City of Nedlands

AGENDA

Council Meeting Agenda Forum

Tuesday, 14 May 2024

Notice of Meeting

Mayor & Councillors
A Council Meeting Agenda Forum of the City of Nedlands is to be held on Tuesday, 14 May 2024 in the Council chambers at 71 Stirling Highway Nedlands commencing at 6pm.
This meeting will be livestreamed Livestreaming Council & Committee Meetings » City of Nedlands

Matthew MacPherson | Acting Chief Executive Officer
9 May 2024

Information

Council Meeting Agenda Forum are run in accordance with the City of Nedlands Governance Framework Policy. If you have any questions in relation to the agenda, procedural matters, addressing the Council or attending these meetings please contact the Executive Officer on 9273 3500 or council@nedlands.wa.gov.au

Public Question Time

Public Questions are dealt with at the Ordinary Council Meeting.

Deputations

Members of the public may make presentations or ask questions on items contained within the agenda. Presentations are limited to 5 minutes. Members of the public must complete the online registration form available on the City's website: Public Address Registration Form | City of Nedlands

Disclaimer

Members of the public who attend Council Meetings Agenda Forum should not act immediately on anything they hear at the meetings, without first seeking clarification of Council's position. For example, by reference to the confirmed Minutes of Council meeting. Members of the public are also advised to wait for written advice from the Council prior to taking action on any matter that they may have before Council.

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1. Declaration of Opening

The Presiding Member will declare the meeting open at 7.00 pm and acknowledge the Whadjuk Nyoongar people, Traditional Custodians of the land on which we meet, and pay respect to Elders past, present and emerging. The Presiding Member will draw attention to the disclaimer on page 2 and advise the meeting is being livestreamed.

2. Present and Apologies and Leave of Absence (Previously Approved)

Leave of Absence (Previously Approved)	Nil.
Apologies	None as at distribution of this agenda.

3. Public Question Time

Public questions will be dealt with at the Ordinary Council Meeting.

4. Deputations

Deputations by members of the public who have completed Public Address Registration Forms.

5. Requests for Leave of Absence

Any requests from Council Members for leave of absence will be dealt with at the Ordinary Council Meeting.

6. Petitions

Petitions will be dealt with at the Ordinary Council Meeting.

7. Disclosures of Financial Interest

The Presiding Member to remind Council Members and Staff of the requirements of Section 5.65 of the Local Government Act to disclose any interest during the meeting when the matter is discussed.

A declaration under this section requires that the nature of the interest must be disclosed. Consequently, a member who has made a declaration must not preside, participate in, or be present during any discussion or decision-making procedure relating to the matter the subject of the declaration.

However, other members may allow participation of the declarant if the member further discloses the extent of the interest. Any such declarant who wishes to participate in the meeting on the matter, shall leave the meeting, after making their declaration and request to participate, while other members consider and decide upon whether the interest is trivial or insignificant or is common to a significant number of electors or ratepayers.

8. Disclosures of Interests Affecting Impartiality

The Presiding Member to remind Council Members and Staff of the requirements of Council's Code of Conduct in accordance with Section 5.103 of the Local Government Act.
Council Members and staff are required, in addition to declaring any financial interests to declare any interest that may affect their impartiality in considering a matter. This declaration does not restrict any right to participate in or be present during the decision-making procedure.

The following pro forma declaration is provided to assist in making the disclosure.

"With regard to the matter in item x ….. I disclose that I have an association with the applicant (or person seeking a decision). This association is ….. (nature of the interest).

As a consequence, there may be a perception that my impartiality on the matter may be affected. I declare that I will consider this matter on its merits and vote accordingly."

The member or employee is encouraged to disclose the nature of the association.

9. Declarations by Members That They Have Not Given Due Consideration to Papers

This item will be dealt with at the Ordinary Council Meeting.

10. Confirmation of Minutes

This item will be dealt with at the Ordinary Council Meeting.

11. Announcements of the Presiding Member without discussion

This item will be dealt with at the Ordinary Council Meeting.

12. Members Announcements without discussion

This item will be dealt with at the Ordinary Council Meeting.

13. Matters for Which the Meeting May Be Closed

For the convenience of the public, the following Confidential items are identified to be discussed behind closed doors, as the last items of business at this meeting.

14. En Bloc Items

This item will be dealt with at the Ordinary Council Meeting.

15. Minutes of Council Committees and Administrative Liaison Working Groups

15.1 Minutes of the following Committee Meetings (in date order) are to be received:

This is an information item only to receive the minutes of the various meetings held by the Council appointed Committees (N.B. This should not be confused with Council resolving to accept the recommendations of a particular Committee. Committee recommendations that require Council's approval should be presented to Council for resolution via the relevant departmental reports).

This item will be dealt with at the Ordinary Council Meeting.

16. Divisional Reports - Planning & Development

16.1 PD31.05.24 Nedlands Village Precinct Structure Plan – Recommendation to the Western Australian Planning Commission

Meeting & Date	Council Meeting 28 May 2024
Applicant	CLE Town Planning and Design
Information Provided	All relevant information required has been provided.
Employee Disclosure under section 5.70 Local Government Act 1995	Nil.
Report Author	Nathan Blumenthal – A/Manager Urban Planning
Director/CEO	Roy Winslow – A/Director Planning and Development
Attachments	1. Zoning Map 2. Nedlands Village Precinct Structure Plan dated received 10 January 2024 3. Design Review Panel Minutes 4. Schedule of Submissions 5. External Agency Submissions 6. Revised Transport Impact Assessment dated received 4 April 2024 7. Schedule of Modifications 8. Modified Zoning and Height Map

Purpose

The purpose of this report is for Council to make a recommendation to the Western Australian Planning Commission (WAPC) on the proposed Nedlands Village Precinct Structure Plan. The Precinct Structure Plan has been prepared and submitted by CLE Town Planning and Design on behalf of the landowner, Hesperia.

It is recommended that the Council recommend to the WAPC that the proposed Structure Plan be approved, subject to modifications and provided proposed Amendment No.15 to the City of Nedlands Local Planning Scheme No.3 is approved.

Recommendation

That Council:

In accordance with Clause 20 of the Deemed Provisions of the Planning and Development (Local Planning Schemes) Regulations 2015:

1. **Note that the land subject of the proposed Nedlands Village Precinct Structure Plan is subject of Amendment No.15 to the City of Nedlands Local**

Planning Scheme No.3 to rezone the land from "Residential" to "Mixed Use" and approval of this Structure Plan by the Western Australian Planning Commission should not occur unless and until the Hon. Minister for Planning approves Amendment No.15 to the City of Nedlands Local Planning Scheme No.3 and the land is rezoned.

2. **Recommend to the Western Australian Planning Commission that the proposed Nedlands Village Precinct Structure Plan be approved in the instance where:**

   a. **The Hon. Minister has approved Amendment No.15 to the City of Nedlands Local Planning Scheme No.15 and the land has been rezoned;**

   b. **The modifications, as set out in Attachment 7, are made to the Nedlands Village Precinct Structure Plan;**

   c. **The Western Australian Planning Commission, on the advice of Main Roads WA, is satisfied that the Structure Plan area will not be subject to any adverse impact on the road network; and**

   d. **The Western Australian Planning Commission, on the advice of Department of Fire Emergency Services is satisfied that the Structure Plan area will not be subject to any adverse impact from Bushfire risk.**

3. **Forward the full Structure Plan proposal, Schedule of Submissions and the recommended modifications to the Western Australian Planning Commission for its determination.**

4. **Notify the Applicant, affected landowners and submitters of Council's recommendation.**

Voting Requirement

Simple Majority.

Background

Land Details

Metropolitan Region Scheme Zone	Urban
Existing Local Planning Scheme Zone	Residential
R-Code	N/A
Land area	Total: 7.41ha Lot 101: 1.73ha Lot 102: 1.86ha Lot 103: 3.82ha

On 10 January 2024 the City received an application for a Precinct Structure Plan pertaining to Lots 101 and Lot 102 Monash Avenue and Lot 103 Karella Street, Nedlands (**Figure 1**) and known as the Nedlands Village Precinct Structure Plan (PSP). The three lots have a combined area of 7.41ha. The lots are currently zoned 'Residential' with additional use rights in accordance with Local Planning Scheme No.3 (LPS 3) Clause Table 4 'A3'. The A3 provisions include Car park, Office, Medical Centre, Place of worship, Residential aged care facility and Shop. In addition, the existing A3 includes built form provisions (maximum 6 storeys or 3 storeys for interface with residential uses) where no structure plan is in place.

There is currently no density code applicable as the area has long been used for the purposes of residential aged care and retirement care, which is subject to separate controls under planning and other legislation. Lot 103 Karella Street is presently vacant. Lots 101 and 102 Monash Avenue are occupied by two residential aged care facilities (Regis Weston and Regis Nedlands) and one retirement village (Centennial Close). The Regis Nedlands building (built in 2018) is proposed to be retained.

Figure 1: Aerial image of Nedlands Village PSP area.

Site Context

Towards the south and south-west of the PSP area, the existing development is predominantly low scale single houses zoned between R10 and R20 which are not expected to significantly change in terms of density or height in the immediate future. The residential lots to the east are zoned R40 and R60, and the lots to the north-east along Monash Avenue are zoned Mixed Use R-AC3. These lots are expected to undergo a gradual transition to a higher density and scale of development.
To the north of the site is Hollywood Primary School, Hollywood Private Hospital and the QEII Medical Centre.

Application Details

The Nedlands Village PSP has been prepared by CLE on behalf of Hesperia. Precinct Structure Plans are guiding documents on how an area could be developed in the future. It outlines land use, density, and development (including built form), access arrangements, infrastructure, environmental assets and community facilities at a precinct scale to facilitate future subdivision and development.
A separate Scheme Amendment (Scheme Amendment 15) has been lodged to align the LPS 3 zoning and land uses with the PSP. This was presented to Council for initiation at its meeting on 27 February 2024. It is noted that the Scheme Amendment will need to be approved by the Minister to enable the change in zoning and new additional use provisions before the PSP can be finalised.

Discussion

Planning and Development (Local Planning Schemes) Regulations 2015

The Schedule 2 Part 4 Deemed Provisions of the Planning and Development (Local Planning Schemes) Regulations 2015 outlines the process for preparing and amending structure plans. It specifies that they are to be subject to the approval of the WAPC and are to operate as documents of 'due regard' (i.e. without the statutory weight of the scheme and consequently capable of flexibility in application). The City has followed the relevant processes outlined within the Regulations in the processing of the structure plan.

State Planning Policy 7.2 Precinct Design Guidelines (SPP 7.2)

SPP 7.2 builds upon the '10 Design Principles' in SPP 7.0, by introducing the concept of design review into the precinct planning through six performance-based design elements. Assessment of the PSP against the intent, objectives, consideration and guidance of the SPP 7.2 Design Elements is provided below.

Design Element 1: Urban Ecology

Bushfire

The north-west portion of the subject site is within a Bushfire prone area (**Figure 2**). As such, SPP 3.7: Planning in Bushfire-Prone Areas is applicable (SPP 3.7). The

applicant has prepared a Bushfire Management Plan (BMP) in accordance with SPP 3.7 (Refer to Appendix 2 of **Attachment 2**). The Nedlands Village PSP was referred to the Department of Fire and Emergency Services (DFES) which has noted that the BMP in its current form does not adequately address the SPP 3.7 policy measures. Modifications to the BMP are required as per DFES advice prior to the endorsement of the PSP (**Attachment 5**).

The BMP assigns responsibility to the City for monitoring of vegetation fuel loads in private landholdings and liaising with relevant stakeholders to maintain fuel loads at minimal/appropriate fuel levels. This is a standard responsibility of the City in accordance with the Bush Fires Act 1954.

Figure 2: Bushfire prone area highlighted in red.

Carnaby's Black Cockatoo

Several Carnaby's black cockatoo roosting sites are known within the greater local area. However, no roosting sites have been identified within the site boundaries. The applicant has provided an Environmental Assessment and Management Strategy (refer to Appendix 4 of **Attachment 2**) which confirms that no cockatoo species or any other threatened ecological communities or flora species are present on the site. Further, the likelihood that the site can provide important habitat for any fauna species of conservation significance is low, given the site primarily comprises cleared areas and non-native vegetation. The PSP was also referred to the Department of Biodiversity Conservation and Attractions which has not raised any concerns with the proposal.

Notwithstanding, the landscape concept design prepared includes appropriate species selection to help to support the functionality of the identified ecological linkage and provide a secondary foraging habitat for Black Cockatoos and other fauna.

Design Element 2: Urban Structure

Pedestrian Access Ways

The Nedlands Village PSP as lodged proposes one pedestrian access way (PAW) which connects the Hardy Road extension through to Monash Avenue, to the west of the Regis Nedlands building. Following the Design Review Panel (DRP) meetings and public consultation, the applicant has committed to providing two further PAWs, one connecting the Hardy Road extension through to Monash Avenue, to the east of the Regis Nedlands building, and one connecting Karella Street through to the proposed POS (**Figure 3**). It is recommended that the PSP be modified prior to approval to include the additional two PAWs. The proposed street alignment and inclusion of multiple PAWs is considered to appropriately promote an urban structure which supports accessibility and connectivity within and outside of the PSP area (SPP 7.2 Objective O2.2). Particularly, the new PAW through to the POS from Karella Street highlights a key destination and focal point within the urban structure and creates an opportunity to draw existing Nedlands residents into the site.

This additional PAW connectivity proposed has been supported by the DRP which commented “The site permeability and connectivity within the surrounding precinct has been improved by the inclusion of the new north south pedestrian right of way. The three vehicle access points are supported and provide an adequate level of access to the site”.

Figure 3: Recommended PAW network. Red PAW is currently proposed. Blue PAW's are recommended.

Streetscape Activation

The City's DRP have highlighted the importance of streetscape activation being locked in via the PSP stage. As per advice from the City's Design Review Panel (DRP) it is recommended that the wording of section 4.2.4 (b) of the PSP be amended to ensure that all at-grade parking within the PSP area is sleeved. This is to ensure high quality streetscape activation whilst minimising dead spaces and streetscapes dominated by parking.

Design Element 3: Public Realm

Public Open Space

Development Control Policy 2.3 Public Open Space in Residential Areas (DCP 2.3) sets out the requirements for the provision of public open space contributions within residential areas. In accordance with DCP 2.3 the typical requirement is for 10% of the gross subdivisible area of the lot be given up free of cost and vested to the Crown as a reserve for Recreation. Any land which is allocated for schools, major regional roads, public utility sites, municipal use sites or other non-residential use is deducted from the gross subdivisible area.

The PSP has excluded the existing Nedlands Regis aged care facility and the future Commercial/Medical Centre site on the corner of Williams Road and Monash Avenue from the gross subdivisible area. After these exclusions, the PSP proposes 9.6% (0.59 ha) public open space. The applicant has committed to the provision of cash in lieu of open space for the remaining 0.4%. In this regard it is recommended that prior to approval, the PSP be modified to include the following wording:

"As a condition of subdivision, the applicant will be required to provide a cash-in-lieu payment for the provision of public open space, to the extent of any shortfall in the ceding of gross subdivisible area."

Both the Nedlands Regis aged care facility and the future Commercial/Medical Centre site are proposed to be zoned 'Mixed Use' via Scheme Amendment 15, and thereby will have the ability to be developed as residential land uses in the future. If this were to occur, the provision of residential public open space would be 7.9%, which is considered insufficient for the needs of the community. To ensure that adequate open space will be provided should these lots be redeveloped as residential, it is recommended that prior to approval the PSP be modified to include the following wording:

"The Nedlands Regis site and the Commercial/Medical Centre site have not made a public open space contribution. Should these sites be developed with a residential component in the future they are subject to a public open space contribution in accordance with Development Control Policy 2.3."

Landscape Design

The applicant has provided a landscape concept design prepared by Plan E Landscape Architects for the public realm as part of the PSP package which is to be implemented as part of the subdivision process (refer to Appendix 5 of **Attachment 2**). Landscaping of individual development sites will be assessed as part of the development application processes.

Design Element 4: Movement

Traffic Management

The applicant has prepared a Transport Impact Assessment (TIA) in accordance with WAPC Transport Impact Assessment Guidelines (refer to Appendix 7 of **Attachment 2**). Given a majority of the existing site is vacant, it is acknowledged that any form of development would result in the generation of additional traffic within the area. The TIA as originally lodged has since been updated to address concerns raised by the City. It is recommended that the revised TIA (**Attachment 6**) be included as part of any final PSP approval. The revised TIA appropriately demonstrates that the forecast traffic generation from the proposal is capable of being catered for within the existing road network, subject to a left in, left out configuration at the Smyth Road / Hardy Road extension intersection. This has been recommended as a modification to the PSP. It is further recommended that the Hardy Road road reserve be increased from 18m to 20m in width to provide sufficient space for future service alignments. Additionally, a crossover strategy is requested to demonstrate access to the R-AC1 and R160 sites.

The Nedlands Village PSP was referred to Main Roads WA (MRWA) given the site's proximity to Stirling Highway, which is a Primary Regional Road Reserve. MRWA has requested further information to be included within the TIA (**Attachment 5**). It is understood that the revised TIA has addressed the matters raised by MRWA. However, it is recommended that the WAPC refer the revised TIA to MRWA for comment prior to approval of the PSP.

Parking

The proposed street reserve design has been configured to allow for on-street parking to be provided within specific street reserves as highlighted in **Figure 4** below. Final design configurations will be confirmed via the subdivision and detailed stages of the development in collaboration with the City. It is estimated that approximately 40 on-street parking bays will be provided.

Parking requirements for individual developments will be assessed at development application stage in accordance with the City of Nedlands Local Planning Policy 4.1 Parking and the Residential Design Codes.

Figure 4: Proposed location of on-street parking

Design Element 5: Land Use

R-Code Density

The proposed Structure Plan is intended for 'Residential' and 'Mixed Use' land uses. The PSP proposes R-code densities of R160 to lots abutting Smyth Road, R80 to the lots abutting Karella Street and R-AC1 to the lots abutting Monash Avenue. The PSP

as proposed has an estimated dwelling yield of 500 dwellings, inclusive of 80 townhouses and 420 apartments.
The City of Nedlands is set a target of 4,320 additional dwellings by 2050 in accordance with Perth and Peel @3.5 Million (2018), which will increase the total number of dwellings in the City to 12,390. The City's adopted Local Planning Strategy identifies the subject site as available for development/redevelopment for the purposes of increasing dwelling numbers. This is one of four targeted infill sites identified within the Strategy. In this regard the Residential land use is supported.

The draft Liveable Neighbourhoods 2015 provides guidance on the determination of density codes surrounding activity centres and high-frequency public transport routes. The site is in proximity to a high frequency public transport route the UWA/QE2 Specialised Activity Centre. This location does not neatly fit into any of the categories identified in draft Liveable Neighbourhoods but would most closely correlate to a density code of R30 to R50.

Given the more recent infill targets set by Perth and Peel @3.5 Million and the City's Strategy, the density guidance outlined in draft Liveable Neighbourhoods may no longer be adequate to achieve infill targets. The City's Strategy preferences targeted density over ad-hoc subdivisions, and thereby the site is an appropriate location to accommodate increased density. The Strategy does not set a prescriptive dwelling target for specific lots, therefore, consideration of density is primarily guided by the recently released State Planning Policy 7.2: Precinct Design.

Land Use

The land uses proposed are largely imposed via the proposed Scheme Amendment 15 (**Figure 5**). The land uses proposed are not a significant change from the existing additional land uses accessible to the site. Existing Lots 101 and 102 are already afforded a range of additional non-residential use rights, therefore the proposed zoning change from 'Residential' to 'Mixed Use' is broadly consistent with the existing LPS3. The applicant has indicated that the intended land uses for the mixed use sites are for Medical Centre, Consulting Rooms, Offices and residential. These are all uses which can be considered within the mixed use zone in accordance with LPS3.

Scheme Amendment 15 proposes a new 'A10' additional use right to the residential zones which allows for discretionary consideration of 'Office', 'Recreation-private', 'Restaurant/café' and 'Shop' The additional use rights proposed via 'A10', are consistent with the existing additional use rights afforded to the site, with the addition of 'Recreation – private'. It is acknowledged that some 'Recreation – private' land uses may be appropriate and provide a greater level of amenity within this locality. All proposed non-residential uses are discretionary and therefore will require development approval to be obtained from the City prior to commencement. This allows for detailed assessment of the specific land uses and operations to occur via the development application pathway.

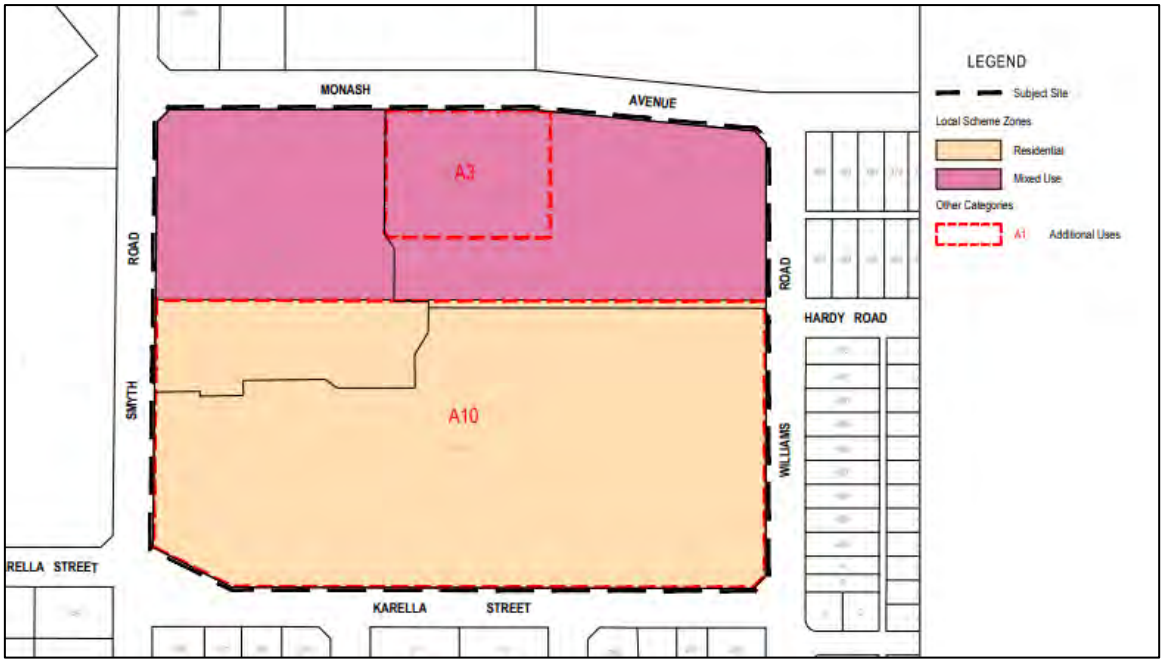

Figure 5: Proposed zoning and Additional Use rights map.

Design Element 6: Built Form

Height & Plot Ratio

The Nedlands Village PSP is intended to be read in conjunction with State Planning Policy 7.3 – Residential Design Codes Volume 1 (R-Codes Volume 1) and State Planning Policy 7.3 – Residential Design Codes – Apartments (R-Codes Volume 2). Section 4.2 of the PSP provides additional development provisions which vary from or are in addition to the R-Codes. In relation to allowable building height this references Plan B: Built Form Controls (**Figure 6**).

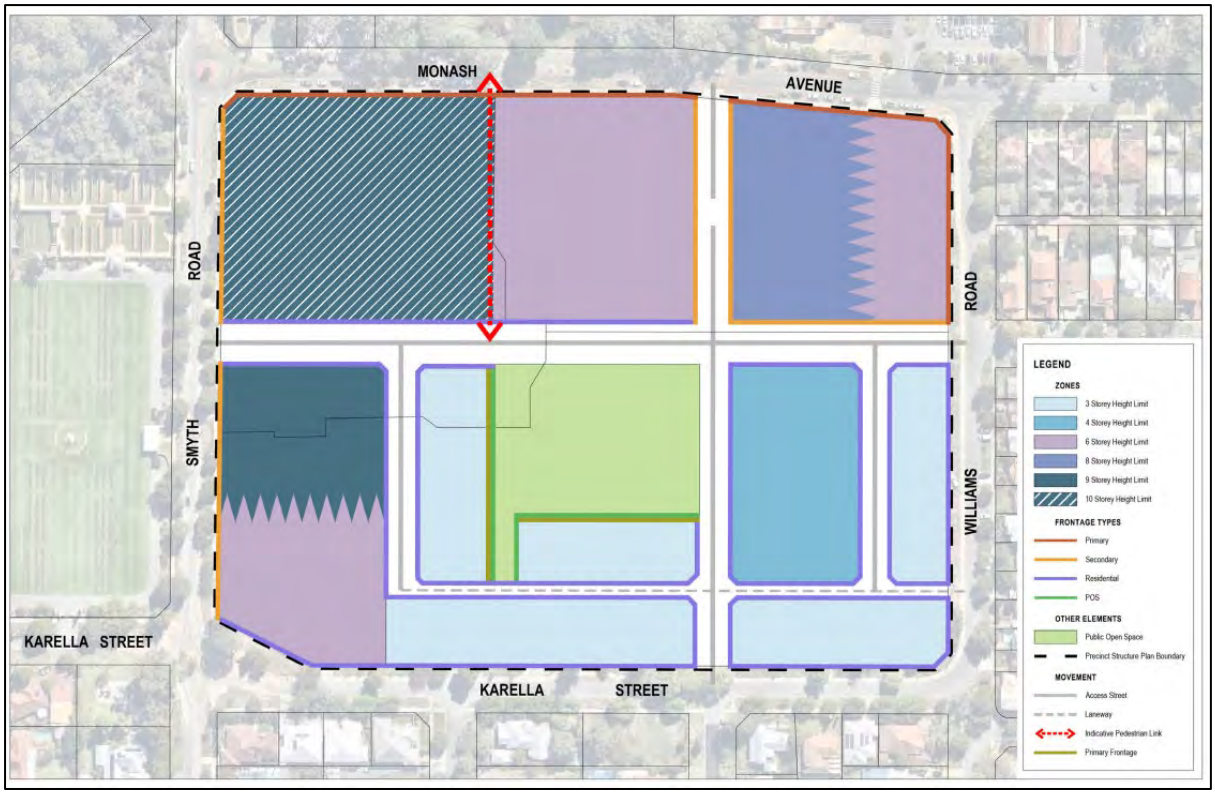

Figure 6: Plan B: Built Form Controls

The current overall height limit for the site in LPS 3 is 6 storeys, or 3 storeys where the development has a residential interface. The PSP generally maintains the 3 storey height limit where the development has a residential interface, except for the lot on the south-west corner of the site, identified in the PSP as Lot I. This lot is proposed to have a height of 6-9 storeys. Officers are not supportive of the height proposed to this lot as it is not responsive to the purpose, context and intended character of the precinct (SPP 7.2 Objective O6.1) nor does it provide for a sensitive transition between lots of differing densities, particularly the existing low-coded lots directly across Karella Street. Further, the height proposed is inconsistent with the R-Codes Volume 2, which sets an Acceptable Outcome of 5 storeys for the R160 coding. Little justification has been provided in the PSP to justify why this height limit and/or density code is proposed.

It is recommended that the existing height limit of 3 storeys is imposed where the development has a residential interface. The remainder of the block is to be as per the R-Codes Volume 2 acceptable outcome (5 storeys). A mark-up of the recommended height controls for the Residential zoned lots is provided at **Figure 7** below. This proposed built form has been supported by the DRP which commented

“The south-west lot is not acceptable in its current form. The built form should be 3 storeys to Karella Street with further height being positioned towards Hardy Road”.

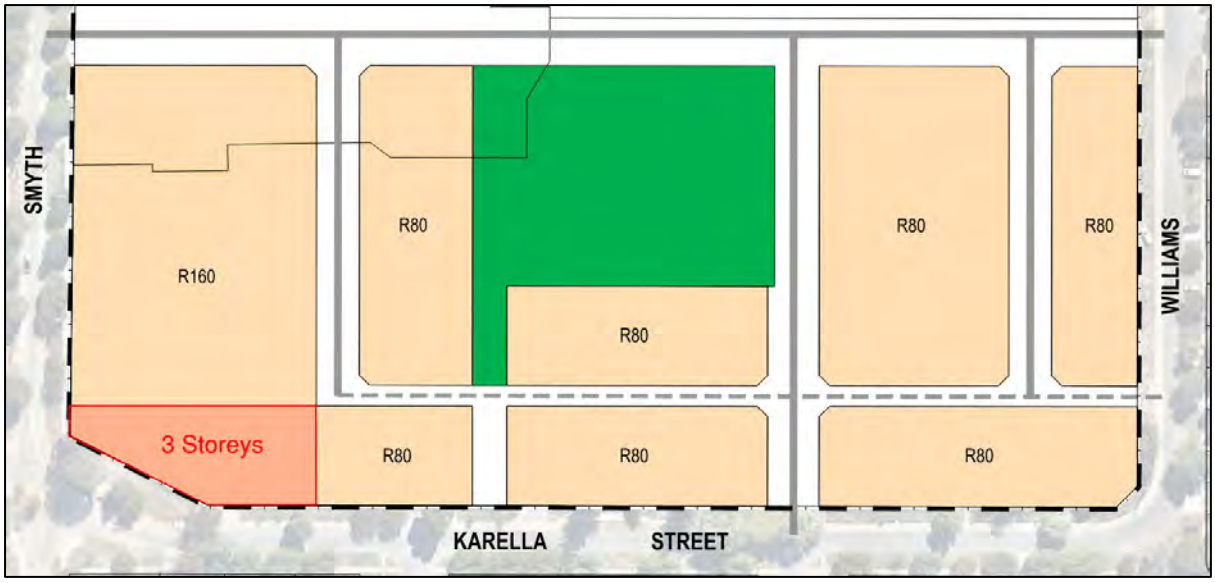

Figure 7: Recommended Height provisions for Lot I

In relation to the Mixed Use zones to the north of the PSP area, the Plan B: Built Form Controls proposes a range of transitional heights ranging from 6 storeys to 10 storeys. The R-Codes Volume 2 sets an Acceptable Outcome of 9 storeys for the R-AC1 coding. Whilst is acknowledged that a transition of heights is likely appropriate to respond to the existing surrounding context, this consideration is already included as part of the R-Codes Volume 2 (Element Objective O2.2.1: the height of development responds to the desired future scale and character of the street and local area, including existing buildings which are unlikely to change). In this regard, the prescriptive heights set in Plan B, especially those which exceed the acceptable outcome, are not necessary to facilitate development which will appropriately respond the context. It is recommended that the height controls pertaining to the Mixed Use zones are reverted back to the R-Codes acceptable outcomes.

In addition to height, the PSP Table 3: Built Form Controls proposes to remove plot ratio outcomes for all lots. The only justification provided for the removal of plot ratio is that

“Building envelopes are to be delivered in accordance with ‘frontage type’ development provisions, as opposed to applying a generic plot ratio. The intent here is to ensure that all buildings are responsive to the existing surrounds and future context” (PSP Page 76).

This consideration is already included as part of the R-Codes Volume 2 (Element Objective O2.5.1: the overall bulk and scale of development is appropriate for the existing or planned character of the area). In this regard, the removal of plot ratio controls via the PSP is not supported and it is recommended that the plot ratio provisions are reverted to the R-Codes acceptable outcomes. This approach has been supported by the DRP which commented

“The PSP should not include additional height or plot ratios beyond the specified R-Code. Any height variations should be addressed as part of the development application process”.

Design Guidelines

The applicant has proposed that the townhouse component of the Nedlands Village PSP area will be subject to a set of site-specific Design Guidelines. These are being developed by the applicant to complement the existing planning framework and facilitate a cohesive architectural response. This is anticipated to be lodged in conjunction with the future subdivision application and is subject to separate approval from the WAPC. Minimal details of the proposed Design Guidelines have been provided as part of the PSP lodgement.

Key objectives of Design Element 6 are to ensure that built form design reduces energy demand by facilitating climate responsive design and to ensure designs are responsive to the streetscape and create a safe and comfortable public realm. This should consider the layout of building to optimise natural ventilation and the design of setbacks and building envelopes to define the streetscape character. Without the provision of Design Guidelines at the PSP stage, these elements of SPP 7.2 are unable to be adequately assessed. In principle, officers are supportive of the preparation of Design Guidelines. However, this should be provided, at minimum, in draft form at the PSP stage. This approach has been supported by the DRP which commented

"Design guidelines, including indicative architectural solutions to the more constrained single residential lots, should be prepared as soon as possible and included within the PSP".

Minor Modifications

In addition to the modifications discussed above, a number of minor modifications to the PSP as lodged are recommended as followed:

- **Modify Plan A to show Hollywood Street north of Hardy Road being zoned 'Mixed Use – R-AC1' – The public road as shown on the lodged PSP is to be replaced with a PAW.**
- **Rename all references to 'Nedlands Village' to 'Nedlands Reserve' – This name change is at the request of the applicant. This has no planning implications and is supported.**
- **Update all figures to reflect updated Structure Plan Map Part A and B – For consistency and clarity.**

Consultation

Public Consultation (Community)

In accordance with the Regulations the Structure Plan was advertised as follows for 42 days, from 15 January 2024 to 26 February 2024, in the following manner:

- **Written notification to owners and occupiers within a 200m radius.**
- **Four signs placed on site at each street for the duration of the advertising period.**

- **Two community information sessions held on Wednesday 7 February 5pm – 7pm and Saturday 17 February 9am – 11am.**
- **Social media post on the City's Facebook on the 6 February 2024.**
- **Notice and publication on the City's website.**
- **Notice on the information board at the City's Administration Building.**
- **Notice in the Post Newspaper.**

At the close of the advertising period, the City received 102 submissions. A full schedule of submissions and applicant responses are provided at Attachment 3. A summary of the key themes from submissions is provided in **Table 1**.

Table 1: Public Consultation		
Issue Raised	**No. of Submissions**	**Officer Comment**
Concerns with increase in traffic – inability for existing road network to accommodate more traffic.	22	It has been adequately demonstrated that the projected traffic generation can be accommodated within the existing and proposed road network subject to a left in, left out configuration at the Smyth Road / Hardy Road extension intersection.
Concerns with proposed new road network and rat run traffic	18	The proposed road design is intended to integrate into the existing grid road network rather than create an enclave. The design aims to eliminate any long, open view lines for motorists that might encourage rat running.
Loss of Character / Nedlands leafy green feel	8	The Nedlands Village PSP proposes over 200 new trees which is a significant improvement on tree canopy in comparison to the pre-development condition. Trees are generally located along pedestrian access linkages to facilitate pedestrian movements and deliver amenity and canopy to the local area. Further, the proposal has generally been supported by the City's DRP in relation to its response to local context.
Inadequate provision of Open Space.	8	Refer to discussion of Public Open Space within this report.

Concerns with location of Open Space – should be more accessible to the public.	4	The central location of the public open space is generally supported, subject to additional PAW links to create for a more effective visual connection and accessibility to the greater public.
Support for proposed Open Space.	13	Noted.
Proposed building heights / densities are too high.	18	Refer to discussion on Land Use and Built Form within this report.
Concerns with lack of on-site and street parking.	10	Refer to discussion on Parking within this report.
Support for redevelopment of an underutilised site.	30	Noted.
Concerns with construction management.	3	The City requires a Construction Management Plan to be submitted to, approved by and monitored by the City of Nedlands for all stages of development. This will require the applicant to adhere to appropriate noise, dust, vibration and tree protection measures.

Public Agencies/Departments

The application was referred to the following Departments and Agencies for comment.

- **ATCO**
- **City of Perth**
- **City of Subiaco**
- **Department of Biodiversity Conservation and Attractions**
- **Department of Education**
- **Department of Fire and Emergency Services**
- **Department of Health**
- **Department of Planning Lands and Heritage**

- **Department of Water and Environmental Regulation**
- **Main Roads WA**
- **Metropolitan Cemeteries Board**
- **Public Transport Authority**
- **Water Corporation**
- **Western Power**

Attachment 4 provides comments from those agencies that made submissions during the consultation period, along with a City Officer response.

Design Review Panel

The PSP was presented to the City's Design Review Panel (DRP) on two occasions on 5 February and 18 March 2024 Full DRP Minutes are provided at **Attachment 3** along with responses from the applicant. A summary of the DRP advice is provided in **Table 2** below.

Table 2: Design Review Evaluation		
	Supported	
	Further information required	
	Not yet supported	
	Yet to be addressed	
	DRP1 – 5 February	DRP2 – 18 March
Element 1 – Urban Ecology		
Element 2 – Urban Structure		
Element 3 – Public Realm		
Element 4 – Movement		
Element 5 – Land Use		
Element 6 – Built Form		

Broadly, the DRP comments provided support for the re-development and renewal of the site, the proposed permeability and connectivity within the surrounding precinct, commitment to sustainability, the provision of new housing and commercial offerings to the community, and response to local context and Nedlands 'sense of place'. Scoring of the Built Form principle remained as 'not yet supported' on the basis of height, plot ratio and lack of Design Guidelines as discussed above. These matters have been requested to be modified prior to the approval of the PSP.

It is noted that the City is obligated to process the PSP within a prescribed period of time. This has required the PSP to be presented to Council with DRP support not yet forthcoming.

Strategic Implications

This item relates to the following elements from the City's Strategic Community Plan.

Vision **Sustainable and responsible for a bright future**

Pillar Place
Outcome 6. Sustainable population growth with responsible urban planning.

Budget/Financial Implications

Nil

Legislative and Policy Implications

The Precinct Structure Plan is to be processed in line with the requirements of the Planning and Development (Local Planning Scheme) Regulations 2015.

Decision Implications

The processes and determination powers with respect to Structure Plans are governed by the Deemed Provisions of Schedule No.2 of the Planning and Development (Local Planning Schemes) Regulations 2015. Under these regulations, the Western Australian Planning Commission is the sole authority responsible for making determinations on Structure Plans.

Pursuant to Regulation 20 (1), Part 4, Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015, the responsible authority must prepare a report to the Western Australian Planning Commission on that Structure Plan, inclusive of a recommendation as to whether or not it should be approved, within 60 days of the date of closure of the public advertising period, or alternatively by a date agreed to by the Western Australian Planning Commission.

The reason why this Structure Plan proposal is advancing now ahead of the Scheme Amendment is because the Applicant obtained the necessary consent from the Western Australian Planning Commission for this to be lodged, advertised and assessed before the land is rezoned via Scheme Amendment No.15, on the proviso that the Structure Plan is not finalised by the Western Australian Planning Commission (not Council) until the rezoning is in-place.

Conclusion

The proposed Nedlands Village PSP is broadly consistent with the six-design elements of SPP 7.2 subject to modifications. The City's adopted Local Planning Strategy identifies the subject site as available for development/redevelopment for the purposes

of increasing dwelling numbers and the PSP includes appropriates provisions for both residential and non-residential land uses. The proposed public open space is well designed and of a suitable size to enhance residential amenity for both new residents and existing residents within the greater Nedlands locality. The proposed road network provides suitable connectivity to the existing road network and is capable of accommodating the increased traffic generation.

It is recommended that Council adopts the officer recommendation to WAPC, to approve the PSP subject to modifications and the endorsement of Scheme Amendment 15.

Further Information

Nil

City of Nedlands

The City of Nedlands accepts no responsibility for the accuracy of this image or the results of any actions taken when using this image

Zoning Map

19/01/2024

1:2500

NEDLANDS VILLAGE

HESPERIA

Precinct Structure Plan

October 2023

CLE Town Planning + Design

Title	Nedlands Village Precinct Structure Plan Part One - Implementation Part Two - Explanatory Section
Prepared for	Hesperia
Date	30 October 2023
Status	Final
Prepared by	CLE Town Planning + Design
CLE reference	3767Rep14B (PSP Part 1) 3767Rep15B (PSP Part 2)

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Approval Page

This Precinct Structure Plan is prepared under the provisions of the City of Nedlands Local Planning Scheme No. 3, the Planning and Development (Local Planning Schemes) Regulations 2015 and State Planning Policy No. 7.2: Precinct Design.

IT IS CERTIFIED THAT THIS PRECINCT STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

_____

Date

Signed for and on behalf of the Western Australian Planning Commission:

_____

an officer of the Commission duly authorised by the Commission pursuant to section 16 of the Planning and Development Act 2005 for that purpose, in the presence of:

_____

Witness

_____

Date

_____

Date of Expiry

Table of Amendments

Amendment No.	Summary of Amendment	Date Approved by WAPC

Executive Summary

This Precinct Structure Plan has been prepared to guide the development of the 'Nedlands Village' project by Hesperia. It has been prepared by CLE Town Planning + Design in accordance with the Guidance for Structure Plans issued in August 2023 and with regard to the suite of documents under State Planning Policy No. 7: Design of the Built Environment.

The PSP provides direction on the intended future structure, land uses and built environment and has been prepared in the context of Hesperia's vision for the site, which is:

Nedlands Village will be a new vibrant and inclusive precinct that celebrates the unique character of Nedlands while embracing the needs of modern living.

The PSP area sits between an established, low-density residential area and significant institutional land uses including the Queen Elizabeth II Medical Centre, Hollywood Primary School and Karrakatta Cemetery. It seeks to improve housing diversity in the local area by delivering a mix of townhouses and apartments, and strike a balance between delivering density and respecting its context.

A Commercial/Medical/Mixed Use site is also proposed to deliver additional medical-oriented floorspace in the sought-after Monash Avenue corridor and a central park will deliver green space for the new community. A permeable street network designed with its basis in the grid pattern of the local area is proposed and linkages to public transport will be prioritised. Lastly, there is provision for the continuation of the residential aged care facility on Monash Avenue known as 'Regis Nedlands'.

As required by policy provisions, the PSP contains two parts. Part 1 is the 'Implementation' section and contains the statutory controls applicable to future development, which are intended to be read in conjunction with the R-Codes and relevant City of Nedlands policies, where applicable. Part 2 is the 'Explanatory' section, which contains a detailed examination of the opportunities and constraints applicable to the site and explains the rationale behind the design. This is augmented by a series of detailed specialist reports appearing as appendices.

Item	Data	PSP Reference (Section #)
Gross area covered by the structure plan	7.4 hectares	Part 1, s. 1
Site area of each proposed land use · Residential · Aged Care · Commercial	 · 4.46ha · 0.56ha · 0.54ha	Part 1, Plan A Part 2, s. 5.5
Total estimated lot yield	81	Part 1, s. 4.1 Part 2, s. 5.5
Estimated number of dwellings	500	Part 1, s. 4.2 Part 2, s. 5.5
Estimated residential site density	112dph	Part 1, s. 4.2 Part 2, s. 5.5
Estimated population	1,300	Part 2, s. 5.5
Number of high schools	Nil	n/a
Number of primary schools	Nil	n/a
Estimated commercial floor space	Approx. 15,900sqm GFA	Part 1, s. 2 Part 2, s. 5.5
Estimated area and percentage of POS given over to: · Regional open space · District open space · Neighbourhood parks · Local parks	 · Nil · Nil · Nil · 0.6ha	Part 1, s. 4.1 Part 2, s. 5.3
Estimated percentage of natural area	Nil	n/a

Project Team

This Precinct Structure Plan has been prepared by **CLE Town Planning + Design** on behalf of **Hesperia**, drawing on a specialist consultant team, including:

- Hesperia - Developer & Project Manager
- CLE Town Planning + Design - Planning & Urban Design
- MJA Studio - Architect
- Hill Thalis - Architect
- Hassell - Architect
- Plan E - Landscape Architect
- Tabec - Engineering
- Emerge - Environment
- Flyt - Transport
- Pentium Water - Drainage
- Douglas Partners - Geotechnics
- MNG - Surveys

Nedlands Village
Precinct Structure Plan

Part One - Implementation

PD31.05.24 - Attachment 2

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1. Precinct Structure Plan Area & Operation

This Precinct Structure Plan applies to:

- Lot 101 (118) Monash Avenue, Nedlands;
- Lot 102 (108) Monash Avenue, Nedlands; and
- Lot 103 (15) Karella Street, Nedlands.

The Precinct Structure Plan area ('PSP area') is bounded by Monash Avenue, Williams Road, Karella Street and Smyth Road. The total land area is approximately 7.4 hectares.

This PSP is in effect from the day it is approved by the WAPC, the date of which is stated on the Approval Page. As stated in Section 28 of the Deemed Provisions in the *Planning and Development (Local Planning Schemes) Regulations 2015*, this PSP has effect for a period of 10 years from the day it comes into effect.

As stated in Section 27 of the Deemed Provisions, a decision-maker for a development approval or subdivision approval in an area that is covered by a PSP is to give due regard to, but is not bound by, the PSP.

Figure 1: Site Plan

PD31.05.24 - Attachment 2

2. Purpose

The purpose of this PSP is to co-ordinate the future zoning, subdivision and development of the PSP area. Its objectives, in the context of the design elements in State Planning Policy No. 7.2: Precinct Design, are as follows.

Victoria House by Hesperia

Urban Ecology

- Provide a multi-functional network of green links and spaces that expand and improve the quality and connectivity of the surrounding natural environment.
- Provide significant tree planting to support local habitat protection, mitigate the effects of climate change, and create vibrant and comfortable urban environments.
- Develop a responsive water management strategy to support a sustainable precinct, especially through the creation of bioswales to support flora and fauna and at-source stormwater infiltration.

Urban Structure

- Adopt the basic structure of streets and blocks evident in the local area, recognising their adaptability for a variety of residential densities and other uses.
- Adopt the prevailing grid-based movement network to create a legible urban structure that supports ease of movement to and through the precinct.
- Encourage active and sustainable travel choices through the creation of a compact and coherent grid arrangement.
- Create view corridors to a centralised public open space, facilitating legibility and familiarity.

Public Realm

- Deliver high-quality public open space and streetscapes designed in response to local precedents and implement landscaping using local species.
- Incorporate Water Sensitive Urban Design principles to optimise plant health and manage reliance on reticulated irrigation.
- Incorporate Crime Prevention through Environmental Design (CPTED) principles, as outlined in the WAPC's Designing Out Crime Planning Guidelines.
- Encourage social interaction through thoughtful design in public and private spaces.

Land Use

- Prioritise residential development, recognising the role that this consolidated, well-located precinct needs to play in the delivery of the City of Nedlands' infill objectives.
- Facilitate the delivery of a diverse range of dwelling unit types, recognising that the housing stock in the local area is dominated by single houses on relatively large lots.
- Provide land for the continuation of Residential Aged Care services on a portion of the site.
- Provide land for the development of new medical-oriented floorspace complementing the UWA / QEII Specialised Centre.

Movement

- Extend existing streets and links into the PSP area to create a legible urban structure and enhance local permeability.
- Prioritise rear access for all development sites facing the existing perimeter streets to minimise crossovers and enhance safety for all users.
- Provide a network of walkable routes that conveniently connects residents to local destinations and supports public transport use, encouraging healthy lifestyles.
- Integrate parking areas with built form and streetscapes to ensure they are not visually or physically disruptive.
- Provide two-way access for vehicles wherever possible to minimise journey distances and slow traffic.
- Streets and public spaces are to be accessible for all.

Built Form

- Complement the density and character of the local area using responsive built form controls along established interfaces.
- Adopt the principles, objectives and controls in SPP 7.3: Residential Design Codes and relevant City of Nedlands policies, except where varied in this PSP.
- Ensure that the scale, bulk, building separation, and setbacks allows for physical and visual permeability.

3. Staging

Development of the PSP area will be staged in response to servicing and commercial considerations. It is envisaged (but not mandated) that development will be staged in accordance with Table 1 below.

Stage	Deliverables
Stage 1	· Creation of freehold lots in south-eastern sector · Delivery of related streets and services
Stage 2	· Development of Commercial / Medical Centre · Delivery of related streets and services
Stage 3	· Development of terrace houses and apartments around POS · Landscape POS · Delivery of related streets and services
Stage 4	· Development of Lot 101 · Delivery of related streets and services

Table 1: Indicative Staging

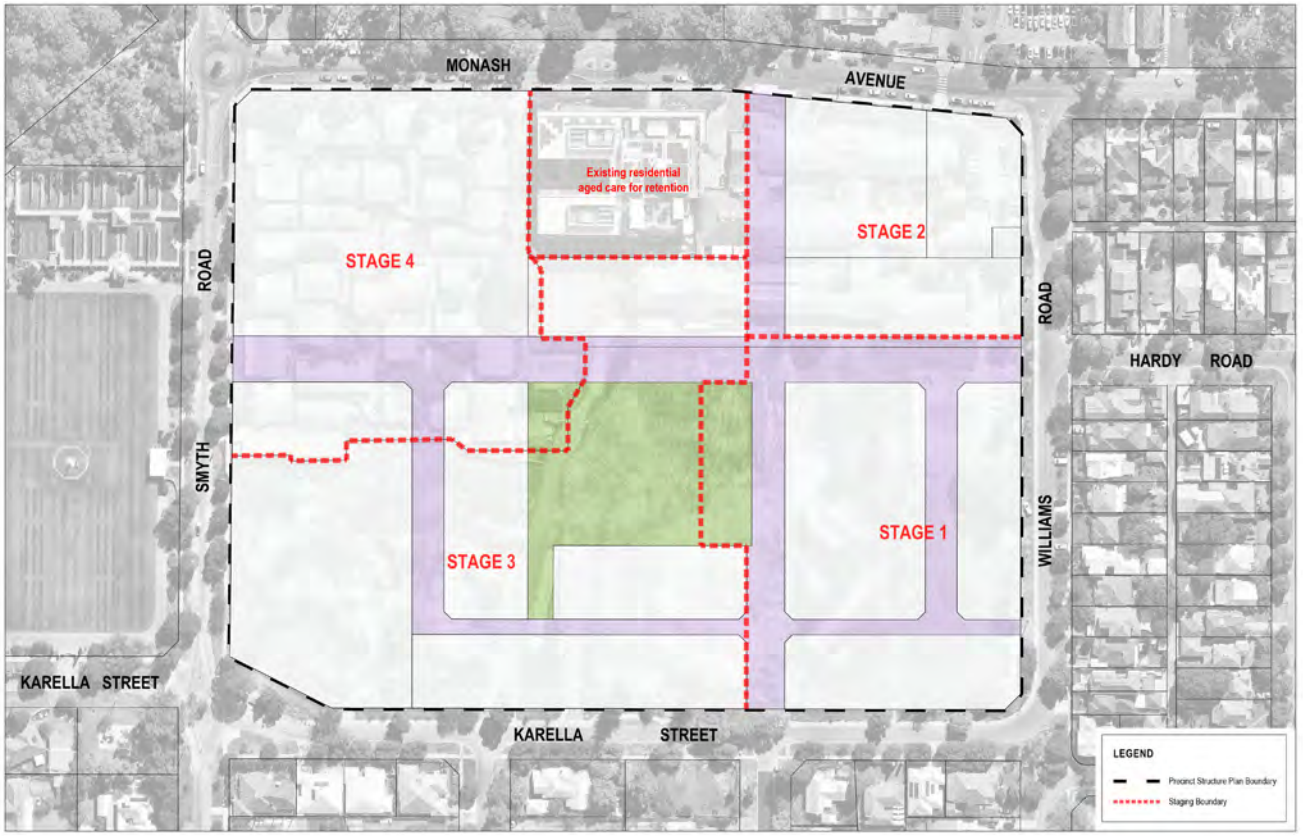


Figure 2: Indicative Staging Plan

PD31.05.24 - Attachment 2

4. Subdivision & Development Requirements

4.1 Zones & Reserves

4.1.1 Zones

Subdivision and development of land within the PSP shall be generally in accordance with the zones shown on the PSP. Refinements to the extent of the zones shown in the PSP are permitted at the subdivision stage subject to an appropriate level of technical justification being provided.

The PSP proposes the zones listed in Table 2, as defined in City of Nedlands Local Planning Scheme No. 3 (with minor site specific refinements).

Zone	Objectives
Residential	· To provide for a range of housing and a choice of residential densities to meet the needs of the community. · To facilitate and encourage high quality design, built form and streetscapes throughout residential areas. · To provide for a range of non-residential uses, which are compatible with and complementary to residential development. · To ensure development maintains compatibility with the desired streetscape in terms of bulk, scale, height, street alignment and setback.
Mixed-Use	· To provide for a significant residential component as part of any new development. · To facilitate well designed development of an appropriate scale which is sympathetic to the desired character of the area. · To provide for a variety of active uses on street level which are compatible with residential and other non-active uses on upper levels. · To allow for the development of a mix of varied but compatible land uses such as residential, retail, commercial office, medical, healthcare, food and beverage establishments, showrooms and recreation facilities.

Table 2: Zones

4.1.2 Movement Network

a. The street network should be developed in accordance with the road hierarchy shown on Plan A: Zones and Reserves, which comprises Access Streets and laneways.

b. Street cross-sections should be developed generally in accordance with the Landscape Master Plan presented as an appendix to this PSP, which encourages extensive street trees and gardens, footpaths, lighting, and at-source stormwater detention in swales.

c. Intersection treatments should be applied generally in accordance with the Transport Impact Assessment presented as an appendix to this PSP.

d. A pedestrian linkage should be provided from Hardy Road toward the bus stops on Monash Avenue, generally on the alignment shown on Plan B: Built Form Controls. This should be universally-accessible, landscaped and lit, and provide a high level of pedestrian amenity to support pedestrian use and public transport access.

4.1.3 Public Open Space

Public open space is to be provided generally in the locations shown on Plan A: Zones and Reserves and landscaped generally in accordance with the Landscape Master Plan prepared by Plan E as part of this PSP.

4.2 Development Provisions

Unless provided for in this PSP, the provisions of the City of Nedlands Local Planning Scheme No. 3 and State Planning Policy No. 7.3: Residential Design Codes ('the R-Codes') apply. This PSP operates in conjunction with the requirements to the R-Codes by applying additional controls, varying 'deemed-to-comply' requirements or adding site-specific performance criteria where appropriate.

4.2.1 Residential Densities

Residential densities for the PSP area are shown on Plan A: Zones and Reserves. Residential development shall be in accordance with the correlating density code requirements in the R-Code, apart from where a variation has been validly approved.

4.2.2 Built Form

a. Built form across the PSP area should comply with the controls in Table 3: Built Form Controls for each frontage type. These prevail to the extent of any inconsistency with any other planning instrument.

b. The 'Primary' frontage type encourages a high level of activation and visual engagement with pedestrians and the public realm in general. A mix of tenancies, distinctive building entrances, glazing, projected and recessed elements, awnings, screens, balconies and/or landscaping are encouraged along 'Primary' frontages.

c. The 'Secondary' frontage type encourages visual engagement with pedestrians and the public realm in general, distinctive building entrances, glazing, awnings and landscaping, with vehicle access points and service areas permitted in appropriate locations.

d. Discretion under Clause 34 of LPS 3 may be exercised by the decision-maker in respect of the requirement of Clause 32.4(2) in Table 6 of LPS 3 to enable residential uses on the ground floor of buildings on land zoned 'Mixed Use'.

e. Development adjacent to the pedestrian linkage between Hardy Road and Monash Avenue should enable passive surveillance of the linkage and be designed and set back to facilitate a pleasant and inviting pedestrian environment.

f. Continuous horizontal and vertical elements shall be broken into smaller components through architectural features, materials, textures and building breaks to provide variety and relief. Articulated roof designs should be provided, particularly in prominent locations.

g. Building separation should be in proportion to building height and facilitate solar access, breezes and visual connections.

h. Development on corner lots should address both the primary and secondary street and any other abutting public realm.

i. Blank walls, vehicle access and building service areas should not physically or visually dominate the lot frontage to any public interface. Any such features on a primary frontage should be integrated into the building design so as not to detract from the amenity and visual appearance of the frontage.

Element	Frontage Type		
	Primary	***Secondary***	***Residential***
Maximum overall building height	Refer to Plan B: Built Form Controls		
Minimum setback	6 metres (overlapping with electricity easement)	2 metres	As per R-Codes
Plot ratio	Not applicable	Not applicable	Not applicable
Street presentation	See 4.2.2(b)	See 4.2.2(c)	As per R-Codes

Table 3: Built Form Controls

4.2.3 Public Open Space Interfaces

Development on land identified with a 'Public Open Space Interface' ('POS Interface') on Plan B: Built Form Controls is subject to the following requirements:

a. Where a residential lot has an interface with POS, as shown on Plan B, that interface constitutes the primary frontage.

b. The minimum setback from the POS boundary is 2 metres except where the boundary is the secondary frontage, in which case the minimum setback is 1 metre.

c. All dwellings fronting the POS shall comprise a minimum of two-storeys.

d. Building design shall incorporate at least one major opening with an unobstructed view of the POS.

e. Fencing along POS interfaces where the interface is the primary frontage shall have a maximum height of 1.8m and be visually-permeable above a height of 1.2m.

f. Fencing along POS interfaces where the interface is a secondary frontage may be solid to 1.8m behind the primary setback line.

g. Enclosed, non-habitable structures such as storage sheds are only permitted where visible from the POS if attached to the dwelling and constructed of the same materials as the dwelling. Unenclosed, non-habitable structures such as gazebos, patios and pergolas are exempt from this provision.

h. All clothes drying, refuse, general storage areas, air conditioning units and ground-based hot water storage tanks shall be screened from the POS.

4.2.4 Car Parking & Lot Access

a. Basement parking, podium parking or parking sleeved behind residential or non-residential development is encouraged throughout the PSP area.

b. Unsleeved at-grade parking and at-grade parking within street setback areas will generally be discouraged throughout the PSP area.

c. Parking within the PSP area should be provided in accordance with:

   i. SPP 7.3: Residential Design Codes for all residential development;

   ii. City of Nedlands Local Planning Policy No. 4.1: Parking for all other uses.

d. Where an applicant proposes development that is required to provide car parking bays, that applicant may, with the City's agreement, make a cash payment to the City in lieu of providing some or all of the required number of parking spaces.

e. A maximum of one crossover will generally be permitted for each lot, with crossovers to be shared using reciprocal rights of access where practical.

f. New crossovers to Smyth Road and Monash Avenue should be kept to a minimum, with access obtained from alternative frontages wherever possible.

g. Loading and service areas should be located in physically and visually unobtrusive places and be screened from view from the public realm.

4.2.5 Bicycle Parking & End of Trip Facilities

a. For residential development, bicycle parking and end of trip facilities shall be provided in accordance with SPP 7.3: Residential Design Codes.

b. For non-residential development, bicycle parking and end of trip facilities shall be provided at a rate commensurate with the likely level of demand from the proposed uses.

4.2.6 Landscaping on Private Land

a. Landscaping on private land within the PSP area should be provided in accordance with:

   i. SPP 7.3: Residential Design Codes for all residential development;

   ii. City of Nedlands Local Planning Policy No. 3.1: Landscaping Plans for all non-residential development.

b. Development design should incorporate deep soil areas that facilitate the retention of healthy, viable mature trees and/or the provision of new trees, with an overall objective of increasing the extent of tree canopy over the PSP area.

4.3 Local Development Plans

At the subdivision stage, the WAPC may impose a condition of approval enabling Local Development Plans to be prepared for any part of the PSP area for the purpose of:

a. Co-ordinating built form, access and/or other planning matters for individual lots or groups of lots.

b. Implementing variations to SPP 7.3: Residential Design Codes beyond any variations approved in this PSP (as amended).

c. Managing interfaces, especially to public open space and other public land.

4.4 Other Requirements

4.4.1 Bushfire Risk Management

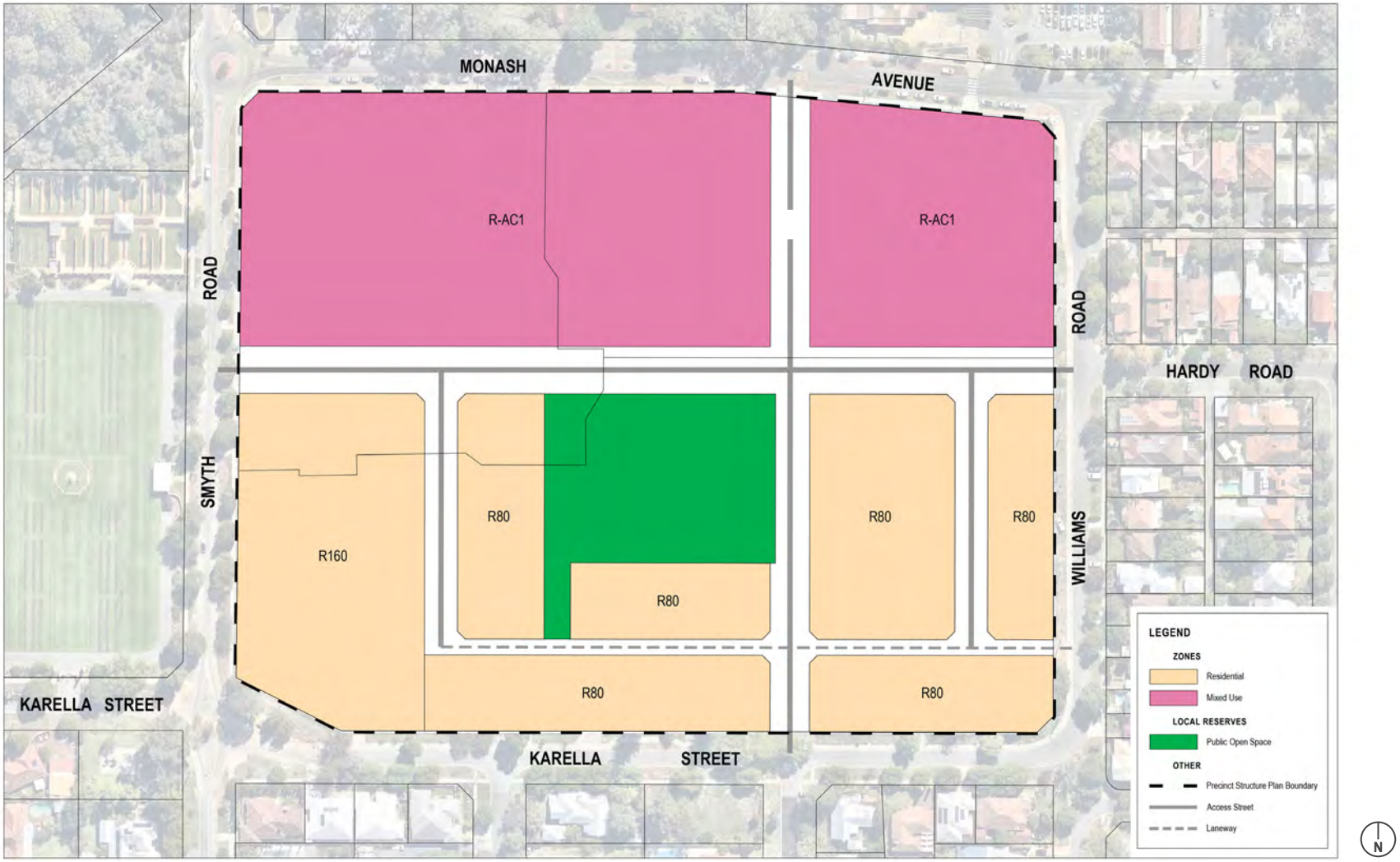
Development and subdivision on any part of the PSP area that is identified as being bushfire-prone in the map database maintained by the Department of Fire and Emergency Services is required to comply with the relevant aspects of State Planning Policy No. 3.7: Planning for Bushfire-Prone Areas.

4.4.2 Infrastructure Arrangements

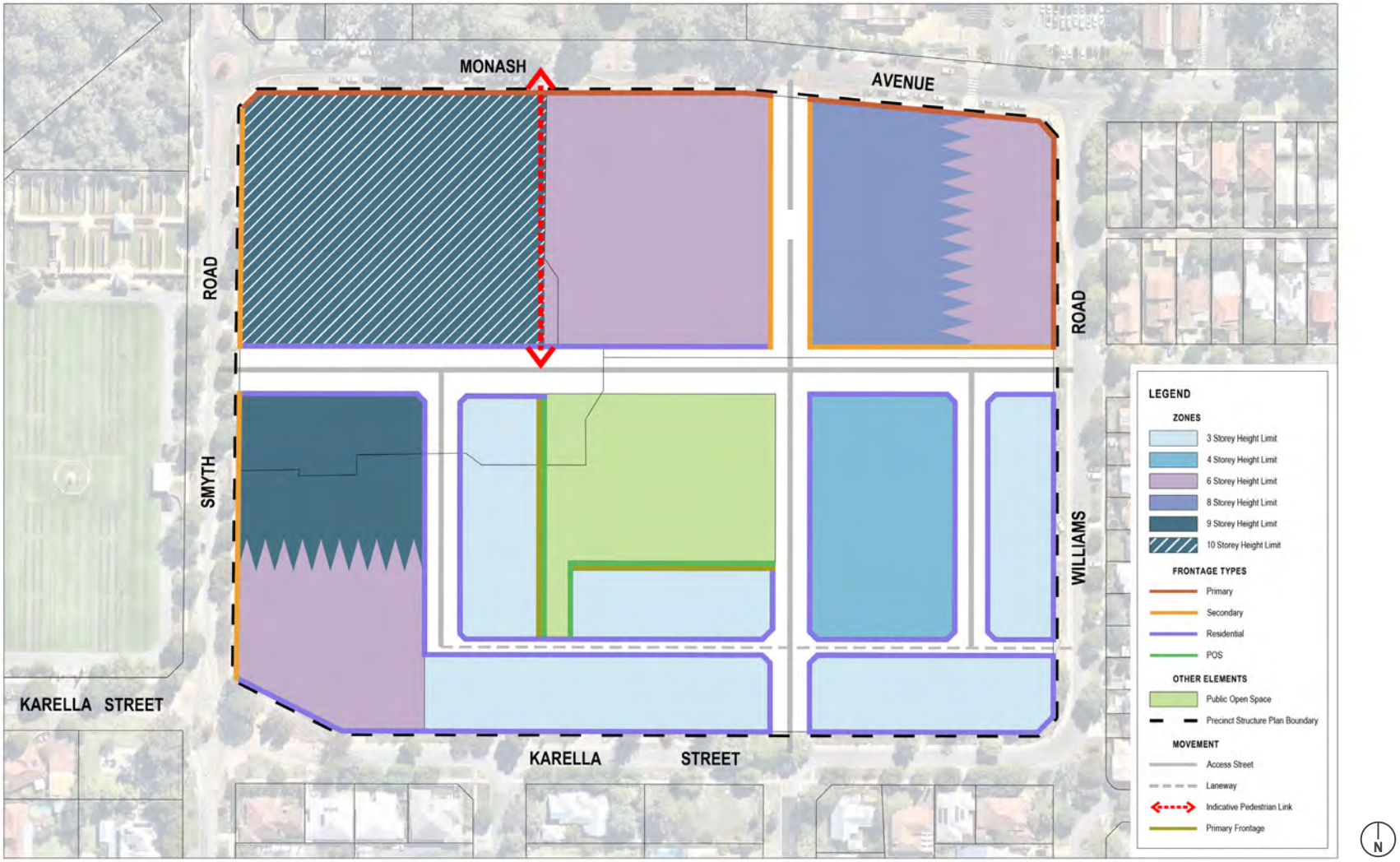
In reference to the existing low-voltage and high-voltage electricity infrastructure surrounding the site along Monash Avenue, Smyth Road, Karella Street and Williams Road, it is noted that the City of Nedlands and Western Power has a current underground scheme (scheme no. N0513466). This work shall not be undertaken by the proponent (Hesperia or its subsidiaries) and shall be undertaken by the City of Nedlands and Western Power in accordance with the scheme.

4.4.3 Water Resource Management

Development and subdivision on any part of the PSP will be required to meet the relevant requirements of the Better Urban Water Management Guidelines (WAPC, October 2008) or its successor in the context of the Local Water Management Plan prepared by Pentium as part of this PSP.



Plan A: Zones & Reserves



Plan B: Built Form Controls

5. Additional Details

5.1 Information to be Submitted with an Application

Additional Information / Purpose	Approval Stage	Responsible Agency
Bushfire Management Plan	Subdivision	WAPC
Transport Impact Assessment	Subdivision	WAPC / City of Nedlands
Documents required under relevant City of Nedlands policies at the time of lodgement	Development	City of Nedlands

Table 4: Information to be submitted with a subdivision or development application

5.2 Information to be Submitted Pursuant to Conditions

Additional Information / Purpose	Responsible Agency
Urban Water Management Plan	City of Nedlands

Table 5: Information to be submitted pursuant to approval conditions, if relevant

Nedlands Village
Precinct Structure Plan

Part Two -
Explanatory Section

PD31.05.24 - Attachment 2

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Appx. 1: WAPC letter dated 9 August 2023 (consent for PSP preparation)
Appx. 2: Bushfire Management Plan
Appx. 3: Engineering Services Report
Appx. 4: Environmental Assessment Report
Appx. 5: Landscape Master Plan
Appx. 6: Local Water Management Strategy
Appx. 7: Transport Impact Assessment
Appx. 8: Copy of the pre-lodgement letterbox drop correspondence

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Figure 21: Concept Plan
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Figure 23: Site Sections (Block J)
Figure 24: Site Sections (Block i)
Figure 25: Site Sections (Block K & L)
Figure 26: Site Sections (Block A, M, N & U)

1. Introduction & Purpose

This Precinct Structure Plan (PSP) has been prepared to guide the development of the 'Nedlands Village' project by Hesperia. It has been prepared by CLE Town Planning + Design in accordance with the *Guidance for Structure Plans* issued in August 2023 and with regard to the suite of documents under State Planning Policy No. 7: Design of the Built Environment.

The purpose of the PSP is to provide direction on the intended future structure, land uses and built environment. It has been prepared in the context of Hesperia's vision for the site, which is:

'Nedlands Village will be a new vibrant and inclusive precinct that celebrates the unique character of Nedlands while embracing the needs of modern living.'

The PSP area sits between an established, low-density residential area and significant institutional land uses including the Queen Elizabeth II Medical Centre, Hollywood Primary School and Karrakatta Cemetery. It seeks to improve housing diversity in the local area by delivering a mix of townhouses and apartments, and strike a balance between delivering density and respecting its context. A key feature of the design approach is the transition of building height up from three storeys along interfaces with existing residential areas up to ten storeys in the north-western corner, away from sensitive land uses.

A Commercial/Medical/Mixed Use site is also proposed to deliver additional medical-oriented floorspace in the sought-after Monash Avenue corridor and a central park will deliver green space for the new community. A permeable street network designed with its basis in the grid pattern of the local area is proposed and linkages to public transport will be prioritised. Lastly, there is provision for the continuation of the residential aged care facility on Monash Avenue known as 'Regis Nedlands'.

Development will occur on a staged basis beginning with the townhouses adjacent to Williams Road and Karella Street and progressing through to the apartments and Commercial/Medical/Mixed Use. The 'Regis Nedlands' facility will continue in its existing premises for the long-term. Centennial Close and Regis Weston, will operate until suitable arrangements for their existing residents have been made.

It is currently intended that one subdivision application will be progressed for the whole PSP area to provide certainty to the community and relevant authorities, whilst development applications will be sought for each individual site in accordance with the developer's priorities and market considerations.

Overall, the PSP intends to deliver a modern, high-quality mixed use development that respects its setting whilst delivering on the significant development potential of this well-located, consolidated site.

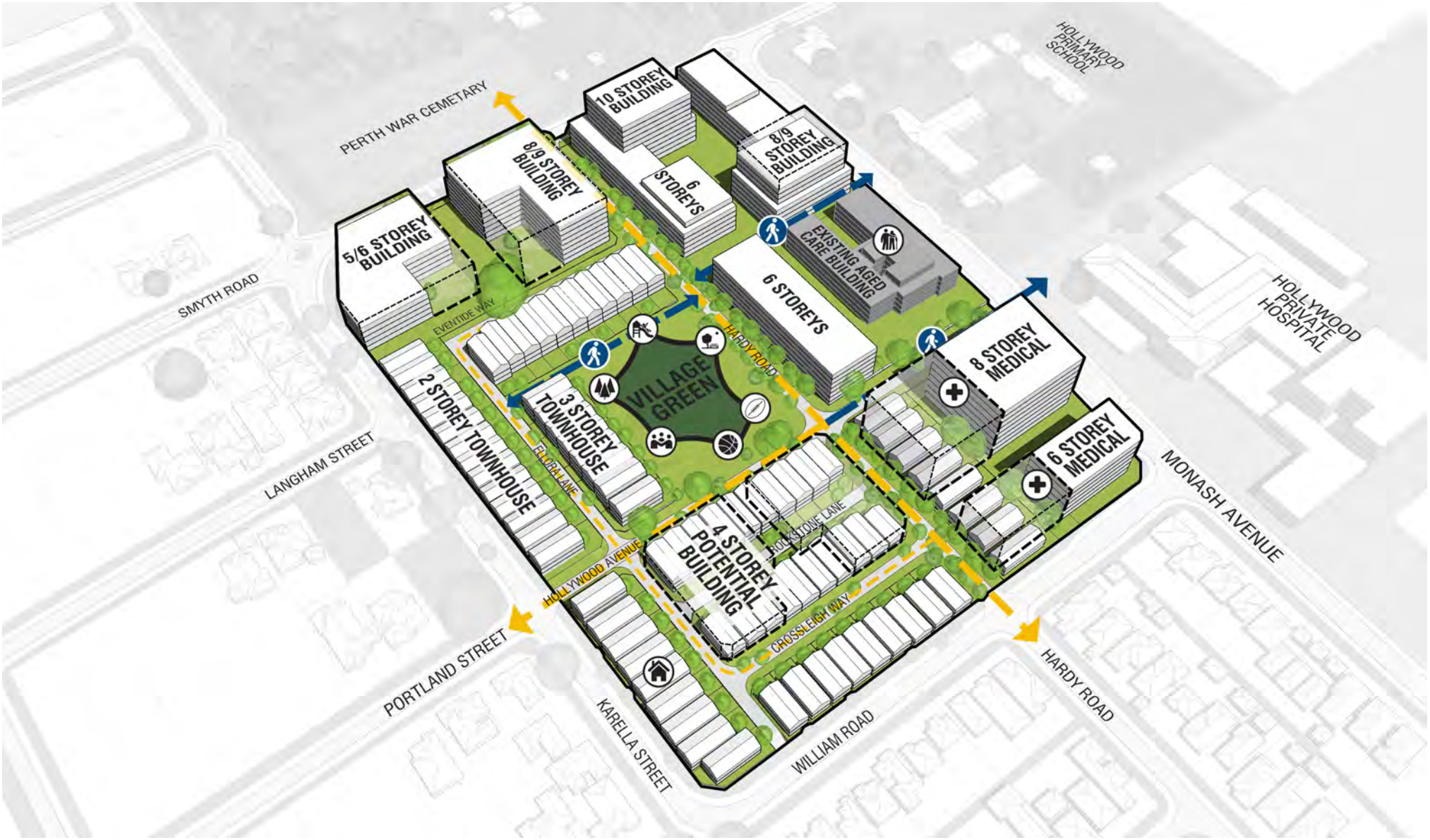


Figure 1: Nedlands Village Masterplan

Victoria House

Knutsford

Rivermark

HESPERIA *prides itself on its commitment and track record in creating a new sense of place and activation on well-located but under-used inner-city land areas.* ***Nedlands Village*** *will represent another example of our approach by offering a variety of residential choices that meet local housing needs. The new village will operate as an extension of the current community, and provide new local amenities, including a large centrally located community park.*

2. Site & Context Analysis

2.1 Physical Context

2.1.1 Site Location

The PSP area is located in the City of Nedlands, approximately 6km south west of the Perth CBD, 1km east of Karrakatta Station, and 500m west of local shops at Hampden Road.

The PSP area covers approximately 7.4ha and is broadly bounded by: Hollywood Primary School and Hollywood Hospital to the north; established residential development to the east and south; and Hollywood Reserve, Perth War Cemetery and Karrakatta Cemetery to the west.

The nearest railway station is Karrakatta Station, approximately 1km west of the site, which is served by the Airport Line and Fremantle Line on the Transperth network.

Other destinations in proximity to the PSP area include Kings Park, Sir Charles Gairdner Hospital, the University of Western Australia, and a commercial precinct around the Captain Stirling Hotel on Stirling Highway.

The PSP area is also identified in the Perth Biodiversity Project as being part of an ecological linkage between Kings Park and the Shenton Bushland, among others. The Environmental Assessment and Management Strategy prepared with this PSP notes that the site does not provide any significant functionality to this linkage, but there is an opportunity to improve on that through appropriate species selection in landscaping.

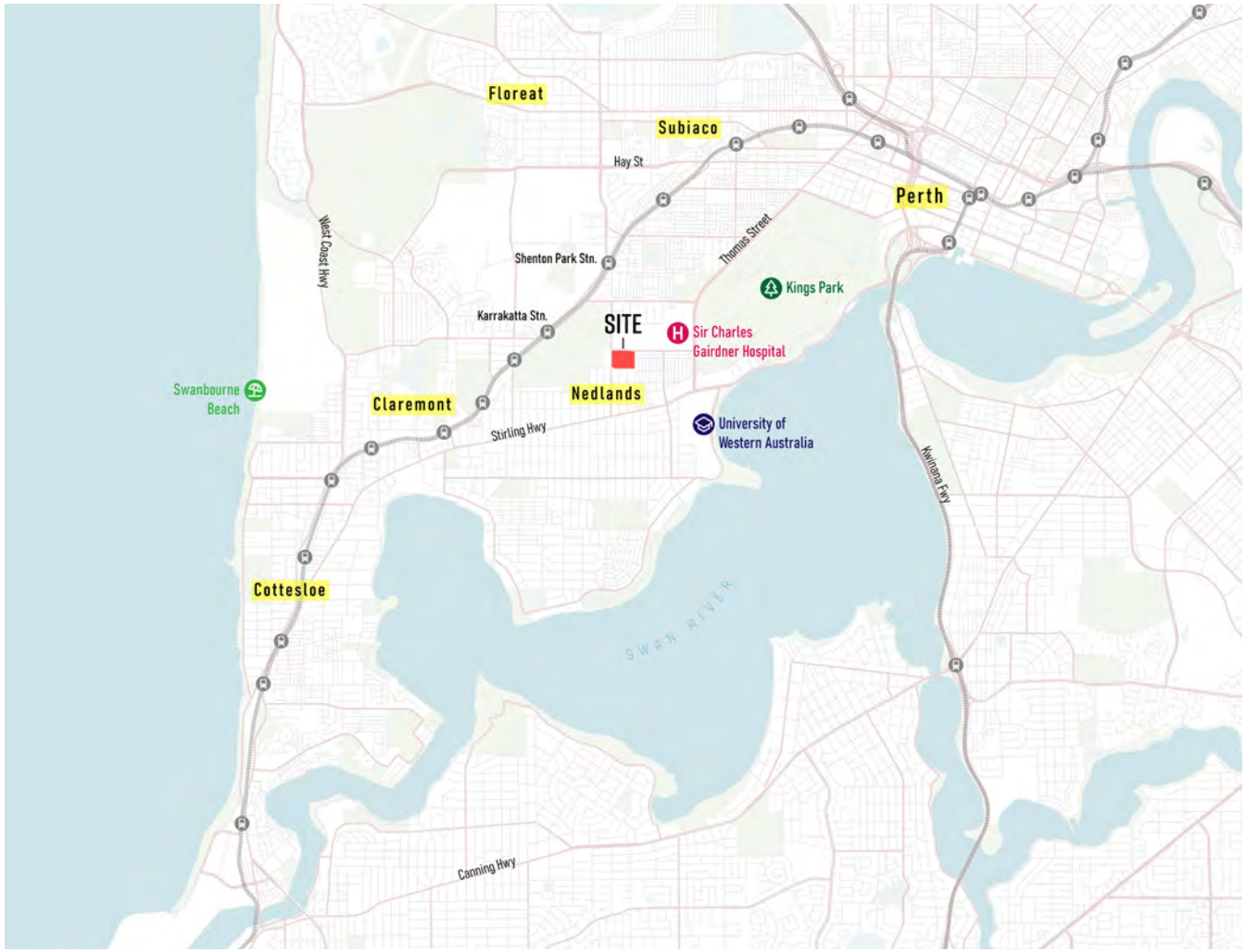


Figure 2: Sub-Regional Location Plan

Hollywood Reserve
Monash Avenue
QEII Medical Centre
Perth City Centre
Kings Park
Site
University of Western Australia

2.1.2 Local Context

The PSP area is located within an infill location for future growth, where new development can be fully integrated into a thriving neighbourhood. There are a wide range of facilities and services that are sustainably accessible to the site within the local area, as shown on Figure 3.

The PSP area lies in close proximity to: Hollywood Primary School, Hollywood Hospital, and a child care centre to the north; Queen Elizabeth II Medical Centre to the north east; and Perth War Cemetery and Karrakatta Cemetery to the west.

A vibrant 'high street' of local shops, services, retail, cafés, and restaurants is located approximately 500m east of the PSP area at Hampden Road. This key local destination is a short walk away via Hardy Road or Karella Street.

There are several local green spaces that provide attractive places to meet, play, and enjoy nature, including Karella Park, Hollywood Reserve, Harvey Road Park, Dot Bennett Park, and Highview Park, which includes a range of sports facilities. The established suburban environment also features an abundance of mature street trees that form green network links that adds to the locality's 'garden suburb' character.

Further afield, within 2km of the PSP area, there are other notable facilities and services, including: Karrakatta Station, Shenton Park, Rosalie Park, Rosalie Primary School, the University of Western Australia, Broadway, Carrington Precinct, various commercial activities along Stirling Highway, and the Captain Stirling Neighbourhood Centre.

The majority of residential lots in the vicinity of the PSP area face east-west comprising generally modest 1930's housing stock, however, new developments and extensions to existing dwellings are continually occurring. Consistent street trees with large front setbacks assist to soften the impact of new two storey dwellings.

The recently developed Hollywood High School site on Aberdare Road, 500m to the north, is made up of single dwellings, townhouses, and a portion of apartments. The majority of these lots face north-south, which is uncommon in the local area and has a distinctive identity. Further afield, the twenty-storey Chellingworth Motors approval on Stirling Highway is the nearest large proposed residential development.

The surrounds of the PSP area can be considered settled and are unlikely to change in the foreseeable future in terms of land use. The adjacent suburb of Nedlands is a sought-after area for homebuyers and there is almost no evidence of subdivision in the nearby neighbourhood, even to the east where the current density coding enables it and the presence of laneways facilitates access. The nearby institutions are established, have facilitative planning controls and are not readily relocatable. These factors indicate that this is not an evolving area. It is therefore important that the PSP respects its setting and presents a sensitive and appropriate interface to its neighbourhood.

Single dwelling on Portland Street

Recently developed Hollywood High School site on Aberdare Road

Figure 3: Local Context Plan

Entry to Hollywood Reserve at Smyth Road

Local shops at Hampden Road

PD31.05.24 - Attachment 2

2.1.3 Local Movement

The PSP area is advantageously located within an accessible and well-connected area that has excellent pedestrian, cycle, and public transport links to significant local destinations. It is bounded on all four sides by existing streets, which presents opportunities for logical extensions to access routes and services. The following streets form the boundary of the PSP area:

- Monash Avenue is a single carriageway road classified as a 'Distributor B' in the Western Australian road hierarchy. It links Winthrop Avenue with Smyth Road and is a major access route for patrons of the QEII Medical Centre and Hollywood Primary School. A stop on bus route no. 25 is in place adjacent to the PSP area.
- Smyth Road is classified as a 'Local Distributor'. It links Aberdare Road with Stirling Highway. A stop on bus route no. 25 is in place adjacent to the PSP area and it provides pedestrian and cyclist access toward the nearest railway station, Shenton Park.
- Karella Street and Williams Road are both Access Roads providing local access to residential properties. They connect with each other at an elbow curve at the south-eastern corner of the PSP area. They intersect with Langham Street, Portland Street and Hardy Road, and these present opportunities to extend seamlessly into the PSP area to create a permeable grid.

All four perimeter streets are original one-chain (20.12m) road reserves and each has a single carriageway lined with trees of varied maturity. There is a footpath on each side of the perimeter streets, but no dedicated cycle network. The 'Perth / Fremantle Bike Map' published by the Department of Transport describes the surrounding footpaths and streets as *"Other Shared Path[s]"* and, for Williams Road, a *"Good Road Riding Environment"*.

The PSP area is located within a 1-12 minute walk to frequent and regular public transport services that provide a wide variety of connections to key destinations. The nearest railway stations are Karrakatta Station, approximatley 1km west of the site, and Shenton Park Station, approximately 1.5km north of the site, which are served by the Airport Line and Fremantle Line on the Transperth network.

The local area has a high level of walkability with paths on both sides of most roads, plentiful street trees, a legible street grid network, and other public paths such as Karak Bidi. Destinations within a 20min neighbourhood catchment (800m) include Hollywood Primary School, Hollywood Subiaco Bowls Club, Karrakatta Cemetery, Dot Bennett Park, QEII Medical Centre, Bodyscape Yoga, UWA Library and Early Learning Centre, and the various businesses, cafes, restaurants and shops along Hampden Road.

All matters relating to transport are addressed in the Transport Impact Assessment ('TIA') accompanying this PSP. The TIA concludes that in relation to traffic, a full build-out scenario for the PSP in the morning and afternoon peaks would see *"the existing and future networks operate well within accepted traffic engineering parameters"*.

Electricity, sewer, drainage and telecommunications infrastructure is in place in the perimeter streets. Its capability for extension are examined in the Engineering Infrastructure Report accompanying this PSP, which indentifies that development in accordance with the PSP would not generate demand beyond the capacity of existing infrastructure. No off-site upgrades are expected to be required.

View of Monash Avenue facing east from above Smyth Road

Monash Avenue (Source: Flyt)

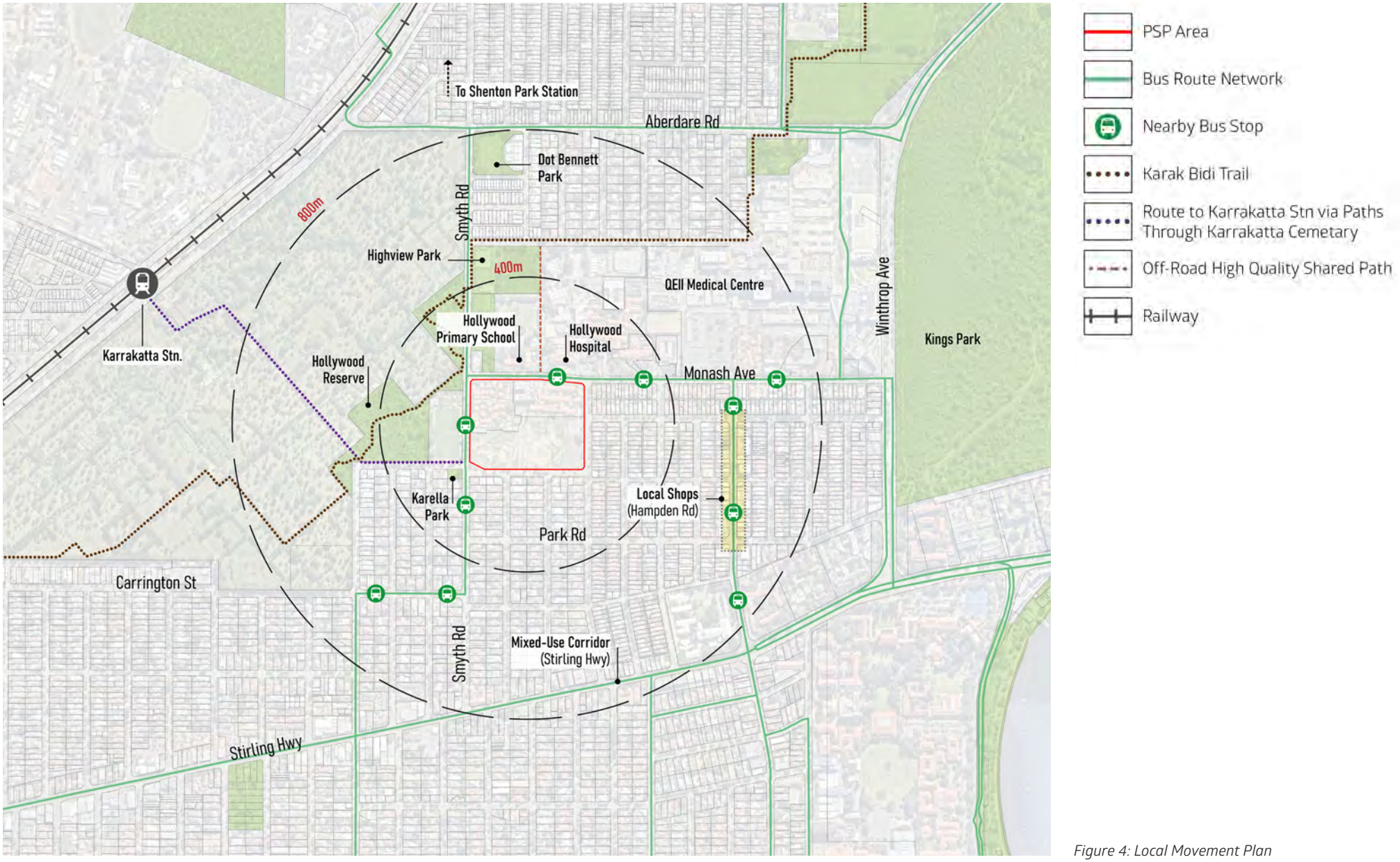


Figure 4: Local Movement Plan

PD31.05.24 - Attachment 2

2.1.4 Site Details

The PSP area comprises three lots listed in Table 6. Encumbrances, excluding mortgages, are listed in Table 7. The easements listed in Table 7 are shown on Figure 5: Site Plan.

The memorial listed under the *Retirement Villages Act 1992* is, at the time of lodgement, in the process of being removed in respect of the PSP area outside the 'Regis Nedlands' residential aged care facility, which will continue operating into the long-term.

View of PSP area facing south east from above Hollywood Reserve

Lot no.	DP no.	CT	Address	Area	Proprietor
101	411077	Vol. 2950 Fol. 233	118 Monash Ave, Nedlands	1.73ha	Retirement Care Australia (Hollywood) Pty Ltd
102	411077	Vol. 2950 Fol. 234	108 Monash Ave, Nedlands	1.86ha	Retirement Care Australia (Hollywood) Pty Ltd
103	411077	Vol. 2950 Fol. 235	15 Karella St, Nedlands	3.82ha	Retirement Care Australia (Hollywood) Pty Ltd

Table 6: Title particulars

Reference	Encumbrance
Lot 101	
E987333	Memorial under the Retirement Villages Act 1992. Lodged 14/9/1992
L747626	Easement to Electricity Networks Corporation for transmission works
Plan	Easement burden created under s.167 Planning and Development Act 2005 for sewerage purposes to Water Corporation
Lot 102	
L747626	Easement to Electricity Networks Corporation for transmission works
Plan	Easement burden created under s.167 Planning and Development Act 2005 for sewerage purposes to Water Corporation
Plan	Easement benefit created under s.136C Transfer of Land Act 1893 for right of footway purposes
Lot 103	
E987333	Memorial under the Retirement Villages Act 1992. Lodged 14/9/1992
Plan	Easement burden created under s.167 Planning and Development Act 2005 for electricity purposes to Electricity Networks Corporation
Plan	Easement burden created under s.167 Planning and Development Act 2005 for electricity purposes to Electricity Networks Corporation
Plan	Easement benefit created under s.136C Transfer of Land Act 1893 for right of footway purposes

Table 7: Title encumbrances

Figure 5: Site Plan

PD31.05.24 - Attachment 2

2.1.5 Site History

Recent Site History

The memorial relates back to a period of time when the PSP area was developed in its entirety for the purposes of residential aged care and retirement village facilities. Until late 2009, the PSP area consisted of:

- The existing 'Centennial Close' village near the intersection of Monash Avenue and Smyth Road, centred around Williams Place. This comprises a complex of single-storey brick and tile villas.
- The existing 'Regis Weston' facility near the intersection of Monash Avenue and Williams Road. This is a two-storey brick and tile facility providing care for less independent residents and primarily fronts Williams Road.
- A three-level building on Monash Avenue between Centennial Close and Regis Weston, on the site of the existing 'Regis Nedlands' facility completed in 2018.
- An array of relatively low-scale buildings on a site of approximately 1.5 hectares in the south-western corner of the PSP area, roughly between Withnell Place and Village Road (both private roads), with public access from Karella Street.
- A significant complex comprising three six-storey wings and two three-storey wings between Village Road and Crossleigh Court (both private roads), with public access from Karella Street.
- An unusual star-shaped complex comprising four pairs of wings emanating from a central building with primary frontage and access from Williams Road, on an approximately a one- hectare site in the south-eastern corner of the PSP area.

The site has changed significantly since 2009. That year, the complex in the south-western corner was demolished and the site cleared, and the complex in the south-eastern corner followed suit in 2010. Demolition of the building on the site now occupied by the 'Regis Nedlands' facility occurred in 2016 and construction on its successor began immediately after, finishing in 2018. Most recently, in mid-2021, the complex between Village Road and Crossleigh Court was demolished.

28th October 2006

23rd March 2011

Image source: Landgate

Early Site History

The PSP area is part of Whadjuk Noongar boodja, or the country of the Whadjuk Noongar people. There are no registered sites of significance to Aboriginal people on or near the PSP area, but it is known that the Nedlands area was part of the hunting grounds used by Mooro Noongars who, at the time of British settlement in 1829, were led by Yellagonga. Yellagonga died in 1835 and land grants in the Nedlands area began during the same decade, disrupting the traditional Noongar way of life. Today, there is no known Aboriginal cultural heritage on the site, which has been extensively disturbed over a long period. This does not preclude the integration of Aboriginal themes in (for example) landscaping, public art and architecture at the development stage.

Agricultural and then residential growth in Nedlands was spurred by the completion of the Perth-Fremantle road (now Stirling Highway) in 1858, the Fremantle-Guildford railway in 1881 and an electric tramway from Perth through to Broadway in 1909. The Hollywood locality of which the PSP area is a part was so named in the 1920s when a real estate agent and developer, Cyril Dudley subdivided land in the vicinity of Hampden Road. The estate was named 'Hollywood' for marketing reasons, with the developer hoping to capitalise on the glamorous connotations of the word at a time when American movies were becoming popular. The name was never gazetted but is synonymous with the locality.

The date the PSP area was cleared of native vegetation is not known, but aerial photography from 1953 published by Landgate indicates that clearance had occurred by that time. The Environmental Assessment and Management Strategy prepared with this PSP states that prior to clearance, the site would have been part of the 'Karrakatta Complex – Central and South', which was characterised by open forest of tuart, jarrah and marri and woodland of jarrah and various species of banksia. The only vegetation present by 1953 comprised rows of mature trees planted along all frontages, particularly on Karella Street and Williams Road, and scattered trees likely of non-remnant origin, some of which are in rows and/or the curtilage of the small number of buildings present at the time.

The 1953 photography indicates that the land surrounding the PSP has changed remarkably little since that time. The residential areas described above to the east and south are in evidence, with the only noteworthy change being the growth in tree canopy. Hollywood Primary School and Hollywood Hospital are both in evidence, albeit on a smaller scale, as are the Perth War Cemetery (established in 1942) and Karrakatta Cemetery (1899). All four of these institutions are included on the City's Local Heritage Survey but not the Heritage List administered as part of the LPS 3 framework.

Although cleared in its entirety, the site was only partly in use in 1953. It was vacant apart from the Salvation Army Boys' Home on Karella Street, roughly on the site of the six-storey building mentioned above. Information published by the Department of Communities indicates that this was established in 1918 and operated until 1992. The Boys' Home occupied its original dormitory-style buildings until 1965 when it transitioned to a 'cottage campus' model and was renamed the Hollywood Children's Village. It became coeducational in 1969 and in its later years was described as offering *"medium to long-term care and a planned respite program, with the principal placement aim being to maintain family links as closely as possible with family restoration as an end goal."*

Aerial photography indicates that development of the PSP area began in earnest in the early 1960s when the buildings that became the 'Regis Weston' facility were erected. This was followed later in the decade by the development of the three-level building on Monash Avenue (on the 'Regis Nedlands' site), the distinctive star-shaped complex on Williams Road and a group of buildings in the south-western corner. The six-storey complex on Karella Street commenced construction in the late 1960s following demolition of the old Boys' Home dormitories.

Expansion of the 'Regis Weston' facility (using its current name) occurred soon after, being complete in 1974. By 1981, the entire 'Centennial Close' campus had appeared, bringing an extraordinary period of growth spanning twenty years to an end.

The first signs of redevelopment are in evidence by the late 1980s when the 'Regis Weston' facility was refurbished and extended. New buildings were erected in the south-western corner of the site in the late 1990s, replacing some of those built in the 1960s. These were among the first to be demolished when the process of clearing the southern half of the site began in 2009.

27th November 1953

6th February 1995

6th September 1974

17th February 2017

Image source: Landgate

Current State of the Site

Progression of the events described in the preceding sections has left the southern half of the site vacant and available for development in the short-term. It is unconstrained, generally flat and contains no remnant vegetation. There is a small number of mature trees and these will be retained if their condition and position enable their health to be maintained.

The northern half of the PSP area, fronting Monash Avenue, is occupied by the three remaining residential aged care and retirement village facilities. They consist of the above-mentioned Centennial Close village on Lot 101 Monash Avenue and, on Lot 102, the 2018 Regis Nedlands building and the older Regis Weston complex. Regis Nedlands is proposed to be retained for the long term under the ownership of RCA, whilst Regis Weston and Centennial Close, in that order, will be redeveloped in due course.

12th February 2023 *(image source: Landgate)*

PD31.05.24 - Attachment 2

2.2 Community Context

The City of Nedlands Local Planning Strategy, which received WAPC approval in 2017, contains an extensive review of the demographic characteristics of the City. It uses Census data that is now outdated, having been generated from the 2001 and 2011 Census events, however, the key findings enable a comparison with those of the most recent Census, which was held in 2021.

The following section references the 2021 Census and the demographics observations made in the Strategy to illustrate how the City of Nedlands compares with Greater Perth and the changes evident over time.

Population

The Strategy observes that the City's population grew by 198 people between 2001 and 2011, which is a minor increase. The 2021 Census indicates more significant growth, with a gain of 596 people being recorded relative to 2011, but this is still modest compared with the rate of growth for Greater Perth as a whole.

	2001*	2011*	2021
Population	21,338	21,536	22,132

Table 8: Population data for the City of Nedlands

** data taken from City's Local Planning Strategy*

The observed growth rate over the ten-year period from 2011 to 2021 is 2.7%, which compares to a growth rate of 22.4% for Greater Perth over the same period.

Age & Family Composition

The Strategy noted that in 2011, the City's median age was 41, compared to 36 for Greater Perth, and that relative to Greater Perth, there was a higher proportion of people in the age brackets above 45 and between 5 and 24 years. This reflects the student population associated with the UWA campus at Crawley but also indicates relatively high numbers of maturing families.

The 2021 Census indicates that the City's median age still exceeds the Greater Perth average and that the gap has in fact widened. It also confirms the relatively high incidence of couple families with children.

	Nedlands (C) – 2021	Greater Perth – 2021
Median age	43	37
Couple family without children	36.2%	37.6%
Couple family with children	53.2%	45.7%
One-parent family	9.9%	15.1%

Table 9: Age and family composition data

The average number of people per household in the City in 2021 was 2.8, which compares to the Greater Perth average of 2.6 and reflects the higher proportion of couple families with children compared to the Greater Perth average.

Dwelling Types

For the period 2001 and 2011, the Strategy observes that the housing characteristics of the City remained *"fairly static"*. A review of the 2021 Census data indicates that this trend has generally continued but there has been an increase in the incidence of people living in townhouses and a small reduction in people living in single houses or apartments.

Relative to Greater Perth, more people in the City reside in single houses and less in both townhouses and apartments. This reflects the prevalence of families with children and the relatively high household incomes illustrated in the 'Income & Property Values' section.

	Nedlands (C) – 2001	Nedlands (C) – 2011	Nedlands (C) – 2021	Gr. Perth – 2021
Single houses	6,014 (82.2%)	6,147 (84.5%)	6,202 (81.6%)	77.8%
Townhouses	552 (7.5%)	640 (8.8%)	917 (12.1%)	14.2%
Apartments	726 (9.9%)	479 (6.6%)	474 (6.2%)	7.6%

Table 10: Dwelling types data

Income & Property Values

The Strategy observes that in 2011, *"although all income groups are represented, Nedlands has on average a significantly lower proportion of its households within the lower and middle income groups compared to Greater Perth"* and that *"the difference between Nedlands and Greater Perth is particularly evident in the highest [income] group"*. These statistics led the Strategy to note that *"Nedlands is, on average, a wealthy LGA with significantly higher levels of household income than Greater Perth"*.

Median weekly household income data from the 2021 Census indicates that Nedlands can still be described in these terms. The relatively high median household income figure is reflected in property terms by the relatively high median house price, median unit price and median weekly rental costs, as published by the Real Estate Institute of WA.

	Nedlands (suburb) – 2021	Greater Perth – 2021
Median household income	$2,832 per week	$1,865 per week
Median house price	$1.96 million	$560,000
Median unit price	$675,000	$400,000
Median rent (house)	$1,022 per week	$580 per week
Median rent (unit)	$515 per week	$520 per week

Table 11: Income and property values data

It is noteworthy that the median unit price for the suburb of Nedlands is, as of August 2023, higher than the median house price for Greater Perth.

Observations

The information presented in this section indicate that the City of Nedlands:

a. is experiencing slow population growth. This is likely to be a product of planning rules that restrict residential subdivision, strong demand for single houses suitable for raising families and the City's long-standing commitment to preserving established neighbourhoods.

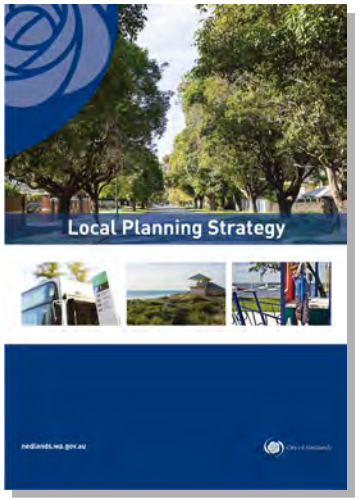
b. has a relatively high average age and a relatively high proportion of households with children, which can been seen as a cause and reflection of the housing stock being dominated by single houses on large lots.

c. may have a cost-related barrier to entry for first homebuyers, given the relatively low proportion of people aged between 25 and 44 and the high median house price. The relatively high incidence of households with children aged 5 or over indicate that the City is more feasible for second- and third-homebuyers than younger families.

d. has a growing appetite for townhouses, given the steady growth in the number and proportion of people living in such dwellings over the past 20 years, but less of an appetite for apartments, in part due to the lack of quality options in the area. However, the relatively high median house price has the potential to stimulate greater interest in apartment living, with quality choices become accessible.

With reference to the 2001 and 2011 Census data, among other sources, the City's Strategy makes several recommendations advocating diversification of the City's housing stock. As mentioned in Section 2.3.1.3, these include encouragement of a *"considerable number of additional dwelling units of a diverse nature within the targeted infill areas"* and *"higher-density multiple and grouped dwelling developments in targeted infill areas to provide a diverse range of dwelling types"*. The 2021 Census data outlined above suggests that these objectives are still valid, and this PSP aims to contribute to their delivery.

The Strategy is not prescriptive about a yield target for the subject lots. It is the intention of this PSP to provide a diverse range of housing product and a yield that makes optimal use of the site whilst respecting the low-density character of the surrounding residential area.



2.3 Governance Context

2.3.1 Strategic Planning Context

2.3.1.1 Perth and Peel @ 3.5 million

The P*erth and Peel @ 3.5 million* suite of policies forms the spatial framework and strategic plan for Perth and Peel. Its purpose is to establish a blueprint to support a population of 3.5 million by 2050 through the implementation of four sub-regional planning frameworks. The structure plan area is within the 'Central' sub-region (refer Section 2.3.1.2 below).

2.3.1.2 Central Sub-Regional Planning Framework

The Central Sub-regional Planning Framework ('the Framework) is part of the *Perth and Peel @ 3.5 million* suite of documents and provides guidance at a sub-regional level for land use and infrastructure.

The PSP area is shown as part of the 'UWA / QEII' Activity Centre. As explored further in Section 2.3.4.1, this has not been reflected in more recent planning initiatives including the draft UWA / QEII Precinct Plan and is therefore outdated.

The Framework reflects the Metropolitan Region Scheme ('MRS') reserves in place to the west (refer to Section 2.3.2.1), indicating that no major land use changes are envisaged for the foreseeable future. The 'Public Purposes-Hospital' reserve applied in the MRS to Sir Charles Gairdner Hospital and the Perth Children's Hospital site is included with the broader Activity Centre annotation. Further afield, Hampden Road and Stirling Highway are both identified as 'Urban Corridors', which are priority areas for infill development at medium to high densities.

The Framework adopts the State Government's 47% infill target for Perth's dwelling demand to 2050 and states that *"Approximately 215,000 dwellings (56 per cent of the total amount of new infill dwellings) are expected to be delivered in the Central sub-region…"*, with a target set for each local government.

The City of Nedlands is set a target of 4,320 additional dwellings by 2050, taking the total number of dwellings in the municipal area to 12,390. This would accommodate additional population of 9,500, assuming 2.2 people per dwelling. Through their local planning strategies and schemes, local governments are responsible for deciding how their dwelling target will be delivered (refer to Section 2.3.2.2).

A Framework plan appears as Figure 6.

2.3.1.3 City of Nedlands Local Planning Strategy

As described in the *Planning and Development (Local Planning Schemes) Regulations 2015* ('the Regulations'), a Local Planning Strategy summarises the long-term planning directions for a local government area and provides a rationale for the zones and reserves applied through a Local Planning Scheme. Local Planning Strategies are prepared in a manner and form approved by the WAPC and must apply any State or regional policy that is relevant to the Strategy area.

The City obtained WAPC endorsement for its Local Planning Strategy in 2017. The Strategy contains a map that identifies the subject lots as a 'Redevelopment / Development Area' and the north-eastern corner as a 'First Transition Zone' from the 'Urban Growth Area' defined along the eastern half of Monash Avenue. These categories are three of the four defined 'Targeted Infill' categories.

The City's interest in preserving its leafy, low-density character is well-documented and is expressed in the Strategy. Section 10.2 of the Strategy states that *"In most areas of the City of Nedlands the status quo of actively seeking to conserve and enhance the physical quality and value of the existing residential neighbourhoods is to prevail."* Achievement of the infill target prescribed by the State Government therefore relies heavily on the 'Targeted Infill' areas, including the PSP area.

The following 'Intentions' in the area of Population and Housing are relevant to the subject lots:

- *"Strongly encourage development of a considerable number of additional dwelling units of a diverse nature within the targeted infill areas."*
- *"Facilitate greater diversity, specifically higher-density multiple and grouped dwelling developments in targeted infill areas to provide a diverse range of dwelling types to accommodate changes in population trends."*
- *"Develop controls to ensure key sites are not under-developed, thus ensuring existing residential character is protected long-term and development is focused in a few specified locations."*

In addition, the specific strategies for the 'Monash' precinct include the following for the subject lots:

- *"Within the Smyth Road redevelopment/development area, comprehensively plan to allow the maximum potential redevelopment of the site with land uses that are complementary to the existing site and the UWA-QEII Specialised Centre".*

The Strategy is not prescriptive about a yield target for the subject lots. It is the intention of this PSP to provide a diverse range of housing product and a yield that makes optimal use of the site whilst respecting the low-density character of the surrounding residential area.

A Strategy plan appears as Figure 8.

2.3.2 Statutory Planning Context

2.3.2.1 Metropolitan Region Scheme

The Metropolitan Region Scheme ('MRS') applies zones and reserves across the Perth metropolitan region. Its purpose is to co-ordinate planning across local government areas by defining and protecting land for public purposes and designating broad zones to guide local-level planning controls.

The PSP area is zoned 'Urban' under the MRS. Nearby:

- The residential areas to the east, south and south-west are zoned 'Urban'.
- To the north, Hollywood Primary School and the privately-operated Hollywood Hospital are also zoned 'Urban'.
- The publicly-operated Sir Charles Gairdner Hospital is reserved for 'Public Purposes-Hospital'.
- To the west, Karrakatta Cemetery and the Perth War Cemetery are both reserved for 'Public Purposes-Special Use'.
- Between the cemeteries, Hollywood Reserve is reserved for 'Parks and Recreation'.

No other MRS instruments, such as the Bush Forever overlay, are applicable on the subject site or in the local area.

An MRS plan appears as Figure 7.

2.3.2.2 City of Nedlands Local Planning Scheme No. 3

Content

The *Planning and Development Act 2005* gives local governments the power to prepare and maintain local planning schemes to make *"suitable provision for the improvement, development and use of land in the local planning scheme area"*. This is done through the application of appropriate local-level zones and reserves.

Local Planning Schemes comprise three parts – the Deemed Provisions that apply to all Local Planning Schemes through the Regulations, as amended, the Scheme Text, which is encouraged to be consistent with the Model Provisions in the aforementioned Regulations, and the Scheme Maps that illustrate the spatial extent of the various zones and reserves.

PSP Area

The City of Nedlands Local Planning Scheme No. 3 ('LPS 3') applies a 'Residential' zone to the PSP area. There is no density code because the PSP area has long been used for the purposes of residential aged care, which is subject to separate controls under planning and other legislation.

There is no enabling provision for this PSP in LPS 3, however, the proponent has received approval from the WAPC to prepare a PSP pursuant to Section 15(c) of the Deemed Provisions. A copy of the WAPC's letter to this effect is provided in Appendix 1.

An Additional Use listing, reference A3 in Table 4 of LPS 3, applies to the PSP area. Sub-clause (1) states that the 'Residential Aged Care' is a 'Permitted' use and sub-clause (2) states that the following uses are permitted if incidental to a Residential Aged Care facility ('I' uses): Car Park; Office; Medical Centre; Shop; Place of Worship.

The third and final sub-clause states that:

- *"Where there is no approved structure plan, local development plan and/or activity centre plan, the following height controls apply:*

  i. maximum of 6 storeys; or

  ii. maximum of 3 storeys where development has a residential interface."

LPS 3 does not define the term 'storey', so it is assumed that the definition in the R-Codes applies.

Proposed Amendment to LPS 3

Implementation of this PSP will necessitate an amendment to LPS 3 for the following reasons:

- The Commercial/Medical/Mixed Use component will not operate as an incidental use to the Regis Nedlands facility proposed to be retained, meaning that the permissibility provided via Table 4 of LPS 3 will not be applicable. 'Medical Centre' is an 'X' use in the 'Residential' zone under LPS 3, meaning it is not permitted. The City has no discretion to approve such a use in this zone.
- The proposed building heights (up to ten storeys in targeted locations) exceed the six storey limit, which in any case was applied in the context of a Residential Aged Care Facility.

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To enable the PSP to be fully implemented, an amendment request proposing the following will be lodged with the City:

- A 'Mixed Use' zone for the land between Monash Avenue and the Hardy Road extension, which provides permissibility for, inter alia, a Medical Centre component and the Residential Aged Care Facility.
- Alteration or deletion of the six- and three-storey height limits to enable the height limits in the PSP to take effect.

Other aspects of the PSP can be implemented without the amendment having been progressed.

Local Context

The following local zones and reserves apply to the land adjacent to the PSP area:

- The residential area to the east is zoned 'Residential' with density codes of R60 and R40, apart from the first row of lots fronting Monash Avenue, which is zoned 'Mixed Use' with a density code of R-AC3. The lot mix is relatively uniform and the prevailing lot size could support subdivision at the applied density codes, but very little has occurred.
- The residential area to the south is zoned 'Residential'. The first row of lots fronting Karella Street are coded R20 whilst beyond those, an R12.5 code applies. The lot mix is relatively uniform and the prevailing lot sizes are not subdivisible under the current codes.
- The residential area to the south-west is zoned 'Residential' with a density code of R10 apart from two lots coded R20. The lot mix is relatively uniform and the prevailing lot sizes are not subdivisible under the current codes.
- Karella Park, south-west of the intersection of Karella Street and Smyth Road, is reserved for 'Public Open Space'.
- Hollywood Primary School to the north is reserved for 'Public Purposes-Education'. The co-located pre-kindergarten centre is reserved for 'Civic and Community'.
- Hollywood Hospital is zoned Special Use and has site-specific planning controls.

An LPS 3 plan appears as Figure 9.

2.3.3 State Planning Policies

This section summarises the State-level policies and strategies that are most relevant to the PSP.

2.3.3.1 SPP 3.7: Planning in Bushfire-Prone Areas

The north-western corner of the PSP area is identified in the map database administered by the Department of Fire and Emergency Services as being bushfire-prone. As such, SPP 3.7 is applicable. The purpose of this policy is to:

- Avoid any increase in the threat of bushfire to people, property and infrastructure;
- Reduce vulnerability to bushfire through the identification and consideration of bushfire risks in decision-making at all stages of the planning and development process;
- Ensure that strategic planning documents (which include structure plans) include specified bushfire protection measures;
- Achieve an appropriate balance between bushfire risk management measures and: biodiversity conservation values, environmental protection and biodiversity management, and landscape amenity, with consideration of the potential impacts of climate change.

To ensure that development in the PSP area achieves the objectives of SPP 3.7, a Bushfire Management Plan (Emerge Associates, September 2023) has been prepared in accordance with the SPP 3.7 Guidelines and is an appendix to this report. This concludes that *"as development progresses, it will be possible for an Acceptable Solution to be adopted for each of the applicable bushfire protection criteria"* in SPP 3.7, of which there are four. Specifically:

- *"Location: there are no specific environmental or topographic considerations restricting any works for the purpose of attaining a moderate bushfire hazard level for the land."*
- *"Siting and Design: all future habitable buildings can be sited within the proposed development so that BAL-29 or less can be achieved based on the proposed SP. Asset Protection Zones (APZ) are achieved for all lots through the management of residential lots, non-vegetated areas and low threat vegetation in the design layout including roadways and public open space."*
- *"Vehicular Access: the proposed layout provides for a road network within the site that will connect to the*

existing public road network...providing egress options in all directions..."

- *"Water: the development will be provided with a permanent and reticulated water supply to support onsite firefighting requirements and is surrounded by fire hydrants."*

2.3.3.2 SPP 4.2: Activity Centres

SPP 4.2 describes the WAPC's policy position on activity centres in the Perth metropolitan area, Peel and Greater Bunbury. It describes activity centres as simply *"mixed use urban areas where there is a concentration of commercial, residential and other land uses"* that are *"multi-functional"* and *"generally well-serviced by transport networks with a focus on public transport and active transport"*.

In this context, SPP 4.2 defines a hierarchy of centres that is intended to form the basis for an activity centre network that meets different levels of community need and, with reference to Section 6(a) of SPP 4.2, *"enables employment, housing, goods and services to be accessed efficiently and effectively by the community"*.

The Queen Elizabeth II Medical Centre and the University of Western Australia are identified within a Specialised Centre precinct referred to as 'UWA / QEII'. The 'Specialised Centre' category differs from others in that it facilitates a specific type of activity, rather than being defined by scale and complexity. UWA / QEII has an *"Education, research and health"* specialisation.

The following observations are made about the boundaries of the UWA / QEII Specialised Centre:

- SPP 4.2 does not define a boundary.
- The City's Local Planning Strategy (2017) defines a boundary that includes the PSP area.
- The Central Sub-regional Planning Framework (2018) defines a boundary that includes the PSP area.
- The draft Precinct Plan for the Specialised Centre that is under preparation by the City of Perth defines a boundary that excludes the PSP area (webpage dated 2023).

There is therefore considerable inconsistency about whether the PSP area is part of the QEII / UWA Specialised Centre in a policy sense.

Functionally, the PSP area has no history of being part of the QEII / UWA 'environment' and although the Residential Aged Care facilities provide medical services, they are not dependent on being included in the Specialised Centre.

This PSP is not reliant on this question being resolved. It makes practical responses to its functional and policy context, specifically:

- A Commercial/Medical/Mixed Use development is proposed in the north-eastern corner fronting Monash Avenue. This is a logical location in the context of the QEII Medical Centre located to the north-east and can create a transition between that facility and the residential land within the PSP area.
- The Regis Nedlands facility is proposed to be retained on its current site fronting Monash Avenue.
- Although not identified as part of the 'First Transition Zone' defined in the City's Strategy, which contemplates medium to high-density residential, apartment buildings of up to ten storeys are proposed in the north-western corner for the reason that this area is distanced from any of the nearby low-density residential areas.
- Generally medium-density residential development is proposed south of the Hardy Road extension, which strikes a balance between seeking dwelling yield and diversity whilst also respecting the character of the nearby residential areas.

Overall, the PSP proposes a mix of uses and a mix of residential densities that responds to its policy and functional context.

2.3.3.3 State Planning Policy 7.0: Design of the Built Environment

SPP 7.0 was prepared by the WAPC to provide a basis for a suite of design-focused policies for different planning proposal types. It does this by outlining three policy measures for adoption in type-specific policies:

- Design Principles. There are ten of these as follows, and they underpin all other aspects of the WAPC's policies on the built environment: Context and Character; Landscape Quality; Built Form and Scale; Functionality and Build Quality; Sustainability; Amenity; Legibility; Safety; Community and Aesthetics.
- Design Review. This is described as an *"independent and impartial evaluation process through which a panel of experts on the built environment assesses the design of a proposal"*. Design Review Panels now exist for most local governments and at a State level and can consider proposals pre- and post-lodgement.

- Design Skills. This measure advocates design by a *"competent and skilled architect or building designer"* and the delivery of a design statement to provide an explanation of the performance of the design against the ten Design Principles.

The ten Design Principles are most relevant to this PSP and are implemented through SPP 7.2: Precinct Design, which is the specific policy applicable to precinct structure planning. This is covered in the following section of this report.

2.3.3.4 State Planning Policy 7.2: Precinct Design

SPP 7.2 is part of the WAPC's 'Design of the Built Environment' suite of documents and provides direction on the preparation, assessment and implementation of Precinct Structure Plans, Local Development Plans and subdivision and development applications within precincts.

SPP 7.2 provides a performance-based process defined in the context of six interrelated design elements and uses the ten Design Principles defined in SPP 7.0 as its basis. It includes a Manner and Form template with which this PSP is consistent.

The Karella Street Precinct is a 'Residential / Mixed Use' precinct for the purposes of SPP 7.2, which encourages the following Planning and Design Focus:

- *"Guiding subdivision / amalgamation and development to support increased residential density and high-quality built form outcomes.*
- *Enhancing urban amenity by detailing lot/building orientation and lot access arrangements that support the future residential character of the precinct.*
- *Strengthening green networks through the enhancement of the urban tree canopy and improved interfaces between the public realm and private property.*
- *Ensuring street design supports safe access and movement, public transport use, walking and cycling."*

These principles are integral to the recommendations and content of this PSP.

2.3.3.5 SPP 7.3: Residential Design Codes

The Residential Design Codes (R-Codes) form the basis for assessment of all single, grouped and multiple-dwelling developments in Western Australia. They are applicable to the PSP area by virtue of the proposed Residential and Commercial zones, within both of which dwellings are permissible in accordance with the applied density code.

The deemed-to-comply pathway in the R-Codes (Volume 1) can be varied by, inter alia, a Precinct Structure Plan. It also makes provision for the creation of Local Development Plans, which can also implement R-Codes variations, at a later date for specific sites.

Variations and supplementary provisions for residential development in the City of Nedlands are also in place via the City's Local Planning Policy No. 1.1: Residential Development – Single and Grouped Dwellings.

2.3.3.6 Liveable Neighbourhoods

Liveable Neighbourhoods ('LN') is the WAPC's operational policy guiding urban design for greenfield development. LN sets out the key considerations for master planning new communities including subdivision layout and movement networks, as well as the location of open space, community facilities, schools and activity centres.

SPP 7.2 is the primary guiding document for this PSP, as the PSP area is a brownfield site. However, LN has been referenced to prepare the Public Open Space calculation described in Section 5.5 and the road cross-sections described in Section 5.4, as SPP 7.2 does not provide sufficient technical direction on these matters.

2.3.4 Local Planning Policies

This section summarises the Local Planning Policies that are most relevant to the PSP. Others may apply at the development stage depending on the nature of the proposal.

2.3.4.1 LPP 3.1: Landscaping Plans

LPP 3.1 is the City's policy guiding the preparation and approval of Landscaping Plans as part of development applications. It is not directly applicable to the structure planning stage of the planning process but will be when development applications within the PSP area are lodged, and it is referenced in Part 1 of this PSP accordingly.

LPP 3.1 has the following objectives:

a. *"To encourage the provision and maintenance of landscaping with all non-residential development, and grouped multiple dwellings development.*
b. *To provide guidance on Council's expectations in terms of the type and minimum standard of landscape plans.*
c. *To encourage development that incorporates creative*

landscaping with the use of interesting plant selection and design ideas.

d. *To encourage the retention of trees and vegetation of environmental, aesthetic and cultural significance through integration as part of a landscape design."*

LPP 3.1 sets standards for landscaping within residential and non-residential development. These are required to be demonstrated in Landscaping Plans, which are defined in LPP 3.1 as having the following objectives:

a. *"Enhance the environmental amenity of a site by retaining remnant vegetation, preventing erosion, soil degradation and nutrient stripping;*

b. *Integrate elements of the streetscape;*

c. *Enhance privacy;*

d. *Create a buffer between incompatible development;*

e. *Create shade and a wind shelter;*

f. *Define pedestrian networks;*

g. *Enhance the overall appearance of development and create a more pleasant working environment; and*

h. *Soften the effect of large areas of paving."*

This PSP endorses these objectives and advocates for due regard to be given to LPP 3.1 when development applications are being prepared for the PSP area.

2.3.4.2 LPP 4.1: Parking

LPP 4.1 defines the City's standards for car-parking for non-residential development. Like LPP 3.1, it is not directly applicable to the structure planning stage of the planning process but will be when development applications within the PSP area are lodged, and it is referenced in Part 1 of this PSP accordingly.

LPP 4.1 has the objective of facilitating *"sufficient parking facilities for cars and other wheeled vehicles"*. It specifies a parking ratio for the land use classes defined in LPS 3.

Although this PSP is largely residential in nature, with parking ratios defined in the R-Codes, a Commercial/ Medical/Mixed Use site is proposed near the intersection of Monash Avenue and Williams Road and the 'Mixed Use' zone proposed to be applied to the land north of the Hardy Road extension could accommodate other uses such as a childcare premises, consulting rooms, office or shop. As such, LPP 4.1 will apply at the development stage.

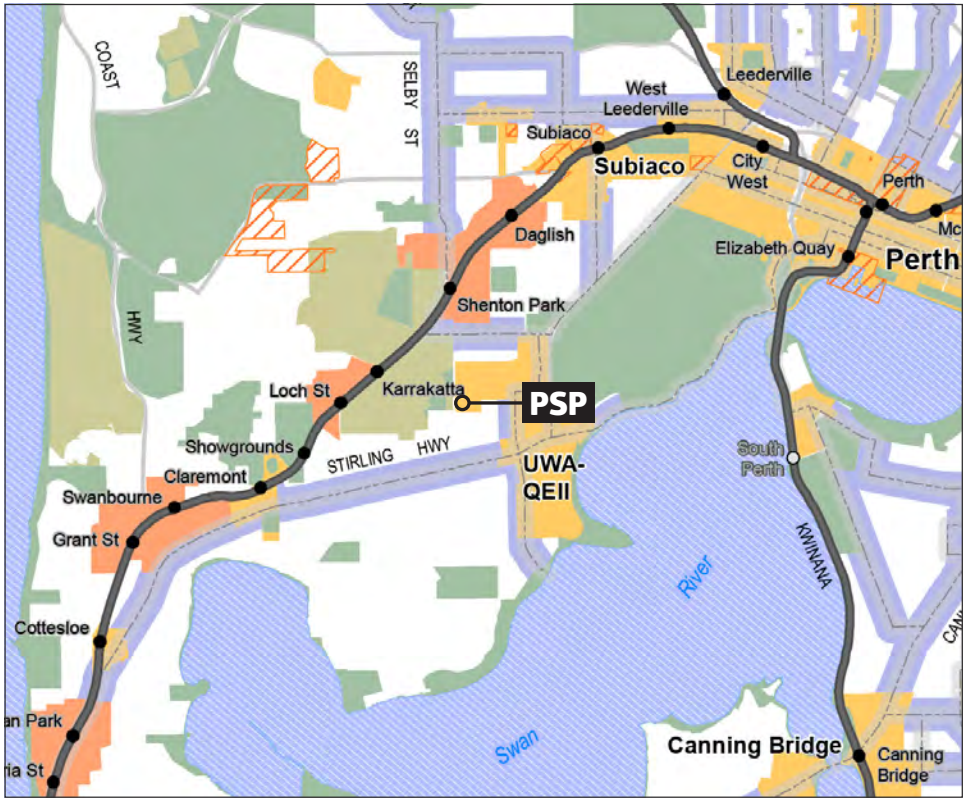


Figure 6: Central Sub-Regional Planning Framework (Source: Perth & Peel @ 3.5 Million, DPLH, 2018)

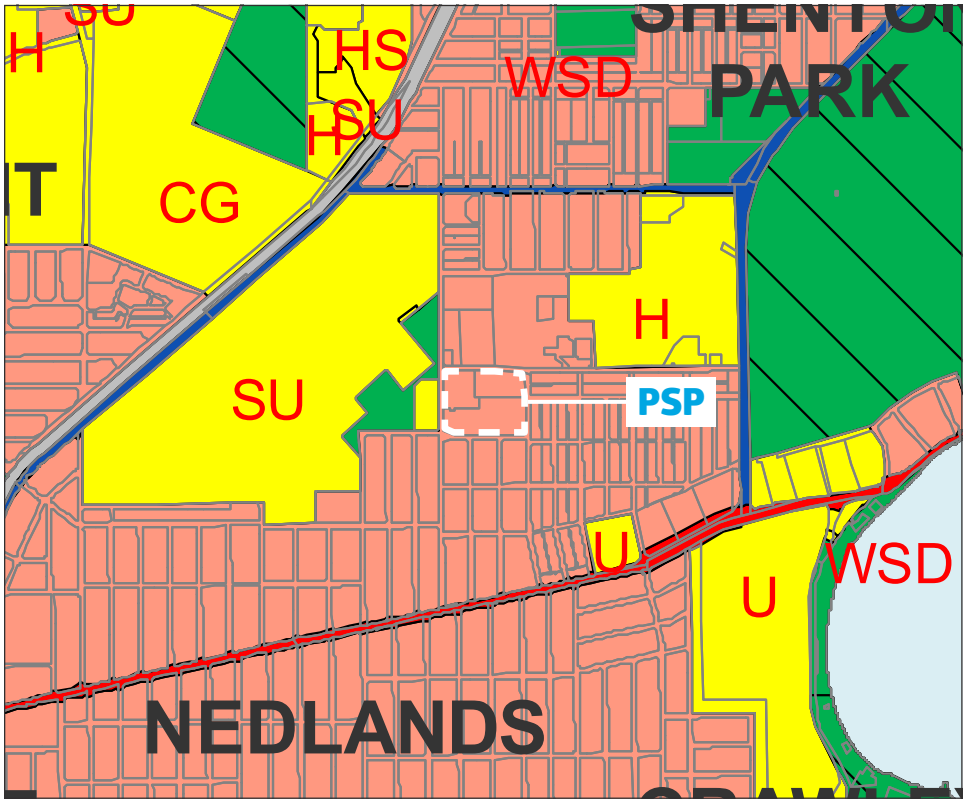
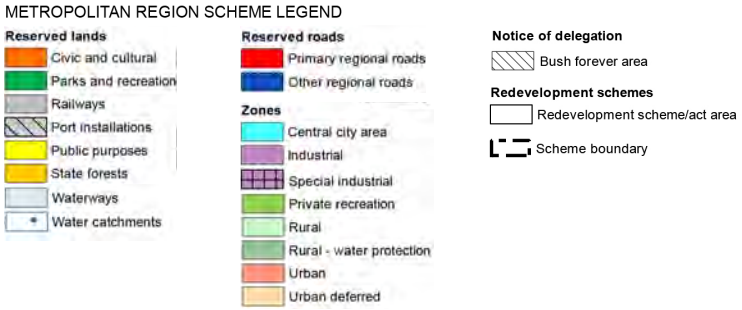


Figure 7: Metropolitan Region Scheme (Source: DPLH)



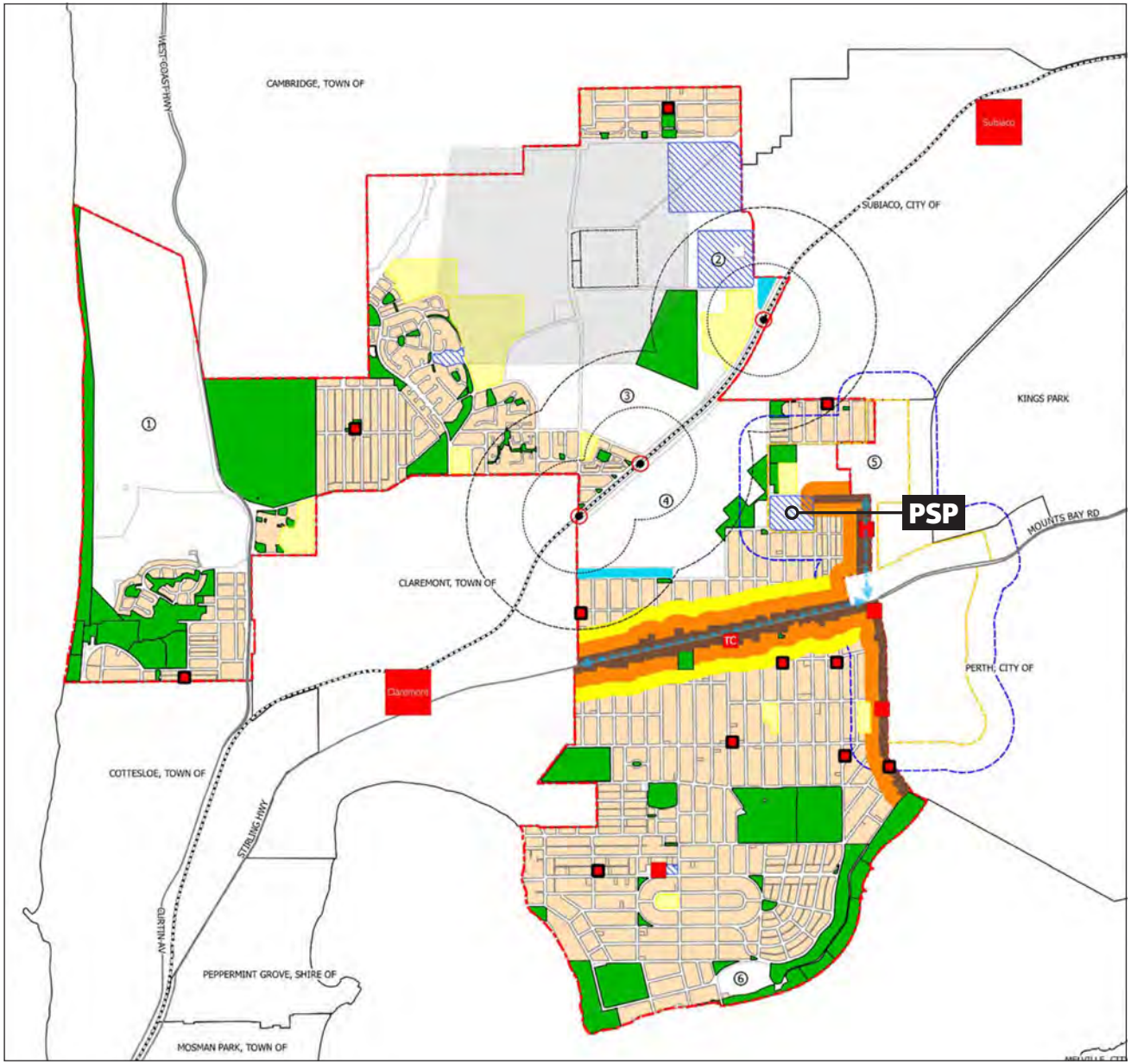


Figure 8: City of Nedlands Local Planning Strategy Map
(Source: City of Nedlands Local Planning Strategy, 2017)

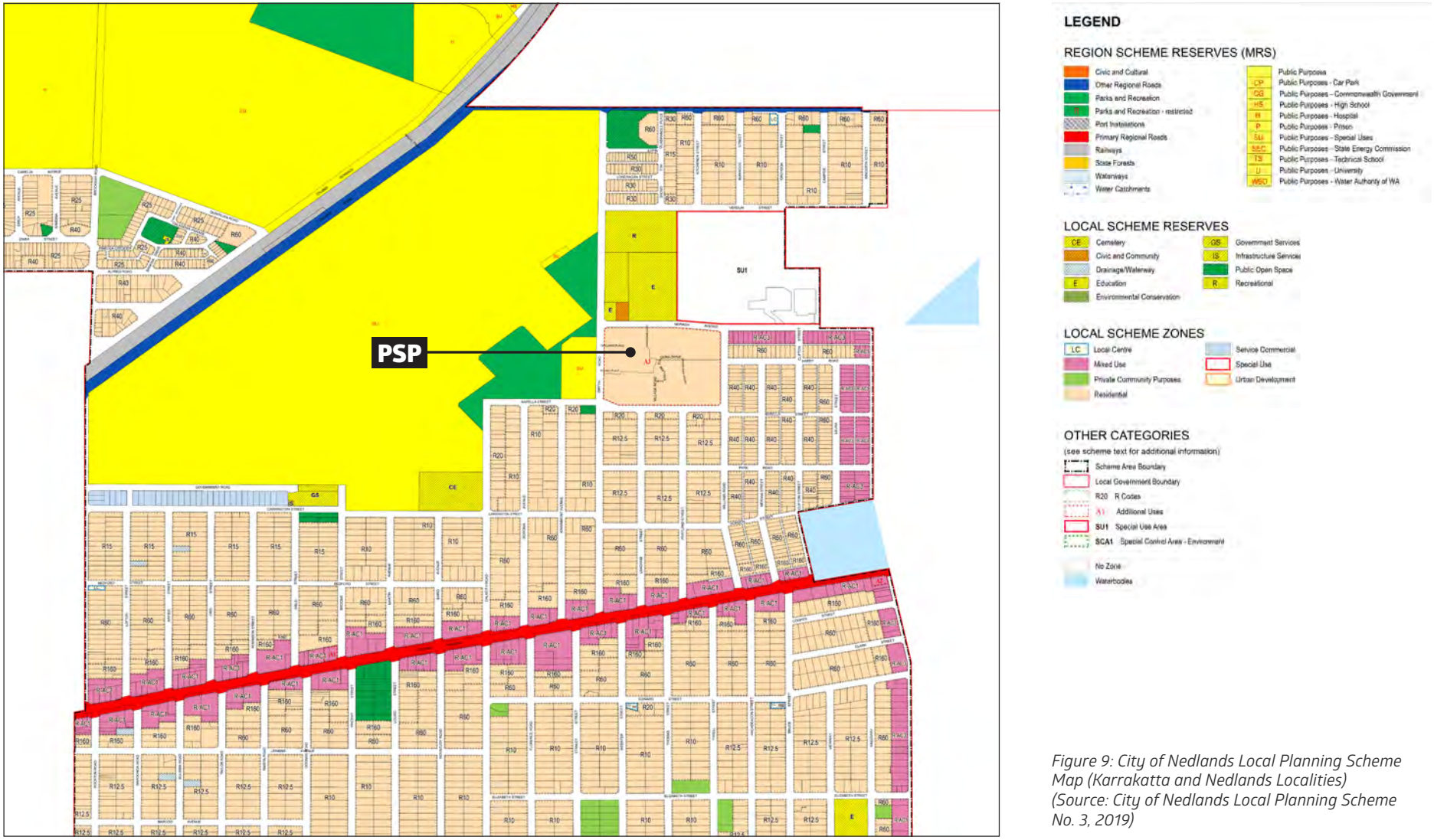


Figure 9: City of Nedlands Local Planning Scheme Map (Karrakatta and Nedlands Localities) (Source: City of Nedlands Local Planning Scheme No. 3, 2019)

3. Opportunities & Constraints Analysis

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3.1 Summary of Design Influences

Contextual analysis and assessment undertaken by the project team has identified important site features that will influence the development proposals. Key findings from technical assessments are shown in Figure 10, and a summary of the key considerations is set out below.

The PSP area is broadly bounded by Monash Avenue, Williams Road, Karella Street and Smyth Road, comprising approximately 7.4 hectares.

The southern half of the PSP area lies vacant and available for development in the short-term. It is unconstrained, generally flat and contains no remnant vegetation. There is a small number of mature trees, but the Environmental Assessment and Management Strategy prepared with this PSP states that the site is in 'Completely Degraded' condition and does not support any significant species of flora or fauna. As such, there is no specific design response required in the PSP, but any viable trees will be retained at the subdivision stage and development stage where possible.

The northern half of the PSP area, fronting Monash Avenue, is occupied by the three remaining residential aged care facilities, all of which are operated by Retirement Care Australia ('RCA'). They consist of the above-mentioned Centennial Close village on Lot 101 Monash Avenue and, on Lot 102, the 2018 Regis Nedlands building and the older Regis Weston complex. Regis Nedlands is proposed to be retained for the long term under the ownership of RCA, whilst Regis Weston and Centennial Close, in that order, will be redeveloped in due course.

The Engineering Infrastructure Report prepared with this PSP notes that the PSP area slopes very gently from a high point of approximately 29m AHD in the south-west down to approximately 23 metres in the north-east, over a distance of approximately 370 metres for an average grade of approximately 1.7%.

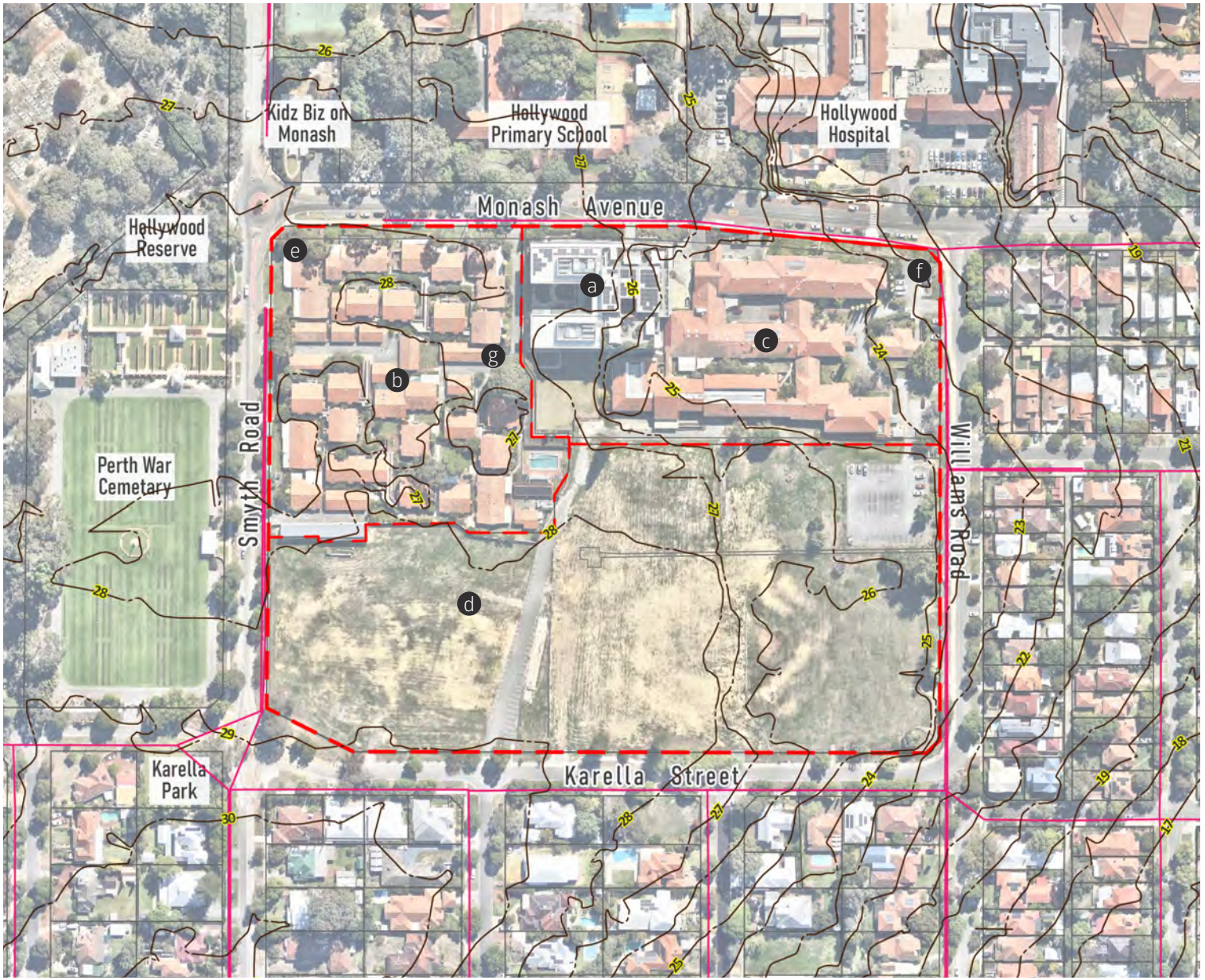
There is also a low point just beyond the south-eastern corner of the PSP area near the Williams Road / Karella Street junction. This sits at approximately 22m AHD and the PSP area is higher, up a non-natural embankment of approximately 3 metres. This creates a disconnected streetscape and opportunities to better integrate the PSP area with the street will be investigated. The embankment tapers down along Williams Road before the levels reconnect near the Hardy Road intersection.

The nearby vegetation in Hollywood Reserve, mentioned above, is a bushfire hazard and as such, the PSP area is partly identified as being bushfire-prone in the map database maintained by the Department of Fire and Emergency Services. As discussed further in Section 2.3.3.1 of this report, a Bushfire Management Plan forms part of this report and finds that development in accordance with this PSP can meet the relevant requirements of the applicable State Planning Policy.

The Engineering Infrastructure Report states that the site has at least approximately 18m of clearance to groundwater, is not registered as a contaminated site and has no known risk of acid sulphate soils disturbance. The Environmental Assessment and Management Strategy states that the PSP area is within the Spearwood dune system and in an area mapped as comprising 'sand – pale and olive-yellow', which is confirmed by on-site geotechnical investigations summarised in the Engineering Infrastructure Report. These note that sandy soils were encountered across the site to depths of between 2m and 6m, with limestone assumed to lay beneath. A potential deep karst or void feature may exist within Lot 101, but this can be readily confirmed through investigative and remedial work at the development stage if necessary.

Electricity, sewer, drainage and telecommunications infrastructure is in place in the perimeter streets. Its capability for extension are examined in the Engineering Infrastructure Report, which indentifies that development in accordance with the PSP would not generate demand beyond the capacity of existing infrastructure. No off-site upgrades are expected to be required.

Collectively, the site conditions summarised above present no constraints to development and no specific design responses are required. In particular, the free-draining nature of the geology is ideal for at-source stormwater management, the process for which is outlined in the Local Water Management Strategy ('LWMS') appended to this report.



PSP Area (incl. Lot boundaries)

1m Contours (mAHD)

Overhead Powerline

a. Regis Nedlands
b. Centennial Close village
c. Regis Weston
d. Land assessed 'Completely Degraded'
e. High point (29mAHD)
f. Low point (23mAHD)
g. Existing Eucalyptus Citriodora to be retained if possible

Figure 10: Opportunities & Constraints Plan

View of PSP area facing north east from above Perth War Cemetery

Street view of PSP area at the corner of Smyth Road and Karella Street

View of PSP area facing east along Monash Avenue from above Karrakatta Cemetery

Street view of PSP area at the corner of Smyth Road and Monash Avenue

View of PSP area facing north west from above existing residential development, with the corner of Karella Street and Williams Road in the foreground.

View of PSP area facing north east from above existing residential development, with the corner of Smyth Road and Karella Street in the foreground.

4. Stakeholder & Community Participation

SPP 7.2 encourages pre-lodgement stakeholder and community engagement as a means of enabling better outcomes, testing design responses and validating context analysis. *"Early and continuous engagement"* is advocated, starting with the pre-lodgement period and continuing through to the statutory advertising period required as part of the post-lodgement assessment.

The proponent of this PSP, Hesperia, announced in June 2023 that it had finalised an agreement to acquire the site. Stakeholder engagement has been underway since before that time in parallel with design work for the project.

4.1 Pre-Lodgement Agency Engagement

SPP 7.2 provides guidance on stakeholder engagement approaches for precinct structure planning. It highlights that agency stakeholders include State and local government agencies and service providers. In this case, the following agency stakeholders were identified and have been consulted:

- WAPC and Department of Planning, Lands and Heritage ('DPLH')
- City of Nedlands.
- Water Corporation and Western Power.
- Metropolitan Cemeteries Board and the Commonwealth War Graves Commission, in respect of Karrakatta Cemetery and the Perth War Cemetery respectively.
- Hollywood Primary School and the operator of the childcare centres on the northern side of Monash Avenue.

WAPC / DPLH

The project team met with DPLH, which provides resourcing to the WAPC, in March 2023 to introduce DPLH's officers to the project. The discussion can be summarised as follows:

- The project team sought comment from DPLH on whether a PSP or a Local Development Plan would be DPLH's preferred planning instrument for the site. DPLH's advice was that the site required a level of design, planning and technical detail commensurate with a PSP. LDPs also typically only control built form, rather than land use, subdivision, zones and reserves.
- The project team and DPLH noted that there is no enabling provision in the applicable planning framework for a PSP. It was agreed that the project team could write to the WAPC to request agreement to prepare a PSP in accordance with Section 15(c) of the Planning and Development (Local Planning Schemes) Regulations 2015. CLE did so accordingly and, after consulting with the City of Nedlands, agreement was issued by the WAPC in August 2023.
- DPLH advised that in its view, the portion of the site fronting Monash Avenue, and particularly the north-eastern corner, had potential for a mixed-use function incorporating activities complementary to the adjacent QEII Medical Centre. This suggestion has been investigated and can be accommodated. It has been adopted as part of the PSP and will be implemented statutorily through an amendment to LPS 3. The existing 'Residential' zone needs to be replaced with a 'Mixed Use' zone to facilitate a more diverse range of uses.

The project team also met with the WAPC, including its Chairperson, in September 2023. Feedback from this meeting was positive, with the attendees agreeing that the PSP proposal responded to strategic planning objectives for the site and would enable the delivery of well-located dwelling supply and commercial floorspace related to the adjacent QEII Medical Centre.

City of Nedlands

The project team has held several meetings with the City of Nedlands, as follows:

- Hesperia met with the Chief Executive Officer and Director Planning and Development in August 2023 for a discussion about the principles and objectives envisaged by Hesperia for the site. The City's feedback indicated that the City was supportive of the site, which is under-utilised, being redeveloped in accordance with the City's Local Planning Strategy. The City also suggested that local residents would be supportive of the site being renewed provided that the urban design approach was respectful of the context.
- A follow-up meeting with the City's planning and engineering staff was attended later in August 2023 by Hesperia and CLE. An early, sketched development concept was presented at this meeting and the approach to the interfaces, internal movement network, public open space and built form was explained. The discussion points included the following:
  i. The need to balance the yield and dwelling diversity objectives in the City's Local Planning Strategy with a context-appropriate urban design approach;
  ii. The importance of consulting with the Metropolitan Cemeteries Board and the Commonwealth War Graves Commission to ensure that the apartment buildings proposed nearby were appropriate in proximity to Karrakatta Cemetery and the Perth War Cemetery;
  iii. The potential for intersection and/or street cross-section treatments to diminish the attractiveness of Hardy Road as a rat-run for Monash Avenue and avoid presenting any of the proposed streets as long corridors that might encourage inappropriate driver behaviour;

iv. The need to provide a comprehensive explanation of the nature and maintenance implications of any site-specific drainage initiatives or infrastructure (to the extent possible at the PSP stage);

v. The potential for Design Guidelines to be prepared for the PSP area and the compliance checking process to be implemented to ensure that any development undertaken by parties other than Hesperia (after a sale of land) is thematically consistent in terms of design, materials and finishes;

vi. The potential for cash-in-lieu to be paid if the final rate of land provision for public open space provision was less than the statutory requirements discussed in Section 1.3;

vii. The pre-lodgement public engagement strategy, which comprises a website and a letterbox drop. The approach and outcomes from this are detailed in the following section of this report.

- A third meeting was attended by Hesperia with the City's planning and engineering staff in October 2023 following the completion of refinements to the development concept. The outcomes of this meeting included:

  i. Agreement that any aspects of the PSP that might be subject to change should be shown in dashed linework for clarity.

  ii. No objection was raised to the notion of fronting the central POS with townhouses on two sides.

  iii. Recognition of the need for the Hardy Road extension to be designed with traffic calming measures to make it unattractive as a rat-run.

  iv. Agreement that threshold treatments for the roads entering the PSP area would be desirable from a traffic calming and amenity perspective.

  v. The potential for Crossleigh Way and Eventide Way to have single-lane sections with on-street parking, to help calm traffic.

  vi. The idea of installing a filter treatment on Hollywood Avenue to separate Commercial/ Medical/Mixed Use traffic from residential traffic was agreed in principle.

  vii. Advice from the City that building heights on the Commercial/Medical/Mixed Use site should step down toward Williams Road.

Water Corporation, Western Power & Other Service Providers

The Water Corporation and Western Power are responsible for the supply of water and electricity and the disposal of wastewater from the site. Engagement with these agencies was undertaken by Tabec in the course of preparing the Engineering Infrastructure Report and no infrastructure constraints arising from the PSP were identified. In particular, the Tabec report notes that:

- *"Water Corporation has advised there are no capacity issues with sewer, and therefore no upgrades are required downstream to accommodate sewer outfall. The sewer is able to be logically extended throughout the proposed subdivision [and] It is most practical for a single connection to the existing sewer in Williams Road"* to be made.

- *"Water Corporation has confirmed their modelling indicates that the development demands do not have significant impact on system operation and minimum pressures are adequate. There are no other offsite upgrades or main extensions required in order to service the proposed development."*

- *"Western Power's network mapping tool... demonstrates the available capacity of the high-voltage feeder to the locality, forecasted at 2026, is 25 to 30 MVA....the total estimated power demand [for this PSP at build-out] is estimated at 1.6MVA"*, which implies that *"there is sufficient power supply to the area without any requirements for substantial off-site extensions"*.

- *"The City of Nedlands and Western Power are jointly planning to undertake an overhead relocation program throughout this area, with works proposed to commence in 2026."* In this regard, a meeting and separate discussions have been held between the City, Western Power, Hesperia, project engineers Tabec and power consultant UPD to address a co-ordinated approach to the staging, location and design of infrastructure when subdivision and development proceeds.

Discussions were not held with service providers for telecommunications or gas supply infrastructure, but the Tabec report states in this regard that *"There are a variety of existing communications providers with existing assets in the immediate vicinity of the site"* and that *"There are existing reticulated medium-pressure gas mains in all road*

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reserves surrounding the site and therefore it is anticipated that connection to gas supplies may be readily delivered if intended."

Lastly, the presence of an existing high-pressure gas main in the southern verge of Monash Avenue is noted and for the subdivision and development stages, *"Accurate service locating and potholing is recommended to confirm the exact location to ensure appropriate protections are in place during the design phase"*. This does not require a design response at the PSP stage.

Metropolitan Cemeteries Board and the Commonwealth War Graves Commission

The PSP area is across Smyth Road from Karrakatta Cemetery and the Perth War Cemetery. As such, the Metropolitan Cemeteries Board and the Commonwealth War Graves Commission ('CWGC') are potentially affected stakeholders and have been consulted pre-lodgement.

The CWGC provided four main points of comment:

- The PSP proposal would increase traffic in the area. In response, the project team has advised that the PSP proposes only one new intersection or access point near the Perth War Cemetery, being the Hardy Road extension to Smyth Road, and that the TIA did not identify a traffic issue arising from the proposed development.
- The CWGC implements strict horticultural requirements to ensure a high standard of presentation for the cemeteries in its care. Excessive overshadowing could compromise this by reducing solar access. A shadow analysis prepared by project architect MJA has been prepared and demonstrates that overshadowing can be managed using planning controls and appropriate building design and articulation to preserve sufficient natural light thus fostering conducive conditions for landscape growth. Hesperia also sought horticultural advice from Plan E who confirmed, subject to confirmation of the species of the grass, that the hours of sunlight on the Perth War Cemetery would still exceed what is usually recommended. Hesperia will coordinate further with CWGC through design development.
- The surroundings of the Cemetery are important in terms of setting and amenity. In particular, the CWGC raised concern about apartment designs that might result in (for example) possessions and washing being left untidily on poorly screened balconies. Planning controls and architectural measures can be implemented to manage this.
- There are multiple events held at the Cemetery throughout the year that require preparation and early-morning rehearsals and activities (including ANZAC Day and Remembrance Day, among others). The construction phase for the PSP area will need to be respectful of these events and future residents will need to be made aware.

The Metropolitan Cemeteries Board responded positively to the concept plan presented at the project team's meeting with their representatives, and did not make specific comments or specific requests for changes.

Hollywood Primary School and Kidz Biz

The PSP area is across Monash Avenue from Hollywood Primary School and the 'Kidz Biz' daycare centre. Pre-lodgement meetings have been held with both these organisations by Hesperia, and a draft development concept was shown.

Both organisations commended the design and particularly its mix of dwellings, centralised public open space and prioritisation of pedestrians. Hollywood Primary School further advised that:

- The Monash Avenue / Smyth Road roundabout is heavily trafficked at peak school times. In response, the project team has advised that the PSP proposes only one crossover to Monash Avenue and the TIA modelling did not raise a concern about this intersection, suggesting that the PSP will not unduly influence the situation.
- The dwelling mix, particularly the apartments, would improve affordability for nurses employed at the QEII Medical Centre.
- Approximately 50% of the School's enrolment comes from beyond its conventional catchment, being the children of parents employed at the QEII Medical Centre but unable to afford to live locally. The School considered that the PSP might help to rectify this.

4.2 Pre-Lodgement Public Engagement

The PSP area is located in an established neighbourhood that is unlikely to change to any great extent in the foreseeable future. The City's interest in preserving its leafy, low-density character is well-documented and is expressed in the Local Planning Strategy. However, the Strategy also identifies the PSP area as one of a relatively small number of 'Targeted Infill' sites that will help enable the City to achieve the infill target set for it in the *Perth and Peel @ 3.5 million* suite of documents. Development of the PSP area will have an effect on its setting and as such, public engagement is important.

At its August 2023 meeting, the project team advised the City that pre-lodgement public engagement would consist of a letterbox drop and a website. These were launched in October 2023 in accordance with the following approach:

- The letterbox drop was extended to all householders and businesses within approximately 300m of the PSP area. A copy of the correspondence is shown on the following page and included as an appendix to this report.
- The website, when launched, provided a copy of the initial iteration of the development concept, with explanatory notes, and invited stakeholders to submit comments and questions. The website has been progressively updated as new information has come to hand.
- The website is being maintained throughout both the pre-lodgement and post-lodgement period to provide a forum for information to be distributed and enable stakeholders to make comment. Where consent is given, comments made can be published on the website to assist other readers.

The website is available at: https://nedlandsvillage.au/

The comments made to date on the website include the following:

- A comment about managing overlooking into nearby residents' backyards from apartments, which will be avoided through the transitional height arrangements proposed in the PSP.
- A note about the benefits of spacious apartments with balconies for older people (the downsizer market) relative to townhouses with stairs.
- Expressions of hope for a quality, attractive, thoughtful and attractive development and interest in purchasing if that becomes a reality.
- Interest in improvements to tree canopy and notes on the positive impact this would have on the micro-climate.

At the time of lodgement, the website remains active and the Nedlands Village project team is reviewing comments from the general public as they are received.

Flyer posted to all households and businesses within 300m of the PSP area in October 2023

5. Design Elements

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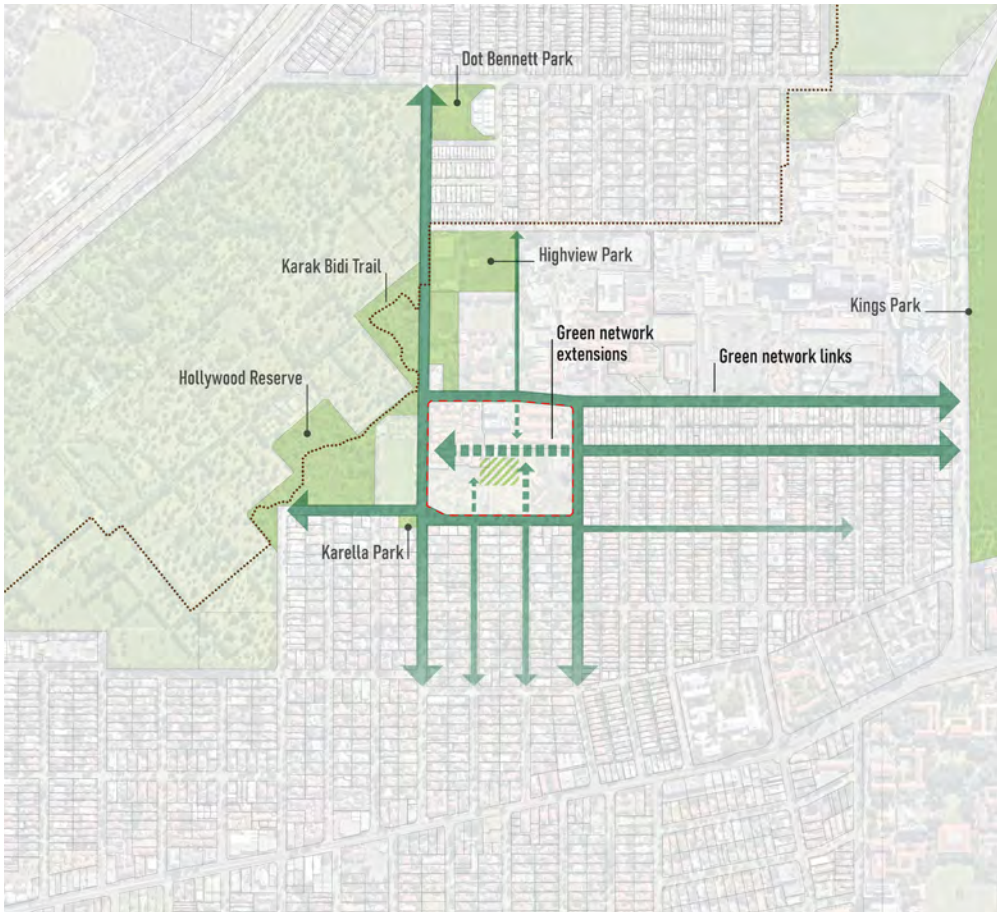
5.1 Design Element 1: Urban Ecology

Design Element Objectives

- Provide a multi-functional network of green links and spaces that expand and improve the quality and connectivity of the surrounding natural environment.
- Provide significant tree planting to support local habitat protection, mitigate the effects of climate change, and create vibrant and comfortable urban environments.
- Develop a responsive water management strategy to support a sustainable precinct, especially through the creation of bioswales to support flora and fauna and at-source stormwater infiltration.

Design Element Summary

- There are significant opportunities to expand and improve the quality and connectivity of the surrounding natural environment on land that currently provides very little contribution to the local urban ecology network.
- The precinct's urban structure will be responsive to the established urban fabric to allow existing green network links to be extended through vibrant streetscapes, providing improved accessibility to local green spaces including Hollywood Reserve.
- An adaptable green space at the heart of the precinct will provide opportunities for water sensitive landscaping and tree planting.
- Development of the precinct will significantly re-establish canopy cover that has been lost through urbanisation.
- The precinct lies on prominent land within the local area and slopes gently from west to east.



Key Principles: Urban Ecology

5.1.1 Urban Ecology Analysis

This section provides a summary of information regarding environmental features, values, and relevant environmental considerations for the PSP area.

Climate

The PSP area, as part of the Perth region, experiences mild winters and hot, dry summers. Summer generally lasts from December to late March, with February usually being the hottest month of the year. The strongest prevailing winds are generally from the south-west. Perth receives moderate though highly seasonal rainfall. Winters are relatively cool and wet, with most of Perth's annual rain falling between May and September.

Climate Change

Tackling climate change is a principal pillar of the emerging proposals, which includes adapting to and mitigating its effects, encouraging residents to make more sustainable travel choices, and securing biodiversity and environmental quality improvements. The local area is highly urbanised but does contain pockets of relatively high quality indigenous vegetation and habitat.

The PSP area presents significant opportunities to expand and improve the quality and connectivity of the surrounding natural environment on land that currently provides very little contribution to the local urban ecology network. This includes allowing existing green network links to be extended through the precinct, creating comfortable streetscapes for pedestrians and ecological linkages for species migration and protection.

Trees & Vegetation

A preliminary tree assessment recorded a total of 96 trees in the site and road reserve including one planted native species and 24 non-native species. The one native tree (marri) recorded in the road reserve is likely to have been planted based on review of historical aerial imagery.

Vegetation within the site is 'non-native' and occurs in 'completely degraded' condition and comprises a small number of scattered non-native trees and shrubs over non-native grassland and planted gardens.

Black Cockatoo Habitat

The marri in the road reserve does not have a suitable hollow and so would be considered a 'potential nesting tree' according to guidance provided by DAWE (2022). Based on the size and age of this tree, it will likely take many decades for hollows to form that are large enough to be suitable for use by black cockatoos for nesting.

Several Carnaby's black cockatoo roosting sites are known from the local area. However, no roosting or secondary evidence of roosting such as branch clippings, droppings or feathers were observed within the site or road reserve and so there is no reason to suspect that black cockatoos roost in the site.

The site and road reserve contain primary and secondary foraging habitat for black cockatoos. The extent of foraging resource in the site is small in comparison to extensive areas of foraging resources for black cockatoos that occur in the wider local area (e.g. Kings Park).

Trees within road reserve on Karella Street

Plant community non-native in 'completely degraded' condition

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Ecological Linkages

The Perth Biodiversity Project, supported by the Western Australia Local Government Association (WALGA), has identified and mapped regional ecological linkages within the Perth Metropolitan Region (PBP 2007).

Ecological linkages are described as areas of native vegetation that provide a corridor or linkage (typically linear) between patches of vegetation to allow movement of flora and fauna and their genetic material through the landscape, helping to maintain metapopulations.

One regional ecological linkage is mapped as occurring across the majority of the site as shown in Figure 11. This ecological linkage extends in a west–east direction and connects with a linkage extending north, located east of the site. These linkages include several Bush Forever sites including BF Site 317 'Kings Park' and BF site 218 'Shenton Bushland, Shenton Park'.

The Environmental Assessment and Management Strategy prepared with this PSP notes that the site does not provide any significant functionality to this linkage, but there is an opportunity to improve on that through the extension of existing green network links through vibrant streetscapes and appropriate species selection in landscaping.

All environmental matters are addressed in the Environmental Assessment and Management Strategy accompanying this PSP.

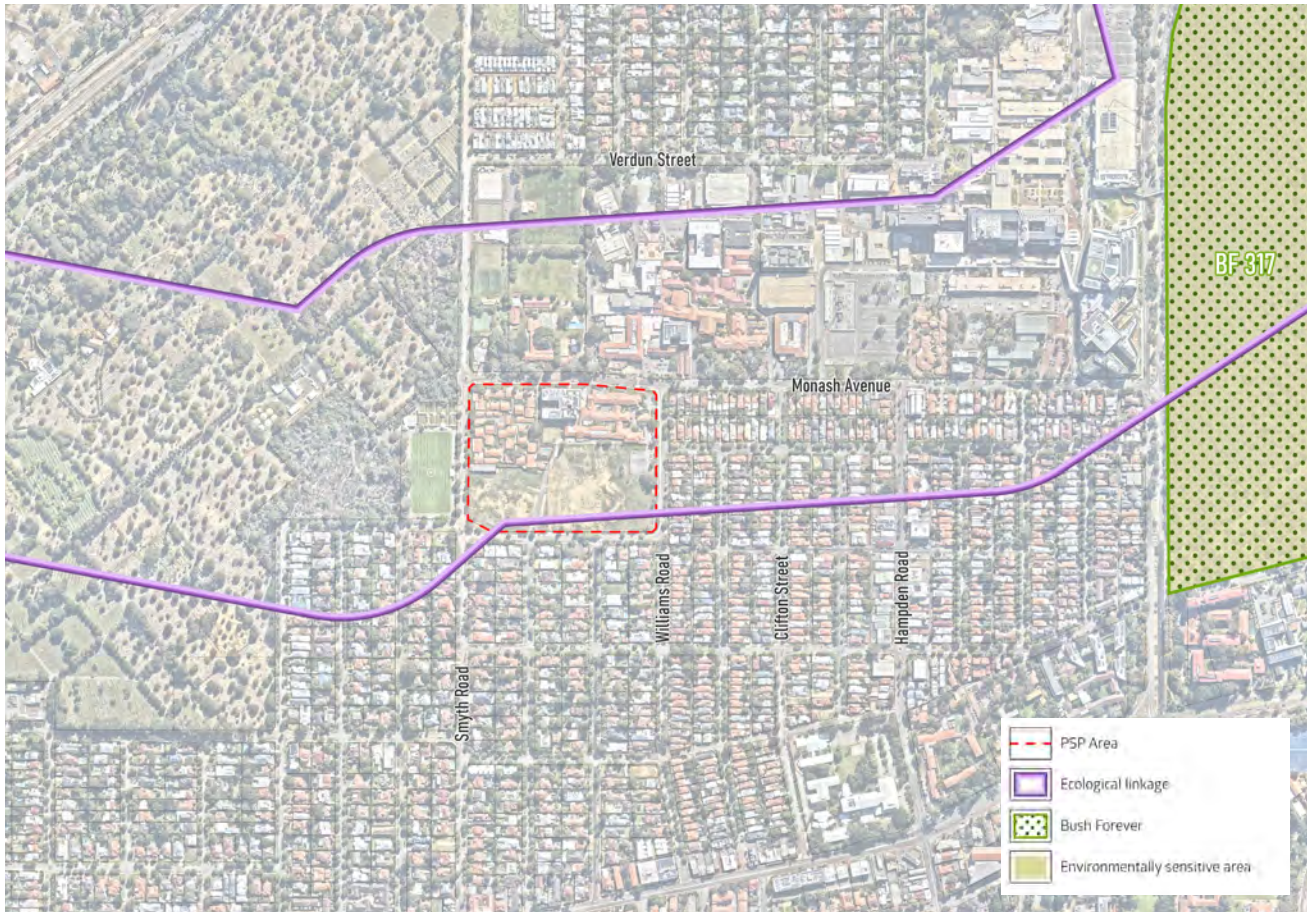

Figure 11: Enironmental Features

Topography

The Engineering Infrastructure Report prepared with this PSP notes that the PSP area slopes very gently from a high point of approximately 29m AHD in the south-west down to approximately 23 metres in the north-east, over a distance of approximately 370 metres for an average grade of approximately 1.7%.

There is also a low point just beyond the south-eastern corner of the PSP area near the Williams Road / Karella Street junction. This sits at approximately 22m AHD and the PSP area is higher, up a non-natural embankment of approximately 3 metres. This creates a disconnected streetscape and opportunities to better integrate the PSP area with the street will be investigated. The embankment tapers down along Williams Road before the levels reconnect near the Hardy Road intersection.

Ground Conditions

The site does not present any constraints to the proposed development from a water management perspective. There are existing water and wastewater servicing infrastructure with adequate capacity to support development proposals. There is also an absence of any sensitive environmental receptors, with the site having considerable depth to groundwater and being located on permeable sand with no watercourses or wetlands nearby. All matters relating to ground conditions are addressed in the Local Water Management Strategy accompanying this PSP.

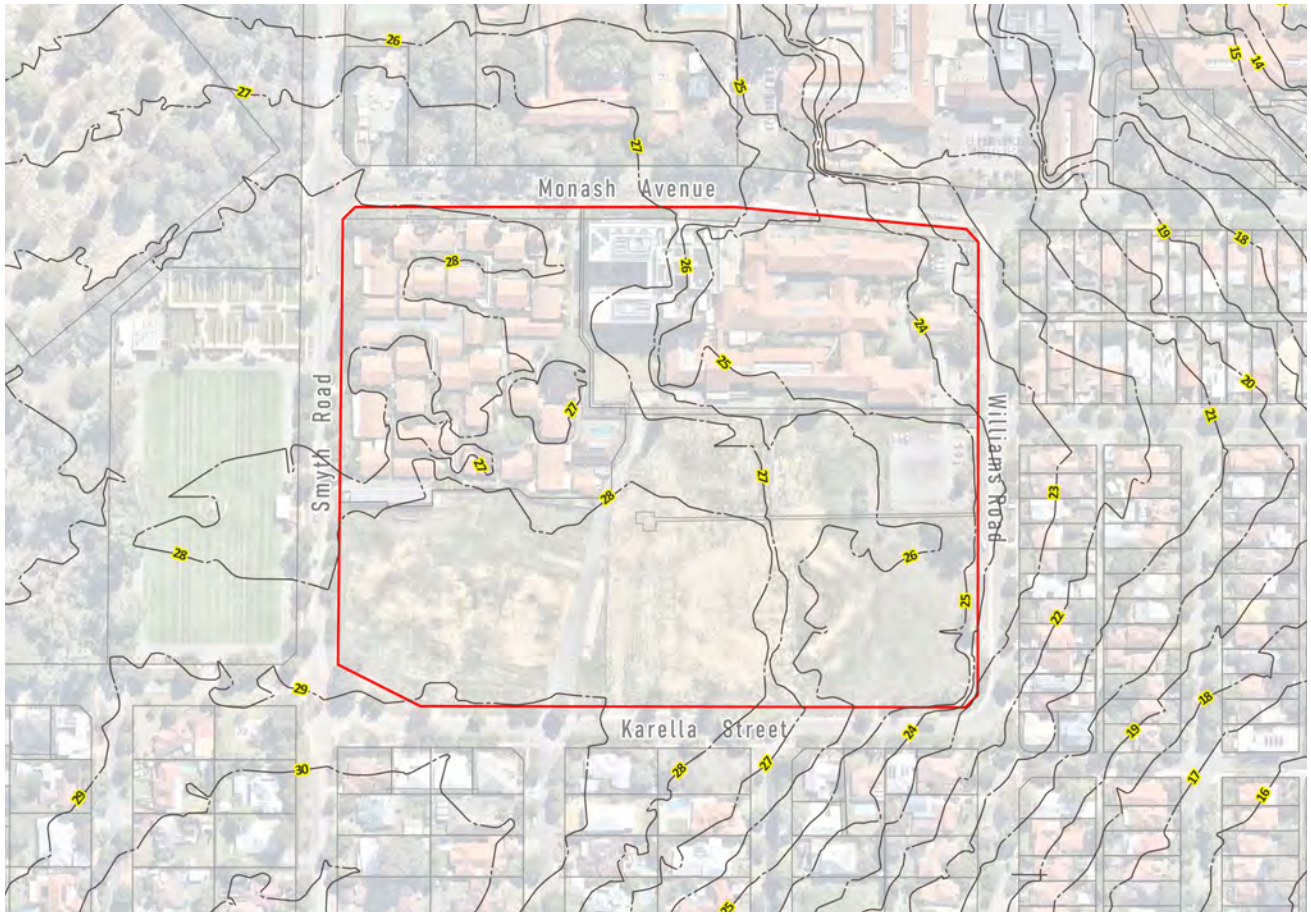

Figure 12: Topographic Contours (mAHD)

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5.1.2 Urban Ecology Response

This section provides a summary of design responses and management strategies regarding environmental features, values, and relevant environmental considerations for the PSP area.

Flora & Vegetation Strategy

Due to the degraded nature of the site, no significant flora or vegetation values have been identified within the PSP area that require specific spatial responses from the PSP proposals.

Existing trees can be retained within areas of open space, road reserve or on lots within the site, however, will need to respond to site constraints such as level changes (i.e. the provision or removal of fill material) and health/longevity considerations.

Bushfire Management Strategy

Based on the outcomes of the Bushfire Attack Level (BAL) assessment and the BAL contour plan, all future lots will be subject to a BAL rating less than BAL-29, due to setbacks provided by public roads and in-lot setbacks, ensuring that development will comply with SPP 3.7.

Areas of public open space, roadside swales, and roadside verges will be designed and maintained to achieve a Low Threat (exclusion 2.2.3.2(f)) classification in the post development scenario.

All matters in this regard are addressed in the Bushfire Management Plan (BMP) accompanying this PSP.

Local Water Management Strategy

In accordance with the Better Urban Water Management Guidelines (WAPC, 2008), a Local Water Management Strategy (LWMS) has been prepared to support the development of the site, which accompanies this PSP.

Stormwater management for the site focuses on achieving at-source capture and infiltration of runoff where appropriate, to provide for passive irrigation of landscape treatments, improve runoff pollutant removal, and reduce the overall stormwater infrastructure requirement. Flood storage of runoff during major (1% AEP) rainfall events is proposed to be via underground storage within the central POS to maximise the useability and amenity of the POS.

Runoff from the precinct's main east-west movement corridor, Hardy Road, will be directed via flush kerbing into planted swales along a proposed 3m wide planted median strip, helping to reduce the amount and size of drainage infrastructure required. A conceptual cross-section of the proposed median swale is provided within Section 5.4 of this PSP.

The LWMS defines the water management principles and objectives for the development as well as the proposed design approach for meeting these. The LWMS outlines the water management requirements for the future subdivision of the site, which will guide the preparation and implementation of future Urban Water Management Plans (UWMPs).

Heritage Response

A desktop assessment has determined that no Aboriginal Heritage sites have been identified within or immediately surrounding the PSP area, which has been extensively disturbed over a long period. However, this does not preclude the integration of Aboriginal themes in (for example) landscaping, public art and architecture at the development stage.

The nearest Aboriginal Heritage sites include 'Swan River', approximately 1.2 km east, and 'Lake Jualbup (Shenton Park Lake)', approximately 1.2 km north-east. The site is also adjacent to the Karak Bidi (translation Black Cockatoo Trail), which is a 11.3km trail that forms part of the Whadjuk Trail network. The trail promotes dreaming stories and song lines originating from the local Noongar people. It provides a unique link between parks and bushland areas, such as Hollywood Reserve.

Green Network

The established suburban environment features an abundance of mature street trees that form green network links that adds to the locality's 'garden suburb' character. The precinct is also identified in the Perth Biodiversity Project as being part of an ecological linkage between Kings Park and the Shenton Bushland, among others.

There are significant opportunities to expand and improve the quality and connectivity of the surrounding natural environment on land that currently provides very little contribution to the local urban ecology network. In this context, the precinct's urban structure will be designed to allow existing green network links to be extended through

vibrant streetscapes, providing improved accessibility to existing and proposed local green spaces.

Streetscapes will include a variety of landscaping features to enhance the local green network, including significant street tree and low shrub/groundcover planting that adds to the locality's 'garden suburb' character. Street trees and shrubs provide amenity, habitat, shade, and evaporative cooling, which will contribute to improved community wellbeing and a comfortable environment for pedestrians.

The precinct's main east-west movement corridor, Hardy Road, provides a distinctive green and blue network link, continuing along the alignment of the existing Hardy Road reserve towards Hollywood Reserve. The proposed road reserve includes verges on both sides of the carriageway as well as a planted median swale, allowing for better urban tree canopy, a more pedestrian-friendly streetscape and at-source treatment and retention of stormwater.

An adaptable green space at the heart of the precinct will provide opportunities for water senstive landscaping, tree planting, and biodiversity improvements.

Through appropriate species selection, the precinct's landscaping will help to support the functionality of the identified ecological linkage and provide habitat for Black Cockatoos and other fauna.

Indicative median swale (Emerge)

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5.2 Design Element 2: Urban Structure

Design Element Objectives

- Adopt the basic structure of streets and blocks evident in the local area, recognising their adaptability for a variety of residential densities and other uses.
- Adopt the prevailing grid-based movement network to create a legible urban structure that supports ease of movement to and through the precinct.
- Encourage active and sustainable travel choices through the creation of a compact and coherent grid arrangement.
- Create view corridors to a centralised public open space, facilitating legibility and familiarity.

Design Element Summary

- The precinct's urban structure will be influenced by the topography of the site and its relationship to existing development.
- The precinct's urban structure will extend existing streets and links into the site, including Hardy Road and Portland Street, to establish a permeable movement network that encourages people to live, shop, and socialise locally.
- There are a wide range of existing facilities and services within a within a 10min walkable neighbourhood catchment (800m), which will be supplemented by opportunities created within the PSP.
- The precinct's urban structure will be responsive to the established neighbouring land uses and enhance pedestrian desire lines through or along the boundary of the PSP, driving the placement of built form, the types of interfaces, and the placement of public open space.
- Larger blocks along Monash Avenue provide flexibility and adaptability to accommodate mixed-use development that could be subject to future change.

Key Principles: Urban Structure

5.2.1 Urban Structure Analysis

This section provides a summary of the surrounding pattern of blocks, streets, and buildings that will influence the intended urban structure of the PSP area.

The local urban structure consists of a legible grid pattern of suburban streets, cut through by a band of institutional facilities. Streets generally feature footpaths on at least one side of the street, convenient access to bus stops, clear physical and visual links to aid legibility, and significant mature street trees, enabling a walkable neighbourhood. The prevailing grid-based movement network also provides direct connections to key local facilities and services as well as ecological assets like Kings Park and Hollywood Reserve.

The majority of residential lots in the vicinity of the PSP area face east-west comprising generally modest 1930's housing stock, however, new developments and extensions to existing dwellings are continually occurring. Consistent street trees with large front setbacks assist to soften the impact of new developments. The majority of lots to the east of Williams Road are fine-grained due to the small street frontage of the single houses, where the majority of lots to the west have larger dual-width street frontages.

Laneways are a key feature of the local area creating a dense grid-like urban structure with frequent pedestrian connections. This also contributes to 'car-less' interfaces of inner streets, opening up opportunities for landscaping of front gardens and porches.

The recently developed Hollywood High School site on Aberdare Road, 500m to the north, is made up of single dwellings, townhouses, and a portion of apartments. The majority of these lots face north-south, which is uncommon in the local area and has a distinctive identity.

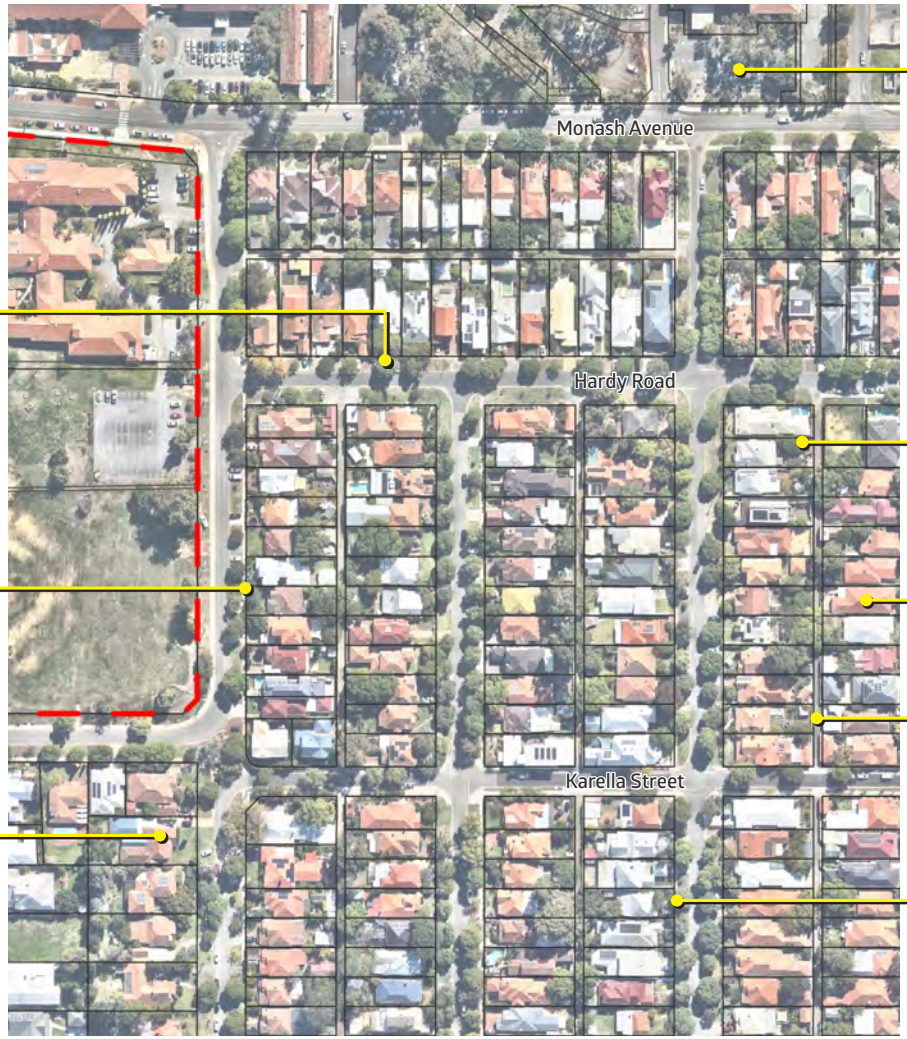
A vibrant 'high street' of local shops, services, retail, cafés, and restaurants is located approximately 500m east of the PSP area at Hampden Road. This key local destination is a short walk away via Hardy Road or Karella Street, and presents a key opportunity for connection to the precinct.

The PSP area has a storied development history, described within Part 2 Section 2.1.5 of this PSP. The southern half of the site is vacant and available for development in the short-term. It is unconstrained, generally flat and contains no remnant vegetation. The northern half, fronting Monash Avenue, is occupied by three remaining residential aged care and retirement village facilities. The Regis Nedlands building is proposed to be retained for the long term under the ownership of RCA, whilst the other facilities will be redeveloped in due course.

The PSP area presents the opportunity to adopt the prevailing grid-based urban structure to support ease of movement to and through the precinct.

View of PSP area from Portland Street footpath

Laneways are a key feature of the local area



Deeper setbacks to large format buildings on Monash Avenue, with space for landscaping and parking

Mature street trees within large front setback, providing shade for pedestrians

Fine-grain residential lots generally one to two storeys

Fine-grain lot frontage to PSP area

Majority of lots face east-west

Laneways are a key feature of the local area, contributing to 'car-less' interface of inner streets.

Larger dual-width lot frontages

Footpaths on at least one side of the street

Aerial image of local area, including Hardy Street and Karella Street

Accessible public open space with passive surveillance from townhouse frontages

Fine-grain townhouses facing north-south

Larger lots developed adjacent to existing low density residential

6m laneways providing rear access delivered to modern standards

'Car-less' interfaces providing safer and more attractive streetscapes

Aerial image of Hollywood High School development site

This recent development provides a useful precedent for the delivery of north-south facing lots and streetscape character, which has drawn reference from the surrounding residential area.

Generous verge to Smyth Road provides ample space for landscaping. Corner lots appropriately address secondary street with windows.

Rear access lots provides 'car-less' interface to inner streets.

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5.2.2 Urban Structure Response

The precinct's urban structure extends existing streets and links into the site, including Hardy Road and Portland Street, to establish a permeable movement network that will encourage people to live, shop, and socialise locally.

The extension of Hardy Road into the site creates a clear connection to local shops at Hampden Road to the east and green spaces to the west. The extension of Portland Street into the site creates a clear connection to various commercial activities along Stirling Highway to the south and health and education facilities along Monash Avenue.

The extension of these connections into the PSP area also creates the framework for a locally distinctive block structure that will be adaptable to the intended uses of the site. Larger blocks along Monash Avenue provide flexibility to accommodate commercial, medical, and/or mixed-use development that could be subject to future change.

The positioning of the public open space, street network, and access locations enables pedestrians to walk through and to the precinct from varying points. An adaptable green space is located centrally at the cruciform of key movement routes, enabling convenient access for residents and the wider community.

There is opportunity to provide an additional pedestrian linkage from Hardy Road to Monash Avenue, along the western edge of the Regis Nedlands building, which would provide a high level of pedestrian amenity to support pedestrian use and public transport access.

Laneways have been identified as a key feature of the local area, which help to facilitate density and 'car-less' interfaces to inner streets. The proposals will seek to incorporate laneways into the residential development areas to create streetscapes with a similar character.

The permeable layout of streets and spaces will be characterised by well-defined footpaths, safe crossing points, landmarks, and thoughtful design choices that will help to create a visually appealing and functional urban environment.

Kings Park
Larger scale buildings on Monash Avenue
Local shops (Hampden Road)
Opportunity to extend Hardy Road into precinct
Low-rise residential development
Opportunity for pedestrian linkage to Monash Avenue

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5.3 Design Element 3: Public Realm

Design Element Objectives

- Deliver high-quality public open space and streetscapes designed in response to local precedents and implement landscaping using local species.
- Incorporate Water Sensitive Urban Design principles to optimise plant health and manage reliance on reticulated irrigation.
- Incorporate Crime Prevention through Environmental Design (CPTED) principles, as outlined in the WAPC's Designing Out Crime Planning Guidelines.
- Encourage social interaction through thoughtful design in public and private spaces.

Design Element Summary

- The precinct's urban structure has informed the creation of new community places, including an adaptable green space at the heart of the precinct, to be known as the 'Village Park'. It is located at the cruciform of key movement routes, Hardy Road and Hollywood Avenue, with clear visual links.
- The 'Village Park' will incorporate local natural topography, ecological linkages, and vegetation to enhance a sense of place, and create a significant place for the local community to gather, play, and socialise.
- The landscape approach for the streetscape is to build on the existing surrounding residential neighbourhood streetscapes which are characterised by wide streets with ample verges, mature street trees and a single footpath to one side of the street. This will be achieved through emphasising street tree and low shrub/ groundcover planting to provide amenity, shade and structure to all streets.

Key Principles: Public Realm

Public Realm Analysis

This section provides a summary of local public open spaces and streetscape character that will influence the PSP area.

The Department of Planning, Lands and Heritage's (DPLH) Urban Tree Canopy Dashboard provides an interactive snapshot of the extent of tree canopy coverage across the Perth and Peel regions. The urban tree canopy is an essential part of creating healthy, liveable neighbourhoods, where more dense and mature tree canopies can support active travel along walking and cycling paths.

In 2018, the street blocks in the suburb of Nedlands had 20% canopy cover from trees over 3m tall, resulting in 80% of the street block area without any canopy cover. The Perth Metropolitan area has an average of 12% canopy cover from trees over 3m tall in street blocks.

The PSP area has 0-5% tree canopy as a result of the site being cleared recently. Retaining street trees and planting additional green landscaping throughout the site would reduce the heat throughout summer and create a more inviting and pleasant pedestrian environment which is a critical element in encouraging people to walk and cycle.

The local area demonstrates a high quality landscape and public realm interface. This is usually defined by the level of planting and maintenance of garden spaces. Some residents have planted verges generously with natives, adding to the layers of landscape from verge to front doors. Many lots have front or rear setback trees that contribute to the ecological values of the place. This is reflective of the average house sizes in the area.

Public Open Space

The City of Nedlands Local Planning Strategy (the Strategy) sets out that the municipality is well serviced by a number of parks, reserves and recreational facilities. In particular the City has significant areas of regional open space and district parks that provide for organised (club based) recreation. There is considered to be ample regional and district public open spaces to cater for anticipated population increases.

There are several local green spaces in the immediate vicinity of the PSP area that provide places to meet, play, and enjoy nature, such as Karella Park, Hollywood Reserve, Harvey Road Park, Dot Bennett Park, and Highview Park, which includes a range of sports facilities.

However, the Strategy also identifies a lack of local parks in the municipality, specifically within the City's older suburbs, which is attributable to the fact that most of the City was developed and subdivided prior to the adoption of the 10% public open space requirement. To address this, this PSP proposes to make a POS contribution primarily in the form of land, as discussed in the 'Public Realm Response' section.

Karella Park is a small and functional local green space with few distinctive features

Hollywood Subiaco Bowls Club, located within Highview Park

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Public Realm Response

The precinct's urban structure has informed the creation of new community places, including an adaptable green space at the heart of the precinct, to be known as the 'Village Park'. The Landscape Masterplan (Plan E), shown opposite, presents a conceptual illustration of the precinct's public open spaces, streetscapes, and key design principles.

Village Park will provide an intimate space for the local community and a positive contribution to the shortfall of local parks identified in the City of Nedlands Local Planning Strategy. It will also help to soften the built environment and provide visual amenity. It is located at the cruciform of key movement routes, Hardy Road and Hollywood Avenue, with clear visual links.

Overall, the PSP will contribute significantly to an improvement in local POS accessibility through simple supply and because a significant portion of the PSP area is identified for apartment development. Such development has obligations under the Apartment Code in respect of communal open space and this reduces demand for public open space relative to (for example) townhouses, for the equivalent population.

The frontage type response has been an important design element to curate a positive public realm experience, which is set out within Part 1 Section 4.2.2 of this PSP.

The 'Primary' frontage type is applied to Monash Avenue and part of Williams Road, north of Hardy Road. 'Primary' frontage types encourage a high level of activation and visual engagement with pedestrians and the public realm in general, including a mix of tenancies, distinctive building entrances, glazing, awnings and landscaping. All built form to these frontages is required to achieve a minimum 6m street setback from the lot boundary, which will allow for significant greening of the street and a high quality street interface.

The landscape approach for the internal streets is to build on the existing surrounding residential neighbourhood streetscapes which are characterised by wide streets with ample verges, mature street trees and single footpath to one side of the street.

The landscape design will reconfigure these key elements to accommodate the higher density living to provide a green, shaded, inviting and accessible street for the whole neighbourhood. This will be achieved through emphasising street tree and low shrub/groundcover planting to provide amenity, shade and structure to all streets. Creating green links that are well connected into the surrounding suburban neighbourhood.

Key landscape elements of the internal streets are as follows:

- Single parallel parking bays to one side of Hardy Road and Hollywood Ave to maximise street tree and low shrub/groundcover planting opportunities.
- Median to Hardy Road to maximise street tree planting opportunities. Median to incorporate swale drain to capture initial stormwater runoff, planted with appropriate plant species.
- 1.8m wide footpaths, located to provide a clear accessible interface to the street facing residences, parking bays and to connect into the existing neighbourhood.
- Fully planted verge with no footpath with street tree and low shrub/groundcover planting, to provide a buffer to side boundaries and increase the diversity within the development.
- Laneway roadways and verge to be flush pavement with segmented unit pavers to create a street hierarchy and distinguish them as a shared vehicle and pedestrian zone.
- Laneways to incorporate tree and low shrub/groundcover planting where possible.

Figure 13: Landscape Masterplan (Plan E)

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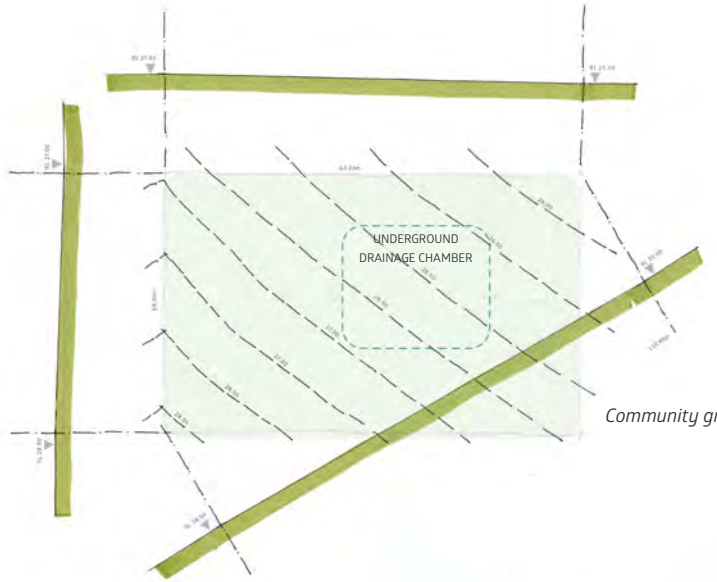
Village Park

The landscape approach for the Village Park is to provide both a strong heart and green space for the neighbourhood. A community focused park to gather, rest and play. Well connected to the adjacent neighbourhood, framed by built form on two sides with a strong public interface to Hardy Road and Hollywood Ave.

The park will work with the existing site conditions and its relationship with proposed interfaces, creating space for a variety of uses. Shelter, gathering, play and informal recreation, allowing for connection to land and community.

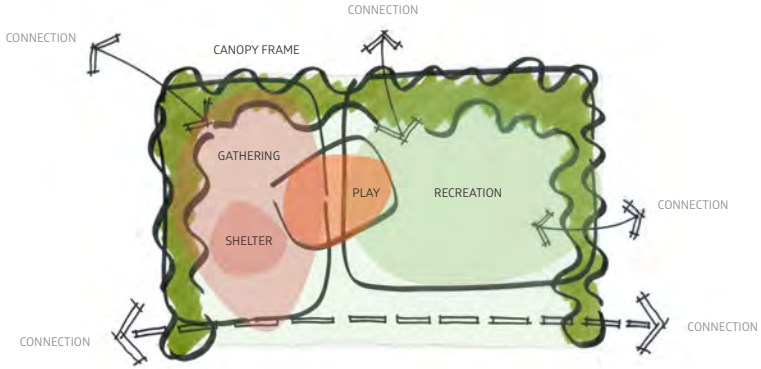
Key landscape elements are as follows:

- Low terraced walls to accommodate the level difference across the park and to create gathering opportunities, informal seating, integration of built form at edges and turfed open space.
- Small informal play space, that uses the slope/level difference with custom and natural play elements.
- Large community gathering space with arbor, BBQ and community table for family and community gatherings.
- Range of smaller gathering spaces with furniture to accommodate a variety of groups and use.
- Artwork to reflect site, history and community.
- Flat turfed area for informal recreation, larger community gathering/events. Turf area will also allow for underground stormwater storage.
- Clear path network to provide a clear interface to surrounding residences and to Hardy Road and Hollywood Ave.
- Variety of tree and low shrub/groundcover planting that is suitable for the local environment, provides amenity, shade, structure and diversity.



Community green

Space in between creating relationships through connection to land and community



Community focused park for gathering, play and recreation

Figure 14: Village Park Masterplan (Plan E)

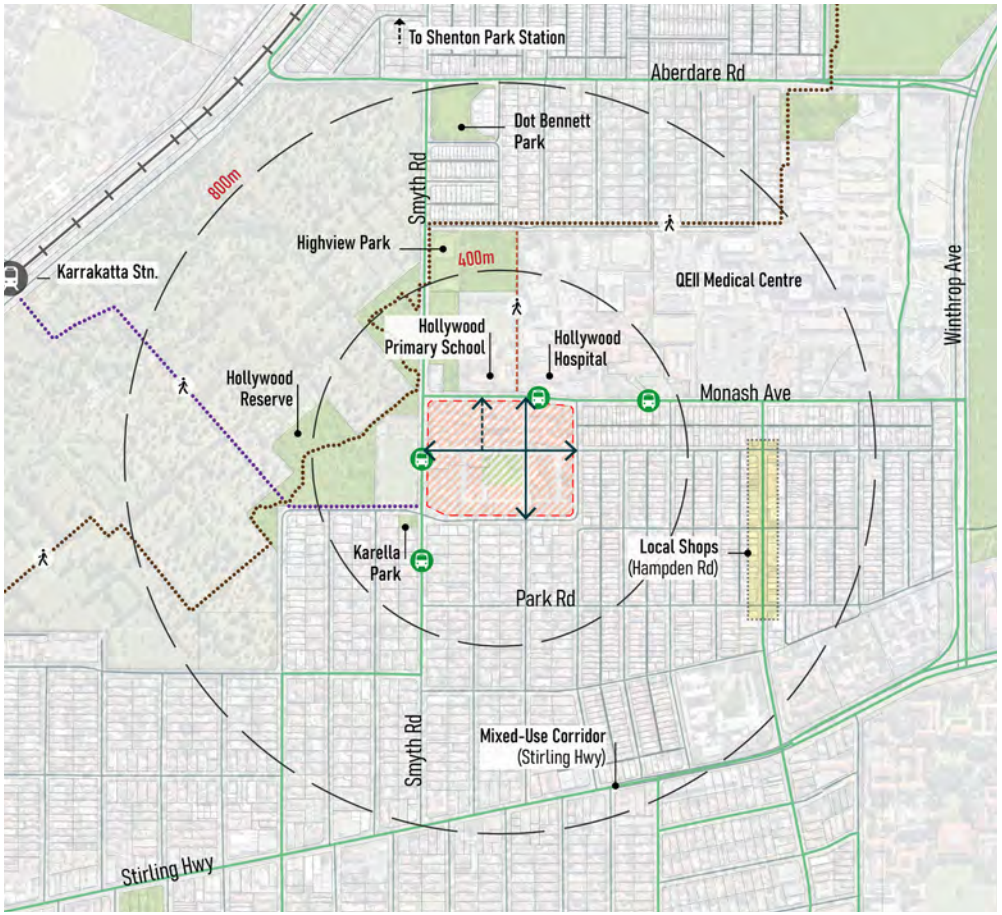
5.4 Design Element 4: Movement

Design Element Objectives

- Extend existing streets and links into the PSP area to create a legible urban structure and enhance local permeability.
- Prioritise rear access for all development sites facing the existing perimeter streets to minimise accesses and enhance safety for all users.
- Provide a network of walkable routes that conveniently connects residents to local destinations and supports public transport use, encouraging healthy lifestyles.
- Integrate parking areas with built form and streetscapes to ensure they are not visually or physically disruptive.
- Provide two-way access for vehicles wherever possible to minimise journey distances and slow traffic.
- Streets and public spaces are to be accessible for all.

Design Element Summary

- The precinct will integrate cohesively with the existing local movement network and deliver streets and spaces that encourage active and sustainable travel choices to establish a truly connected community.
- Streets will be designed to include extensive street trees and planting, footpaths, lighting, visitor parking, public realm features, and at-source stormwater detention in swales to help vitalise the urban environment.
- Public and private accesses into the precinct for vehicles are proposed to be co-ordinated and consolidated to ensure that the perimeter of the site will be mostly uninterrupted, providing continuous and safe walkways.
- The surrounding community will benefit from the proposed internal movement network, which provides direct access through the site directly to local destinations such as Monash Avenue and Hollywood Primary School.



Key Principles: Movement

Movement Analysis

The PSP area is advantageously located within an accessible and well-connected area that has excellent pedestrian, cycle, and public transport links to significant local destinations. It is bounded on all four sides by existing streets, which presents opportunities for logical extensions to access routes and services. The following streets form the boundary of the PSP area:

- Monash Avenue is a single carriageway road classified as a 'Distributor B' in the Western Australian road hierarchy. It links Winthrop Avenue with Smyth Road and is a major access route for patrons of the QEII Medical Centre and Hollywood Primary School. A stop on bus route no. 25 is in place adjacent to the PSP area.
- Smyth Road is classified as a 'Local Distributor'. It links Aberdare Road with Stirling Highway. A stop on bus route no. 25 is in place adjacent to the PSP area and it provides pedestrian and cyclist access toward Shenton Park Station.
- Karella Street and Williams Road are both Access Roads providing local access to residential properties. They connect with each other at an elbow curve at the south-eastern corner of the PSP area. They intersect with Langham Street, Portland Street and Hardy Road, and these present opportunities to extend seamlessly into the PSP area to create a permeable grid.

All four perimeter streets are original one-chain (20.12m) road reserves and each has a single carriageway lined with trees of varied maturity.

All matters relating to transport are addressed in the Transport Impact Assessment ('TIA') accompanying this PSP. The TIA concludes that in relation to traffic, a full build-out scenario for the PSP in the morning and afternoon peaks would see *"the existing and future networks operate well within accepted traffic engineering parameters"*.

Public Transport Access

The PSP area is located within a 1-12 minute walk to frequent and regular public transport services.

Bus route 25 runs along Monash Avenue and Smyth Road and provides connections to Claremont Station and Shenton Park Station via Hollywood Hospital and QEII Medical Centre. This bus route runs between Shenton Park Station and Hollywood Private Hospital every 20 minutes from 5.29am to 6.14pm. Services to Claremont Station are less frequent.

High frequency bus routes, 950 and 998/999, operate from the QEII Medical Centre. The 950 bus route provides regular and direct connections to Morley via Elizabeth Quay Bus Station and Beaufort Street. The 998/999 provide connections across Perth including the University of Western Australia (UWA), Stirling, Dianella, Bayswater, Curtin University, Fiona Stanley Hospital, Murdoch University, Fremantle and Cottesloe. The high frequency bus routes run every 10-15 minutes.

Bus routes 96 and 97 operate from QEII Medical Centre and provide connections to Leederville Station, Subiaco Station and down to UWA. Services run every 15-20 minutes. Bus route 103 runs between Elizabeth Quay Bus Station and Claremont Station via QEII Medical Centre with infrequent services every 45-60 minutes.

The Purple CAT bus runs between UWA and Elizabeth Quay Bus Station via QEII Medical Centre with services every 10 minutes during peak times.

The nearest railway stations are Karrakatta Station, approximatley 1km west of the site, and Shenton Park Station, approximately 1.5km north of the site, which are served by the Airport Line and Fremantle Line on the Transperth network. Services run every 6 minutes during peak times providing direct connections to Fremantle and Perth.

Proximity of the site to excellent public transport services is shown in Figure 4.

Existing Pedestrian Network

The area has a high level of pedestrian connectivity with paths on both sides of most roads, which predominantly travel along the main desire lines except at roundabout intersections. Surrounding the site, the paths are generally wide and in relatively good condition with few obstructions. Driveways regularly intersect the footpath allowing vehicles to have priority of movement.

There is some shade provided by established trees, which will improve over time given the recent street tree planting along the edge of the PSP area. The above ground power cables limit the extent of the shade, but plans by Western Power to install underground power later in the 2020s will assist to rectify this. All effort should be made to retain existing trees providing shade canopy.

On Monash Avenue, there is a zebra crossing that provides a safe crossing opportunity to the hospital's main entrance as well as a median cut through outside of the primary school which is managed by a crossing guard during school arrival and pick up times.

Monash Avenue is a Distributor Road catering for a range of trips, vehicle movements, and modes of travel. During site visits, the footpaths were seen to be busy with a wide variety of users, and become more congested during school drop off and pick up times. There is currently not enough space for the full range of user groups users to comfortably use the footpath at the same time.

The Monash Avenue carriageway was observed to have a constant flow of traffic being a combination of through movements to Winthrop Avenue, bus route 25, on-street parking turnover, and drivers accessing the hospitals in the area. While traffic was generally slow as a result of the turnover of on-street parking, some drivers were observed speeding and generally exhibiting unsafe behaviour.

Monash Avenue has capacity to carry a high volume of vehicles, however the land uses either side demand a slower speed and safe environment.

The road surface and drainage has recently been upgraded along Smyth Road, and provides a high quality road base which reduces the noise of vehicles along here. There is a median and 1.8m wide pedestrian cut-through that allows for safer pedestrian crossings.

400m and 800m catchments are shown in Figure 4, where walking is shown to be an efficient mode of transport as a result of the grid layout of the street network, and the paths through Karrakatta Cemetery. Destinations within this catchment include Hollywood Primary School, Hollywood Subiaco Bowls Club, Karrakatta Cemetery, Dot Bennett Park, QEII Medical Centre, Kings Park, Itsara Thai Restaurant, Bodyscape Yoga, UWA Library and Early Learning Centre, and the various businesses, cafes, restaurants and shops along Hampden Road.

The PSP area currently has a 0-5% tree canopy as a result of the site being cleared recently. Retaining street trees and planting additional green landscaping throughout the site would reduce the heat throughout summer and create a more inviting and pleasant pedestrian environment which is a critical element in encouraging people to walk and cycle.

Karak Bidi

The Karak Bidi (translation Black Cockatoo Trail) is a 11.3km trail that forms part of the Whadjuk Trail network.

The trail includes views of the Swan River (Derbal Yarigan), which is woven into dreaming stories and song lies originating from the local Noongar people. It provides a unique link between parks and bushland areas, such as Hollywood Reserve.

It is a suitable path for all walkers. It is mostly sealed, however it does include a crushed limestone segment of trail through Karrakatta prior to entering the bushland at Hollywood Reserve, where there are some additional unsealed sections of pathway.

Existing street trees along Smyth Road help to create a pleasant pedestrian environment

Karak Bidi (translation Black Cockatoo Trail) at Hollywood Reserve

Existing Bicycle Network

The Fremantle Line Principal Shared Path is located a cycling distance of 1.1km north west from the subject site which provides a very high quality cycling route with connections to Perth City and onwards, as well as more local destinations including Subiaco, Claremont, Cottesloe, and North Fremantle.

While there are no dedicated cycle lanes or paths along Monash Avenue, there are excellent cycling options throughout Kings Park providing route options away from Winthrop Avenue.

Given the proximity of the subject site to Perth City, Subiaco and other destinations and employment centres, cycling should be encouraged and supported as a viable mode option.

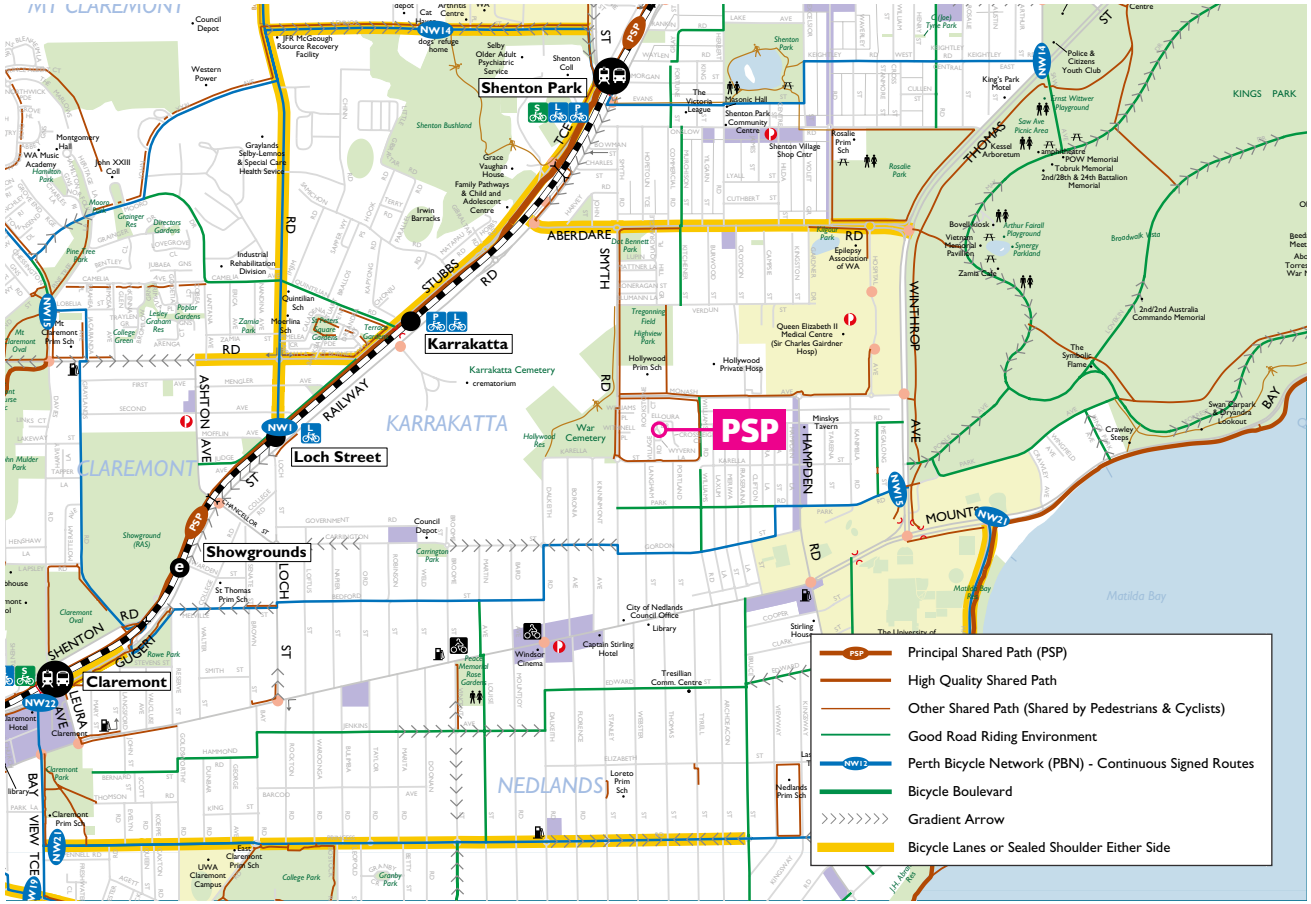


Figure 15: Existing Cycling Network (Source: Department of Transport)

PD31.05.24 - Attachment 2

Movement Response

This section provides a summarised movement strategy for the PSP area that highlights the planned connectivity between the various land uses within the proposals and the existing movement network. Further information relating to transport is provided within the Transport Impact Assessment ('TIA') accompanying this PSP.

Proposed Vehicle Access

The development proposals include four new intersections that will provide all mode access into an internal movement network. A review of the immediate area showed that intersection controls are generally give way or stop sign controlled and this same approach has been applied to designing the precinct network.

The internal movement network is structured around a permeable layout of streets and spaces that are designed to promote movement by active and sustainable modes. This network will be based upon a hierarchy of routes, which each have a different character and role within the development.

The proposed network includes two main streets, Hollywood Avenue and Hardy Road, which reflect the existing local development pattern and provide access to other internal streets and laneways. Eventide Way and Crossleigh Way will run north-south and Elloura Lane will run east-west providing rear access to development lots.

The location of these new streets and intersections are shown in Figure 17, and an overview of the street types are illustrated and described over the following pages.

Proposed Pedestrian Network

Public and private accesses into the precinct for vehicles are proposed to be co-ordinated and consolidated to ensure that the perimeter of the site will be mostly uninterrupted, providing continuous and safe walkways.

Within the subject site, Hardy Road and Hollywood Avenue will include footpaths and be designed as slow speed environments to create a high quality walking spine for residents and visitors. Both Eventide Way and Crossleigh Way are proposed to have footpaths on the side of the reserve that does not provide rear loaded vehicle access. Pathways will also be provided through the central public open space.

The creation of filtered permeability through the Hollywood Avenue corridor will allow pedestrian and cyclist access into the area to be separated from vehicle access points. This will provide a safe corridor through to Hollywood Primary School from the development area and the surrounding neighbourhood to the south and east.

There is opportunity to provide an additional pedestrian linkage from Hardy Road to Monash Avenue, along the western edge of the Regis Nedlands building. This linkage would be universally-accessible, landscaped and lit, and provide a high level of pedestrian amenity to support pedestrian use and public transport access.

The surrounding community will gain significant benefit from the proposed internal movement network, which provides direct access through the site directly to local destinations such as Monash Avenue and Hollywood Primary School.

Proposed Cycle Network

Cycling trips are expected to be generated by residents commuting to work, as well as recreational trips. Cycling is a low carbon transport option and is also part of a healthy lifestyle.

The proposals will aim to encourage cycle use through the inclusion of high quality paths through the site, or for vehicle speeds to be 30km/h or under which safely allows people to ride on the road mixed with vehicles.

Opportunities to increase the widths of footpaths to enable dual-use paths will be assessed at future more detailed design stages.

There is an opportunity for Hardy Road to become a viable east-west cycling option for local trips and the inclusion of a filtering treatment on Hollywood Avenue will provide for a legible north-south connection from the development and surrounding neighbourhood through to Hollywood Primary School.

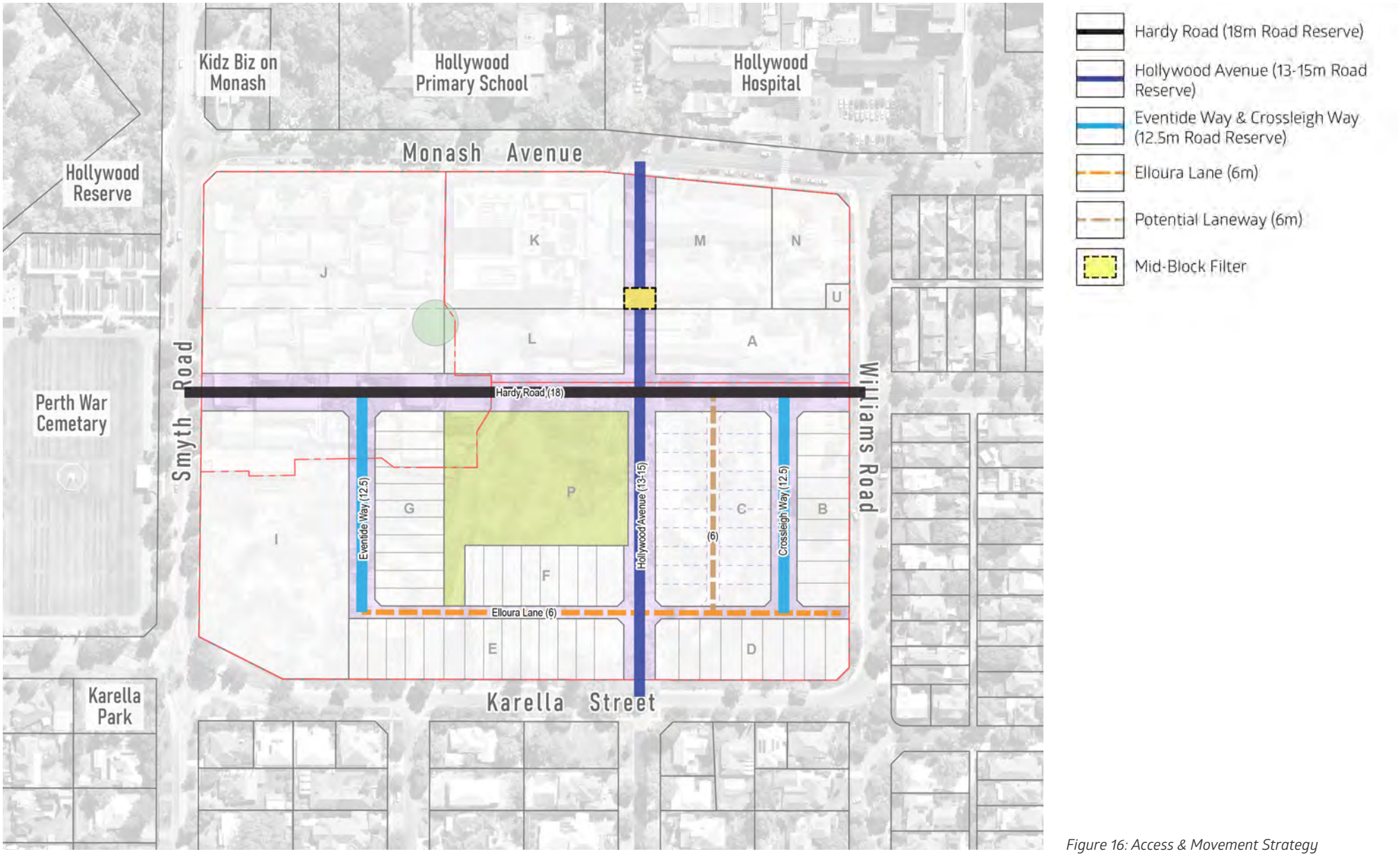


Figure 16: Access & Movement Strategy

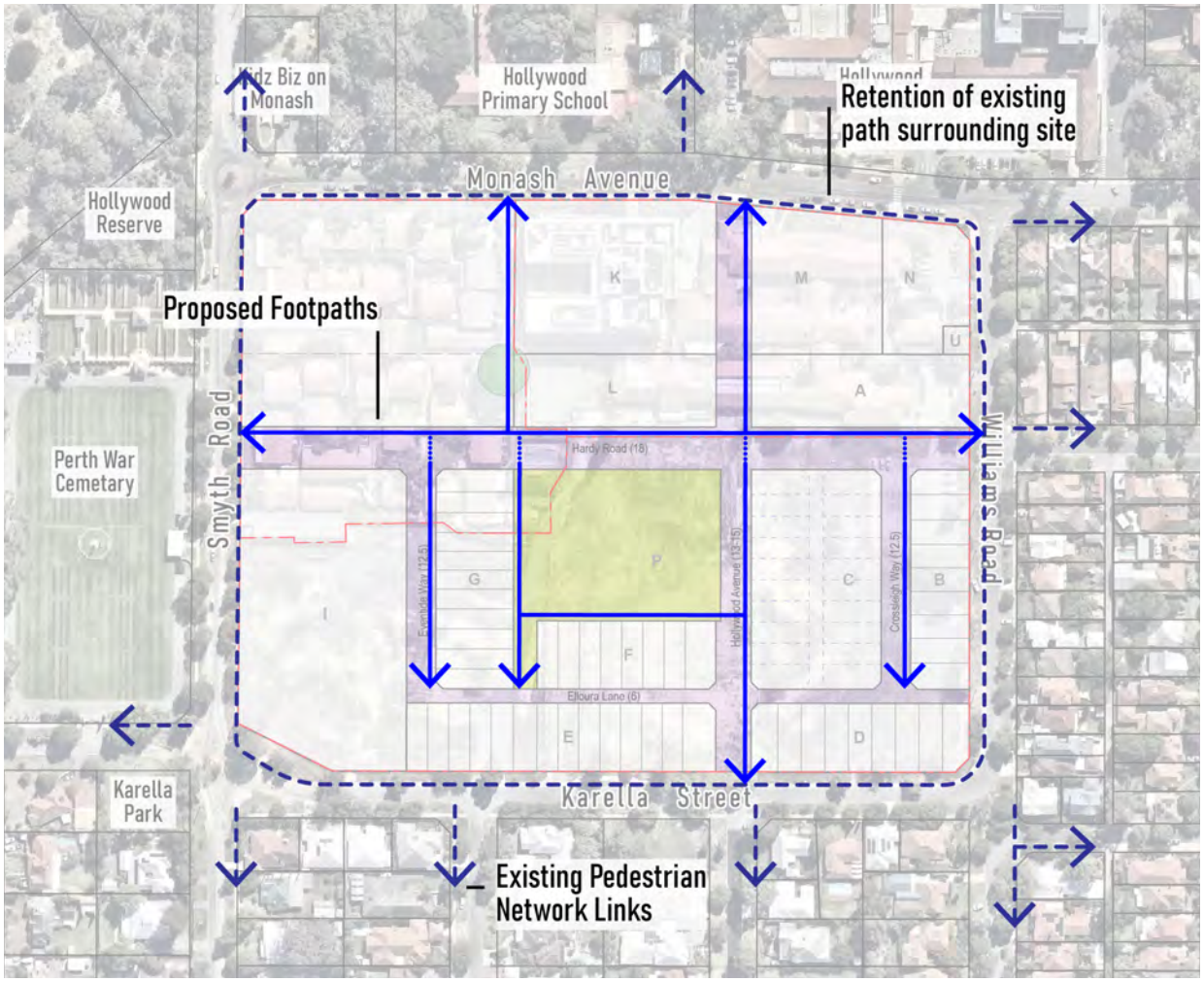


Figure 17: Pedestrian Connectivity Plan

Example of potential filtering treatment (source: Google)

Pedestrian connections around the perimeter of the site will be mostly uninterrupted, providing continuous and safe walkways

Hardy Road (18m Road Reserve)

Hardy Road provides a main movement corridor that runs east-west through the development, continuing along the alignment of the existing Hardy Road reserve.

Through the PSP area, a 6m carriageway will sit within an 18m road reserve, separated by a 3m planted swale and verges on both sides, which provide plentiful space for low shrub/groundcover planting and street trees.

Extensive planting and drainage features within Hardy Road will create a distinctive green/blue corridor that will enhance the quality and connectivity of the surrounding natural environment. It will also contribute to creating a vibrant streetscape and comfortable walking environment along this important movement route.

Single parallel parking bays are provided for visitors to the north side adjacent to a footpath.

Hardy Road will run from Smyth Road through to Williams Road with give way controls at Smyth Road and a four-way stop sign control at the intersection of Williams Road. Internal intersections of Hardy Road are proposed to be give way controlled with Hardy Road being the through movement.

Frequent intersections and street tree planting help to create an attractive, low speed environment. Opportunities to incorporate chicanes along Hardy Road as an additional traffic calming measure will be assessed at future more detailed design stages, in consultation with the City of Nedlands.

Figure 18: Hardy Road Section (Source: Streetscape Design, Plan E)

PD31.05.24 - Attachment 2

Hollywood Avenue (13-15m Road Reserve)

Hollywood Avenue provides a main movement corridor that runs north-south through the development, continuing along the alignment of Portland Street.

It comprises a 6m two-way carriageway within a 15m reserve, with verges on both sides and on-street parking and a footpath to the east side. Where the street runs adjacent to public open space, the road reserve is reduced to 13m.

There will be no through access on Hollywood Avenue from Monash Avenue to Hardy Road, with a mid-block filter feature being utilised to allow for pedestrians and cyclists, but not vehicles. This section will also feature a turnaround head included to cater for errant vehicle turnaround. The location of the proposed filter feature is shown in Figure 17 and an example of a potential filter treatment, from the City of Melville, shown on page 86.

The verge widths provide opportunities for groundcover planting and street trees that allow existing green network links to be extended through the site.

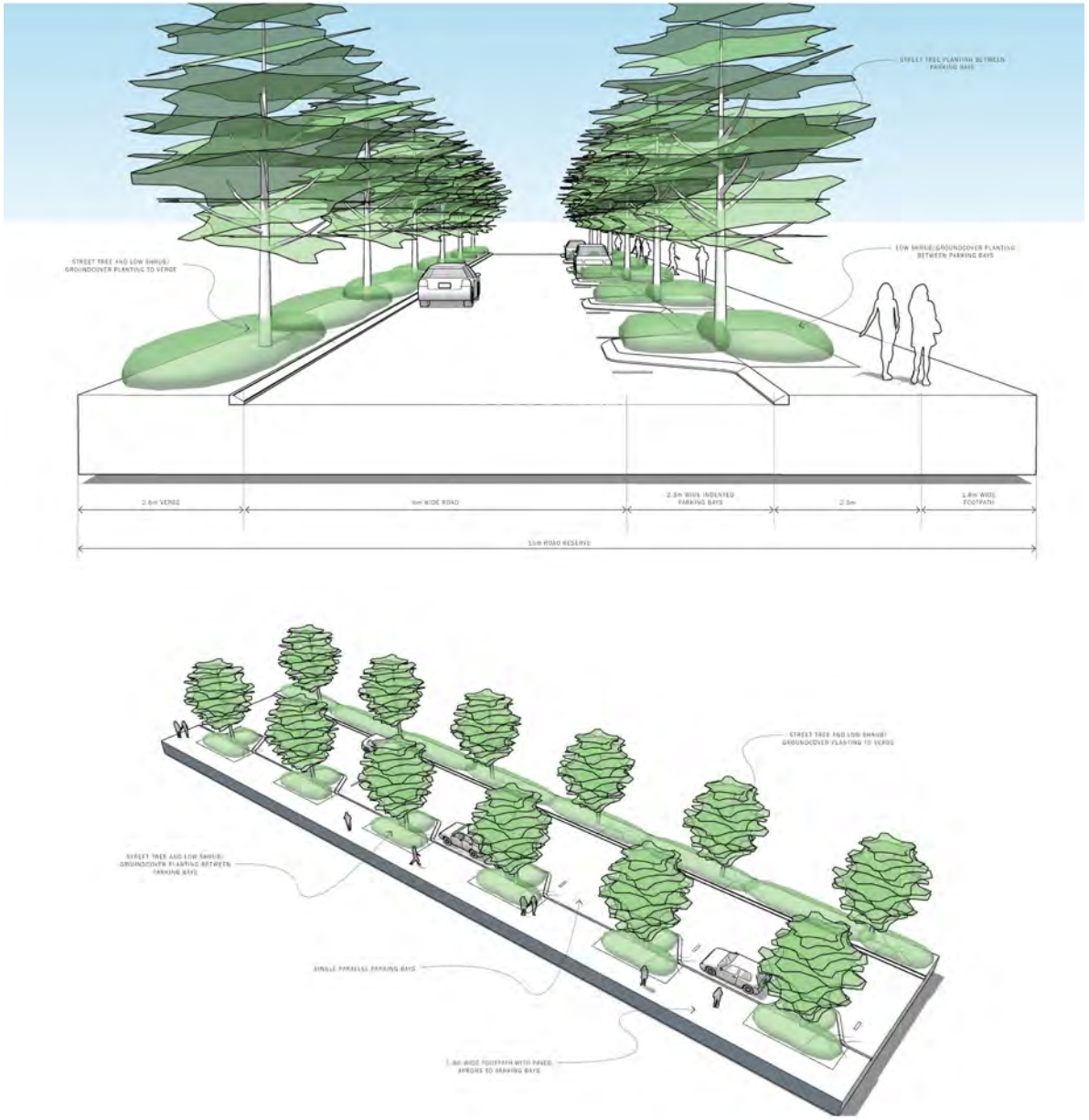


Figure 19: Hollywood Avenue Section (Source: Streetscape Design, Plan E)

Eventide Way (12.5m Road Reserve)

Eventide Way will be a lower order access street that will provide access to development sites fronting on to Smyth Road and townhouses overlooking the central public open space.

It compises a 5.5m two-way carriageway within a 12.5m reserve, with a verge and on-street parking on the west side and a footpath on the east side. Groundcover planting and street trees are to be provided within the verge, between indented car bays, and within the footpath.

It would connect to Elloura Lane which will be a two-way carriageway with 6m pavement width.

Crossleigh Way (12.5m Road Reserve)

As with Eventide Way, Crossleigh Way compises a 5.5m two-way carriageway within a 12.5m reserve, with on-street parking and a footpath. It will provide access to development sites on the Williams Road frontage.

Space for an additional laneway has also been provided for those lots fronting Hollywood Avenue and Crossleigh Way. That configuration will rely on development outcomes. It would connect Hardy Road to Elloura Lane and will be a two-way carriageway with 6m pavement width.

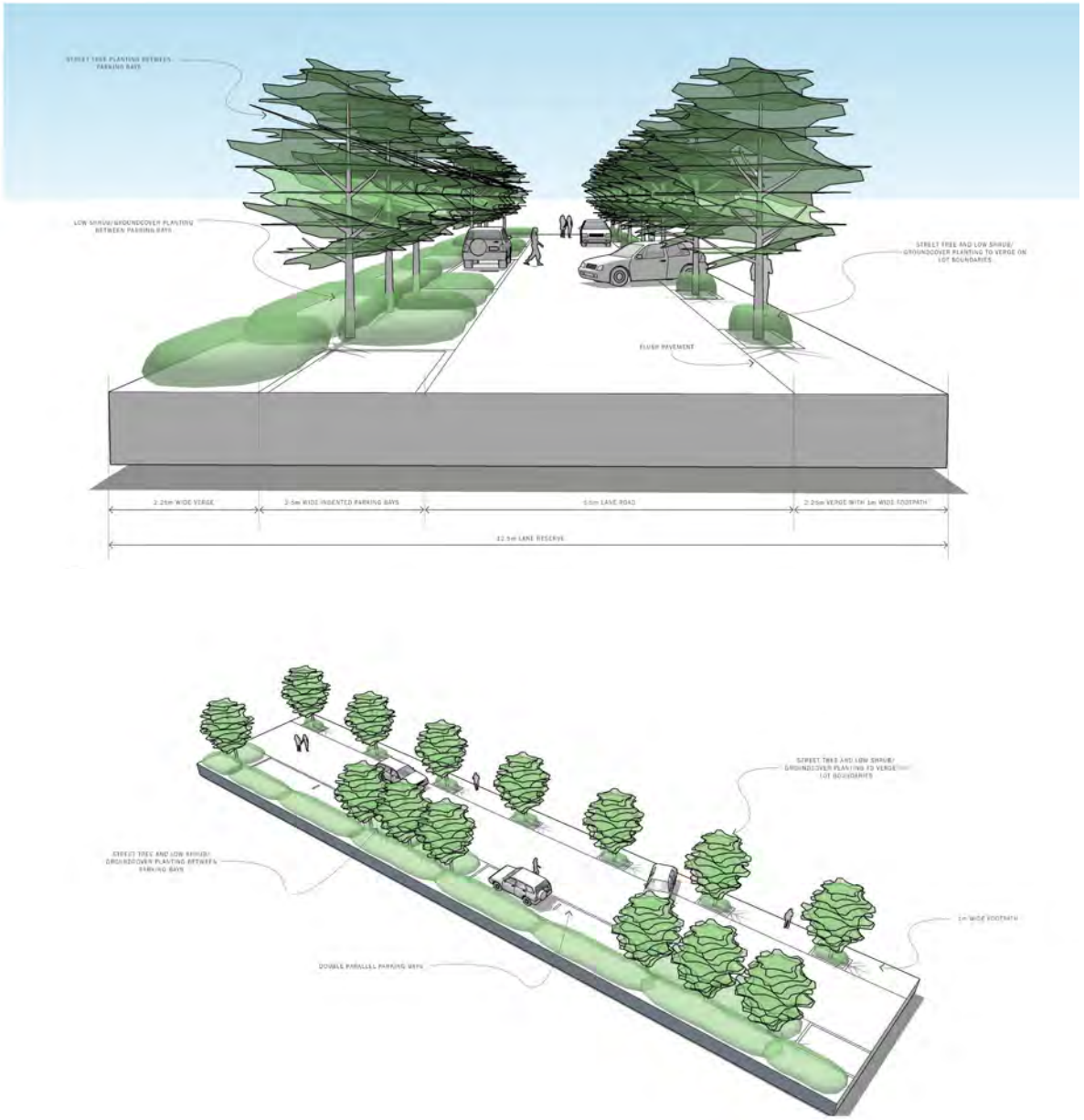


Figure 20: Eventide Way Section (Source: Streetscape Design, Plan E)

5.5 Design Element 5: Land Use

Design Element Objectives

- Prioritise residential development, recognising the role that this consolidated, well-located precinct needs to play in the delivery of the City of Nedlands' infill objectives.
- Facilitate the delivery of a diverse range of dwelling unit types, recognising that the housing stock in the local area is dominated by single houses on relatively large lots.
- Provide land for the continuation of Residential Aged Care services on a portion of the site.
- Provide land for the development of new medical-oriented floorspace complementing the UWA / QEII Specialised Centre.

Design Element Summary

- Residential-zoned land is placed along interfaces with existing residential neighbourhoods to the south and east to create a seamless transition from the old to the new without land use conflict.
- Building heights will increase with distance from established neighbourhoods to ensure that the character of the local area is respected and local amenity preserved.
- Non-residential (commercial and medical-oriented uses) will be placed close to the QEII Medical Centre interface along Monash Avenue to capitalise on the opportunity for co-location.
- Public open space will be centrally located to maximise physical and visual accessibility and create a recognisable focal point for the precinct and the surrounding area.

Key Principles: Land Use

Land Use Analysis

This section summarises the nature of the surrounding area in terms of land use and how that will influence the PSP area.

The surrounds of the PSP area can be considered settled. In terms of land use and built form character, the local area is unlikely to change significantly in the foreseeable future. Nedlands is a sought-after area for homebuyers and there is almost no evidence of subdivision in the nearby neighbourhood, even to the east where the current density coding enables it and the presence of laneways facilitates access. The nearby institutions, including the QEII Medical Centre, Hollywood Primary School, Karrakatta Cemetery and the Perth War Cemetery are established, have facilitative planning controls and are not readily relocatable.

These factors indicate that this is not, in general, an evolving area. It is therefore important that the PSP respects its setting and has appropriate interfaces.

Hollywood Private Hospital on Monash Avenue (Source: Google)

Existing residential development on Portland Street (Source: Google)

PD31.05.24 - Attachment 2

Land Use Response

The proposed land uses have been determined as part of a comprehensive masterplanning process, which has considered contextual and site assessment work.

Built around the grid pattern of suburban streets described in Element 2, this PSP proposes residential and mixed-use elements that will facilitate the delivery of residential dwelling supply and additional medical-oriented commercial floorspace. Collectively, the Central sub-regional Planning Framework, the City's Local Planning Strategy and feedback from the City and the community in the pre-lodgement phase of this project are encouraging of a diverse, high-yielding residential outcome for the site. This is proposed to be delivered through the designation of 'Residential' and 'Mixed Use' zones, both of which enable residential development, across the PSP area with high density codes of R80, R160 and R-AC1. As mentioned elsewhere in this report, densities and building heights will transition from two to three storeys along interfaces with existing residential areas, up to ten storeys adjacent to the established institutional land uses north of Monash Avenue.

The 'Mixed Use' zone proposed between the Hardy Road extension and Monash Avenue is intended to facilitate a residential outcome near Smyth Road, the continuation of the 'Regis Nedlands' facility and a Medical Centre or other mixed-use development adjacent to Williams Road. The Medical Centre proposal is a logical proposal in the context of the adjacent QEII Medical Centre and will deliver floorspace for medical-oriented commercial enterprises that complements the existing facilities to the north and enables synergistic employment opportunities. It will also play a role in delivering active and safe public spaces, as it will, by nature, generate activity from early in the morning to late in the evening, which fosters vibrancy without being detrimental to the amenity of the adjacent planned residential areas. The built form controls specified for the Monash Avenue and Williams Road frontages in Part 1 of this PSP encourage continuous, activated frontages to complement the inherently 'active' nature of the land use mix and optimise opportunities for human interaction and passive surveillance.

In addition to the employment opportunities supported by the 'Mixed Use' zoning, there is permissibility in the 'Residential' zone for commercial enterprises such as childcare premises, consulting rooms (potentially with health-related tenants, given the location) and home-based businesses. Whilst the emergence of such enterprises would be entirely organic and market-dependent, the potential for their establishment without a change of zoning is an incentive for potential investors.

Overall, the proposed land use mix illustrated on Plan A: Zones and Reserves and the relevant related provisions in parts 1 and 2 of this PSP are tailored to reflect the context of the site, its likely future character, and the likely needs of the current and future community. The site is challenging in that it sits between low-density, high-value residential neighbourhoods and a variety of institutional uses to the north, however, this also presents opportunities. A transition of residential dwelling types and densities is being proposed, which fosters housing supply and diversity, and the opportunity to provide additional medical-oriented floorspace that complements the QEII Medical Centre is also being taken, supporting local services and employment.

Public Open Space

This PSP is required to meet the standard WAPC requirement that 10% of the gross subdivisible area of the site be set aside as creditable public open space, of which 8% must be unrestricted.

Although this PSP has been prepared in accordance with the Precinct Design Guide, there is no equivalent to the POS calculation methodology codified in Liveable Neighbourhoods in that document. As such, Liveable Neighbourhoods has been used along with Development Control Policy 2.3: Public Open Space ('DC 2.3'). The calculated POS contribution is summarised in Table 12.

Consistent with Section 3.1.1 of DC 2.3, land uses that do not generate demand for POS, such as the Regis Nedlands aged care facility and the proposed Commercial/Medical/Mixed Use, have been excluded from the gross site area from which the POS requirement is derived. In this regard, although the PSP concept plans show townhouses on the northern side of Hardy Road near Williams Road, it is more likely that the Commercial/Medical/Mixed Use will extend over this site and this scenario has been assumed in the POS calculation.

Using these assumptions, this PSP makes provision for approximately 6,000 square metres of consolidated public open space, all of which is unrestricted. The accessibility of the POS has been optimised through its centralised location and its useability has been maximised by its shape, consolidated nature and the use of sub-soil drainage infrastructure. Sub-soil infrastructure is a practical solution for the PSP area because of the high infiltration capacity of the soils and its cost feasibility, which is related to the relatively high land values in the area.

If, at the subdivision stage, the final POS contribution is less than 10% and the shortfall is required to be rectified, the City of Nedlands has given preliminary advice that a cash-in-lieu contribution would be acceptable.

Overall, the PSP will contribute significantly to an improvement in local POS accessibility through simple supply and because a significant portion of the PSP area is identified for apartment development. Such development has obligations under the Apartment Code in respect of communal open space and this reduces demand for public open space relative to (for example) townhouses, for the equivalent population.

The rationale for the location of the POS, and its intended function, has been communicated in Section 5.3 of Part 2 of this PSP

Public Open Space Schedule (all areas are in hectares)		
Site Area		7.41
Existing Deductions		
None	0.00	
Total existing deductions	0.00	
Net Site Area		7.41
Structure Plan and Subdivision Deductions		
Lot 102A - Existing Residential Aged Care	0.55	
Lot 102B - Future Commercial / Medical Centre	0.65	
1:1 Drainage within POS	0.00	
Restricted Open Space Surplus	0.00	
Total Structure Plan Deductions	1.20	
Gross Subdivisible Area		6.21
POS @ 10%		0.62
Public Open Space Requirement		
May Comprise:		
Min 8% unrestricted POS	0.50	
Max 2% restricted POS	0.12	
TOTAL POS REQUIRED (ha)		0.62
Public Open Space Provided	Unrestricted POS Area	Restricted POS Area
Central POS	0.59	0.00
TOTAL (ha)	0.59	0.00
Additional Deductions		
Restricted Open Space Surplus		0.00
Revised Public Open Space Contribution		
Min 8% unrestricted POS provided	0.59	9.6%
Max 2% restricted POS provided	0.00	0.0%
Total Creditable POS Provided	0.59	9.6%

Table 12: Nedlands Village POS Schedule

PD31.05.24 - Attachment 2

5.6 Design Element 6: Built Form

Design Element Objectives

- Complement the density and character of the local area using responsive built form controls along established interfaces.
- Adopt the principles, objectives and controls in SPP 7.3: Residential Design Codes and relevant City of Nedlands policies, except where varied in this PSP.
- Ensure that the scale, bulk, building separation, and setbacks allows for physical and visual permeability.

Design Element Summary

- The character of the built form shall accommodate higher densities within the northern and western areas to reflect the precinct's prominent location and relationship to existing development.
- Building envelopes are to be delivered in accordance with 'frontage type' development provisions to ensure that all buildings are responsive to the existing surrounds and future context.
- The PSP area will provide a diverse mix of approximately 500 new homes, including apartments and townhouses that will cater for a range of lifestyles.
- Indicative massing diagrams are presented to help visualise the built form design provisions.

Figure 21: Concept Plan

Built Form Analysis

This section provides a summary of the surrounding built environment that will influence the PSP area.

Building heights in the local area are generally low scale, reflecting the predominant single residential uses. However, there are some commercial and medical buildings of a larger bulk and scale along Monash Avenue, including the Regis Nedlands building within the PSP area. Buildings along Monash Avenue are set back from the lot boundary providing space for landscaping and parking, thus reducing the impact of the larger buildings on the streetscape.

While there is the physical height of a building, the perception of height can be ameliorated in many different ways, through the manipulation of setbacks, bulk, topography and introduction of landscaping. The type of built form, and how the building is oriented, can also contribute to a responsive urban landscape.

Building heights within the PSP area should be responsive to the established built environment, which is unlikely to change within the foreseeable future. Interfaces and edges to different uses and zones are important considerations when determining the maximum height of a building. Heights should facilitate an effective built form that enables not only a pleasant internal environment but also respond to the streetscape.

The PSP area will provide nuanced built form provisions to address the transition and edges to abutting lower density residential developments and provide appropriate guidance as to height, setbacks and active ground floor use.

Ronald McDonald House Charities on Monash Avenue (Source: Google)

Single residential dwellings on Williams Road (Source: Google)

PD31.05.24 - Attachment 2

Built Form Response

Contextual analysis, design review, and consultation undertaken by the project team has prompted a built form response that aims to strike a balance between delivering density and responding to adjacent uses.

The PSP is proposing building heights that transition from two to three storeys along interfaces with existing residential areas, up to ten storeys adjacent to the established institutional land uses on Monash Avenue and the Perth War Cemetery.

Building envelopes are to be delivered in accordance with 'frontage type' development provisions, as opposed to applying a generic plot ratio. The intent here is to ensure that all buildings are responsive to the existing surrounds and future context.

Built form across the PSP area should comply with the controls in Part 1 Table 3: Built Form Controls for each frontage type, which are illustrated on Plan B: Built Form Controls.

The 'Primary' frontage type encourages a high level of activation and visual engagement with pedestrians and the public realm in general. A mix of tenancies, distinctive building entrances, glazing, projected and recessed elements, awnings, screens, balconies and/or landscaping are encouraged..

The 'Secondary' frontage type encourages visual engagement with pedestrians and the public realm in general, distinctive building entrances, glazing, awnings and landscaping, with vehicle access points and service areas permitted in appropriate locations.

The PSP area will provide a diverse mix of approximately 500 new homes, including apartments and townhouses that will cater for a range of lifestyles. The townhouses are intended to provide contemporary and flexible terrace housing opportunities that also provide an appropriate transition towards the existing residential areas.

A set of indicative massing diagrams are presented over the following pages to help visualise the built form design provisions. The diagrams are deliberately conceptual and do not seek to pre-determine a final outcome but serve to set the tone and general direction of future discussions.

Guiding Principles

The following guiding principles are provided to support the built form response:

- Locate higher-scale development abutting Smyth Road and Monash Avenue
- Locate lower-scale and lower-intensity development abutting existing residential development
- Provide appropriate solar access and natural ventilation to all buildings
- Adopt a podium and tower approach to larger buildings, which presents improved opportunities for appealing pedestrianised environments
- Enhance view corridors through appropriate setbacks of towers above podiums
- Potential for private rooftop activation to maximise high amenity views of the city and local surrounds
- Provide a landscape rich approach to draw upon the existing Nedlands vernacular.
- Corner lots appropriately address primary and secondary streets.

Appearance & Materials

Future development proposals within the PSP area will provide a contemporary interpretation of the prevailing streetscape elements and materiality. A range of high-quality materials, styles, and details will be encouraged to maintain the varied nature of development within the surrounding built environment.

Sustainability

Buildings will be designed to meet high standards of energy efficiency and operational performance, including the following project targets:

- 6 Leaf EnviroDevelopment certification
- 5 Star Green Star Buildings certification
- Waterwise Development Gold
- 8 Star average NatHERS for all residential built form
- Design specified according to Section J NCC and Green Star requirements for all commercial/medical/mixed use built form

Project targets are subject to further review at future more detailed design stages.

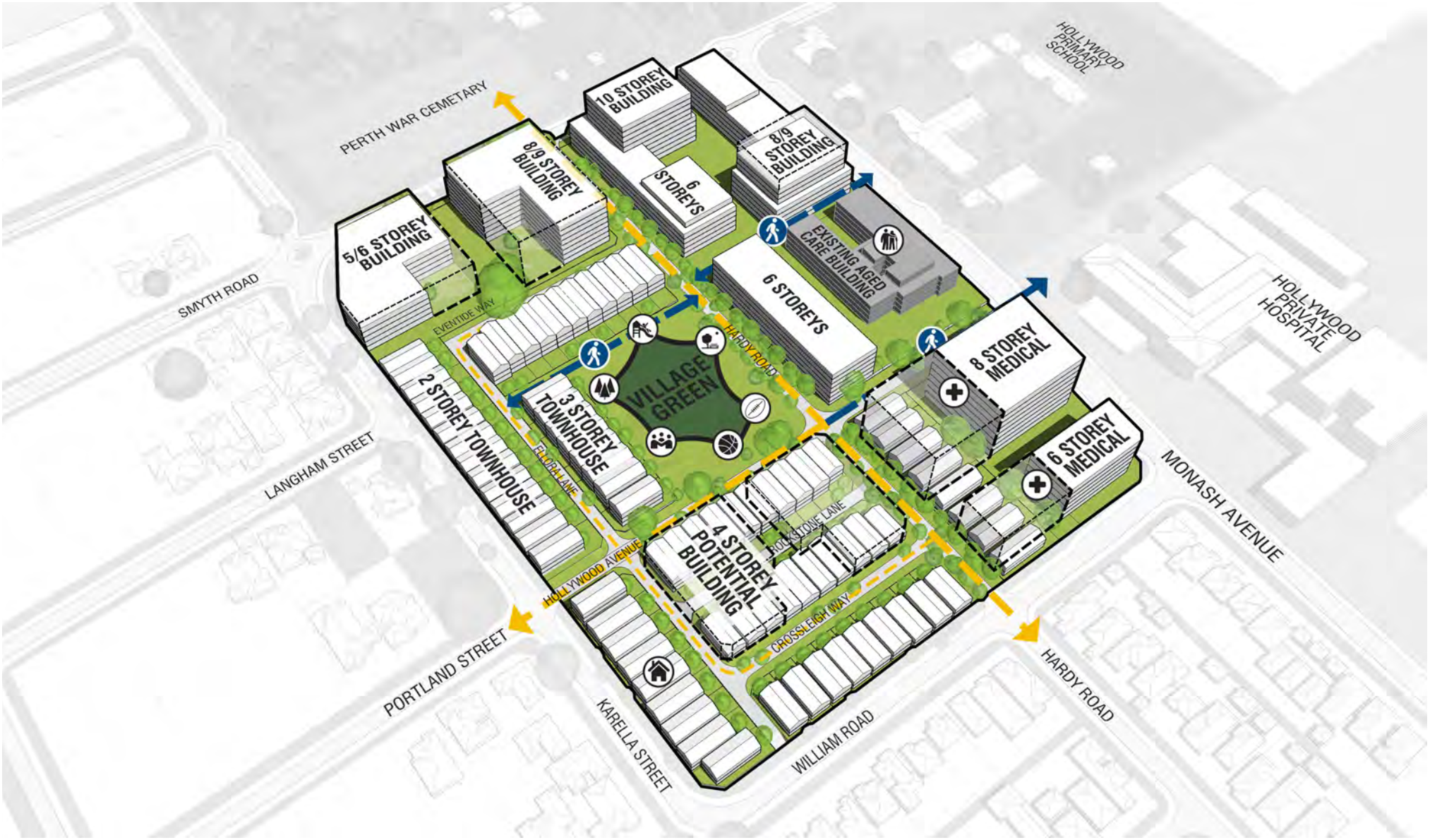


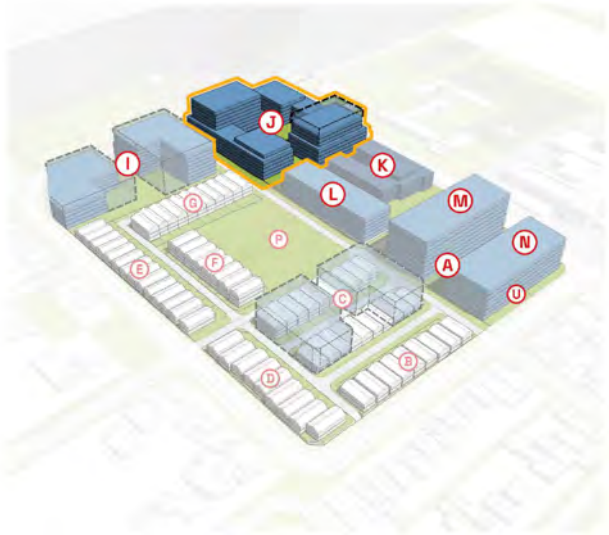
Figure 22: Nedlands Village Masterplan

PD31.05.24 - Attachment 2

Block J

The following diagrams present an indicative massing of built form within block J, which are supported by the following principles:

- Adopt a podium and tower approach to larger buildings, which presents improved opportunities for appealing pedestrianised environments
- Slimmer buildings with reduced floorplates can more easily achieve solar access and natural ventilation
- Potential for private rooftop activation to maximise high amenity views of the city and local surrounds



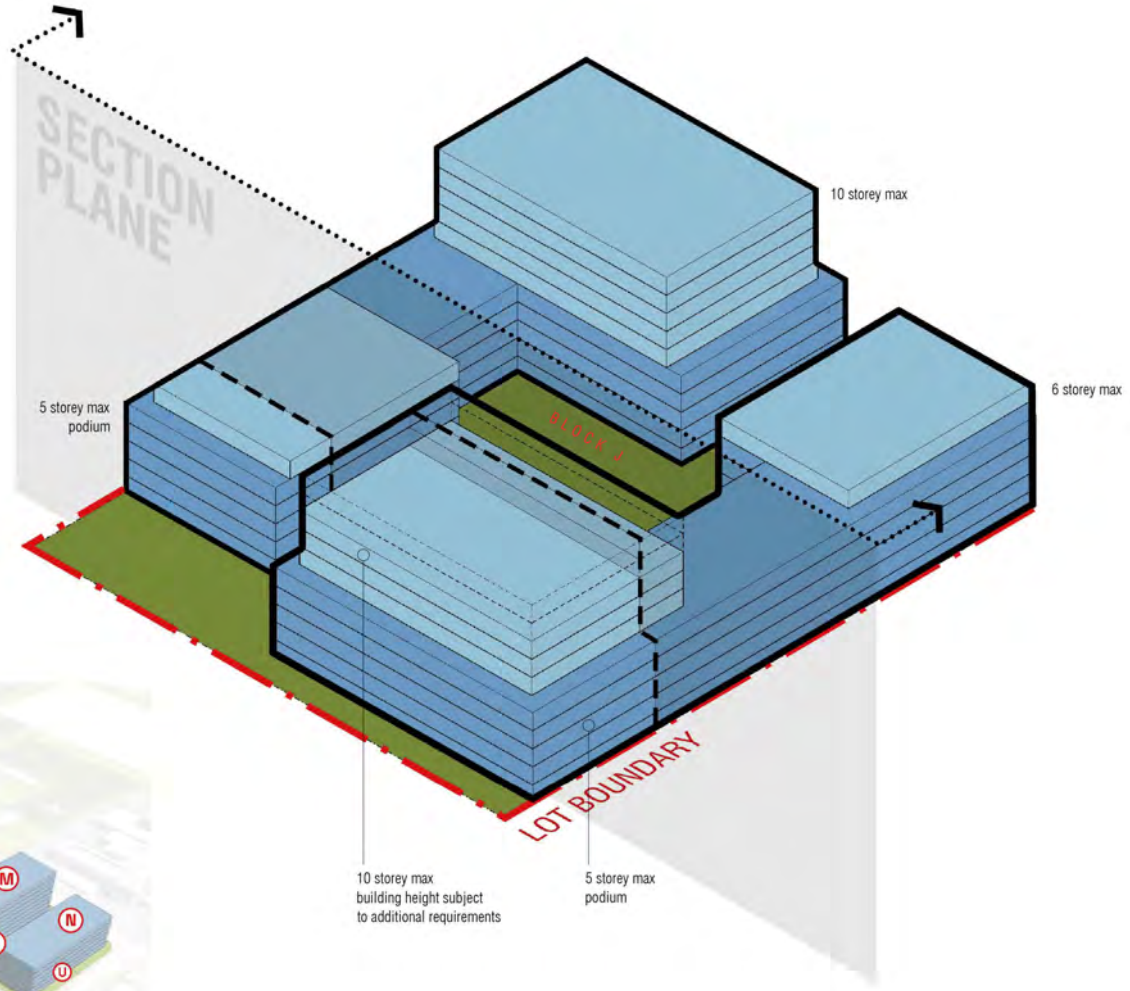
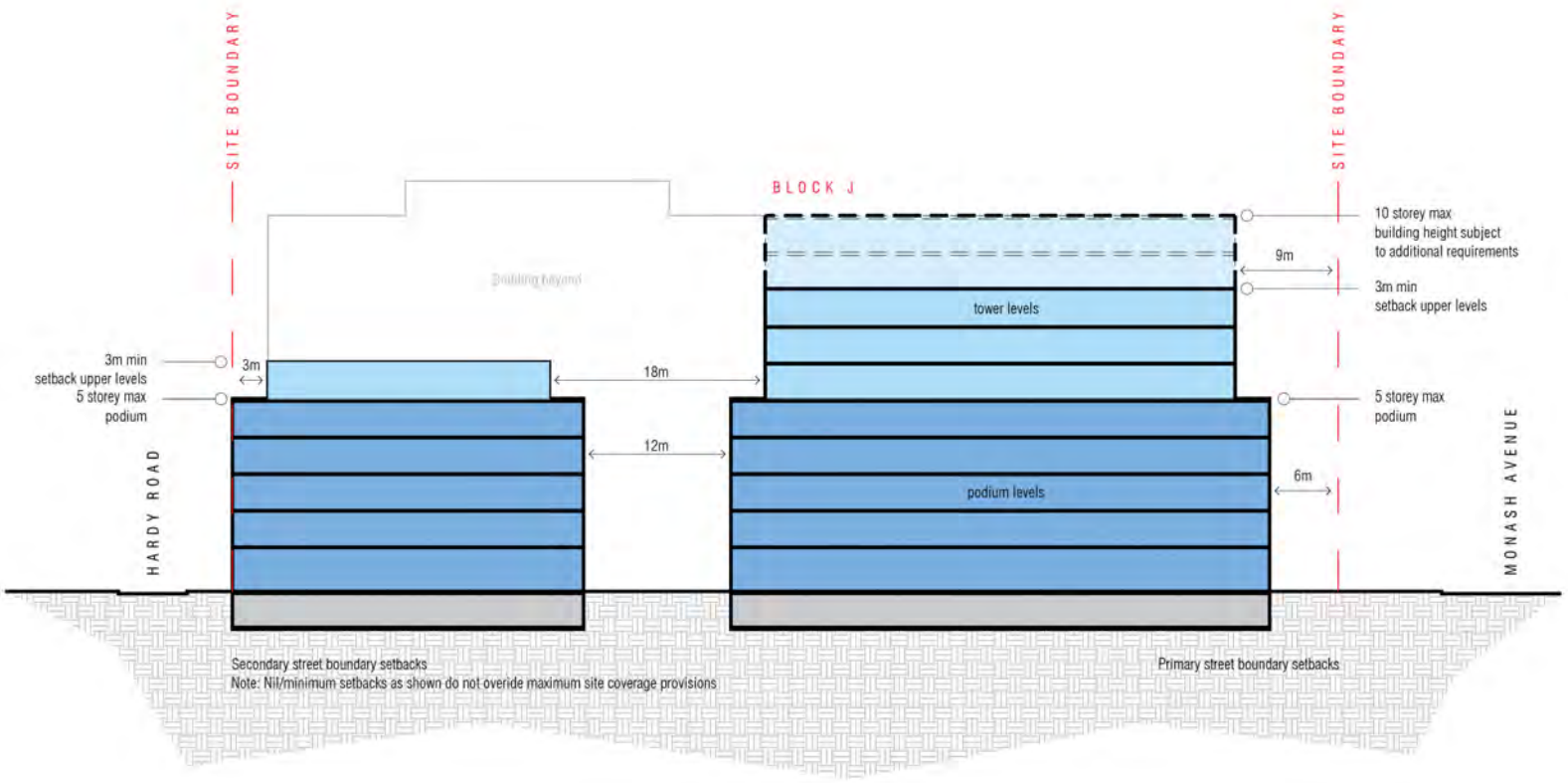


Figure 23: Site Sections (Block J)


SITE BOUNDARY
BLOCK J
SITE BOUNDARY
10 storey max
building height subject
to additional requirements
9m
3m min
setback upper levels
tower levels
3m min
setback upper levels
5 storey max
podium
3m
18m
5 storey max
podium
12m
6m
podium levels
HARDY ROAD
MONASH AVENUE
Secondary street boundary setbacks
Note: Nil/minimum setbacks as shown do not overide maximum site coverage provisions
Primary street boundary setbacks

PD31.05.24 - Attachment 2

Block i

The following diagrams present an indicative massing of built form within block i, which are supported by the following principles:

- Adopt a podium and tower approach to larger buildings, which presents improved opportunities for appealing pedestrianised environments
- Slimmer buildings with reduced floorplates can more easily achieve solar access and natural ventilation
- Potential for private rooftop activation to maximise high amenity views of the city and local surrounds
- Building heights step down towards existing residential development on Karella Street

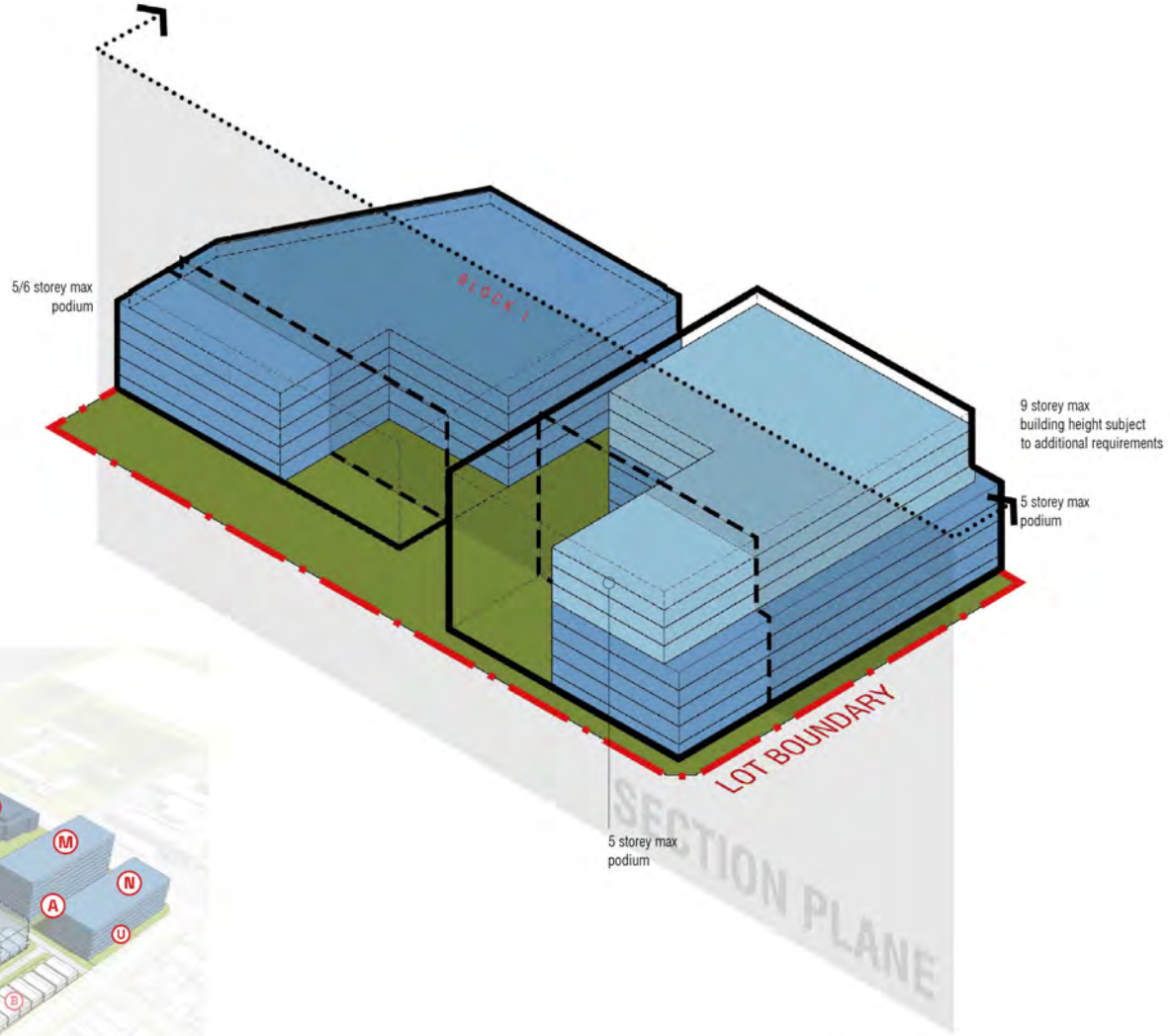
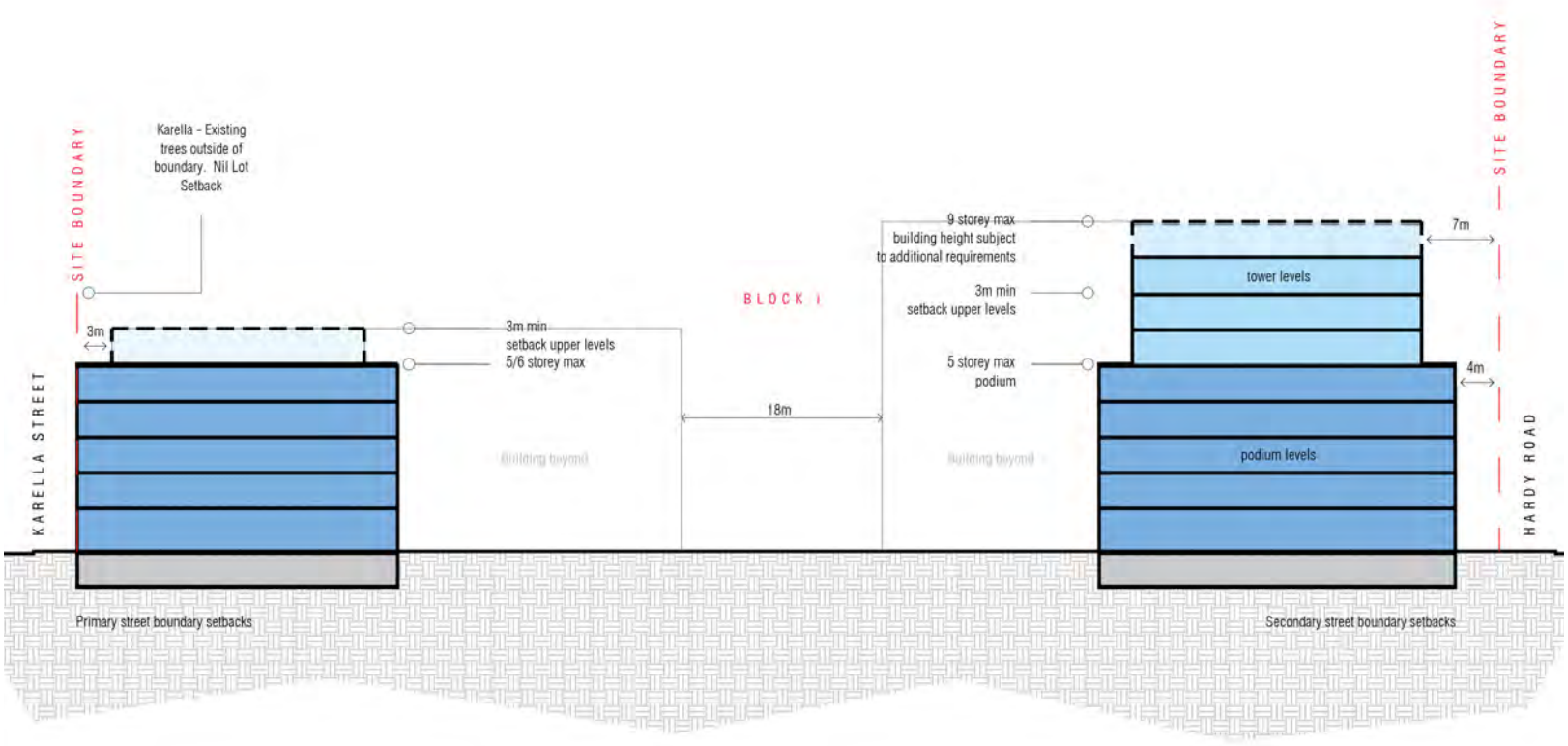


Figure 23: Site Sections (Block i)


SITE BOUNDARY
Karella - Existing trees outside of boundary. Nil Lot Setback
3m
3m min setback upper levels 5/6 storey max
BLOCK 1
18m
9 storey max building height subject to additional requirements
3m min setback upper levels
5 storey max podium
7m
tower levels
4m
podium levels
SITE BOUNDARY
KARELLA STREET
HARDY ROAD
Primary street boundary setbacks
Secondary street boundary setbacks

PD31.05.24 - Attachment 2

Block K & L

The following diagrams present an indicative massing of built form within blocks K & L, which are supported by the following principles:

- Slimmer buildings with reduced floorplates can more easily achieve solar access and natural ventilation
- Potential for private rooftop activation to maximise high amenity views of the city and local surrounds
- Strong and positive frontage to Village Park

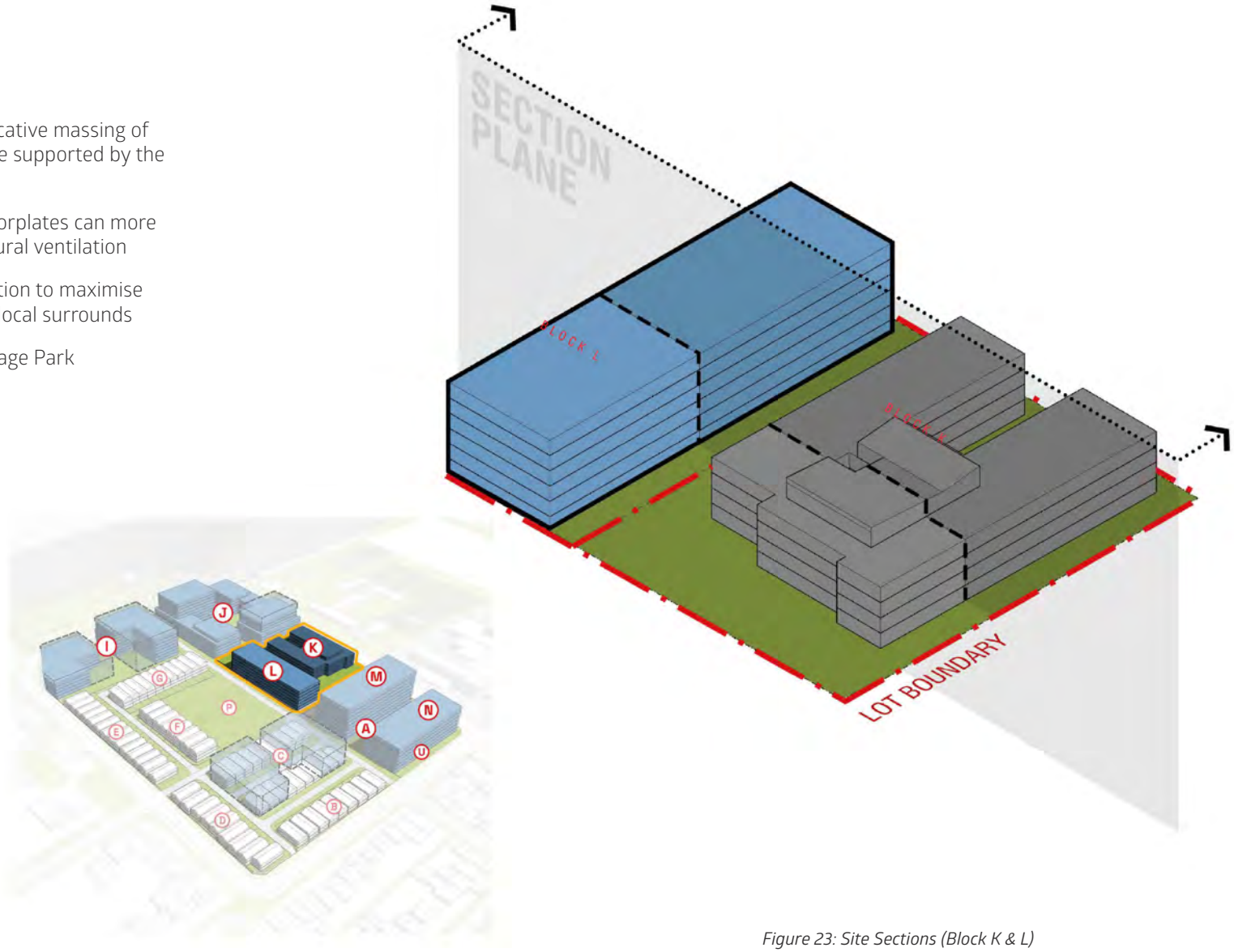
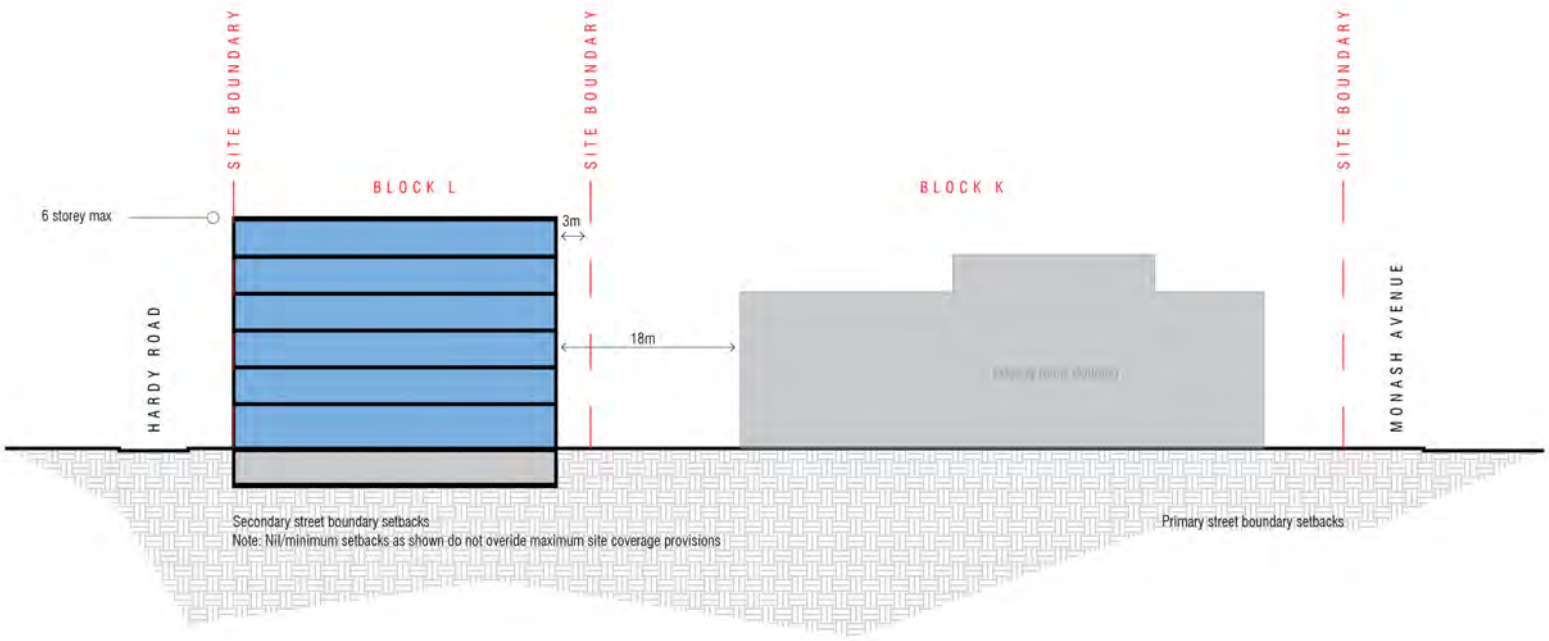


Figure 23: Site Sections (Block K & L)


SITE BOUNDARY
SITE BOUNDARY
SITE BOUNDARY
BLOCK L
BLOCK K
6 storey max
3m
18m
HARDY ROAD
MONASH AVENUE
Secondary street boundary setbacks
Note: Nil/minimum setbacks as shown do not overide maximum site coverage provisions
Primary street boundary setbacks

PD31.05.24 - Attachment 2

Block A, M, N & U

The following diagrams present an indicative massing of built form within blocks A, M, N, and U, which are supported by the following principles:

- Building heights step down towards existing residential development on Williams Road
- 6m setbacks to 'Primary' frontage type, Monash Avenue and Williams Road

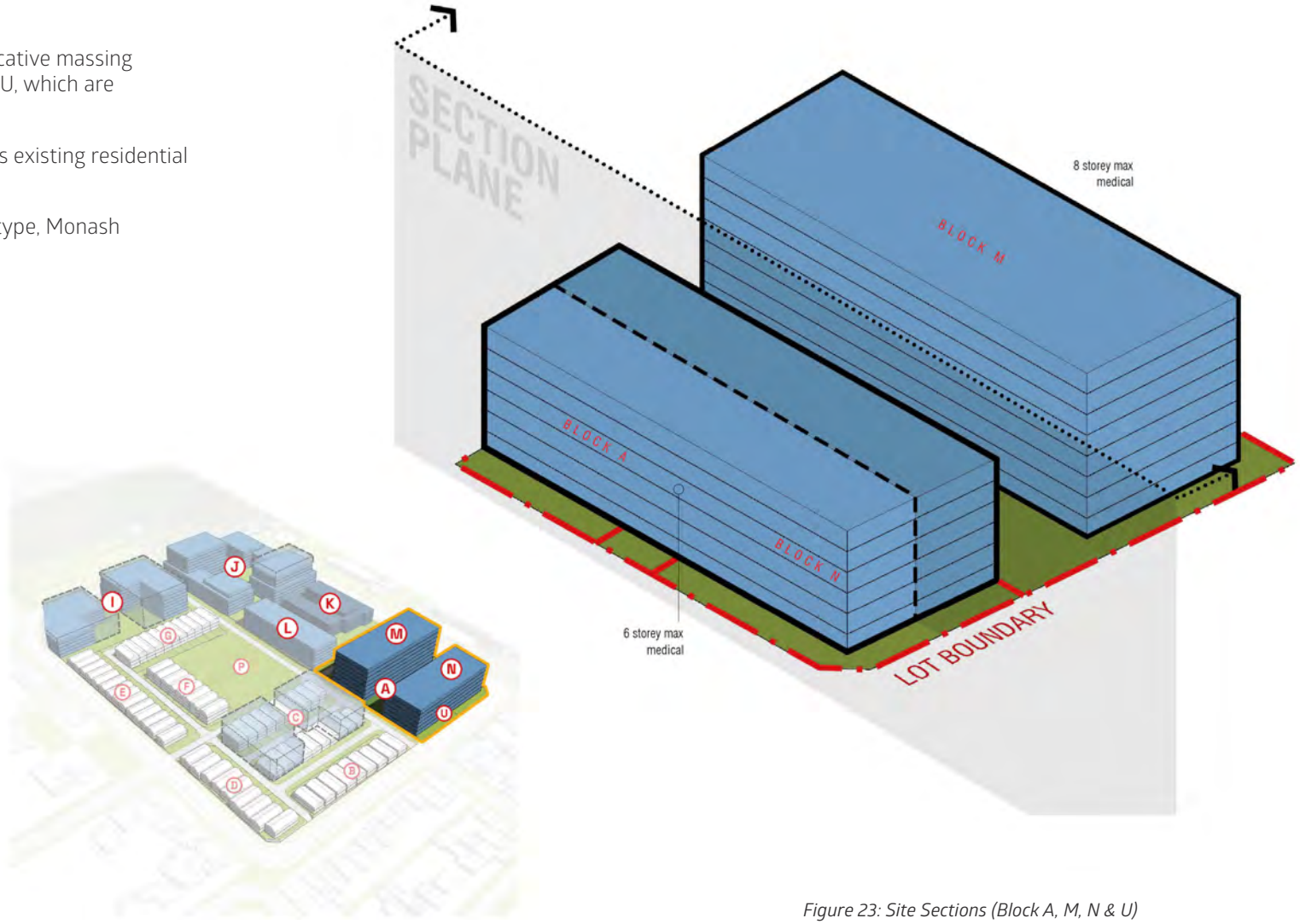
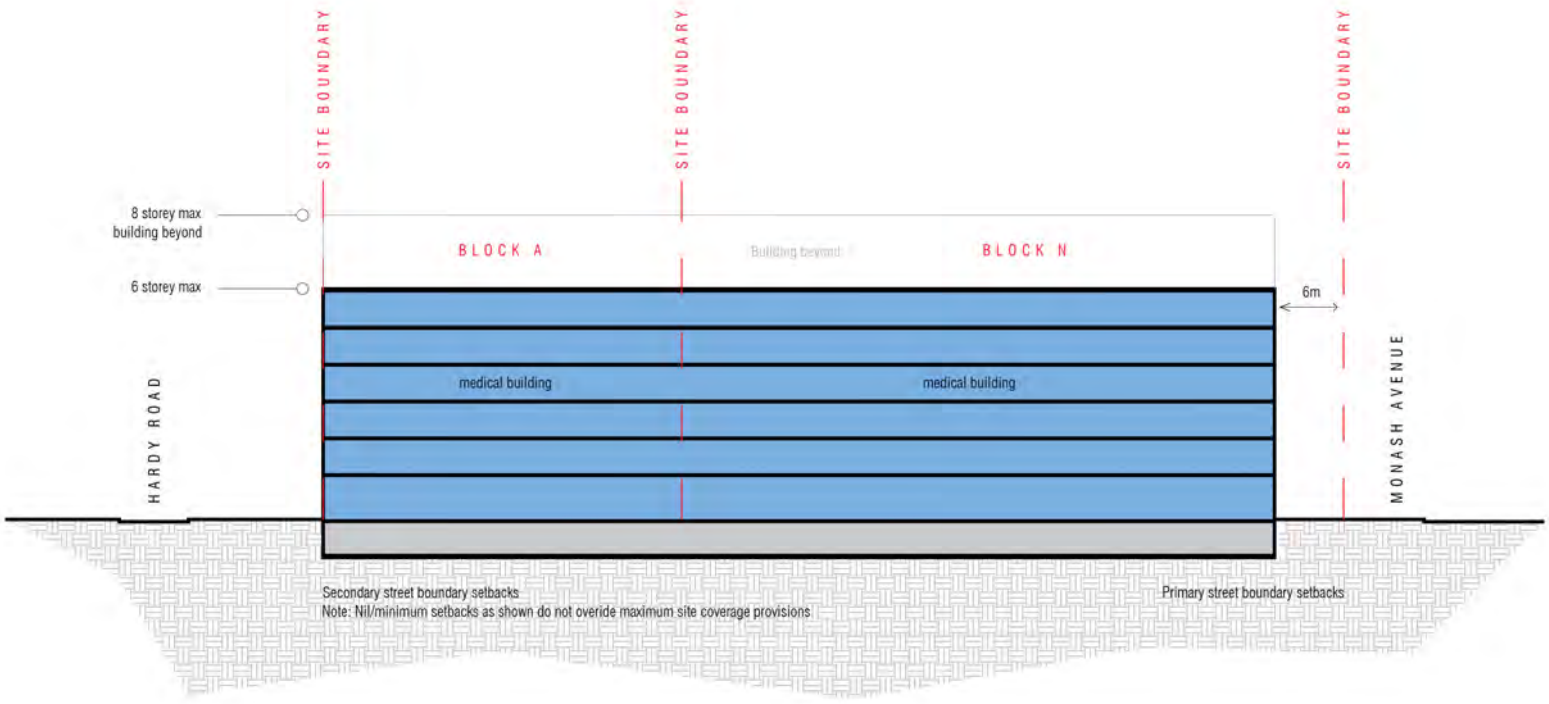


Figure 23: Site Sections (Block A, M, N & U)


SITE BOUNDARY
SITE BOUNDARY
SITE BOUNDARY
8 storey max
building beyond
6 storey max
BLOCK A
Building beyond
BLOCK N
6m
medical building
medical building
HARDY ROAD
MONASH AVENUE
Secondary street boundary setbacks
Note: Nil/minimum setbacks as shown do not overide maximum site coverage provisions
Primary street boundary setbacks

PD31.05.24 - Attachment 2

Title	Nedlands Village Precinct Structure Plan Part Two - Explanatory Section
Prepared for	Hesperia
Date	30 October 2023
Status	Final
Prepared by	CLE Town Planning + Design
CLE reference	3767Rep15B (PSP Part 2)

© CLE 2023

6. Technical Appendices

Appendix 1: WAPC letter giving consent for PSP preparation

Western Australian Planning Commission

WAPC File Number: N/A
Your ref: 3767Ltr7
Enquiries: Jeremy Thompson (6551 9937)

Mr Alex Watson
CLE Town Planning and Design
2 Abbotsford Street
WEST LEEDERVILLE WA 6007

Via Email: alex@cleplan.com.au

Dear Mr Watson

REQUEST FOR CONSENT TO PREPARE PRECINCT STRUCTURE PLAN FOR LOTS 101 & 102 MONASH AVENUE AND LOT 103 KARELLA STREET, NEDLANDS

Thank you for your letter to the Western Australian Planning Commission (WAPC) dated 3 July 2023, requesting WAPC consent to prepare a precinct structure plan for the above site pursuant to clause 15(c) of the Deemed Provisions for Local Planning Schemes, contained within the *Planning and Development (Local Planning Schemes) Regulations 2015.*

The WAPC has considered your request and resolved that a precinct structure plan is required for the orderly and proper planning of Lots 101 & 102 Monash Avenue and Lot 103 Karella Street, Nedlands.

The owner's intent to modify the existing memorials on site under the *Retirement Villages Act 1992* concurrently with the preparation of the precinct structure plan is acknowledged. Please note that sites that are no longer intended for retirement village purposes are to be free of related memorials on title, prior to the Western Australian Planning Commission's determination of the precinct structure plan.

Yours faithfully

Ms Sam Fagan
Secretary
Western Australian Planning Commission
9 August 2023

Postal address: Locked Bag 2506 Perth WA Street address:140 William Street Perth WA 6000
Tel: (08) 655 19000 Fax: (08) 655 19001 TTY: 655 19007 Infoline: 1800 626 477
corporate@planning.wa.gov.au www.planning.wa.gov.au
ABN 35 482 341 493

Appendix 2: Bushfire Management Plan

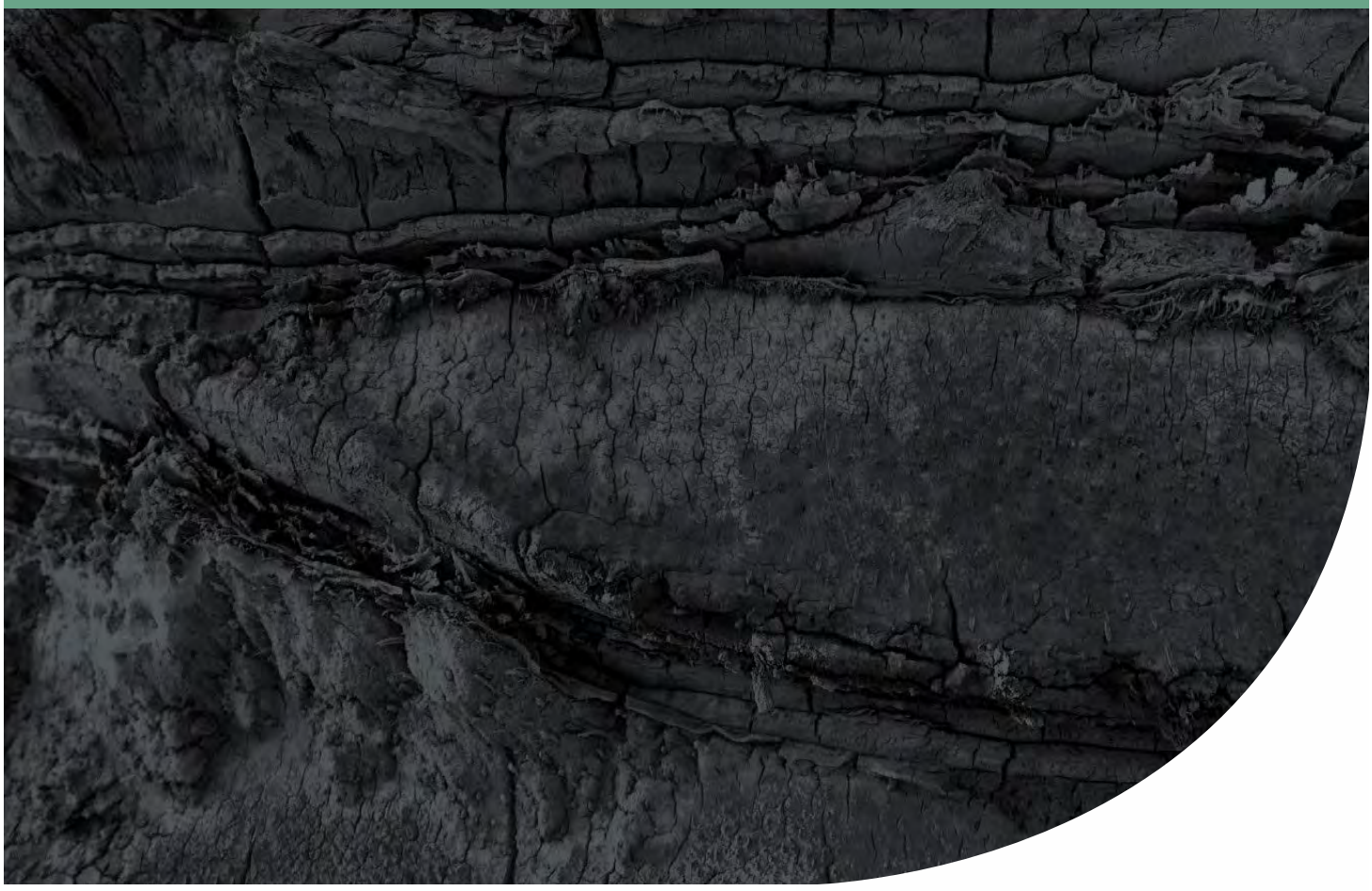
(Emerge)

Bushfire Management Plan

Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands

Project No: EP23-028(03)

Prepared for Hesperia Pty Ltd
October 2023



Document Control

Doc name:	**Bushfire Management Plan Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands**				
Doc no.:	**EP23-028(03)—007 PVS**				
Version	**Date**	**Author**		**Reviewer**	
1	August 2023	Paul Smith	PVS	Jason Hick	JDH
		Samuel Luckas	SPL		
	Submitted for client review.				
A	October 2023	Paul Smith	PVS	Anthony Rowe	AJR
	Submitted to client.				
B	October 2023	Paul Smith	PVS	Anthony Rowe	AJR
	Submitted to client.				

Disclaimer:

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This document has been prepared primarily to consider the layout of development and/or the appropriate building construction standards applicable to development, where relevant. The measures outlined are considered to be prudent minimum standards only based on the standards prescribed by the relevant authorities. The level of bushfire risk mitigation achieved will depend upon the actions of the landowner or occupiers of the land and is not the responsibility of the author. The relevant local government and fire authority (i.e. Department of Fire and Emergency Services or local bushfire brigade) should be approached for guidance on preparing for and responding to a bushfire.

Notwithstanding the precautions recommended in this document, it should always be remembered that bushfires burn under a wide range of conditions which can be unpredictable. An element of risk, no matter how small, will always remain. The objective of the Australian Standard AS 3959:2018 is to "prescribe particular construction details for buildings to reduce the risk of ignition from a bushfire" (Standards Australia 2018). Building to the standards outlined in AS 3959 does not guarantee a building will survive a bushfire or that lives will not be threatened by the effects of bushfire attack.

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Executive Summary

This *Bushfire Management Plan* (BMP) has been prepared on behalf of Hesperia Pty Ltd (the proponent) to support a Structure Plan (SP) to enable future residential and special use development. Located within the City of Nedlands, the proposed Nedlands Regis SP applies to an area primarily comprised of Lot 101, 102 & 103 Monash Road Nedlands (an area referred to as 'the site').

The site comprises a total area of 7.41 hectares (ha) and is zoned 'Residential' and 'Additional Use' under the City of Nedlands Local Planning Scheme No. 3 (LPS 3) and an 'Urban' zone under the Metropolitan Region Scheme (MRS). The site is bounded to the west by a cemetery (Karrakatta Cemetery) and reserve (Hollywood Reserve), education, aged care and hospital facilities north and residential and mixed land use south and east of the site.

The site is partially located within a 'bushfire prone area' under the state-wide Map of Bush Fire Prone Areas prepared by the Office of Bushfire Risk Management (OBRM 2021). The identification of a site within an area declared as bushfire prone necessitates further assessment of the determined bushfire risk affecting the site in accordance with *Australian Standard 3959:2018 Construction of buildings in bushfire prone areas* (AS 3959), and the satisfactory compliance of the proposal with the policy measures described in *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone Areas Version 1.4* (the Guidelines) (DPLH & WAPC 2021).

The purpose of this BMP is to assess the bushfire hazards, both within and near the site, and identify the 'management' strategies required to ensure the development of the land is consistent with the intent of SPP 3.7 - *to preserve life and reduce the impact of bushfire on property and infrastructure.* As part of this, a Bushfire Attack Level (BAL) assessment involving the classification and condition of vegetation within 150 m of the site has been undertaken.

As part of assessing the long-term bushfire risk to the site, vegetation classifications have been detailed (in accordance with AS 3959) in order to inform a Bushfire Attack Level (BAL) assessment. The following bushfire hazards were identified as applicable to the site following residential development:

- Forest (Class A) vegetation, which was identified to the north-west of the site.
- Grassland (Class G) vegetation, which was identified in the central area of the site, is associated with existing cleared land.

In order to resolve the potential for bushfire to affect the site, all classified vegetation within future residential lots and road reserves within the site will be removed and converted to non-vegetated (exclusion 2.2.3.2(e)) and low threat vegetation (exclusion 2.2.3.2(f)). Future open space areas within the site will be maintained to achieve low threat in accordance with Section 2.2.3.2 of AS 3959. All other classified vegetation outside the site is assumed to remain in its existing condition and therefore assumed to pose a bushfire risk to the site in the long-term.

Compliance Assessment

The outcomes of this BMP demonstrate that as development progresses, it will be possible for an acceptable solution to be adopted for each of the applicable bushfire protection criteria outlined in the Guidelines. This includes:

- **Location**: there are no specific environmental or topographic considerations restricting any works for the purpose of attaining a moderate bushfire hazard level for the land.
- **Siting and Design**: all future habitable buildings can be sited within the proposed development so that BAL-29 or less can be achieved based on the proposed SP. Asset Protection Zones (APZ) are achieved for all lots through the management of residential lots, non-vegetated areas and low threat vegetation in the design layout including roadways and public open space.
- **Vehicular Access**: the proposed layout provides for a road network within the site that will connect to the existing public road network, specifically Hollywood Street to the north, Hardy Road, and Elloura Lane to the east and Hardy Road to the west, with surrounding streets Smyth Road, Karella Street, Williams Road, and Monash Avenue providing egress options in all directions from the site. As part of the future development of the site, Hardy Road will connect onto Williams Road to the east and Smyth Road to the west. Hollywood Street will connect to Monash Avenue to the north and Karella Street to the south, providing the southern lots with two access routes to four different directions.
- **Water**: the development will be provided with a permanent and reticulated water supply to support onsite firefighting requirements and is surrounded by fire hydrants.

The management/mitigation measures to be implemented through the proposed subdivision and development of the site have been outlined as part of this BMP.

PD31.05.24 - Attachment 2

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Appendices

Appendix A

Structure Plan

List of Abbreviations

Table A1: Abbreviations – General terms

General terms	
AHD	Australian Height Datum
AS	Australian Standard
APZ	Asset Protection Zone
BAL	Bushfire Attack Level
BMP	Bushfire Management Plan
BPAD	Bushfire Planning and Design
ESA	Environmentally Sensitive Area
FDI	Fire Danger Index
FZ	Flame Zone
TEC	Threatened ecological community

Table A2: Abbreviations – Organisations

Organisations	
CoN	City of Nedlands
DBCA	Department of Biodiversity, Conservation and Attractions
DWER	Department of Water and Environmental Regulation
DFES	Department of Fire and Emergency Services
DPLH	Department of Planning, Lands and Heritage
OBRM	Office of Bushfire Risk Management
WAPC	Western Australian Planning Commission

Table A3: Abbreviations – Legislation and policies

Legislation	
Guidelines	*Guidelines for Planning in Bushfire Prone Areas version 1.4* (DPLH & WAPC 2021)
SPP 3.7	State Planning Policy 3.7 Planning in Bushfire Prone Areas (WAPC 2015)

Table A4: Abbreviations – Planning and building terms

Planning and building terms	
LPS	Local Planning Scheme
MRS	Metropolitan Region Scheme
NCC	National Construction Code

Table A4: Abbreviations – units of measurement

Units of measurement	
cm	centimetre
ha	hectare
m	metre
m^2	square metre
m AHD	m in relation to the Australian height datum
mm	millimetre

1 Introduction

1.1 Background

Hesperia Pty Ltd (the proponent) have prepared the Nedlands Regis Pricinct Structure Plan (SP) to guide the progression of residential, open space and special use development across Lots 101, Lot 102 and Lot 103 Monash Avenue, Nedlands (referred to herein as the 'site'), which is an area of approximately 7.41 hectares (ha) in size. The proposed SP is provided in **Appendix A** and provides for semi-detached housing, town houses, apartment complexes, a 'village park' and medical purpose buildings. The Regis Aged Care apartments within the north-west corner of Lot 102 are will be retained. The site is located within the City of Nedlands, approximately 4 km to the south-west of the Perth Central Business District (CBD), as shown in **Figure 1**.

The site is partially located within a 'bushfire prone area' under the state-wide Map of Bush Fire Prone Areas prepared by the Office of Bushfire Risk Management (OBRM 2021) as shown in **Plate 1**. The identification of a site within an area declared as bushfire prone necessitates a further assessment of the determined bushfire risk affecting the site in accordance with *Australian Standard 3959:2018 Construction of buildings in bushfire prone areas* (AS 3959), and the satisfactory compliance of the proposal with the policy measures described in *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone Areas Version 1.4* (the Guidelines) (DPLH & WAPC 2021).

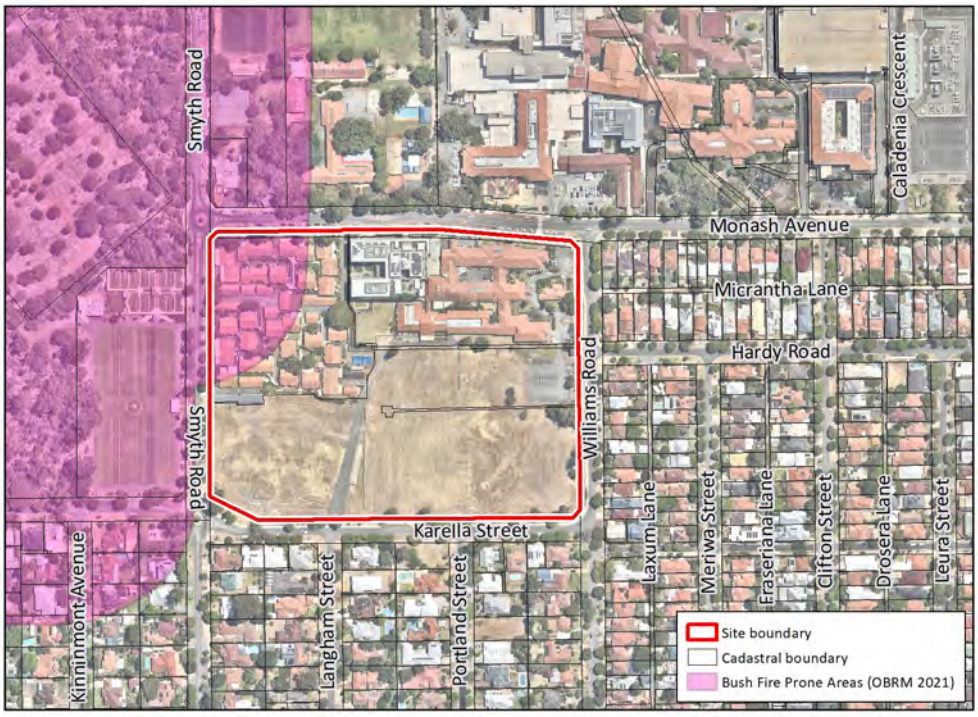

Plate 1: Areas within and surrounding the site is identified as 'bushfire prone areas' (as indicated in purple) under the state-wide Map of Bush Fire Prone Areas (OBRM 2021).

The purpose of SPP 3.7 and its policy intent is to preserve life and reduce the impact of bushfire on property and infrastructure through effective risk-based land use planning. Importantly, it is risk-based, requiring a methodical approach to identify and evaluate the hazards and provide the

treatments to ameliorate these hazards to an acceptable level. SPP 3.7 requires that the determining authority give consideration to the precautionary principle (clause 6.11 in SPP 3.7) and they must be satisfied that the potential for significant adverse impacts can be adequately reduced or managed. In particular:

> *SPP 3.7 does not require that there be no increase at all in the threat of bushfire to people property or infrastructure. Rather, as is seen in clause 2 of SPP 3.7, the intention of the policy is to 'implement effective, risk-based land use planning and development to preserve life and **reduce the impact of bushfire on property and infrastructure**'.*

1.2 Aim of this report

The purpose of this BMP is to assess bushfire hazards both within the site and nearby and demonstrate that the threat posed by any identified hazards can be appropriately mitigated and managed. This BMP has been prepared to support the proposed subdivision of the site and addresses the requirements of SPP 3.7 (WAPC 2015), the Guidelines (DPLH & WAPC 2021) and (AS 3959) (Standards Australia 2018). The document includes:

- An assessment of the existing classified vegetation in the vicinity of the site (within 150 m) and consideration of bushfire hazards that will exist in the post development scenario (**Section 3**).
- Commentary on how the future development can achieve the bushfire protection criteria outlined within the Guidelines including an indication of BAL ratings likely to be applicable to future habitable buildings (**Section 5**).
- An outline of the roles and responsibilities associated with implementing this BMP (see **Section 6**).

1.3 Statutory policy and framework

The following key legislation, policies and guidelines are relevant to the preparation of a bushfire management plan:

- *Bush Fires Act 1954*
- *Fire and Emergency Services Act 1998*
- *Planning and Development Act 2005* and associated regulations
- *Building Act 2011* and associated regulations
- *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (WAPC 2015)
- *Guidelines for Planning in Bushfire Prone Areas Version 1.4* (DPLH & WAPC 2021)
- *Australian Standard AS 3959 – 2018 Construction of buildings in bushfire prone areas* (Standards Australia 2018)

1.4 Description of the proposed development

The site has a proposed SP and consists of residential and special use purposes and is provided in **Appendix A**. The SP over the site will allow for:

- residential development
- medical facility

- a central public open space (POS) within the central portion of the site
- an interconnected public road network.

The site is zoned 'Residential' and 'Additional Use' under the City of Nedlands Local Planning Scheme No. 3 (LPS 3) and 'Urban' under the Metropolitan Region Scheme (MRS), with the proposed SP consistent with the zoning as shown in **Plate 2**.

More broadly, the site is located within an area where residential land uses are well established with an existing public road network, with Monash Road located to the north, Smyth Road to the west, Williams Road to the east and Karella Street to the south of the site.

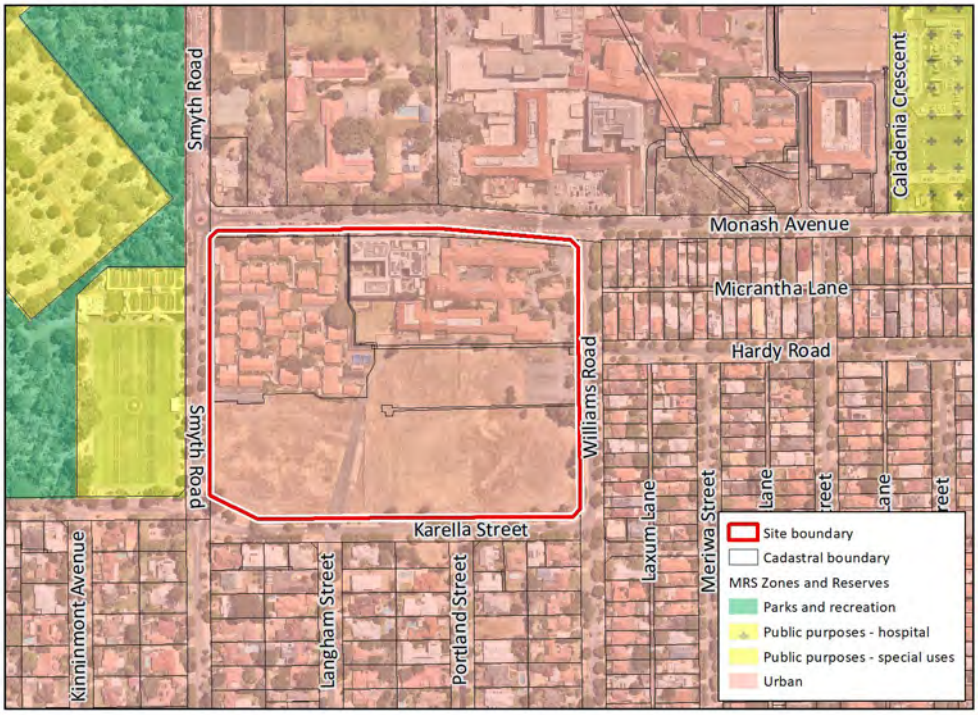

Plate 2: Metropolitan Region Scheme Zoning, in and surrounding the site.

1.5 Description of land characteristics

The majority of the northern portion of the site supports the existing Regis Hollywood Village (retirement facility). The southern portion of the site is cleared vegetation with some scattered trees evident. Historical clearing of remnant vegetation is evident from 1953 (Landgate 2023).

Surrounding land uses include:

- Hospital and school facility to the north
- Karrakatta Cemetery, Perth War Cemetery and Hollywood Reserve to the west
- Residential and commercial land uses to the east and south.

2 Environmental Considerations

In accordance with the *Bushfire Management Plan – BAL Contour* template prepared by the Department of Planning, Lands and Heritage (2018), this BMP has considered whether there are any environmental values that may require specific consideration through either protection, retention or revegetation. To support this, a review of publicly available databases has been undertaken, with particular reference to the Shared Location Information Platform (SLIP) databases. A summary of the search results has been provided in **Table 1**.

The majority of the site has been cleared of vegetation and is mostly pasture grasses with scattered mature trees. As a result, the site contains limited environmental values of conservation significance.

Table 1: Summary of potential environmental considerations that may be associated with the site (based on a search of the SLIP databases)

Key environmental feature (information in brackets refers to mapping data source)	Yes / no / potentially occurring within the site	If yes / potentially, describe value that may be impacted
Conservation category wetlands and buffer (Geomorphic wetlands, Swan Coastal Plain (DBCA-019))	No	No Conservation Category Wetlands (CCWs) intersect or surround the site. Therefore, no specific management/ protection is required.
RAMSAR wetlands (DBCA-010)	No	No RAMSAR wetlands are identified within the mapping as occurring within the site or in close proximity.
Threatened and priority flora (Emerge Associates 2023)	No	Emerge visited the site and undertook a reconnaissance flora and vegetation survey in August 2023 (Emerge Associates 2023). No species of threatened or priority flora are identified within the site.
Threatened ecological communities (DBCA-038) (Emerge Associates 2018)	No	Based on the findings from the flora and vegetation survey undertaken by Emerge, no threatened ecological communities (TEC's) were identified within the site.
Bush Forever areas (DPLH-019)	No	No Bush Forever sites are mapped within or adjacent to the site. It is noted the Bush Forever (BF) Site 317 'Kings Park' is located 840 m to the east of the site and Bush Forever site 218. 'Shenton Bushland, Shenton Park' is located 930 m to the north-west of the site.
Clearing regulations – Environmentally Sensitive Areas (DWER-046)	No	Not applicable. No Environmentally Sensitive Areas are identified within the site.
Swan Bioplan Regionally Significant Natural Areas 2010 (DWER-070)	No	Not applicable. No Regionally Significant Natural Areas are identified within the site.

Table 2: Summary of potential environmental considerations that may be associated with the site (based on a search of the SLIP databases) Continued

Key environmental feature (information in brackets refers to mapping data source)	Yes / no / potentially occurring within the site	If yes / potentially, describe value that may be impacted
Bush Forever areas (DPLH-019)	No	No Bush Forever sites are mapped within or adjacent to the site. It is noted the Bush Forever (BF) Site 317 'Kings Park' is located 840 m to the east of the site and Bush Forever site 218. 'Shenton Bushland, Shenton Park' is located 930 m to the north-west of the site.
Clearing regulations – Environmentally Sensitive Areas (DWER-046)	No	Not applicable. No Environmentally Sensitive Areas are identified within the site.
Swan Bioplan Regionally Significant Natural Areas 2010 (DWER-070)	No	Not applicable. No Regionally Significant Natural Areas are identified within the site.

2.1 Native vegetation – modification and clearing

As outlined above the majority of the site has been previously cleared and now comprises non-native grasses and trees within the north-western portion of the site. Road reserves will be landscaped which includes trees. All vegetation outside the site, is assumed to remain in its existing condition.

With regard to bushfire management, vegetation clearing within the site will be required to enable the relevant siting and access requirements of the Guidelines to be achieved and would be associated with clearing to establish:

- Future lots, including the portion of the public open space
- Asset protection zones (APZs)
- Public roads.

2.2 Revegetation and landscape plans

No revegetation is proposed as part of this development. The areas of public open space within the site are intended to be utilised for recreation and drainage purposes and will be landscaped accordingly. The detailed design of these areas will be determined in collaboration with the City of Nedlands as part of the standard development process and based on achieving the requirements of Livable Neighbourhoods and general local government expectations for open space in urban areas. Open space will be designed and delivered to achieve low threat vegetation in accordance with Section 2.2.3.2 of AS 3959. Ongoing management is likely to include:

- Irrigation of grass and garden beds (where required).
- Regular removal of weeds and built-up dead material (such as fallen branches, leaf litter etc.).
- Low pruning of trees (branches below 2 m in height removed where appropriate).
- Application of ground/surface covers such as mulch or non-flammable materials as required.
- Regular mowing of grass to less than 100 mm in height.

3 Bushfire Assessment Results

Bushfire risk for the site has been appropriately considered both in context to the site and potential impact upon the site using AS 3959 and the Guidelines.

The objective of AS 3959 is to reduce the risk of ignition and loss of a building to bushfire. It provides a consistent method for determining a radiant heat level (radiant heat flux) as a primary consideration of bushfire attack. AS 3959 measures the Bushfire Attack Level (BAL) as the radiant heat level (kW/m^2) over a distance of 100 m. AS 3959 also prescribes deemed-to-satisfy construction responses that can resist the determined radiant heat level at a given distance from the fire. It is based on six Bushfire Attack Level (BAL) ratings: BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ.

A BAL contour plan has been prepared in accordance with Appendix Three of the Guidelines and Method 1 of AS 3959 to determine the BAL ratings likely to be applicable to future buildings (see **Figure 3**).

3.1 Assessment inputs

The BAL assessment was undertaken in accordance with Method 1 of AS 3959. A site visit was undertaken on 21st August 2023. Vegetation classifications and effective slope under vegetation have been detailed in **Figure 2**. A BAL contour plan (see **Figure 3**) has been prepared based on the developed condition of the site in accordance with Appendix Three of the Guidelines.

3.1.1 Assumptions

The BAL assessment is based on the following assumptions:

- **Designated FDI**: 80
- **Flame temperature**: 1090 K
- **Effective slope beneath classified vegetation**: flat/upslope and downslope >0-5° (**Figure 2**)
- Vegetation within the Karrakatta Cemetery appears to be well managed, despite the tree canopy present along the northwestern boundary of the war memorial and eastern boundary of the cemetery.
- Areas of low threat vegetation outside the site will continue to be managed and/or considered to achieve low threat (in accordance with Section 2.2.3.2 of AS 3959) based on the existing maintenance regimes, and/or as per the City of Nedlands Fire Break Notice.
- Classified vegetation that has been identified outside of the proponent's landholdings has been assumed to remain in its current state (unless stated otherwise) and will therefore continue to be a bushfire hazard to development within the site.
- Areas of grassland can include up to 10% foliage cover from shrubs and trees, per AS 3959.

3.1.2 Vegetation classification

Assessing bushfire hazards takes into account the vegetation classifications and exclusions within the site and surrounding area for a minimum of 100 m, in accordance with AS 3959 and the Guidelines. The assignment of vegetation classifications is based on an assessment of vegetation structure, which includes consideration of the various fuel layers of different vegetation types, as outlined in **Plate 3.**

All vegetation within 150m of the site was classified in accordance with Clause 2.2.3 of AS 3959. Each distinguishable vegetation plot is described in **Table 1** and shown in **Figure 2**. This classification is a conservative assessment of the vegetation.

Not all vegetation is a classified bushfire risk. Vegetation and ground surfaces that are exempt from classification as a potential hazard are identified as a low threat under Section 2.2.3.2 of AS 3959. Low threat vegetation includes the following:

a) *Vegetation of any type that is more than 100 m from the site.*
b) *Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified.*
c) *Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site, or each other or of other areas of vegetation being classified.*
d) *Strips of vegetation less than 20 m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified.*
e) *Non-vegetated areas, that is, areas permanently cleared of vegetation, including waterways, exposed beaches, roads, footpaths, buildings, and rocky outcrops.*
f) *Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load. This includes grassland managed in a minimal fuel condition, mangroves, and other saline wetlands, maintained lawns, golf courses (such as playing areas and fairways), maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens (and other non-curing crops), cultivated gardens, commercial nurseries, nature strips and wind breaks.*

Plate 3: The five fuel layers in a forest environment that could be associated with fire behaviour (Gould et al. 2007)

*Table 3: AS 3959 vegetation classification (refer to **Figure 2**)*

Photo ID:	1	Plot:	1	
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
Forest vegetation has been identified in the north-western portion of the site. This forest vegetation is comprised of mature trees growing to a height of approximately 6-10m in height, with a greater than 30% foliage cover, with a predominant under and mid-storey of shrubs and juvenile trees.				

Photo ID:	2	Plot:	1	
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
Forest vegetation has been identified in the north-western portion of the site. This forest vegetation is comprised of mature trees growing to a height of approximately 6-10m in height, with a greater than 30% foliage cover, with a predominant under and mid-storey of shrubs and juvenile trees.				

Photo ID:	3	Plot:	1	
Vegetation Classification or Exclusion Clause				
Class A - Forest				
Description / Justification for Classification				
Forest vegetation has been identified in the north-western portion of the site adjacent to the Perth War Cemetery. This forest vegetation is comprised of mature trees growing to a height of approximately 10-15m in height, with a greater than 30% foliage cover, with a predominant under and mid-storey of shrubs and juvenile trees.				

*Table 2: AS 3959 vegetation classification (refer to **Figure 2**) (continued)*

Photo ID:	**4**	Plot:	**2**
Vegetation Classification or Exclusion Clause			
Class G - Grassland			
Description / Justification for Classification			
Classified grassland vegetation has been identified in the surrounding areas to the site which is characterised by weedy pasture grass cover of varying density and height but generally over 100 mm in height. This vegetation is assumed to be removed in the post development scenario of the site, and would be Excluded - Low Threat, Public Open Space.			
Photo ID:	**5**	Plot:	**2**
Vegetation Classification or Exclusion Clause			
Class G - Grassland			
Description / Justification for Classification			
Classified grassland vegetation has been identified in the surrounding areas to the site which is characterised by weedy pasture grass cover of varying density and height but generally over 100 mm in height. This vegetation is assumed to be removed in the post development scenario of the site, and would be Excluded - Low Threat, Public Open Space			
Photo ID:	**6**	Plot:	**2**
Vegetation Classification or Exclusion Clause			
Class G - Grassland			
Description / Justification for Classification			
Classiofied grassland vegetation has been identified in the surrounding areas to the site which is characterised by weedy pasture grass cover of varying density and height but generally over 100 mm in height. This vegetation is assumed to be removed in the post development scenario of the site, and would be Excluded - Low Threat, Public Open Space.			

*Table 2: AS 3959 vegetation classification (refer to **Figure 2**) (continued)*

Photo ID:	**7**	Plot:	**3**
Vegetation Classification or Exclusion Clause			
Excluded - Low Threat Vegetation			
Description / Justification for Classification			
(e) Non vegetated areas that are permanently cleared of vegetation. Existing non-vegetated areas have been identified in the surrounding areas of the site that include roads and residential buildings.			

Photo ID:	**8**	Plot:	**3**
Vegetation Classification or Exclusion Clause			
Excluded - Low Threat Vegetation			
Description / Justification for Classification			
(e) Non vegetated areas that are permanently cleared of vegetation. Existing non-vegetated areas have been identified in the surrounding areas of the site that include roads and residential buildings.			

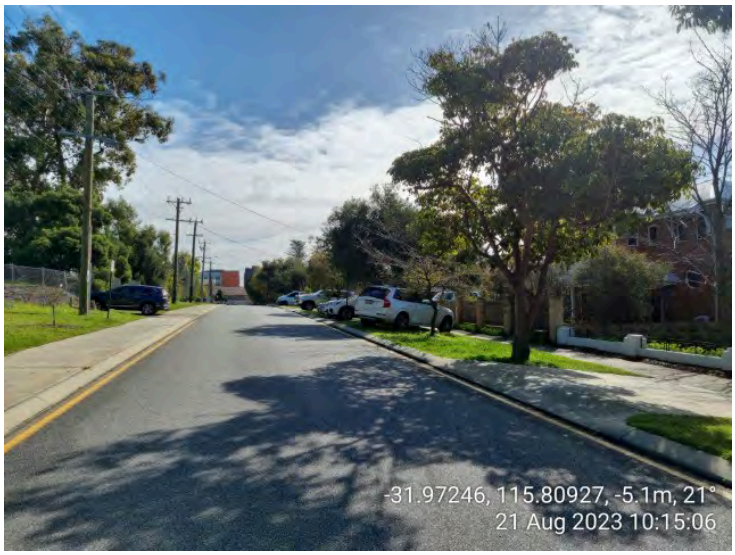

Photo ID:	**9**	Plot:	**3**
Vegetation Classification or Exclusion Clause			
Excluded - Low Threat Vegetation			
Description / Justification for Classification			
(e) Non vegetated areas that are permanently cleared of vegetation. Existing non-vegetated areas have been identified in the surrounding areas of the site that include roads and buildings including an aged care facility.			

*Table 2: AS 3959 vegetation classification (refer to **Figure 2**) (continued)*

Photo ID:	10	Plot:	4	
Vegetation Classification or Exclusion Clause				
Excluded - Low Threat Vegetation				
Description / Justification for Classification				
(e) Non vegetated areas that are permanently cleared of vegetation. Existing non-vegetated areas have been identified in the surrounding areas of the site that include roads and buildings including an aged care facility.				

Photo ID:	11	Plot:	4	
Vegetation Classification or Exclusion Clause				
Excluded - Low Threat Vegetation				
Description / Justification for Classification				
(e) Non vegetated areas that are permanently cleared of vegetation. Existing non-vegetated areas have been identified in the surrounding areas of the site that include roads and buildings including an aged care facility.				

Photo ID:	12	Plot:	5	
Vegetation Classification or Exclusion Clause				
Excluded - Low Threat Vegetation				
Description / Justification for Classification				
(f) Low threat vegetation has been identified within the Perth War Cemetery to the west of the site. This low threat vegetation is determined to be managed on a regular basis in perpetuity and is part of a reticulated area.				

3.1.3 Assessment outputs

The vegetation classification undertaken in **Section 3.1** is summarised in **Table 3.** BAL ratings are based on the minimum distance outlined in Table 2.5 of AS3959 and relevant distances are outlined in **Table 4**. The BAL ratings for the key built form elements of the proposed development are shown in **Figure 3.**

Table 4: AS 3959 vegetation classification and effective slope

Plot	Applied vegetation classification	Effective slope
1	Class A - Forest	Flat/upslope
2	Class G – Grassland	Flat/upslope
3	Excluded - Low Threat Vegetation	N/a
4	Excluded - Low Threat Vegetation	N/a
5	Excluded - Low Threat Vegetation	N/a

The BAL ratings for all lots within the site have been calculated based on the vegetation assessment. The BAL ratings applicable to the SP area have been demonstrated in the BAL Contour Plan (see **Figure 3**).

Table 5: Setback distances based on vegetation classification and effective slope and Table 2.5 of AS 3959, as determined by the method 1 BAL assessment.

Plot number (see Figure 2)	Vegetation classification (see Figure 2)	Effective slope (see Figure 2)	Distance to vegetation (from Table 2.5 of AS 3959)	BAL rating
Plot 1	Forest (Class A)	Flat/upslope	< 16 m	BAL-FZ
			16 - < 21 m	BAL-40
			21 - < 31 m	BAL-29
			31 - < 42 m	BAL-19
			42 - < 100 m	BAL-12.5
			> 100 m	BAL-LOW
Plot 2	Grassland (Class G)	Flat/upslope	< 6 m	BAL-FZ
			6 - < 8 m	BAL-40
			8 - < 12 m	BAL-29
			12 - < 17 m	BAL-19
			17 - < 50 m	BAL-12.5
			> 50 m	BAL-LOW
Plot 3	Excluded Low threat Vegetation and Non-vegetated areas	N/A	N/A	BAL-LOW
Plot 4	Excluded - Low threat Vegetation and Non-vegetated areas	N/A	N/A	BAL-LOW
Plot 5	Excluded - Low threat Vegetation and Non-vegetated areas	N/A	N/A	BAL-LOW

4 Identification of Bushfire Hazard Issues

From a bushfire hazard management perspective, based on the requirements of SPP 3.7 and the Guidelines, the key issues that are likely to require management and/or consideration as part of ongoing operation and any future development within the site include:

- Provision of appropriate separation distance from bushfire hazards to ensure a BAL rating of BAL-29 or less can be achieved at buildings.
- Ensuring that site access is designed, constructed, and managed to ensure safe access and egress for fire fighting vehicles and occupants.
- Ensuring that site landscaping is designed, implemented, and managed to achieve low threat standards to reduce the risk of fires starting onsite.
- Ensuring that the provision of water for firefighting is sufficient and accessible by firefighting services.

4.1 Permanent Hazards

Much of the site and the surrounding 150m area comprises of non-vegetated land and low threat vegetation. However, the site is located adjacent to areas of classified vegetation to the north-west. This vegetation is associated with landholdings, not under control and is therefore not able to be modified or managed by the landholder. Classified vegetation surrounding the site includes:

- Class A – Forest vegetation to the north Monash Avenue and along Smyth Road

4.2 Temporary/Manageable Hazards

As discussed in **Section 3.1.3**, it is reasonable to assume that the classified vegetation within the site (shown in **Figure 2**) can be managed to achieve a low threat classification (and therefore not a hazard), and is therefore considered a temporary/manageable hazard, this includes the areas of unmanaged grass. **Section 4** of this report provides guidance on mitigating these hazards to reduce the risk to the existing site and any future development within the site.

4.3 Vulnerable or High-Risk Land Use

The definition of vulnerable land use is where occupants are less than able to respond in an emergency. The site will accommodate multiple buildings with an internal road network. As the area will be converted into a residential style community, many occupants would be familiar with the site and surrounding areas. Due to the Medical Facilities in the area, if there were to be vulnerable land use, this would be addressed at the development approval stage for those particular land uses.

5 Assessment Against the Bushfire Protection Criteria

This BMP provides an outline of the mitigation strategies that will ensure that as subdivision and associated development progresses within the site, an acceptable solution can be adopted for each of the bushfire protection criteria detailed within Appendix Four of the Guidelines. The applicable bushfire protection criteria identified in the Guidelines and addressed as part of this BMP are:

- Element 1: Location of the development
- Element 2: Siting and design of the development
- Element 3: Vehicular access
- Element 4: Water supply.

As part of future development, it is likely that an 'acceptable solution' will be able to address the intent of all four bushfire protection criteria as part of future subdivision of the site. A summary of how this can be achieved and an associated compliance statement for each has been provided in **Table 5.**

Table 6: Assessment against the bushfire protection criteria from the Guidelines

Bushfire protection criteria	Proposed bushfire management strategies
Element 1: Location	
A1.1 Development location	Future habitable buildings within the site will be able to achieve a BAL rating of BAL-29 or less, based on the outcomes of the BAL contour which indicates that the proposed road network and lot sizes (internal lot setbacks) can accommodate the required separation.
Element 2: Siting and design	
A2.1 Asset Protection Zone	One of the most important bushfire protection measures influencing the safety of people and property is to create an Asset Protection Zone (APZ) around buildings. The APZ is a low fuel area immediately surrounding a building, and can include non-flammable features such as irrigated landscapes, gardens, driveways, public roads and managed public open space. The vegetation classification (**Figure 2**) identifies a bushfire hazard to the north-west of the site, associated with areas of Forest. Overall, the acceptable solution can be satisfied, with the majority of the site able to achieve a BAL rating of BAL-LOW, given the separation from bushfire hazards. Where BAL-29 is exceeded, notably in the north-western portion of the site, future lots are suitably sized to ensure any future development will be able to be located within areas within the lot that are not exposed to a BAL rating exceeding BAL-29.
Element 3: Vehicular access	
A3.1 Public roads	Existing surrounding public roads and all new roads within the site can and will comply with the minimum standards outlined in Appendix Four of the Guidelines (WAPC and DFES 2017), which includes a minimum 6 m-wide trafficable surface (or as agreed with the City of Nedlands).
A3.2a Two access routes.	The proposed development layout, provided in **Appendix A**, provides for an interconnected road network, which connects to the existing public road network, namely Monash Avenue to the north of the site heading east and Smyth Road providing an egress point in two directions to the north and south of the site.

Table 5: Assessment against the bushfire protection criteria (continued)

Bushfire protection criteria	Proposed bushfire management strategies
Element 3: Vehicular access (continued)	
A3.2b Emergency access way (EAW)	Multiple internal access points are planned via inner roads within the development connecting to the surrounding, existing public road network. These access points will allow for emergency access in the event of a bushfire emergency, allowing alternative access from another location. The location of the egress points can be seen via different road access shown in **Appendix A.**
A3.3 Through-roads	Internal roads within the development connecting to the surrounding, existing public road network are planned as part of the development.
A3.4a Perimeter roads	Not applicable
A3.4b Fire service access route	Not applicable
A3.5 Battle-axe access legs	Not applicable. No battle-axe properties are proposed as part of the development.
A3.6 Private driveway longer than 70 metres	Not applicable. No Private driveways longer than 70m are proposed as part of this development.
Element 4: Water	
A4.1 Reticulated areas	Development is located within an Emergency Services Levy (ESL) Category 1 area, which indicates that bushfire events are responded to by Career Fire and Rescue Service Stations, and the State Emergency Service. Fire response services require ready access to an adequate water supply during bushfire emergencies. The site will connect with a reticulated water supply and will include fire hydrants installed by the developer to meet the specifications of Water Corporation (Design Standard DS 63) and DFES. In non-residential areas, hydrants should be installed prior to tenants occupying future lots within the site. Existing water infrastructure, including water mains and hydrants, are currently in place**.** If development is proposed to occur in a staged manner, water infrastructure will be connected to any lots being developed, to ensure water is available for emergency services in the event of a bushfire prior to the entire site being developed.
A4.2 Provision of water for fire fighting purposes	The Water Corporation will be responsible for all hydrant maintenance and repairs.

Plate 4: Excerpt of Table 6 from The Guidelines

Table 6: Vehicular access technical requirements

TECHNICAL REQUIREMENTS	1 Public roads	2 Emergency access way[1]	3 Fire service access route[1]	4 Battle-axe and private driveways[2]
Minimum trafficable surface (metres)	In accordance with A3.1	6	6	4
Minimum horizontal clearance (metres)	N/A	6	6	6
Minimum vertical clearance (metres)	4.5			
Minimum weight capacity (tonnes)	15			
Maximum grade unsealed road[3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum grade sealed road[3]		1:7 (14.3%)		
Maximum average grade sealed road		1:10 (10%)		
Minimum inner radius of road curves (metres)		8.5		

Notes:

[1] To have crossfalls between 3 and 6%.

[2] Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

[3] Dips must have no more than a 1 in 8 (12.5% -7.1 degree) entry and exit angle.

5.1 Additional management strategies

5.1.1 Future approval considerations

The BAL assessment is a conservative and cautious assessment of the potential bushfire risk posed to future habitable buildings within the site based on the proposed management of vegetation and assumptions outlined in **Section 3**.

5.1.2 Landscape management

5.1.2.1 Within the site

Public open space

It has been assumed that all vegetation on the site will be removed as part of future development. Any future landscaping that may occur on the site should be designed to achieve and be consistent with low threat vegetation according to Section 2.2.3.2 of AS 3959 and the City's Firebreak Notice.

If development occurs in a staged manner, vegetation within 100 m of the lots to be developed (located within the site boundary) will be cleared to ensure that future development will not be impacted by vegetation within the site. This clearing can occur in accordance with the approved clearing permit that is applicable to the site.

Within the proponent's landholdings

Classified grassland vegetation within Lot 103 to the south of the site will be managed to a low threat standard, to ensure that BAL ratings do not impact the site. This will likely include:

- Clearing of vegetation.
- Low pruning of trees (branches below 2 m in height removed where appropriate).
- Regularly mowing/slashing of grass to less than 100mm in height.

5.1.2.2 Surrounding the site

Within private landholdings

The private landholdings surrounding the site are assumed to be managed by the applicable landowners in accordance with the City's Firebreak Notice in perpetuity and/or in accordance with existing maintenance regimes. All other vegetation will remain in its existing condition for the foreseeable future.

5.1.3 City of Nedlands Firebreak Notice

The City of Nedlands releases a Firebreak Notice on an annual basis to provide a framework for bushfire management within the City. The City of Nedlands is able to enforce this notice in accordance with Section 33 of the *Bush Fires Act 1954*. In addition, Section 33 1(b) also provides the City with additional power to direct landowners to undertake works to remedy conditions conducive to the outbreak or spread of bushfire, until subdivision and development are progressed within the site, the proponent will be required to comply with the Firebreak Notice (or as agreed with the City of Nedlands).

5.1.4 Public education and preparedness

Community bushfire safety is a shared responsibility between individuals, the community, government, and fire agencies. DFES has an extensive Community Bushfire Education Program including a range of publications, a website, and Bushfire Ready Groups. The DFES website (https://www.dfes.wa.gov.au/bushfire/prepare/) provides a range of materials to help the community prepare for and survive the bushfire season.

The City of Nedlands provides bushfire safety advice to residents available from their website https://www.nedlands.wa.gov.au/city-services/emergency-management.aspx. Professional, qualified consultants also offer bushfire safety advice and relevant services to residents and businesses in high-risk areas in addition that that provided in this BMP.

In the case of a bushfire in the area, advice would be provided to residents by DFES, and/or the City of Nedlands on any specific recommendations with regard to responding to the bushfire, including evacuation if required. However, it is highly recommended that future residents make themselves aware of their responsibilities with regard to preparing for and responding to a potential bushfire that may impact them, their family and property, regardless of the BAL rating their properties are subject to.

6 Responsibilities for Implementation and Management of Bushfire Measures

Table 6 outlines the developer responsibilities to be undertaken as part of future development, future responsibilities of the proponent (developer), future landowners and the City of Nedlands associated with implementing this BMP with reference to ongoing bushfire risk mitigation measures for existing land uses (through compliance with City of Nedlands Firebreak or Fuel Hazard Reduction Notice) or future mitigation measures to be accommodated as part of the development process but not necessary for title clearances. These responsibilities will need to be considered as part of the subsequent development and implementation process. These items will be certified by a bushfire consultant prior to any clearance necessary if any.

Table 7: Responsibilities for the implementation of this BMP prior to development, and future management.

Proponent – Prior to Issue of Certificates of Title for New Lots	
No.	**Implementation action**
1	Install the public roads to the standards outlined in Appendix Four of the Guidelines or as agreed with the City of Nedlands. Public road reserves should be designed and maintained to achieve low threat in accordance with Section 2.2.3.2 of AS 3959.
2	Remove classified vegetation within 100 m (or 50 m where only grassland is present) of lots to be titled. (if any)
3	Reticulated water supply and hydrants are to be installed as per standard Water Corporation requirements, unless otherwise agreed. (hydrants already in place)
4	Where relevant, certify BAL ratings for the lots designated bushfire prone within the *Map of Bush Fire Prone Areas* at the time lot titles are created, based on the BAL Contour Plan **(see Figure 3)** and/or in accordance with a revised BAL assessment if the vegetation classifications are different to those identified within this BMP (in particular if vegetation classifications change as a result of the detailed landscape design and assumptions regarding the retained vegetation). The certified BAL ratings can then be submitted to the City to support future building licenses.
5	Staged Development: • If vegetation within 100m of lots is not sufficiently managed to achieve the BALs indicated in this BMP at the time titles are created, the proponent must provide assurance to the City (for example, via a Letter of Undertaking) that the vegetation will achieve the assumed post-development vegetation condition prior to the submission of building licenses or prepare a revised assessment demonstrating BAL-29 can be achieved at all future habitable buildings. • Two access routes must be provided at all times. • If Emergency Access Way's (EAWs) are required temporarily to provide two access routes during staging, they must be provided in accordance with the minimum technical requirements of Table 6 of the Guidelines.
6	Where possible within the site boundary, remove classified vegetation within 100 m of the retained vegetation within the westernmost POS prior to the titling of lots.

Table 6: Responsibilities for implementation of this BMP prior to titles, development, and future management (continued)

Proponent – Prior to Sale or Occupancy	
No.	**Implementation and Management actions**
1	The areas of POS within the site should be designed, implemented, and maintained (for the period agreed with the City of Nedlands) to achieve a low threat standard in accordance with Section 2.2.3.2 of AS 3959. This will include modifying existing vegetation through the removal/thinning of vegetation and where appropriate retention of mature trees (where necessary).
2	A copy of the BMP and BAL certification/assessment to be available to each lot owner within designated bushfire prone areas.
City of Nedlands	
No.	**Management action**
1	Monitoring vegetation fuel loads in private landholdings against the requirements of the City's Firebreak and Hazard Reduction Notice (and/or existing maintenance regimes outlined in this BMP) and liaising with relevant stakeholders to maintain fuel loads at minimal/appropriate fuel levels, in accordance with the City's responsibilities under the *Bush Fires Act 1954*.
Property owner/occupier	
No.	**Management action**
1	Where within a bushfire prone area, ensuring construction of new dwelling/s complies with AS 3959, as per the applicable BAL rating, determined as part of this BMP or through a separate BAL assessment. The BAL rating for a new dwelling should not exceed BAL-29. This will only be applicable if a future BAL assessment identifies that vegetation management has not been undertaken within 100m of residential lots and future dwellings are located in an area exceeding BAL-LOW.
3	Ensuring that their property complies with the City of Nedlands Firebreak and Fuel Hazard Reduction Notices as published and in accordance with directions given by the local government. This includes maintaining the entire lot to a low threat standard until developed.
4	Ensuring fire hydrants are accessible at all times.
Water Corporation	
No.	**Management action**
1	The Water Corporation is responsible for the ongoing maintenance and repair of water hydrants.

7 Applicant Declaration

7.1 Accreditation

This assessment report has been prepared by Emerge Associates who have a number of team members who have undertaken Bushfire Planning and Design (BPAD) Level 1 and Level 2 training and are Fire Protection Association of Australia (FPAA) accredited practitioners. Emerge Associates have been providing bushfire risk management advice for more than 10 years, undertaking detailed bushfire assessments (and associated approvals) to support the land use development industry.

Anthony Rowe is a Fire Protection Association of Australia (FPAA) Level 3 Bushfire Planning and Design (BPAD) accredited practitioner (BPAD no. 36690) with over nine years' experience and is supported by team members who have undertaken BPAD Level 1 and Level 2 training and are in the processing of gaining formal accreditation.

7.2 Declaration

I declare that the information provided is true and correct to the best of my knowledge.

Signature:

Name: Anthony Rowe

Company: Emerge Associates

Date: 09/10/2023

BPAD Accreditation: Level 3 BPAD no. 36690

8 References

8.1 General references

The references listed below have been considered as part of preparing this document.

Department of Planning, Lands and Heritage, and Western Australian Planning Commission, (DPLH & WAPC) 2021, *Guidelines for Planning in Bushfire Prone Areas Version 1.4*, Perth, Western Australia.

Department of Water and Environmental Regulation (DWER) 2021, *Water Register*, Perth, <https://maps.water.wa.gov.au/#/webmap/register>.

Gould, J., McCaw, W., Cheney, N., Ellis, P. and Matthews, S. 2007, *Field Guide: Fuel Assessment and Fire Behaviour Prediction in Dry Eucalypt Forest*, CSIRO and Department of Environment and Conservation, Perth, Western Australia.

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Western Australian Planning Commission (WAPC) 2015, *State Planning Policy 3.7 Planning in Bushfire Prone Areas*, Perth.

8.2 Online references

The online resources that have been utilised in the preparation of this report are referenced in **Table 4: Element 4**, with access date information provided in **Table R-1**.

Table R 1 Access dates for online references

Reference	Date accessed	Website or dataset name
(DWER 2023)	**28 August 2023**	**Water Register**

Figures

Figure 1: Site Location and Topographic Contours

Figure 2: AS 3959 Vegetation Classifications and Effective Slope

Figure 3: BAL Contour Plan

Figure 4: Spatial Representation of Bushfire Management Strategies

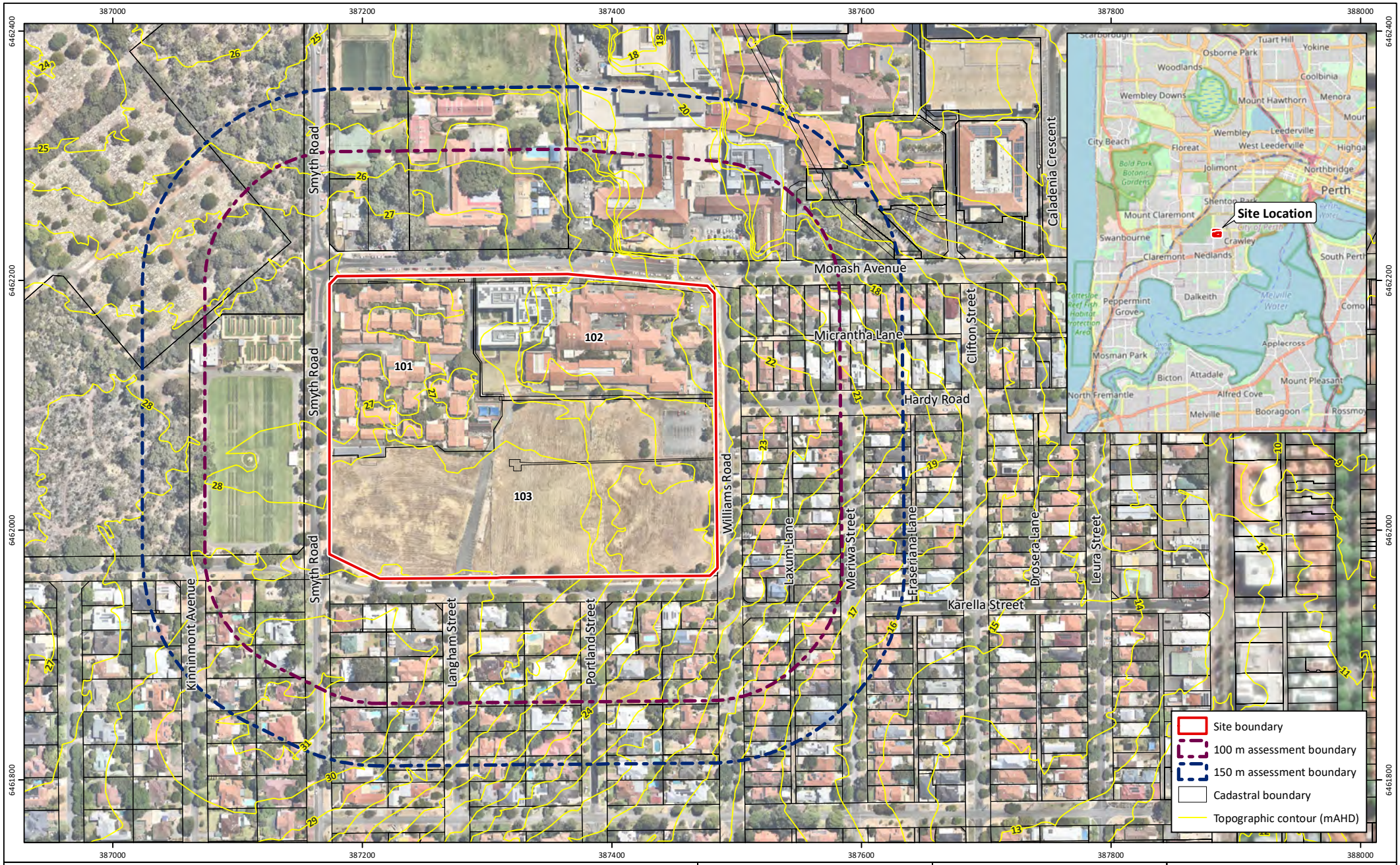

Figure 1: Site Location and Topographic Contours

Project:	Bushfire Management Plan (BMP) Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands
Client:	Hesperia

Plan Number:
EP23-028(04)--F16

Drawn:	GAR
Date:	25/08/2023
Checked:	PVS
Approved:	JDH
Date:	05/09/2023

N

0 50 100 150
Metres

Scale: 1:4,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

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©Landgate (2023). Nearmap Imagery date: 17/04/2023

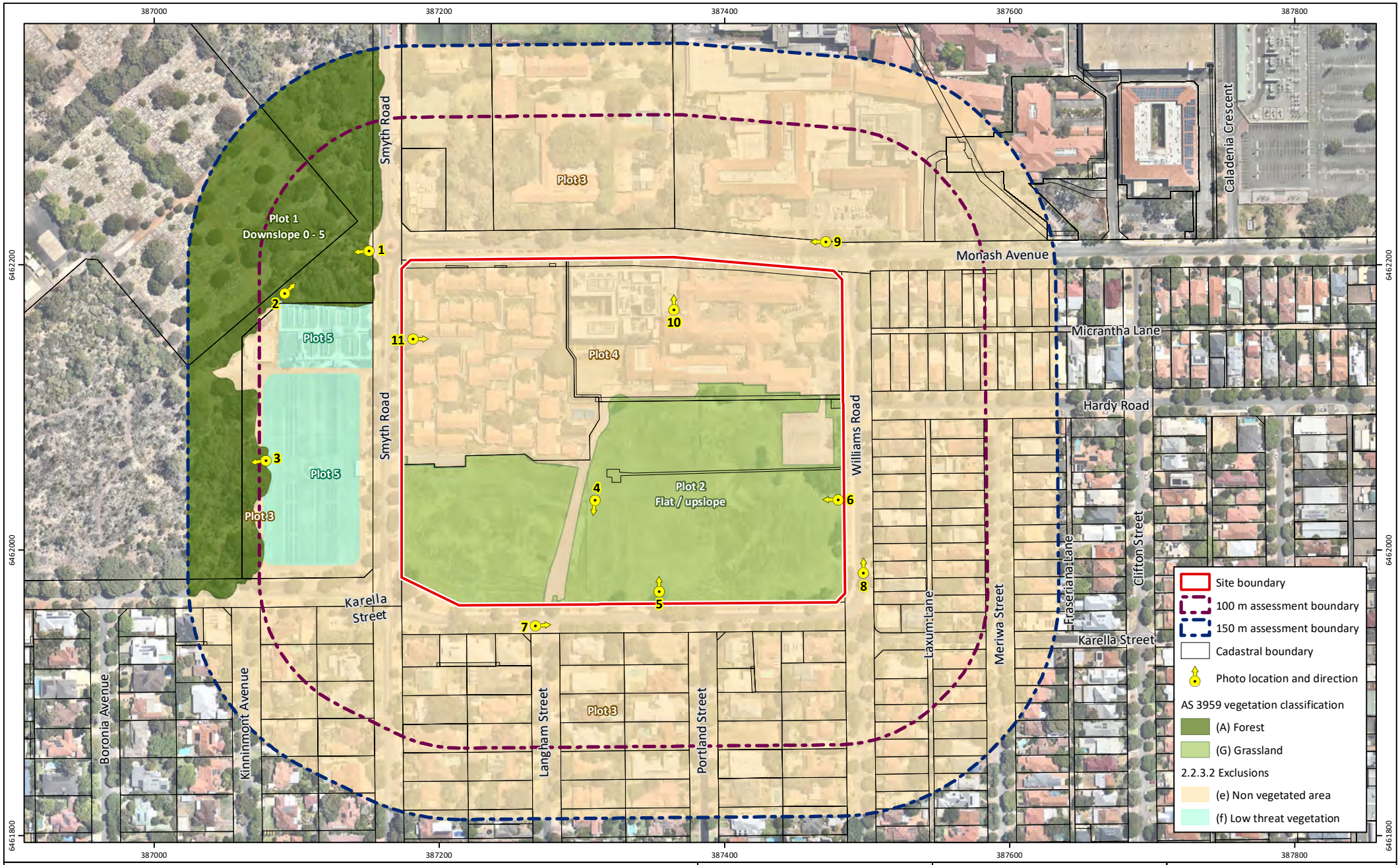

Figure 2: AS 3959 Vegetation Classification and Effective Slope

Project: Bushfire Management Plan (BMP)
Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands
Client: Hesperia

Plan Number:
EP23-028(04)--F17
Drawn: GAR
Date: 25/08/2023
Checked: PVS
Approved: JDH
Date: 05/09/2023

N

0 40 80 120
Metres
Scale: 1:3,500@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used
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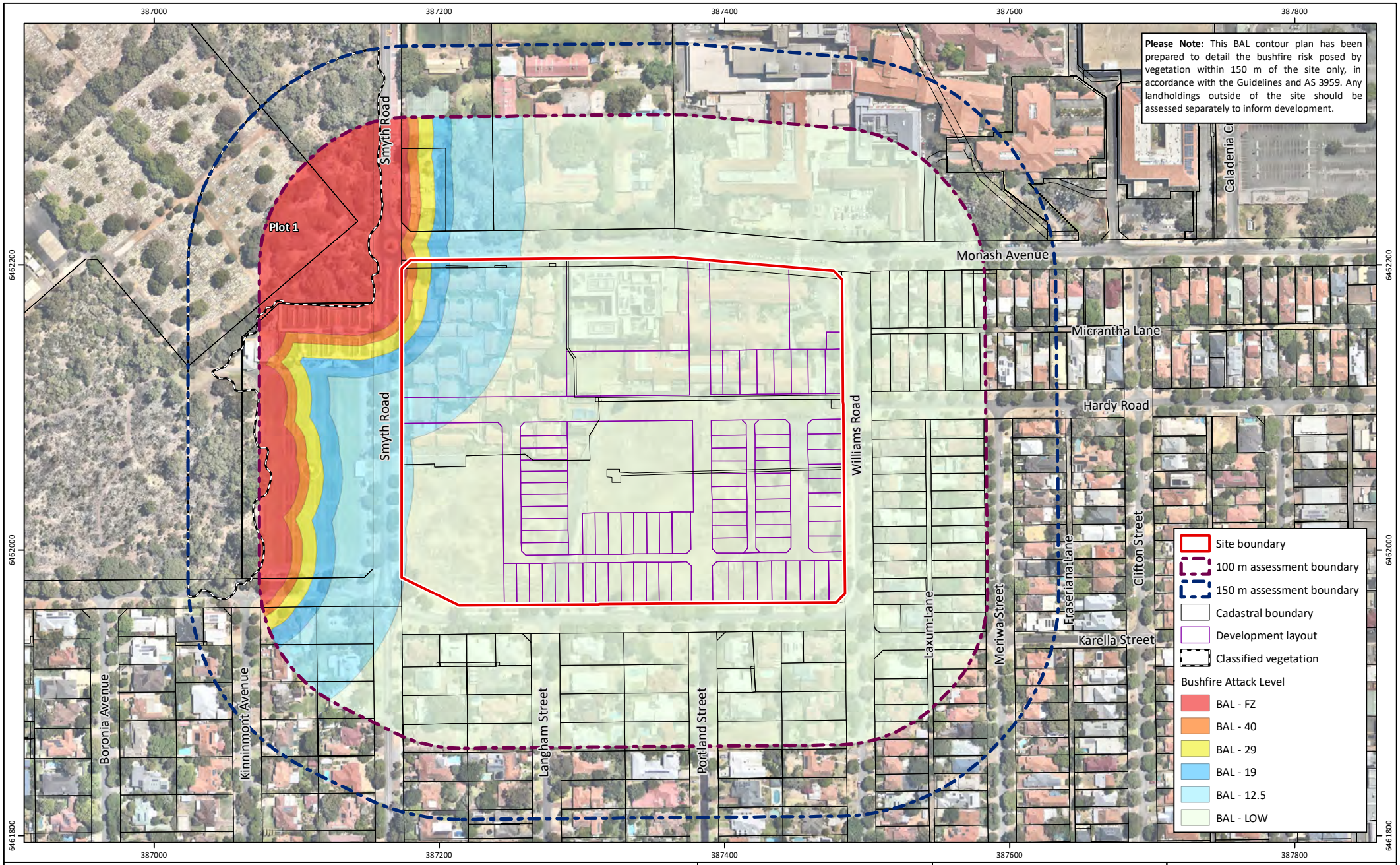

Figure 3: Post Development Bushfire Attack Level Contour Plan

Project: Bushfire Management Plan (BMP)
Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands
Client: Hesperia

Plan Number:
EP23-028(04)--F20a
Drawn: WJC
Date: 09/10/2023
Checked: PVS
Approved: JDH
Date: 09/10/2023

N

0 40 80 120
Metres
Scale: 1:3,500@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES

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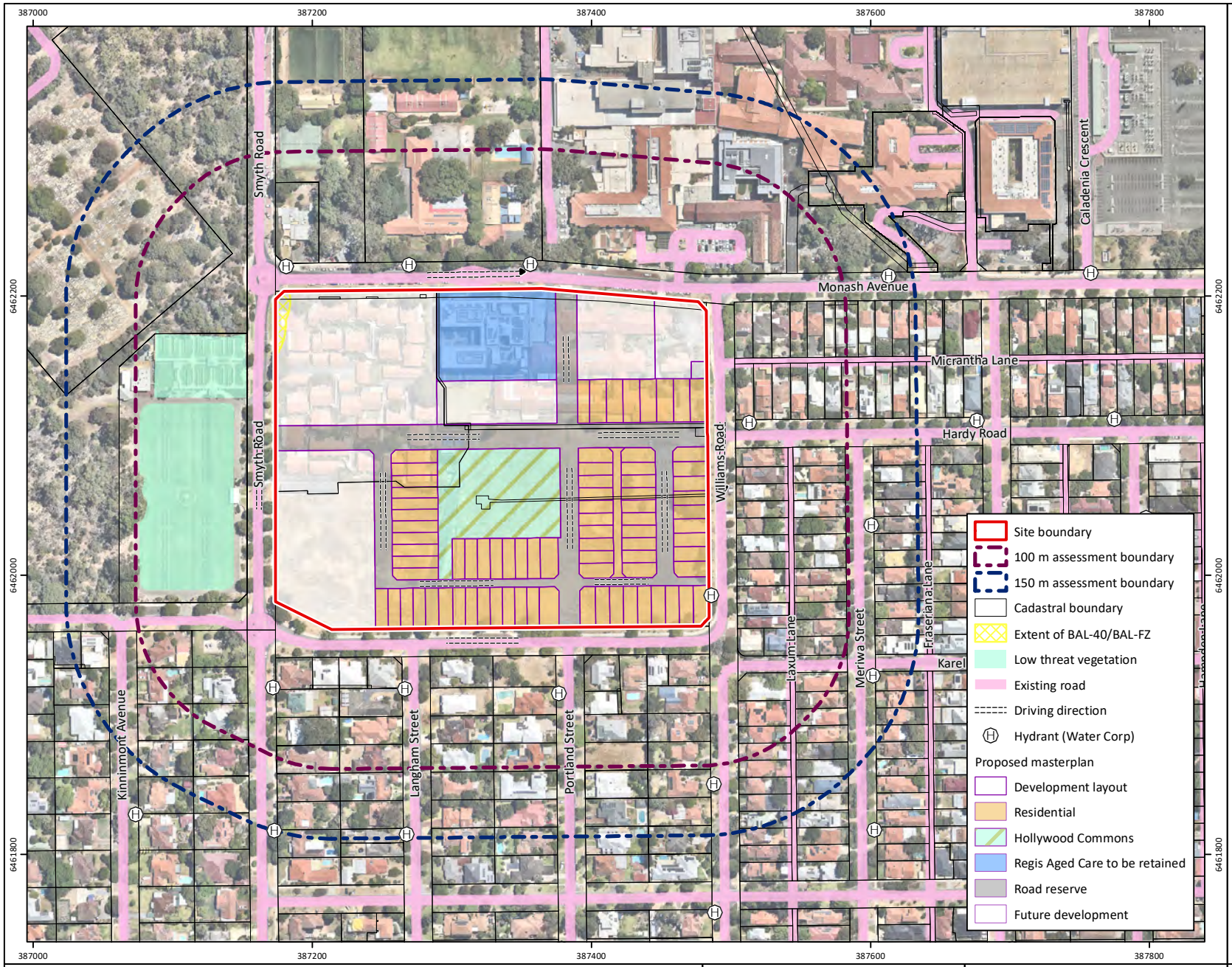
©Landgate (2023). Nearmap Imagery date: 26/02/2023



Development Location
Habitable buildings within the site will be able to achieve a BAL-29 or less, based on the BAL contour and that the proposed roads and lot sizes can accommodate the required separation. (subject to the removal of classified vegetation within the site).

Asset Protection Zone
Once developed, the maintenance of the site must be upheld in a low threat condition in perpetuity.

Vehicle access
Existing surrounding and new roads in the site will comply with the standards outlined in Appendix Four of the Guidelines, which includes a minimum 6 m-wide trafficable surface. The proposed development layout provides for an interconnected road network, which connects to the existing public roads. Multiple internal access points will allow for emergency access in the event of a bushfire emergency.

POS maintenance
All public open spaces, grassed areas and vegetation along roads such as trees, will be maintained in a Low Threat Classification in perpetuity, including trimmed grass to less than 100mm and pruning of trees branches below 2m.

Water supply
Reticulated fire hydrants exist within the adjacent road reserve. A connection to the reticulated scheme water supply is to be provided to the site.

Figure 4: Spatial Representation of Bushfire Management Strategies

Project: Bushfire Management Plan (BMP)
Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands
Client: Hesperia

Plan Number:
EP23-028(04)--F19a
Drawn: WJC
Date: 09/10/2023
Checked: PVS
Approved: JDH
Date: 09/10/2023

N

0 50 100 150
Metres
Scale: 1:4,000@A4
GDA2020 MGA Zone 50

emerge ASSOCIATES

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Appendix A

Structure Plan

Block	Area	% site area
A	2882.0	
B	2320.0	
C	5133.8	
D	2688.331	
E	3822.1	
F	2199.7	
G	3065.5	
H		
I	11141.4	
J	5606.6	
K	2674.1	
L	3366.9	
M	1931.3	
N	1931.3	
Total	48763.2	65.8%
Park	5937.3	8.0%
Street	13097.2	17.7%
Utility	135.2	

DESIGNER

- Use figured dimensions only
- Comply with relevant Australian Standards
- Comply with relevant Authorities' requirements

HESPERIA

Level 3/338 Barker Road Subiaco WA
PO Box 782 Subiaco WA 6904

N

REV	DATE	AMENDMENT
A	26/9/23	Issue for consultants

Notes
This scheme has been prepared for feasibility purposes only.
The scheme depicts a potential solution - subject to future statutory approval.

PROJECT
Nedlands Regis
118-120 Monash Road, Nedlands

CLIENT
for Hesperia

DRAWING TITLE
Hesperia Master Plan

JOB NO	DRAWN	SCALE	DRAWING NO.
2313		1.1500 at A3	**H1**
DATE	CHECKED	PLOT DATE	REVISION
		26/9/23	**A**

Appendix 3: Engineering Services Report

(Tabec)

TABEC
Civil Engineering Consultants

LOTS 101, 102 AND 103 MONASH AVENUE NEDLANDS

Engineering Infrastructure Report

October 2023

CLIENT: HESPERIA

PROJECT: LOTS 101, 102 & 103 MONASH AVENUE, NEDLANDS, WA

TITLE: LOTS 101, 102 & 103 MONASH AVENUE, NEDLANDS:

ENGINEERING INFRASTRUCTURE REPORT

DOCUMENT REVIEW				
Revision	Date Issued	Written By	Reviewed By	Approved By
1	07/04/2023	JBSMALL	JBSMALL	CCBITMEAD
2	22/08/2023	JBSMALL	JBSMALL	CCBITMEAD
3	02/10/2023	JBSMALL	JBSMALL	CCBITMEAD
4	24/10/2023	JBSMALL	JBSMALL	CCBITMEAD

Note:

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1 INTRODUCTION

This report has been prepared by TABEC to provide servicing and infrastructure advice for Lots 101, 102 and 103 on Monash Avenue.

This report is based on the civil engineering aspects of urban related land uses and summarises the availability of existing infrastructure assets in proximity to the landholding and the potential engineering infrastructure requirements to support urban development within the study area.

The report has been prepared in response to a Hill Thalis concept subdivision plan over the site and is based on information documented from the field investigations and advice from other specialist consultants where appropriate. The report also includes desktop sourced information and experience in similar ground conditions for infill development projects in the Perth metropolitan area. The information contained is therefore subject to update as further detail is resolved through future design phases.

The information is current as of October 2023. Figure 1 illustrates the location on the aerial image.

Figure 1 – Site location and aerial image (MNG Access)

2 Landform / Topography

The existing surface elevations shown as contour banding included in Figure 3. The site, encompassing Lots 101, 102 and 103 is approximately 310m in an east-west dimension and about 245m north-south.

The image shows little variation in existing contours on the western portion of the site, with contours generally between 28 - 29mAHD. There is greater level variation toward the east, where levels fall toward the north-east to a low point near the intersection of Monash Avenue and Williams Road where the ground levels are about 23mAHD. There is therefore approximately 6m of fall from the southwest corner of Lot 103 at an average grade across the whole site of 1.7%.

A survey has been provided by MNG, which includes a detailed survey of Lot 103 and surrounding roads, with spot heights only within lots 101 and 102 given the existing buildings which currently occupy the site.

Figure 2 – Master Plan Subdivision (Hill Thalis)

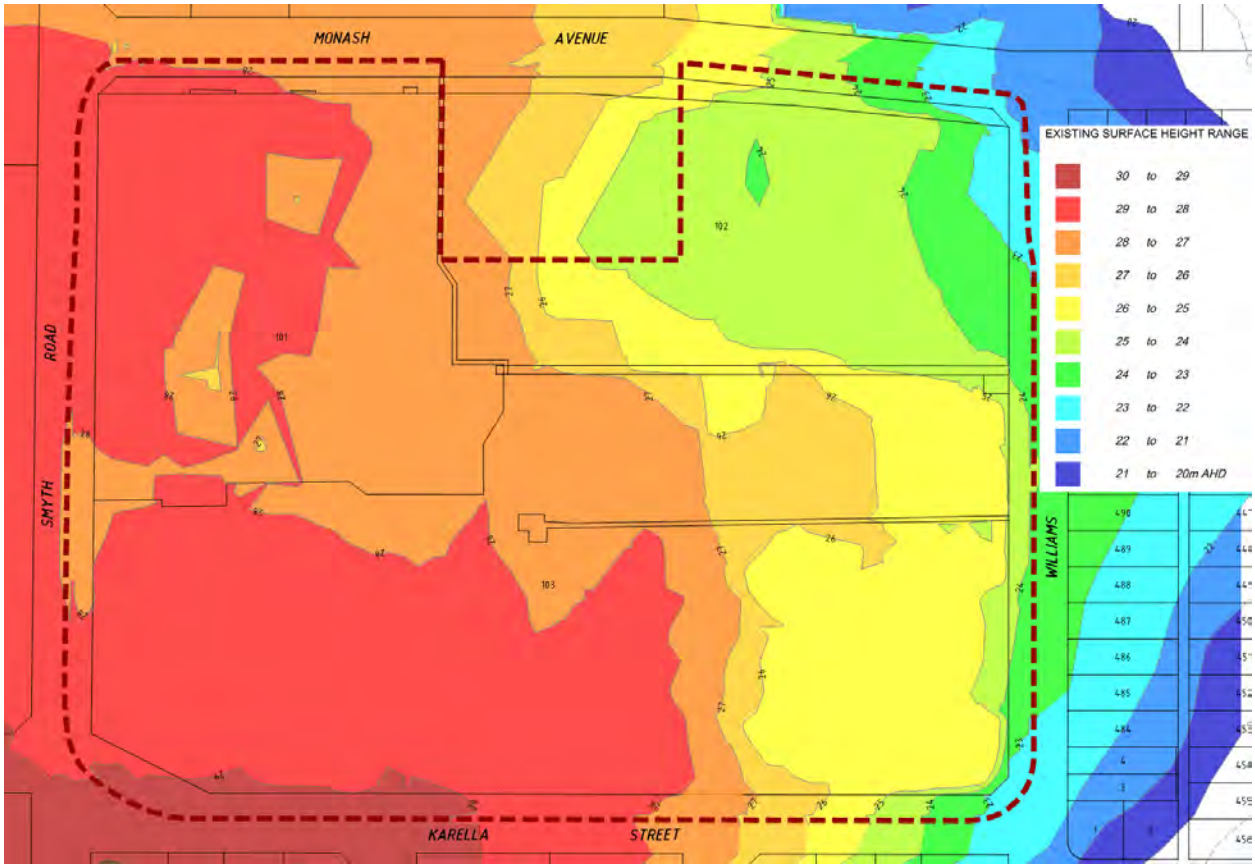

Figure 3 – Existing surface levels and contour banding (TABEC)

2.1 Groundwater and Acid Sulphate Soils

The historical maximum groundwater contours are published by Department of Water and Environmental Regulation (DWER) and are shown in Figure 4 below. The maximum groundwater is anticipated to be below 5mAHD. Given the lowest existing natural ground level onsite is 23mAHD, there is at least about 18m of clearance to the maximum groundwater level.

Excavations for services installation and siteworks will therefore not intersect the groundwater table.

Figure 4 – Historical Maximum Groundwater Contours (DWER)

Figure 5 – Acid sulfate soil risk map (MNG Access)

In addition, the site is also mapped as having no known risk of encountering potential acid sulphate soils. As indicated by Figure 5, higher risk areas are associated with areas to the east closer toward the Swan River and lower lying areas. Acid Sulfate Soils Dewatering Management Plans are therefore not anticipated.

3 SITEWORKS

In-order to prepare the site for the proposed urban development, substantial siteworks are not anticipated to be required, following the demolition of various buildings and removal of pavements. Some topsoil will exist in places though given previous clearing works it would be relatively limited.

There are a variety of trees across the site, and opportunities to retain trees, where appropriate and possible may be sought, pending the intended built form outcome. This can be investigated in future design phases.

Douglas Partners geotechnics have undertaken site investigations and confirmed the following materials were identified from 15 boreholes and 17 cone penetration tests (CPT). The location of site testing completed is demonstrated in Figure 6.

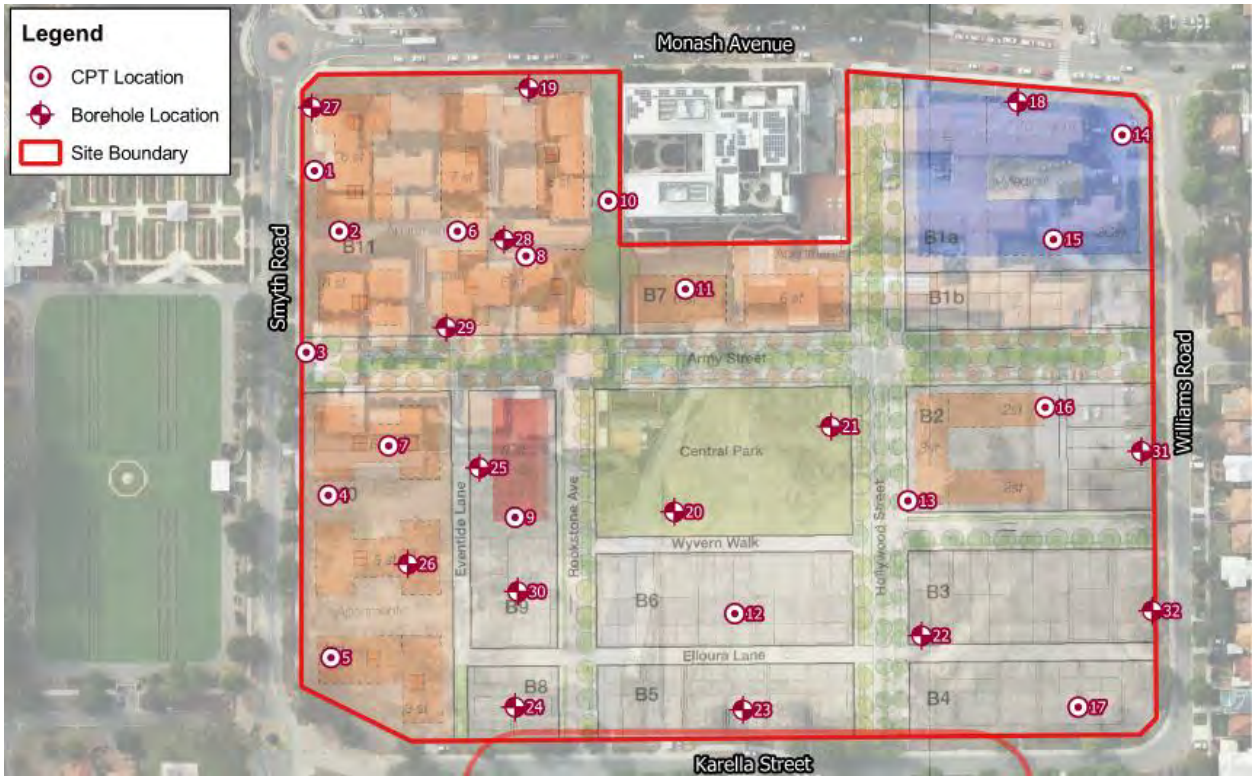

Figure 6 – Location of geotechnical testing (Douglas Partners)

- Fill / Sand, Gravelly Sand and Sandy Gravel: surficial granular fill materials encountered from surface to depths between 0.15 m and 2.0 m at all borehole locations. The fill within the boreholes was generally in a medium dense condition. Rootlets were generally encountered to a depth of 0.1 m at all borehole locations.
- Sand: yellow-brown becoming orange-brown sand, trace silt underlying the fill to a termination depth of 2.5 m within the boreholes and to depths between 6 m and 18 m within the CPT. The surficial sand within the CPT was generally loose and loose to medium dense to depths of between 2m and 6m before becoming medium dense. Some loose sand was also encountered above the

inferred limestone at several locations. Very loose sand was encountered between 11m and 16.5m at a location in Lot 101.

- Inferred limestone: refusal at a majority of CPT locations indicates the presence of limestone. The investigation method precludes an assessment on the type or strength of this rock.

3.1 Demolition

Currently on Lot 101 is the existing Hollywood Village, while Lot 102 contains the Regis Nedlands Day Therapy and Weston aged care facilities. The proposed development plans demonstrate that both facilities will eventually be demolished.

The existing Regis aged care facility on Lot 102 that was recently constructed in about 2017 is intended to remain. The removal of other minor pavements, parking areas and fencing will be included with the siteworks.

4 EARTHWORKS AND RETAINING WALLS

Geotechnical advice has been provided by Douglas Partners, based on the field-testing which states:

- Surficial loose and loose to medium dense sandy soils were encountered at all CPT locations to depths between 2 m and 6 m. It is expected that standard earthwork preparation and heavy rolling will be suitable to prepare areas of the site where the proposed development includes low rise buildings or pavement. Depending on the loads and design settlement criteria for the proposed multi-storey apartment buildings, it is possible that there may be the need for alternative forms of ground improvement or piled foundations.
- Other loose soils were encountered at depth, just above inferred limestone, which is of little geotechnical concern at this stage and is typically considered to be the occurrence of loose sand between limestone pinnacle formations.
- Some very loose sand was encountered from 11m to 16.5m depth at CPT1. This feature would warrant some further investigation to assess the possible risk of a deep karst/void feature and to determine the lateral extent of the very loose soils. Further investigation (following demolition) would likely include an increased frequency of CPTs, deep geotechnical boreholes and geophysical survey.

Given the above, it is possible that over-excavation in some areas to compact loose material be required to support proposed development. Earthworks onsite shall be completed under the guidance of a geotechnical engineer who will also confirm anticipated site classifications based on AS2870-2011.

A concept 3D earthworks plan has been prepared over Lots 101, 102 and 103, consistent with the Hill Thalis plan. The proposed design model ties-in with existing levels maintained on all boundaries.

Terracing of lots and construction of retaining walls to follow natural terrain and deliver a development form is proposed. Terracing can be refined at detail design stages together with architectural input for coordinated outcomes to be achieved. Retaining walls will be required to manage the various level differences and these shall also have due regard to the intended built form.

The concept cut and fill image is shown in Figure 8. This demonstrates that up to about 2m of cut may be undertaken in the central area, as roads grade from Smyth Road down toward Williams Road. Geotechnical advice should be sought to confirm the nature of material at this depth of likely excavation.

A cut-to-fill balance is proposed based on the concept earthworks plan prepared to date.

Figure 7 – Concept earthworks design with finished contours (TABEC)

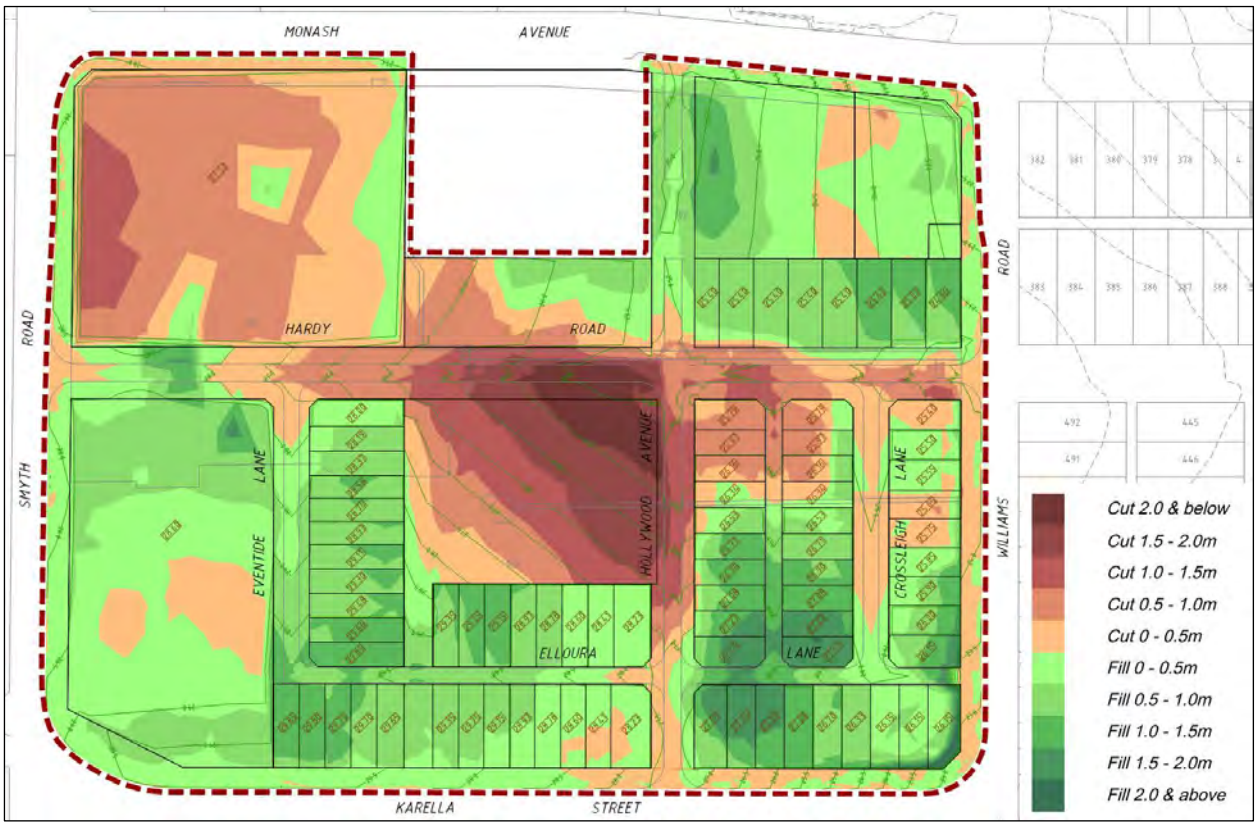

Figure 8 – Concept 3D earthworks cut to fill plan (TABEC)

5 ROADS AND TRAFFIC

5.1 Existing Road Network

All roads surrounding the site are within existing 20m wide road reserves and include a variety of treatments, in response to the different land uses surrounding the site.

Monash Avenue and Smyth Road appear to contain 7.4m wide road pavements, though Smyth Road contains additional widening with a central median at the northern end with pedestrian crossing refuge. There are existing roundabouts at both the northern and southern boundaries along Smyth Road. Monash Avenue contains traffic calming given there is an existing child-care site, primary school and hospital to the immediate north of the site. Both Williams Road and Karella Street appear to have 6.0m wide road pavements. There are existing footpaths on all boundaries of the site.

It is noted that Karella Street does not connect through to the east of Williams Road and that discontinuous section may affect traffic impacts on the existing road network.

Upgrades to existing roads surrounding the site are not anticipated as a requirement of this development.

5.2 Proposed Roads

Given the additional dwellings proposed to be delivered on this site, a Traffic Impact Assessment to inform the due diligence has been prepared by Flyt.

Hardy Road (east-west) is proposed to be constructed with an 18m road reserve and Hollywood Street (north-south) is proposed to be up to 15m in width, though a boulevard treatment with a 3.0m wide median including a swale may be proposed for Hardy Road. This would include 3.0m lanes and parking bays to one side of the road. This provides for generous verges, which are intended to be planted for a tree-lined street scape. Traffic calming measures like landscaped chicanes along Hardy Road are being investigated and will be shown in detail as the design develops.

This type of road cross-section provides three planting opportunities as green/leavy streets are proposed by the developer. Within Lots 101, 102 and 103, it is expected that road profiles otherwise will generally remain consistent with Liveable Neighbourhoods and City of Nedlands policy.

Consideration may be given to raised flush parking, to match the footpath levels, however this will be further assessed at detailed design stages.

Laneways are currently shown on the Hill Thalis concept plan vary between common 6.0m width, and 12.5m reserve widths, with the latter able to include greening opportunities and potential narrower road pavements to accommodate parking.

Under Section 9.1.4 of this report, comments are included about the existing intersection of Williams Road and Monash Avenue. Modifications to the existing kerb line at that intersection are intended to be avoided, as this would trigger significant cost to relocate existing power facilities.

6 STORMWATER DRAINAGE

Mapping of the existing local stormwater drainage network is not available, though as is common with infill development sites, it is likely that the surrounding network will not have capacity for the additional stormwater runoff collected through urban development of Lots 101, 102 and 103. It is acknowledged however that 400m east of the site, at the intersection of Hardy Road and Hampden Road is a DN525mm

Water Corporation main drain. This drainage facility crosses beneath Stirling Highway and connects to the Swan River providing an outlet for locally collected stormwater.

Notwithstanding, as part of the proposed subdivision it is anticipated that stormwater collected from the impervious areas will need to be detained and infiltrated onsite in lieu of relying on external drainage assets which don't provide a Water Sensitive Urban Design (WSUD) outcome.

Figure 9 has been prepared to show the surface water catchment plan for the site. The majority of the site is graded to the central POS, where stormwater is proposed to be infiltrated. The hydrologist, Pentium Water, has undertaken detailed modelling and advised volumes for the proposed onsite detention of the 1% AEP storm event. This excludes the apartment sites which will contain stormwater within each of the boundaries. There is an isolated small catchment in the south-eastern portion of the site, which will need to locally detain stormwater, likely beneath the proposed road pavements.

For the residential lots, Pentium Water have allowed for lot connections meaning that stormwater runoff for each storm event would be conveyed to the downstream detention/infiltration facility.

It is noted that a potential median swale in Hardy Road is proposed to locally drain the road pavement, with direct infiltration for minor events, in line with Water Sensitive Urban Design approaches.

Douglas Partners undertook permeability testing onsite and while the results were all above 9m/day, Pentium Water adopted 8m/d infiltration for underground system, based on combination of Geotech results and City of Nedlands guidance.

The stormwater drainage system will be designed and constructed in accordance with City of Nedlands policies through pit and pipe conveyance systems. A Local Water Management Strategy is separately prepared and subsequent Urban Water Management Plan will be required at detailed design stages.

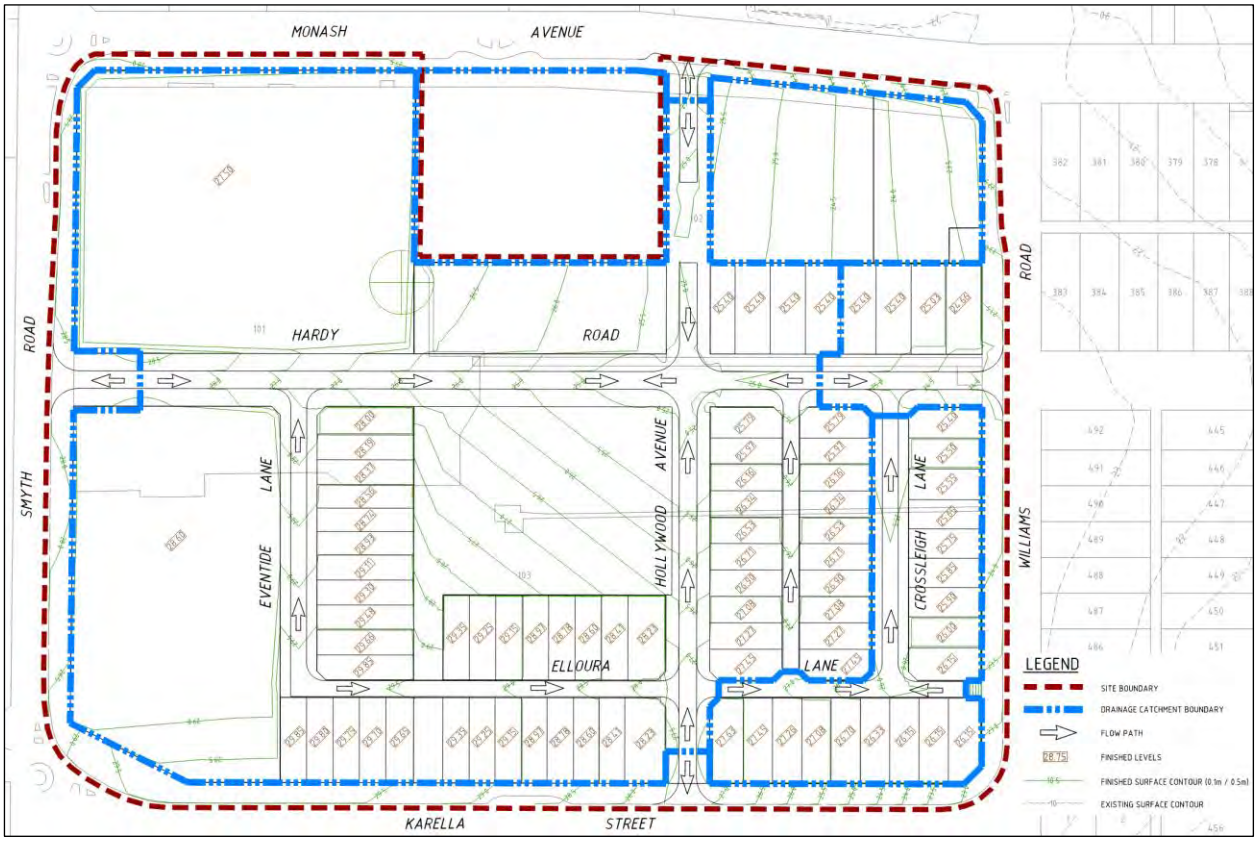

Figure 9 – Concept surface stormwater catchment plan (TABEC)

7 WASTEWATER

The site is currently serviced through two connections, including an existing DN150mm sewer in Williams Road and a separate DN150mm connection along Karella Street that are shown on Figure 10.

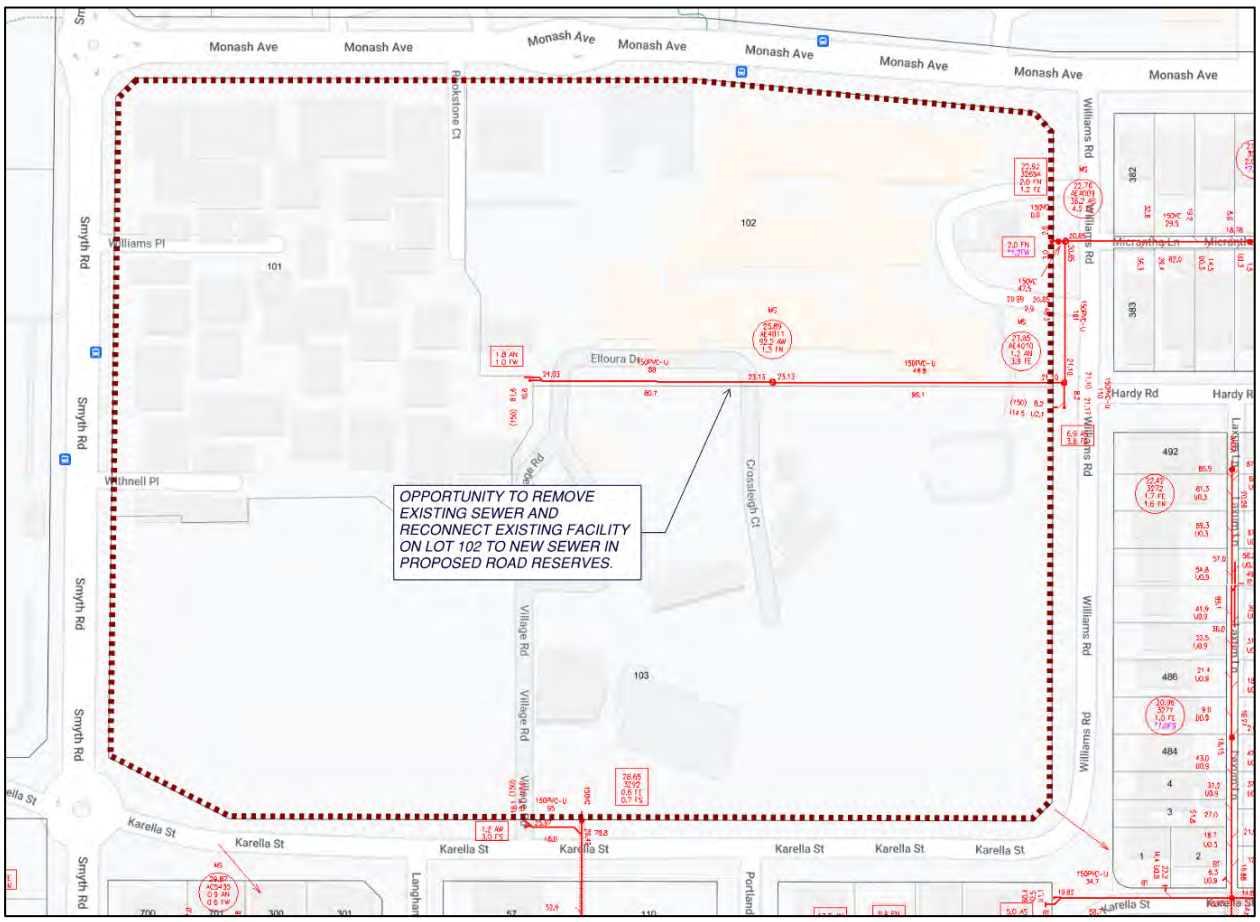

Figure 10 – Ultimate Waste Water Planning (Water Corporation)

There is also an existing sewer easement inside Lot 102, which contains an existing Water Corporation sewer to service Lot 101. Since existing facilities on Lot 101 are proposed to be demolished, it will be possible for the existing sewer to be removed. The existing facility on Lot 102 which is intended to remain however, will require a new plumbing connection to a proposed sewer network.

Based on the preliminary lot yields, Water Corporation has undertaken planning reviews to accommodate the additional flows generated from the proposed development.

Water Corporation has advised there are no capacity issues with sewer, and therefore no upgrades are required downstream to accommodate sewer outfall. The sewer is able to be logically extended throughout the proposed subdivision.

It is most practical for a single connection to the existing sewer in Williams Road, with the development of Lots 101, 102 and 103 serviced from a gravity fed reticulated network. Standard Water Corporation infrastructure contributions will apply on a per lot basis, and single contributions will only apply for the creation of the apartment sites. There are no meter-based flow allowances for the ultimate dwelling yields within these sites.

8 WATER SUPPLY

The area is well serviced with existing Water Corporation water mains on all boundaries of the site. This includes a DN180mm main in the northern verge of Monash Avenue, a DN150 main on the western side of Williams Road which also continues along the southern verge of Karella Street providing services to existing residents. There is also a DN305 water distribution main in the eastern verge of Smyth Road, however lots are generally not directly serviced from the distribution main.

Based on previous land use, there are existing fire service connections and meter connections to Lots 101, 102 and 103.

There is a potential requirement for a duplicate water main in Smyth Road. This was initially anticipated given domestic supplies are not ordinarily connected to distribution mains and Water Corporation has confirmed that a subdivision plan showing lot frontages to Smyth Road would trigger the reticulated water main extension.

However, on the current Hill Thalis concept plan, apartment sites front Smyth Road rather than individual lot frontages, and therefore domestic service connections may not be required on the western boundary of the site. Rather, the apartment sites could be serviced from other proposed internal roads. There is opportunity therefore to avoid the water main duplication, which shall be assessed in further detail as the project progresses.

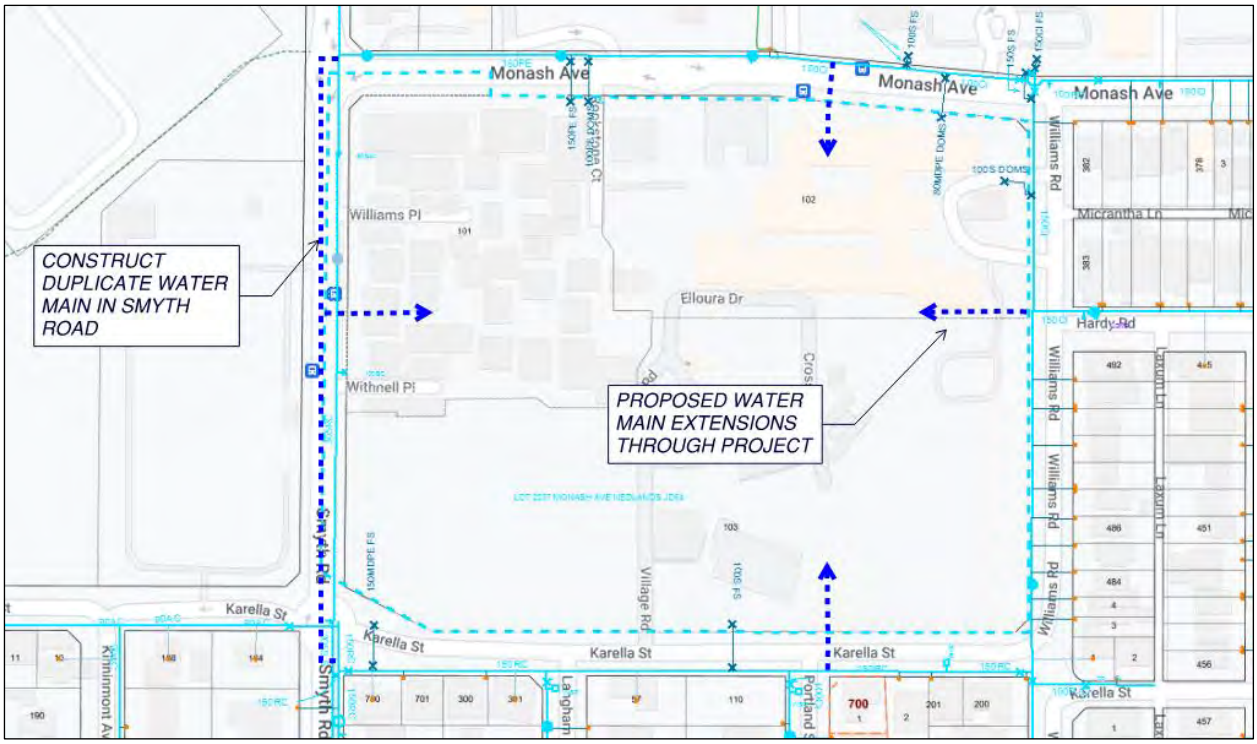

Figure 11 – Water Corporation Mapping (TABEC)

Notwithstanding, based on the information provided, Water Corporation has confirmed their modelling indicates that the development demands do not have significant impact on system operation and minimum pressures are adequate. There are no other offsite upgrades or main extensions required in-order to service the proposed development.

Construction requirements for the water supply are illustrated in Figure 11.

Water Corporation has confirmed that they have considered other proposed developments in the area and concluded that the existing system has adequate capacity to supply this proposal.

For the proposed subdivision, water mains would connect to existing supplies and be extended internally. The water mains shall be designed and constructed according to the Water Corporation specifications. Installation would occur based on staging as it progresses and fully funded by the developer. Standard infrastructure contributions would also apply.

9 POWER SUPPLY

The nearest Western Power zone substation is close to the site, located approximately 300m to the north-east on the Queen Elizabeth II medical centre and is relatively new, having been constructed in 2014. There is an existing HV distribution network servicing the surrounding areas, including the 66kV overhead line in the southern verge of Monash Avenue, and other high voltage networks in the other roads surrounding the site.

Western Power's network mapping tool is included in Figure 12, which demonstrates the available capacity of the high-voltage feeder to the locality, forecasted at 2026 is 25 to 30 MVA. Therefore, it appears there is sufficient power supply to the area without any requirements for substantial offsite extensions.

There are three HV feeder cables surrounding the proposed development site, which includes 3.3MVA supply connected to Lots 101, 102 and 103 combined. The total estimated power demand however, based on the concept masterplan design is approximately 4.9MVA and therefore an additional demand on the network is estimated as 1.6MVA.

Western Power has not confirmed the capacity of the existing feeder cable, however, it is likely that Western Power has an opportunity to split the additional load across multiple feeders to avoid significant offsite network upgrades. Existing loads can be adjusted through switching of the feeder cables. Notwithstanding, in lieu of formal confirmation by Western power some risk remains though as advised by our power sub-consultant UPD it is expected that mitigation options exist to manage this.

Figure 12 – Western Power network mapping tool. March 2023 (Western Power)

9.1 Proposed Power Infrastructure

The City of Nedlands and Western Power are jointly, planning to undertake an overhead relocation program throughout this area, with works proposed to commence in 2026. There is opportunity to coordinate designs, loading upgrades and works between the developer of this site, and the City which account for the proposed development. Engagement with both the City of Nedlands and Western Power is ongoing with a mutual intention to coordinate design works and achieve cost efficiencies for all parties.

9.1.1 Monash Avenue

Along the southern verge of Monash Avenue is an existing overhead 66kV HV power line. There is an easement 8m wide from the centre of this pole which impacts the northern boundary of the development site and appropriate setbacks will be required. Due to the high cost involved with relocating the existing overhead 66kV line, it is intended the HV line will remain in place.

In addition, there is an existing LV overhead line with a communications pilot cable. These assets will require removal and relocation underground where the road intersection is proposed along Monash Avenue, due to an existing pole that would otherwise clash. As these works will involve modifications to the existing larger HV transmission poles with cable terminations, they may require upgrading with replacement due to their expected age.

The existing Western Power transformer within Lot 102 will require removal, though it cannot be relocated under initial demolition works due to the existing sites it currently serves. A forward works package at the time of subdivision would be most appropriate, with an intention to relocate the transformer onto Site 1, if possible, with a new switchboard as well.

9.1.2 Smyth Road

It is anticipated that the removal of five bays of overhead power, between poles, along the eastern verge of Smyth Road will be necessary, including across the proposed road intersection with Hardy Road extension.

There is greater complexity and cost however to remove the existing pole near the roundabout intersection between Smyth Road and Karella Street. Since individual lots do not front that roundabout on the current concept masterplan design and given there is an apartment site proposed at this corner there is no requirement by Western Power to remove the overheads and it would be proposed the existing overhead network across the intersection main. As a result, new lighting will be installed along Smyth Road and the removal of the existing transformer in Lot 101.

9.1.3 Karella Street

There are existing stay-poles in the northern verge of Karella Street, supporting the overhead power which is located on the southern side of Karella Street. IT is possible that these poles could be accommodated and left in-place, however that is subject to final subdivision layouts and confirmation of the alignment and position of new road reserves.

While it is likely the existing overhead poles will be removed at these locations, though there may be opportunity, through application to Western Power for the stays to remain.

9.1.4 Williams Road

Extending inside Lot 103, from Williams Road is an existing power easement servicing the former land use over the site. This cable is now redundant and can be removed.

Due to proximity of existing overhead power at the northern end of Williams Road, the building design for the medical centre may require a small setback. In due course, it is recommended the line be surveyed as it may truncate the corner and impact the footprint of that site.

It is recommended that existing 66kV HV overhead line along Monash Avenue be retained in place. There is an existing pole supporting this line at the northern end of Williams Road close to the kerb line of Monash Avenue. Removal of this pole will trigger significant cost and therefore it is strongly recommended the existing pavement and intersection layout remain, so the existing overhead power does not require removal. Therefore, the traffic review should accommodate the existing road pavements without intersection upgrades in this location.

Along Williams Road, the existing overhead power will be removed south of Monash Avenue, and the existing transformer will be relocated within the site. Existing power connections to homes along Williams Road will require conversions.

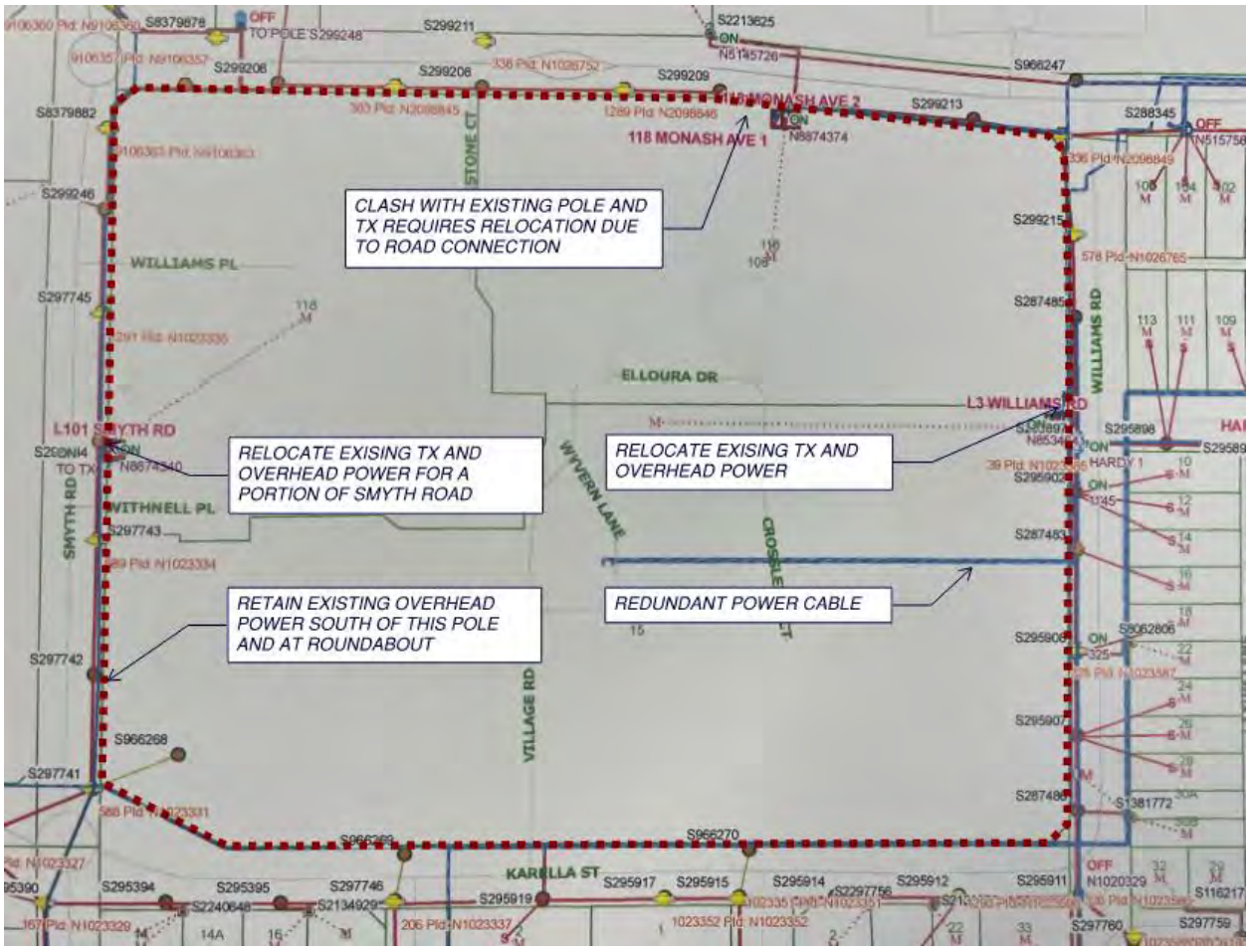

Figure 13 – Western Power asset mapping (Western Power)

9.1.5 Subdivision Power Supply

Based on the Western Power requirement, the loads have been calculated with various transformers and switchgear. Appropriate sites to accommodate the additional power infrastructure, in addition to the relocated assets from Willaims and Smyth Road will need to be considered in updated planning layouts. All lots will otherwise be provided with power connections during the subdivision works, with street lighting provided throughout, as required by City of Nedlands policy.

The effects of earth potential rise (EPR) issues will require investigation. There is a steel high-pressure gas main along Monash Avenue, a section of steel DN305mm water main to the south-east of the site. Site testing and earth resistivity shall be assessed to ensure the proposed HV equipment is appropriately earthed.

Confirmation of Western Power's requirements to service the development is subject to a formal design review. A Design Information Package (DIP) application was made in March 2023 for this purpose.

10 COMMUNICATIONS

There are a variety of communications providers with existing assets in the immediate vicinity of the site. As shown in Figure 14 below, there is a substantial existing Telstra network, within Lots 101, 102 and 103. In addition, there is a Vocus cable in the northern verge of Monash Avenue, and both Optus and Nextgen cables also in Monash Avenue and Smyth Road.

In addition, as shown in Figure 15, NBN services are available in Nedlands with existing services to surrounding homes.

NBN Co is responsible for the installation of fibre in all broad acre developments within the long-term optic fibre footprint, to which this area qualifies, though given the variety of existing assets, alternate providers to NBN would likely be interested in providing communication services to development of Lots 101, 102 and 103.

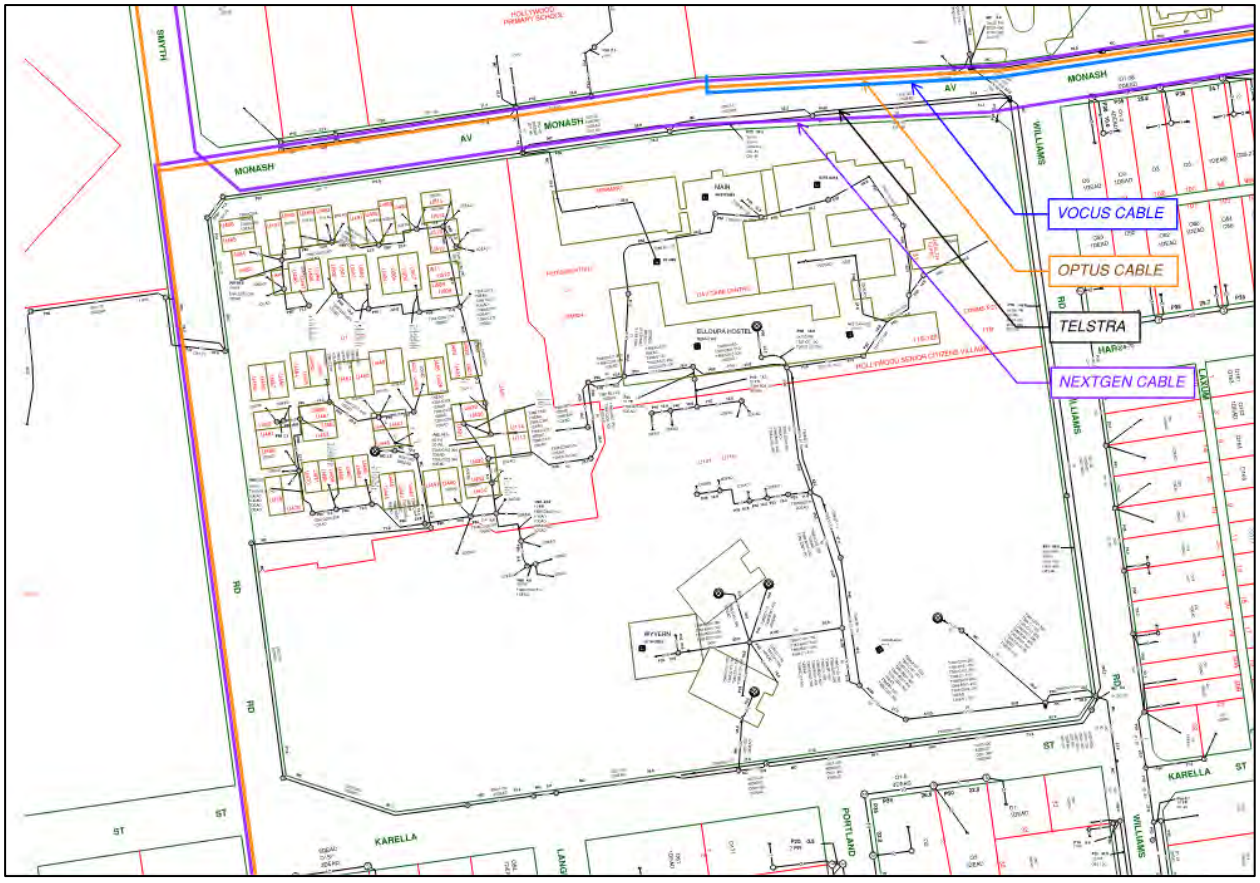

Figure 14 – Existing communications services (BYD)

Figure 15 – NBN Rollout Map (NBN website)

Other providers such as Opticomm may also be an option, noting that Opticomm builds networks to enable 1GBps data speeds to residential customers. This can enable the connection of other data services over their network to deliver Smart Cities solutions, without such devices having a physical (billable) address such as POS areas with free Wi-Fi, smart poles, and micro-grid services.

The developer for the site will be responsible for providing pit and pipe infrastructure throughout the subdivision for the fibre to be installed. Lot deployment fees based on the final subdivision plan will apply.

11 GAS SUPPLY

There are existing reticulated medium-pressure gas mains in all road reserves surrounding the site and therefore it is anticipated that connection to gas supplies may be readily delivered if intended. If there is an intention by the developer to provide gas services to the areas of development, it is unlikely there would be any requirement to extend or upgrade gas services beyond the development boundary, though confirmation from ATCO has not been sought.

The existing ATCO gas network around the site mains is shown in Figure 16 below.

It is acknowledged however the supply of gas is not a WAPC subdivision condition and there is no obligation on the developer to install gas networks. Further consideration may be given to the broader sustainability of utilising gas, as a non-renewable and the impact on future land users before electing to proceed.

There is an existing high-pressure gas main in the southern verge of Monash Avenue which introduces some construction risk as this main will have minimum cover requirements and greater clearances to other services that is otherwise required for medium pressure gas. Accurate service locating and potholing is recommended is confirm the exact location to ensure appropriate protections are in place during the design phase.

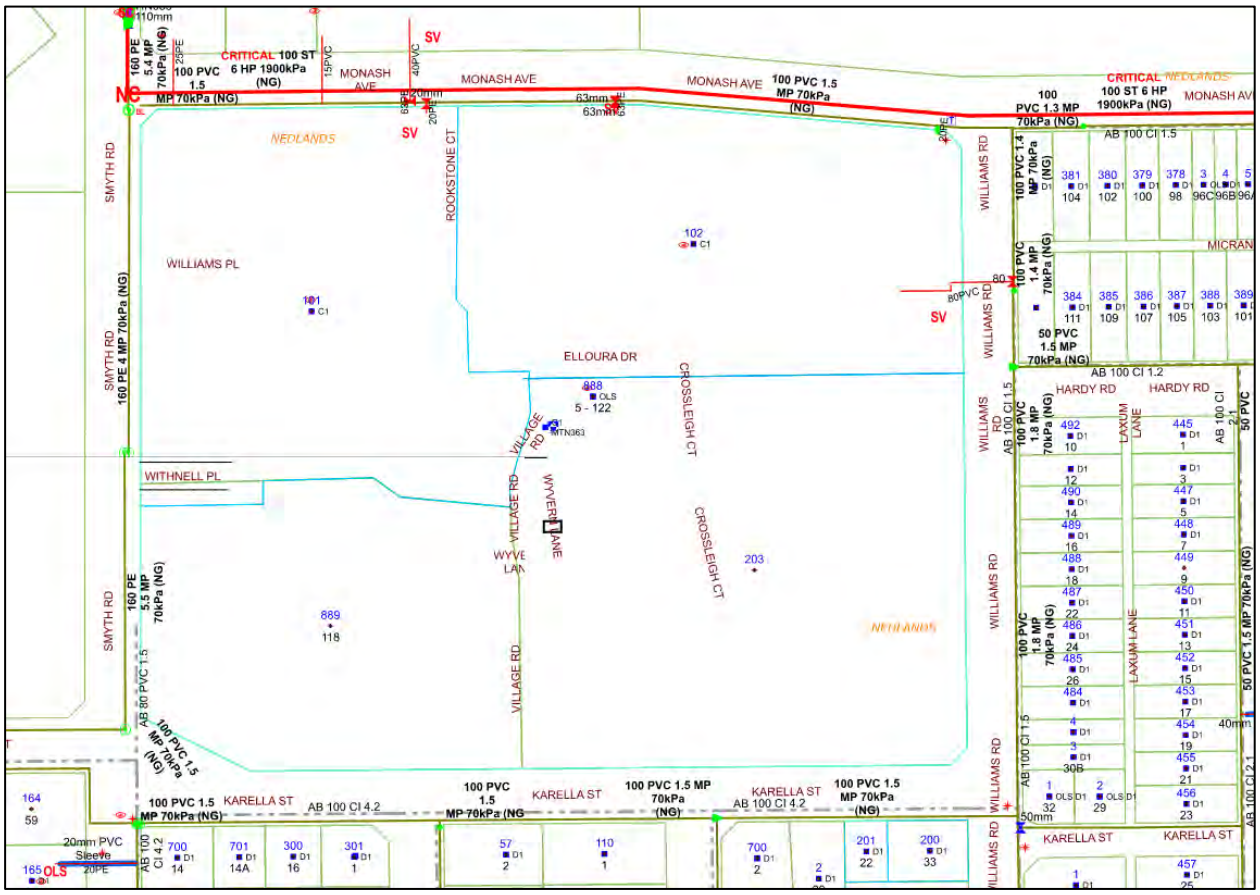

Figure 16 – Existing ATCO Gas Network map (ATCO Gas)

12 CONCLUSION

Based on the infrastructure review, Lots 101, 102 and 103 Monash Avenue in Nedlands can be adequately serviced to support development intention. It does not appear that there is major risk in terms of servicing upgrades, as it has been confirmed that both surrounding sewer and water reticulation have adequate capacity to support the development.

It is likely that Western Power would be able to manage the additional load produced by the increased dwelling numbers by splitting loads across the various existing feeder cables at the boundaries of the site without significant offsite network upgrades. The opportunity to coordinate removal and relocation of the existing overhead power supplies at the boundaries of the site, together with City of Nedlands and Western Power is being sought. Close communication with these parties will ensure the proposed design loads are accommodated, and there are savings opportunities for all parties in this approach.

Notwithstanding there is substantial design detail to be resolved, the site is able to be developed, according to the current concept subdivision plan.

The above review has been completed based on desktop information, advice from other consultants and the outcome of field investigations, where appropriate.

13 REFERENCES

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Appendix 4: Environmental Assessment Report

(Emerge)

emerge ASSOCIATES
Integrated Science & Design

Environmental Assessment and Management Strategy

Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands

Project No: EP23-028(04)

Prepared for Hesperia Pty Ltd
August 2023

Document Control

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		Samuel Luckas	SPL		
	Draft submitted to client for review.				
A	October 2023	Samuel Luckas	SPL	Jason Hick	JDH
	Final version				

Executive Summary

This *Environmental Assessment and Management Strategy* (EAMS) has been prepared on behalf of Hesperia Pty Ltd ('the proponent') to support a Structure Plan (SP) to enable future residential and special use development. Located within the City of Nedlands, the proposed Nedlands Regis SP applies to Lot 101, 102 and 103 Monash Road Nedlands (herein referred to as 'the site').

This EAMS has been prepared to address the requirements of the Western Australian Planning Commission's (WAPC) *Structure Plan Framework* (WAPC 2015b) to support the preparation, assessment and ultimate implementation of the SP. This report provides a synthesis of information from a range of sources regarding the environmental features, values and relevant environmental considerations for the site and its future proposed development.

The site comprises a total area of 7.41 hectares (ha) and is zoned 'Residential' and 'Additional Use' under the City of Nedlands Local Planning Scheme No. 3 (LPS 3) and 'Urban' under the Metropolitan Region Scheme (MRS). The site is bounded to the west by Karrakatta Cemetery and Hollywood Reserve to the west, education, aged care and hospital facilities north and residential and a range of mixed land uses south and east of the site.

The relevant environmental attributes and values of the site are summarised as follows:

- The majority of the site has been historically cleared for special (residential aged care facility) and residential land uses.
- Topography across the site is gently undulating, and ranges from 23 metres (m) in relation to the Australian Height Datum (mAHD) on the eastern side of the site, to 29 mAHD to the south-west corner of the site (Landgate 2022).
- A review of the DWER mapping indicates that the site and immediate surrounds are not classified for any Acid Sulfate Soils (ASS) risk.
- Given historic clearing and associated residential land uses, flora and vegetation within the site has been significantly modified, with the entirety of the site identified as being in 'completely degraded' condition in accordance with the Keighery (1994) vegetation condition scale.
- One plant community was identified within the site '**non-native'** which comprises open woodland of predominantly non-native trees over shrubland of non-native species (planted garden) or herbland and grassland of non-native species.
- No threatened ecological communities (TECs) were identified within the site, nor are any likely to occur based on the degraded nature of vegetation within the site.
- No threatened or priority flora species have been identified within the site, nor are any likely to occur based on the degraded nature of vegetation within the site.
- Due to the degraded nature of vegetation within the site, the extent of functional fauna habitat within the site is constrained to scattered non-native trees which is not considered significant habitat due to the limited extent. Vegetation in nearby, adjacent land is considered to provide higher fauna habitat values than that within the site.
- Based on the existing *Geomorphic Wetlands of the Swan Coastal Plain* mapping (DBCA 2023), no wetlands are identified within or nearby to the site.

- A review of the *Aboriginal Cultural Heritage Inquiry System* (ACHIS) (DPLH 2023a) indicates there is no known Aboriginal heritage identified within the site.
- Areas of extensive permanent bushfire hazard are located to the north-west and west of the site boundary. These hazards will be retained in the future and therefore need to be considered from a bushfire risk perspective.

The SP layout has responded to and accommodated site-specific environmental considerations where necessary, including accommodation of stormwater management requirements as documented within a Local Water Management Strategy (LWMS) (Pentium Water 2023). The SP layout does provide for public open space, however this has not specifically needed to accommodate native vegetation retention given the absence of native vegetation within the site. The SP does provide wide road reserves and open space to enable tree retention and implementation of development within the SP will involve landscaping with street trees and other landscape treatments in accordance with a guiding landscape master plan.

This document provides an environmental management strategy to be implemented across the site for future subdivision and development stages. The key components of this management strategy are summarised as follows.

- Acid sulfate soils (ASS): Given the depth to groundwater within the site and the low risk of ASS within or near the site, ASS investigations and management considerations for the site are unlikely to be required at the subdivision and development stages.
- Vegetation and tree retention: as part of future subdivision and development, detailed analysis of the final development design and bulk earthworks requirements will confirm the extent to which existing trees can be retained.
- Hydrology: While there are no sensitive receptors or groundwater dependent ecosystems within or within close proximity to the site, stormwater management requirements as outlined within the LWMS will be implemented through an Urban Water Management Plan (UWMP) for each stage of future subdivision and development.
- Bushfire risks: To respond to the known bushfire hazards within and surrounding the site future development will be in accordance with a Bushfire Management Plan (BMP) (Emerge Associates 2023a). This assumes that the public open space (POS) corridor within the site will be classified as low threat vegetation (exclusion 2.2.3.2(f)) in the post development scenario and that areas of bushfire hazard surrounding the site are accounted for through development setbacks.

Overall, the environmental attributes and values of the site can be accommodated within the SP design or can be managed appropriately through the future subdivision and development phases in line with the relevant state and local government legislation, policies and guidelines and best management practices.

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Appendix A

Nedlands Regis Masterplan- Dwelling type (CLE Town Planning + Design 2023)

Appendix B

Ecological and Tree Assessment – Emerge Associates 2023

List of Abbreviations

Table A1: Abbreviations – General terms

General terms	
AHD	Australian Height Datum
AHIS	Aboriginal Heritage Inquiry System
ASS	Acid Sulfate Soil
BC	Baudin's black cockatoo
CC	Carnaby's black cockatoo
DBH	Diameter at Breast Height
EAMS	Environmental Assessment and Management Strategy
ESA	Environmentally sensitive area
FRTBC	Forest red-tailed black cockatoo
IBRA	Interim Biogeographic Regionalisation of Australia
LWMS	Local Water Management Strategy
PEC	Priority ecological community
PF	Priority flora
PDWSA	Public drinking water source area
SP	Structure Plan
TEC	Threatened ecological community
TF	Threatened flora
UWMP	Urban Water Management Plan

Table A2: Abbreviations – Legislation and policies

Legislation and policies	
AH Act	*Aboriginal Heritage Act 1972*
BC Act	*Biodiversity Conservation Act 2016*
EP Act	*Environmental Protection Act 1986*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*

Table A3: Abbreviations – Organisations

Organisations	
DAFF	Department of Agriculture, Fisheries and Forestry
DBCA	Department of Biodiversity Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DoH	Department of Health
DoW	Department of Water (now known as Department of Water and Environmental Regulation)
DPAW	Department of Parks and Wildlife (now known as Department of Biodiversity Conservation and Attractions)
DPLH	Department of Planning, Lands and Heritage
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
WAPC	Western Australian Planning Commission

Table A4: Abbreviations – Planning and building terms

Planning and building terms	
MRS	Metropolitan Region Scheme
LPS	Local Planning Scheme
LSP	Local Structure Plan

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1 Introduction

1.1 Background

Hesperia Pty Ltd (the proponent) have prepared the Nedlands Regis Structure Plan (SP) to guide residential, open space and special use development across Lots 101, Lot 102 and Lot 103 Monash Avenue, Nedlands (herein referred to as the 'site'). The proposed SP is provided in **Appendix A** and provides for semi-detached housing, town houses, apartment complexes, public open space and medical purpose buildings. The site is located within the City of Nedlands, approximately 4 km to the south-west of the Perth Central Business District (CBD), as shown in **Figure 1.**

The site comprises a total area of 7.41 hectares (ha) and is zoned 'Residential' and 'Additional Use' under the City of Nedlands Local Planning Scheme No. 3 (LPS 3) and 'Urban' under the Metropolitan Region Scheme (MRS). The site is bounded to the west by Karrakatta Cemetery, Hollywood Reserve to the west, education, aged care and hospital facilities to the north and residential and mixed land uses to the south and east of the site.

A portion of the site currently supports a retirement village, and other buildings located on Lot 103 were demolished from circa 2008. Land uses for the surrounding properties include 'Public Purpose' and 'Parks and Recreation' relating to Karrakatta Cemetery and Hollywood Reserve west of the site under the Metropolitan Region Scheme (MRS), 'Education', 'Social Care Facilities', 'Special Use Zone' north of the site and 'Residential' and 'Mixed Use' under the LPS south and east of the site relating to the existing residential and commercial land-uses. The land use zoning pursuant to the MRS for the site and surrounding areas is shown in **Plate 1** below.

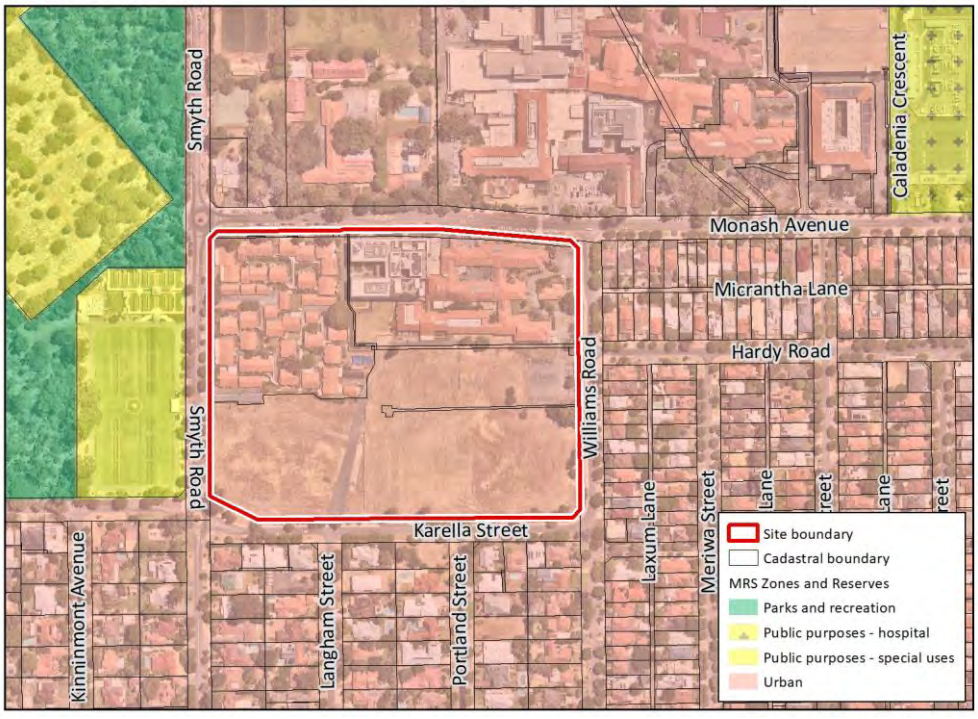

Plate 1: MRS zones and reserves surrounding the site (WAPC 2023)

1.2 Purpose of this report

The purpose of this Environmental Assessment and Management Strategy (EAMS) is to provide a synthesis of information regarding the environmental values and attributes of the site. Specifically, this report:

- Identifies the existing environmental values and attributes of the site (**Section 2**)
- Discusses the land use planning context and the proposed SP (**Section 3**)
- Discusses how the SP layout responds to the existing environment and outlines the future environmental management framework (**Section 4**)
- Outlines how the environmental management framework will be implemented (**Section 5**).

This EAMS is the key supporting environmental document for the SP, to ultimately facilitate the consideration of any environmental issues by the various local and state government agencies and authorities. It is consistent with the Western Australian Planning Commission's *Structure Plan Framework* (WAPC 2015b).

1.3 Scope of work

Emerge Associates (Emerge) was engaged by the proponent to undertake an environmental assessment to document the existing environmental attributes and values of the site and ensure any relevant environmental values can be considered and where necessary accommodated within the SP. This involved utilising a range of information sources including local and regional reports, databases, mapping and site-specific investigations. The outcomes of these investigations have provided information on the following attributes:

- Landforms, topography and soils
- Flora and vegetation
- Terrestrial fauna
- Hydrology
- Aboriginal and non-indigenous heritage
- Historical and existing land uses within and surrounding the site
- Bushfire hazards.

In addition to the preparation of this EAMS, Emerge have undertaken a site specific ecological and tree assessment and documented this in *Ecological and Tree Assessment* (Emerge Associates 2023b) which has been attached as **Appendix B**, and the proponent has also commissioned the preparation of a Local Water Management Strategy (Pentium Water 2023) to support the proposed SP.

2 Existing Environment

2.1 General site conditions

The site is located in the central-western portion of the Swan Coastal Plain (SCP), approximately 4 km to the south-west of the Perth CBD. The site is located in an area that has historically supported urban and residential land uses, with a review of historical imagery showing cleared land and urban development occurring as early as 1953, and has supported various forms since this initial development. The site is bounded to the west by Karrakatta Cemetery, Hollywood Reserve to the west, education, aged care and hospital facilities to the north and residential and mixed land uses to the south and east of the site. The Swan River is located approximately 1.3 km east of the site and there are large areas of remnant vegetation to the east of the site, associated with Kings Park.

2.2 Landform and soils

2.2.1 Topography

Topography across the site is gently undulating, and ranges from 23 metres (m) in relation to the Australian Height Datum (mAHD) on the eastern side of the site, to 29 mAHD to the south-west corner of the site (Landgate 2022). This is consistent with site observations during a site inspection. The topographic characteristics of the site are shown in **Figure 2.**

2.2.2 Landform, soils and geology

Regional soil mapping provided in the 1:50,000 Environmental Geology Series (Gozzard 1986) indicates the natural soil profile present across the site is likely to comprise of undulating sand dunes/ plains landscape with deep yellow sands, brown/yellow sands and/or pale deep sands over limestone.

Regional soil association mapping indicates that the entirety of the site occurs within the Perth coastal zone (Churchward and McArthur 1980). Based on regional landform mapping of the Swan Coastal Plain (Gozzard 2011), the site is located in within the Spearwood system.

The Geological Survey of Western Australia, as documented in *Perth Metropolitan Region 1: 50,000 Environmental Geology Series Fremantle Part Map Sheets 2033 I & 2033 IV* (Gozzard 1983) indicates that the site is comprised of 'Sand – pale and olive yellow, medium to coarse-grained, sub-angular to sub-rounded quartz, trace feldspar, moderately sorted, of residual origin' (S7) (See **Figure 2**).

2.2.3 Acid sulfate soils

Acid sulfate soils (ASS) is the name commonly given to naturally occurring soils and sediment containing iron sulphide (iron pyrite) materials. In their natural state, ASS are generally present in waterlogged anoxic conditions and do not present any risk to the environment. ASS can present issues when oxidised, producing sulphuric acid, which can impart a range of impacts on the

surrounding environment, infrastructure and human health. Projects involving the disturbance of ASS must therefore assess the risk associated with disturbance by considering potential impacts.

The Department of Water and Environment Regulation (DWER) provides broad-scale mapping indicating areas of potential ASS risk (DWER 2018). A review of the DWER mapping indicates that the site and immediate surrounds are not classified as having any ASS risk.

2.3 Biodiversity and natural assets

2.3.1 Flora and vegetation

2.3.1.1 Regional context

Native vegetation is described and mapped at different scales in order to illustrate patterns in its distribution. At a continental scale the *Interim Biogeographic Regionalisation of Australia* (IBRA) divides the Swan Coastal Plain into two floristic subregions (Environment Australia 2000).

The site is contained within the Perth subregion of the Swan Coastal Plain, which is characterised as mainly containing *Banksia* low woodland on leached sands with *Melaleuca* swamps where ill-drained; and woodland of *Eucalyptus gomphocephala* (tuart), *E. marginata* (jarrah) and *Corymbia calophylla* (marri) on less leached soils (Beard 1990).

At a regional scale, vegetation complex mapping undertaken by Heddle *et al.* (1980) indicates the site occurs within the Karrakatta Complex – Central and South, described as being Predominantly open forest of *E. gomphocephala - E. marginata* -E*. calophylla* and woodland of *E. marginata - Banksia spp*. In 2018, there was 6.81 % if the pre-European extent of the Karrakatta Complex-Central and South remaining on the Swan Coastal Plain (Government of Western Australia 2019).

2.3.1.2 Site specific surveys and investigations

A flora, vegetation and tree assessment was carried out by an ecologist from Emerge Associates on the 17th and 21st August 2023, and has been attached as **Appendix B**. The assessment covered the site and the immediate bordering road reserves.

2.3.1.3 Plant communities

One plant community was identified within the site, '**non-native',** which occurs over the entire site. This community comprises a small number of scattered non-native trees and shrubs over non-native grassland. While the community within the site was described as 'non-native', a single Native Marri *Corymbia calophylla* tree was found within the road reserve immediately adjacent to the site and was identified as being previously planted rather than being remnant (see **Figure 3**).

A description and the total extent of the plant community identified within the site is provided in **Table 1** with representative photograph provided in **Plate 2**.

Table 1: Plant communities identified within the site

Plant community	Description	Area (ha)
Non-Native	Open woodland of predominantly non-native trees over shrubland of non-native species (planted garden) or herbland and grassland of non-native species.	7.41

*Plate 2: Plant community **non-native** in 'completely degraded' condition*

2.3.1.4 Vegetation condition

The vegetation condition was assessed using methods from Keighery (1994). The entire site supports primarily non-native vegetation in 'completely degraded' condition due to the low number and cover of native species.

The extent of vegetation by condition category is detailed in **Table 2** and shown in **Figure 4.**

Table 2: Vegetation condition categories within the site

Condition category (Keighery (1994))	Area (ha)
Pristine	0
Excellent	0
Very Good	0
Good	0
Degraded	0
Completely Degraded	7.41

2.3.1.5 Threatened and Priority Ecological Communities

Generally, ecological communities can be described as groups of native plants, animals and other organisms that occur together in a particular type of habitat. An ecological community's structure, composition and distribution are determined by a range of environmental factors. 'Threatened ecological communities' (TECs) are ecological communities that are recognised as rare or under threat and therefore warrant special protection.

Selected TECs are afforded statutory protection at a Commonwealth level under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). TECs listed under the EPBC Act are categorised as either 'critically endangered', 'endangered' or 'vulnerable'. Any action likely to have a significant impact on a TEC listed under the EPBC Act requires approval from the Commonwealth Minister for the Environment.

Within Western Australia, TECs are protected under the BC Act and the BC Regulations. TECs are determined by the Western Australian Threatened Ecological Communities Scientific Advisory Committee and endorsed by the Minister for the Environment. Somewhat confusingly no TECs have been formally listed under the BC Act and so, while protected under legislation, the significance of TECs is currently best acknowledged through other State environmental approval processes such as the Environmental Impact Assessment pursuant to Part IV of the *Environmental Protection Act 1986* (EP Act) and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* pursuant to Part V of the EP Act.

An ecological community under consideration for listing as a TEC in Western Australia, but which does not yet meet survey criteria or has not been adequately defined, or which is rare but not currently threatened, is referred to as a 'priority ecological community' (PEC). Whilst PECs are not afforded statutory protection in Western Australia, they are considered during the approval process.

A search of State and Commonwealth TEC and PEC databases was completed prior to the reconnaissance flora and vegetation survey. These database searches indicated that multiple TECs and PECs have previously been recorded within 10 km of the site. However, following the flora and vegetation survey it was confirmed that none of these TECs or PECs occur within the site.

2.3.1.6 Significant flora

Certain flora taxa that are considered to be rare or under threat warrant special protection under Commonwealth and/or State legislation. At a Commonwealth level, flora taxa may be listed as 'threatened' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Threatened flora species listed under the EPBC Act are assigned a conservation status according to attributes such as population size and geographic distribution. Any action likely to have a significant impact on a taxon listed under the EPBC Act requires approval from the Commonwealth Minister for the Environment and Energy.

In Western Australia flora species may also be classed as 'threatened' under the *Biodiversity Conservation Act 2016* (BC Act). It is an offence to 'take' or 'disturb' threatened flora listed under the BC Act without Ministerial approval.

Flora species that do not currently meet the criteria for listing as threatened but are potentially rare or threatened may be added to the DBCA's *Priority Flora List*. These species are classified into 'priority' levels based on threat. Whilst priority species are not under direct statutory protection, they are considered during State approval processes.

A search of State and Commonwealth listed threatened and priority flora databases was completed prior to the reconnaissance flora and vegetation survey. These database searches indicated that multiple species of conservation significance have the potential to occur within 10 km of the site. However, following the flora and vegetation survey it was confirmed that, none of these species were identified as potentially occurring within the site.

2.3.2 Terrestrial fauna

2.3.2.1 Site specific surveys and investigations

A fauna assessment was carried out by ecologists from Emerge Associates, with a site visit undertaken on the 21st of August 2023, to determine the fauna values within the site. This has been attached as **Appendix B.**

2.3.2.2 Species of conservation significance

Certain fauna taxa that are considered to be rare or under threat warrant special protection under Commonwealth and/or State legislation. At a Commonwealth level, fauna taxa may be listed as 'threatened' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Any action likely to have a significant impact on a taxon listed under the EPBC Act requires approval from the Commonwealth Minister for the Environment and Energy.

In Western Australia fauna species may also be classed as 'threatened' under the *Biodiversity Conservation Act 2016* (BC Act). It is an offence to 'take' or 'disturb' threatened fauna without Ministerial approval.

Threatened fauna species listed under the EPBC Act and/or BC Act are assigned a conservation status according to attributes such as population size and geographic distribution.

Fauna species that do not currently meet the criteria for listing as threatened but are potentially rare or threatened may be added to the Department of Biodiversity, Conservation and Attractions (DBCA) *Priority Fauna List*. These species are classified into 'priority' levels based on threat. Whilst priority species are not under direct statutory protection, they are considered during State approval processes.

Migratory fauna species that migrate to Australia and its external territories, or pass though or over Australian waters during their annual migrations warrant special protection under Commonwealth and State legislation. At a Commonwealth level, migratory fauna taxa may be listed as 'migratory' under the EPBC Act.

Any action likely to have a significant impact on a fauna species listed under the EPBC Act requires approval from the Commonwealth Minister for the Environment and Energy.

In Western Australia migratory fauna taxa may be listed as 'specially protected species' and classed as 'migratory' under the *Biodiversity Conservation Act 2016* (BC Act).

The term 'pest fauna' can refer to any animal that requires some form of action to reduce its effect on the economy, the environment, human health and amenity. Many non-native fauna species and some fauna species native to Australia but not Western Australia are considered to be pest fauna.

A particularly invasive or detrimental pest species may be listed as a 'declared pest' pursuant to Western Australia's *Biosecurity and Agriculture Management Act 2007* (BAM Act), indicating that it warrants special management to limit its spread. At a National level, pest fauna may be listed as 'Established Pests and Diseases of National Significance' (EPDNS) under the *Australian Pest Animal Strategy (2017-2027) (DoA 2017)*.

A search of State and Commonwealth listed threatened, priority and other conservation significant fauna databases was completed prior to the field survey.

Based on these desktop results and taking into account the habitat requirements of individual fauna species, the following eleven fauna species of conservation significance were considered 'likely' or 'possible' to occur within the site:

- *Apus pacificus* (Pacific swift)
- *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo)
- *Calyptorhynchus latirostris* (Carnaby's cockatoo)

None of these species or any other conservation significant fauna were recorded within the site during the field survey. Except for the two species of black cockatoo mentioned above (from herein referred to collectively as 'black cockatoos' and further discussed in **Section 2.2.2.4** below) the site is likely to be primarily utilised by common and widespread native and non-native fauna species. The likelihood that the site would provide important habitat for any fauna species of conservation significance is low, given the site primarily comprises cleared areas and non-native vegetation which support low fauna habitat values.

2.3.2.3 Fauna habitat

As part of the fauna assessment, fauna habitats were described according to the dominant flora species and vegetation type present. While the majority of the site currently comprises cleared areas, minor foraging habitat was identified within the site as listed and described in

Table 3 and shown in **Figure 5**. The fauna habitat identified within the site was described as 'Suitable for common and widespread species with non-specific habitat requirements.'

Table 3: Fauna habitats identified within the site.

Fauna habitat classification	Description	Area (ha)
Non-native	Open woodland of predominantly non-native trees over shrubland of non-native species (planted garden) or herbland and grassland of non-native species, suitable for common and widespread species with non-specific habitat requirements.	0.21ha

2.3.2.4 Black cockatoo habitat

Breeding habitat

Trees of species known to support breeding by black cockatoos that are located within the known range of black cockatoos and either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to support future hollow formation, are considered breeding habitat trees (from herein referred to as 'habitat trees'). No habitat trees were recorded in the site.

No confirmed Carnaby's cockatoo breeding sites, as mapped by DEC (2011) with a 12 km buffer, are located near the site. The closest confirmed Carnaby's cockatoo breeding site buffer is located approximately 22 km north of the site.

Roosting habitat

The site contains only a very limited number of trees that could provide potential roosting habitat for black cockatoos. No evidence of roosting was observed.

Records of black cockatoo roosting sites across south-west Western Australia are maintained by Birdlife Australia, utilising annual community surveys as part of the *Great Cocky Count* (GCC). Based on the most recently published 2019 GCC report, and published DBCA mapping, the site is situated within close proximity to a confirmed Carnaby's black cockatoo roosting site. Notwithstanding this, it is considered unlikely that roosting would occur within the site, given the degraded nature, lack of native vegetation and the low fauna habitat values present within the site.

Surrounding roost sites are mapped as occurring near the site. These roost sites are linked with Carnaby's, Baudin's and forest red-tailed black cockatoos and are associated with nearby Bush Forever areas (Bush Forever Sites 215, 317 and 119), as well as areas of native vegetation and local parks.

Foraging habitat

Foraging habitat (see **Figure 5**) within the site is generally limited and patchily distributed throughout the site. The area mapped as 'native' foraging habitat within the survey boundary (approximately 0.01ha) corresponds to a single native Marri (*Corymbia calophylla*) tree which is located in the road reserve immediately adjacent to the site, and contains vegetation consumed by all three species of black cockatoo. The 'non-native' foraging habitat extends over approximately 0.21 ha within the site. It is not considered that the site provides important foraging habitat, given its limited extent and quality of foraging habitat and the presence of extensive areas of higher quality foraging habitat near the site (e.g., Kings Park).

2.3.3 Bush Forever

The Government of Western Australia's Bush Forever policy is a strategic plan for conserving regionally significant bushland within the Swan Coastal Plain portion of the Perth Metropolitan Region. The objective of Bush Forever is to protect comprehensive representations of all original ecological communities by targeting a minimum of 10% of each vegetation complex for protection

(Government of WA 2000). The Bush Forever policy is only applicable within the boundary of the Metropolitan Region Scheme (MRS).

Bush Forever (BF) Site 317 'Kings Park' is located 840 m to the east of the site and Bush Forever site 218 'Shenton Bushland, Shenton Park' is located 930 m to the north-west of the site, as shown in **Figure 6.**

2.3.4 Ecological linkages

Ecological or biodiversity linkages are described as areas of native vegetation which provide a corridor or linkage (typically linear) between patches of vegetation to allow movement of flora and fauna and their genetic material through the landscape, helping to maintain metapopulations. Ecological linkages are often continuous or near-continuous as the more fractured a linkage is, the less ease flora and fauna have in moving within the corridor (Alan Tingay and Associates 1998).

The Perth Biodiversity Project, supported by the Western Australia Local Government Association (WALGA), has identified and mapped regional ecological linkages within the Perth Metropolitan Region (PBP 2007).

One regional ecological linkage is mapped as occurring across the majority of the site as shown in **Figure 6.** This ecological linkage extends in a west – east direction and connects with a linkage extending north, located east of the site. These linkages include several Bush Forever sites including BF Site 317 'Kings Park' and BF site 218 'Shenton Bushland, Shenton Park'. The site itself is not considered to contribute to or provide any significant ecological linkages functionality, particularly due to the lack of environmental values within the broader site.

2.3.5 Environmentally sensitive areas

Within Western Australia, the clearing of 'native vegetation' can only be undertaken once a Clearing Permit has been attained under Part V of the EP Act, or if the clearing activity is in accordance with a valid exemption, including:

- Exemptions listed in Schedule 6 of EP Act. These include, but are not limited to:
  - Clearing undertaken in accordance with a subdivision approval
  - Clearing that is required under other laws (for example, Local Governments may require landholders to establish and maintain firebreaks under the *Bush Fires Act 1954*).
- Exemptions listed in the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (the Regulations). These are associated with low impact land management practices.

'Environmentally sensitive areas' (ESAs) are prescribed under the Regulations to protect native vegetation values in proximity to significant threatened flora, ecological communities, wetlands or ecosystems. Within ESAs, exemptions listed in the Regulations (i.e. those associated with low impact land management practices) do not apply and a Clearing Permit is required to undertake such clearing activities. The relevance of ESAs is limited to this specific context.

No ESAs were identified within or immediately surrounding the site whilst the nearest ESA to the site is situated approximately 840 m due east, relating to King's Park. In addition, there have been no areas of native vegetation identified within the site.

2.4 City of Nedlands – Environmental Management Plans

The City of Nedlands does not have an overarching Local Biodiversity Strategy, but rather has prepared individual management plans for each reserve under its management control. The site is situated adjacent and to the east of the 'Hollywood Reserve', of which the *Hollywood Reserve Management Plan 2013-2018* (City of Nedlands 2014) provides a five-year strategy for environmental management. Currently the *Hollywood Reserve Draft Management Actions 2019-2024* outline the updated management actions for the reserve.

The site is not mapped as occurring within the Hollywood Reserve management plan area and is not part of the Hollywood Reserve.

2.5 Hydrology

2.5.1 Groundwater

Information on the regional groundwater conditions obtained from the Perth Groundwater Map (DWER 2023a) indicates the maximum likely groundwater level beneath the site is approximately 4-5 mAHD. When compared to ground surface levels, this equates to a depth to groundwater of approximately 18-24 metres mAHD.

The groundwater salinity is between 250 mg/L to 500 mg/L. The site is located in an area reported to be suitable for garden bores. The regional groundwater contours mapped by the DWER suggest a groundwater flow direction to the south, towards the Swan River.

A search of the DWER Water Information Reporting database (DWER 2023b) located three groundwater bores within the site (identification numbers 61606605, 61605625 and 61612325).

2.5.2 Surface water

The site is within the catchment of the Swan River, which flows from north-east to south-west about 1.3 km east of the site. The DWER floodplain mapping information indicates that the 1% AEP flood level for the adjacent section of the Swan River is 2.22 mAHD, which is more than 20 m below the site's lowest elevation.

Being situated on highly permeable sands and near the high point of the local landscape, there are no surface water features or significant drainage paths within the site. The main hydrological process at the site is infiltration of rainfall to the permeable sandy soils (Pentium Water 2023).

No local stormwater network information is available on the City of Nedlands Intramaps online mapping tool. Pit-and-pipe drainage systems are evident along the existing road reserves which

border the site, however it is anticipated that these collect runoff from the road reserves themselves and do not provide for any runoff or discharge from the site.

There is also a Water Corporation main drainage system located approximately 400 m downstream (east) of the site. The City of Nedlands local drainage system is likely to connect into the Water Corporation system which services trapped low areas and provides an outlet to the Swan River. It is anticipated that the site does not currently form part of the contributing catchment to either the City of Nedlands or Water Corporation drainage systems (Pentium Water 2023).

2.5.3 Wetlands

Wetlands are areas which are permanently, seasonally or intermittently waterlogged or inundated with water. Naturally occurring wetland features are common across the Swan Coastal Plain and can contain fresh or salty water, which may be flowing or still.

DBCA maintains the *Geomorphic Wetlands of the Swan Coastal Plain* dataset (DBCA 2018), which categorises geomorphic wetland features into types and management categories to guide land use and conservation. Wetland types are based on landform shape and water permanence (hydro-period) and management categories of wetlands are determined based on hydrological, biological and human use features. The three management categories are described in **Table 4**.

Table 4: Management categories defined in the Geomorphic Wetlands of the Swan Coastal Plain (DBCA 2017)

Management category	Description of wetland	Management objectives
Conservation (CCW)	Support high levels of attributes	Preserve wetland attributes and functions through reservation in national parks, crown reserves and state owned land. Protection provided under environmental protection policies.
Resource enhancement (REW)	Modified or degraded but still supporting substantial attributes and functions	Restore wetland through maintenance and enhancement of wetland functions and attributes. Protection via crown reserves, state or local government owned land, environmental protection policies and sustainable management on private properties.
Multiple use (MUW)	Few remaining important wetland attributes and functions but still provide important hydrological functions	Use, development and management considered in the context of water, town and environmental planning through land care.

A review of the *Geomorphic Wetlands, Swan Coastal Plain* dataset (DBCA 2018) indicated no geomorphic wetlands mapped within or immediately surrounding the site. The closest 'conservation' category wetland (CCW) feature (UFI 13,316) occurs approximately 1.3 km east of the site associated with the Swan River.

2.5.4 Public Drinking Water Source Areas

PDWSAs are proclaimed by the DWER to protect identified drinking water sources, which can be surface water or groundwater sources (DoW 2009). They are proclaimed under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909* or the *Country Areas Water Supply Act 1947* as Water Reserves, Catchment Areas or Underground Water Pollution Areas. PDWSAs provide Western

Australia with the majority of its drinking water supplies and can be vulnerable to contamination from a range of land uses and water-based activities. The site is not located within or in proximity to any proclaimed or proposed Public Drinking Water Source Areas (PDWSAs).

2.6 Heritage

2.6.1 Aboriginal cultural heritage

In Western Australia, Aboriginal cultural heritage is currently managed pursuant to the *Aboriginal Cultural Heritage Act 2021*[1]. DPLH maintain the Aboriginal Cultural Heritage Inquiry System (ACHIS), which is a directory containing locations and information about Aboriginal Cultural Heritage (ACH) in the State. A desktop assessment of the ACHIS identified that no Aboriginal Heritage sites have been identified within or immediately surrounding the site. The nearest Aboriginal Heritage sites include 'Swan River' (ID 3536) approximately 1.2 km east and 'Lake Jualbup (Shenton Park Lake)' (ID 3794) approximately 1.2 km north-east of the site.

Section 38 of the *Aboriginal Heritage Act 1972* (AH Act) maintained the *Aboriginal Heritage Inquiry System* (AHIS) by the Department of Planning, Lands and Heritage (DPLH), containing information on Registered Aboriginal Heritages Sites and Other Heritage Places throughout Western Australia. In accordance with the *Aboriginal Heritage Due Diligence Guidelines* (DAA 2013), a search of the AHIS online database (DPLH 2018) was undertaken to support preparation of the SP, which also did not identify any Aboriginal heritage sites as being mapped by DPLH within the site.

Although no Aboriginal heritage sites were identified within the site, it is important to note that if during construction Aboriginal heritage artefacts or sites are discovered, these are protected under the ACH Act and AH Act and works should cease and a suitably qualified expert should be brought in to survey the potential site. If required based on the outcome of the survey, the need for permission under the AH Act or ACH Act to manage and disturb sites will need to be resolved.

2.6.2 Non-indigenous heritage

In order to determine the actual or potential presence of sites or features of non-indigenous heritage significance within the site, a review of readily available information at a federal, state and local government level was undertaken to determine if any of the following occur within the site:

- World Heritage Sites
- National Heritage Places
- Commonwealth Heritage Places
- Sites listed in the State Register of Heritage Places
- Sites listed in the City of Nedlands Heritage List.

A review of the above registers did not identify any heritage features as being mapped within the site.

[1] In August 2023, the WA Government announced that the ACH Act would be repealed and replaced by an amended version of the *Aboriginal Heritage Act 1972* (AH Act). At the time of writing, this change to the statutory framework is yet to be legislated.

2.7 Land use considerations

2.7.1 Historical land uses

2.7.1.1 Changes in land use

A review of aerial photographs captured between 1953 and 2023 revealed:

- The site was likely used for residential since circa 1953 and has been developed through to 2023.
- Several demolitions of buildings are evident from circa 1961 to 2021.

2.7.1.2 Potential contamination

The site is not a known contaminated site under the reporting provisions of the *Contaminated Sites Act 2003*.

A review of the Contaminated database (DWER 2023) indicated three properties listed as *'Remediated – Restricted Use'* that occur within 1 km of the site but does not include the site.

2.7.2 Surrounding land uses

The site is surrounded by a hospital and a primary school to the north, existing residential areas to the east and south and the Karrakatta Cemetery to the west. The land immediately to the north is zoned 'special use zone' relating to the hospital, 'education' and 'civic and community', areas to the south and east is zoned for 'residential' and 'mixed use', and reserves for an area for 'Public purposes' to the west associated with Karrakatta Cemetery.

A review of available information and consideration of nearby land uses indicates that no land uses have been identified within at least 1000 m of the site that are likely to impact on future residential land uses or require separation distances to be accommodated in order to mitigate potential impacts on health and/or amenity.

2.8 Bushfire hazard

The portion of the north-west corner of the site is located within a 'bushfire prone area' under the state-wide Map of Bush Fire Prone Areas prepared by the Office of Bushfire Risk Management (OBRM 2021) as shown in **Plate 3**. Strategic planning proposals, including local structure plans require a bushfire hazard level assessment under the *Guidelines for Planning in Bushfire Prone Areas Version 1.4* (the Guidelines) (DPLH & WAPC 2021).

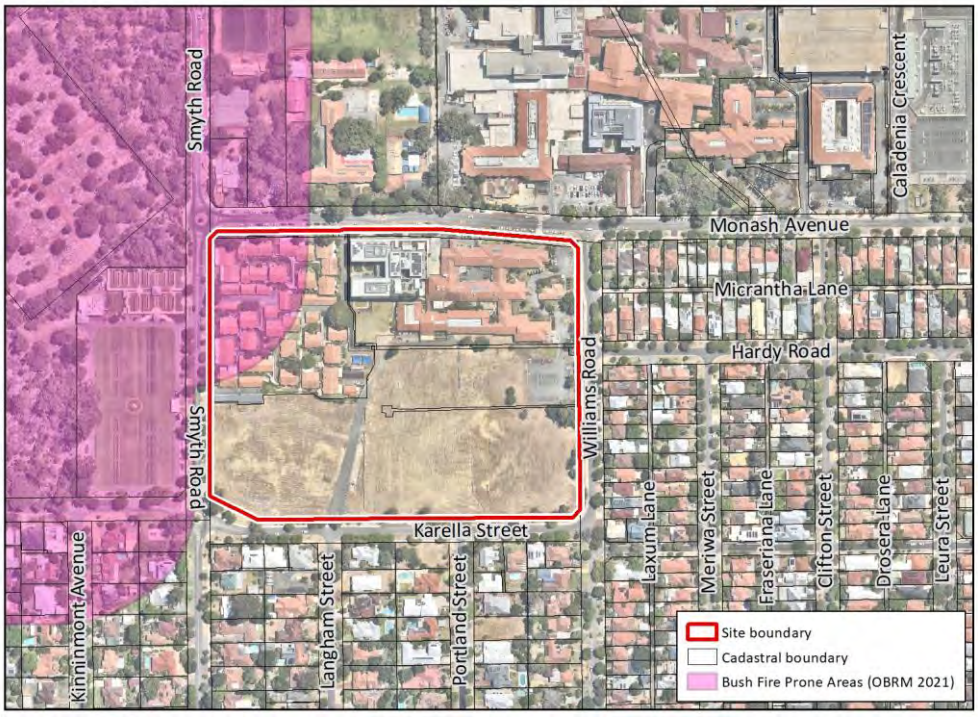

Plate 3: Areas within and surrounding the site identified as 'bushfire prone areas' (as indicated in purple) under the state-wide Map of Bush Fire Prone Areas (OBRM 2021).

A BMP has been prepared by (Emerge Associates 2023a) to support the SP, which includes an assessment of vegetation within and surrounding the site to determine applicable bushfire hazards, in accordance with *Australian Standard 3959:2018 Construction of buildings in bushfire-prone areas (AS 3959),* and an assessment of the bushfire protection criteria outlined in the Guidelines. The BMP has determined that the SP can satisfy the requirements of SPP 3.7 and the Guidelines.

As part of the BMP, a post-development vegetation classification scenario has been determined to assist in understanding whether the proposed urban development can satisfy SPP 3.7, and whether any separation distances to achieve a bushfire attack level of BAL-29 or less will need to be accommodated within the SP area. The low/ moderate bushfire hazards likely to affect residential development within the site (in the post-development scenario) will largely be associated with existing classified Forest (Class A) vegetation to the north-west of the site, and grassland (Class G) vegetation identified central of the site.

In order to resolve the potential for bushfire to affect the site, all classified vegetation within future residential lots and road reserves within the site will be removed and converted to non-vegetated (exclusion 2.2.3.2(e)) and low threat vegetation (exclusion 2.2.3.2(f)). Future open space areas within the site will be maintained to achieve low threat in accordance with Section 2.2.3.2 of AS 3959. All other classified vegetation outside the site, is assumed to remain in its existing condition and therefore pose a bushfire risk to the site in the long-term. This means that there is no removal or modification of native vegetation necessary outside of the site to achieve the recommended bushfire risk mitigation outcomes.

2.9 Noise impacts

Under the *State Planning Policy 5.4 Road and Rail Noise* (WAPC 2019) assessment areas have been determined for specific rail and road infrastructure to manage impacts on potential noise-sensitive land uses. These include a 300 m buffer for 'strategic freight and major traffic routes', and 200 m for 'other significant freight/traffic routes' which triggers specific measures that will apply to a proposal to manage and mitigate noise impacts.

A review of the SPP 5.4 (DPLH-057) (DPLH 2023b) mapping data identifies the site occurs outside of any identified assessment area. The nearest assessment area is mapped approximately 380 m north-east from the nearest 'other significant freight/traffic corridor' associated with Stirling Highway and approximately 680 m south-east from the nearest 'metropolitan passenger railway' relating to the Fremantle Railway line. SPP 5.4 states a trigger distance of 200 meters for 'other significant freight/traffic corridor' would require acoustic impacts consideration, while a trigger distance of 100 meters for 'metropolitan passenger railway'.

Therefore, given the proximities, no further consideration regarding acoustic impacts is required.

2.10 Summary of relevant environmental factors

Table 5 provides a summary of the environmental factors that have been investigated for the site and those that will require further specific consideration as part of the future development within the site. These considerations are discussed further in **Section 4**.

Table 5: Relevant environmental factors and considerations for the proposed SP

Environmental factor	Relevant considerations
Acid Sulfate Soils	A review of the DWER mapping indicates that the site and immediate surrounds are not classified as having any ASS risk and no further consideration of this factor is required.
Flora and vegetation	Due to the degraded nature of the site, no significant flora or vegetation values have been identified within the site.
Terrestrial fauna	No significant fauna values have been identified on the site given the lack of vegetation and fauna habitat.
Bush Forever	Whilst BF Site 317 'Kings Park' is located 840 m to the east of the site and BF Site 218. 'Shenton Bushland, Shenton Park' is located 930 m to the north-west of the site, the proposed development is not likely to impact on any Bush Forever sites and no further consideration of this factor is required.
Ecological linkages	A regional ecological linkage has been identified across the site and surrounds. The site is not considered to contribute to or provide any significant ecological linkage functionality, particularly due to the lack of environmental values within the broader site.
Environmentally Sensitive Areas	No ESAs are identified within or surrounding the site. No further consideration of this factor is required.
Groundwater	The depth to groundwater was measured at approximately 19 m BGL on the northeastern boundary and 28 mBGL on the southwestern boundary of the site. This is discussed further in **Section 4.3**.

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Environmental factor	Relevant considerations
Surface water	No surface water features are identified within or adjacent to the site. The management of stormwater will be a consideration for future development and is discussed further in **Section 4.3.**
Wetlands	No geomorphic wetlands are mapped as occurring across or adjacent to the site. No further consideration of this factor is required.
Aboriginal heritage	No Aboriginal heritage sites have been identified within the site.
Non-indigenous heritage	No non-indigenous heritage values have been identified within, or in close proximity to the site and therefore no further consideration of this factor is required.
Historic land uses	The site is largely cleared of native vegetation and while it has supported special use land uses, including aged care, no specific contamination has been identified as requiring management. No further consideration of this factor is provided as part of this EAMS.
Surrounding land uses	There are no existing land uses in proximity to the site which are incompatible with the proposed residential land use of the site, therefore no further consideration of this factor is required.
Bushfire hazard	Classified vegetation has been identified as affecting the site in the post development scenario and is further considered in **Section 4.4** and within the SP supporting BMP (Emerge Associates 2023a).
Noise impacts	The site is mapped outside of any significant traffic or freight corridor and does not require any further consideration regarding potential noise impacts.

3 Planning Framework and Proposal

3.1 Proposed Local Structure Plan

The site is currently zoned 'Urban' under the Metropolitan Region Scheme (MRS), and 'Urban' and 'Special Use' under the City of Nedlands Local Planning Scheme No. 3 (LPS 3).

The Nedlands Regis Proposed Structure Plan has been prepared for the site on behalf of Hesperia and is included in **Appendix A**.

The land uses within the site are proposed to include residential lots, public open space, an interconnected road network and special use services. Public open space proposed within the site will serve a number of functions including:

- The provision of passive recreation
- Opportunities to retain vegetation
- Accommodation of urban water management requirements.

3.2 Future planning approvals and environmental management framework

The SP will be submitted to the City of Nedlands for consideration, with final approval by the WAPC.

A key component of implementing the future subdivision and development of any area is the relevant environmental management framework. Where required, the environmental management requirements can be implemented through applicable subdivision conditions.

The future environmental management framework is discussed further in **Section 4**.

3.3 Environmental Approvals

3.3.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act protects listed Matters of Nation Environmental Significance (MNES), and it is an offence to implement any action that would have a significant impact on any MNES. If a proponent believes their proposed action is likely to have a significant impact on any MNES, then they are required to refer this proposal to the federal government (the Department of Climate Change, Energy, the Environment and Water (DCCEEW).

Based on the proposed development layout impacts to the site, it is considered unlikely that the proposed action would bring about a significant impact on any MNES pursuant to the EPBC Act and therefore unlikely to require referral to the DCCEEW. No listed flora species or communities occur within the site, and the extent and quality of Black cockatoo foraging habitat is limited and unlikely to pose significant impacts if impacted through development.

The EPBC Act Referral guidelines for 3 WA threatened black cockatoo species (DCCEEW 2022), recommends referral to the minister for:

- loss of native foraging habitat greater than 1ha
- loss of exotic foraging habitat greater than 1 ha
- any loss of habitat trees
- any loss of a known roosting site

Given that there are no habitat trees, no known roosting and the extent of foraging habitat to be cleared is less than 1 ha, there would not be any basis to suggest that referral based on potential impacts to black cockatoo is required in accordance with the EPBC Act Referral guidelines for 3 WA threatened black cockatoo species (DCCEEW 2022).

3.3.2 Environmental Protection Act 1986

Under the EP Act it is an offence to clear native vegetation unless the clearing is done in accordance with a clearing permit, or an exemption applies.

'Native vegetation' as defined in s 3(1) and 51A of the EP Act and Regulations as follows:

Indigenous aquatic or terrestrial vegetation, that includes dead vegetation unless that dead vegetation is of a class declared by regulation to be excluded from this definition but does not include vegetation in a plantation.

Native vegetation does not include vegetation that was intentionally sown, planted or propagated (even if this involves indigenous terrestrial plant species), although natural regeneration of previously areas would constitute native vegetation. Clearing vegetation that is not native vegetation for the purposes of the EP Act can be cleared without requiring a clearing permit or exemption.

Given there is no native vegetation within the site, and the single identified native Marri tree was identified as being previously planted (and is also situated outside of the site), a clearing permit or exemption pursuant to Part V of the EP Act will not be required to facilitate future development.

Part IV of the EP Act allows for the referral of proposals to the EPA by the proponent, a decision maker, any member of the public (i.e. third party referrals), and the EPA (via the Chair) also may call in a proposal that hasn't been referred. The EPA may choose to assess a referred proposal, and usually considers significance when making this decision.

The proposal is unlikely to be considered a significant proposal and therefore is unlikely to require referral to the EPA pursuant to Part IV of the EPA Act.

PD31.05.24 - Attachment 2

4 Environmental Assessment and Management Framework

Given the site context there are few environmental values and attributes that will need to be accommodated in future planning.

4.1 Flora and vegetation

4.1.1 Policy framework and management objective

In the context of environmental impact assessment, the EPA objective for flora and vegetation is '*to protect flora and vegetation so that biological diversity and ecological integrity are maintained*'. Where a proposal may potentially impact upon flora and vegetation values, the following mitigation hierarchy should be applied to minimise potential impacts:

1. **Avoid** impacts
2. **Minimise** impacts
3. **Offset** impacts.

The site is dominated by areas of 'non-native' vegetation with planted endemic and non-endemic species. No vegetation within the site has been identified as being conservation significant (i.e. TEC or threatened flora) or of regional or local significance.

Given this, the impact of future development within the site is likely to be minimal on flora and vegetation values. Therefore, the objective for future management of flora and vegetation within the site will be principally focussed around opportunistically retaining individual trees within future open space or within lots where this is practical.

4.1.2 SP considerations for flora and vegetation

Due to the degraded nature of the site, no significant flora or vegetation values have been identified within the site that require specific spatial responses from the SP.

Existing trees can be retained within areas of open space, road reserve or on lots within the site, however, will need to respond to site constraints such as level changes (i.e. the provision or removal of fill material) and health/longevity considerations. While no native vegetation was found within the site, the native Marri tree found in the road reserve has been identified as planted, and as such would not require a clearing permit pursuant to Part V of the *Environmental Protection Act 1986.*

4.1.3 Future flora and vegetation management requirements

As part of subdivision, the WAPC may include a standard condition (model subdivision condition EN2, WAPC 2017), which requires:

Measures being taken to ensure the identification and protection of any vegetation on the site worthy of retention that is not impacted by subdivisional works, prior to commencement of subdivisional works. (Local Government)

This can be used to ensure that where possible in public open space and road reserves, vegetation retention is considered as part of the subdivision works process. It is recommended that this be considered as part of the subdivision design process, so that the subdivision layout responds to existing vegetation where possible.

4.2 Terrestrial fauna

4.2.1 Policy framework and management objectives

In the context of environmental impact assessment, the EPA's objective for terrestrial fauna is *'to protect fauna so that biological diversity and ecological integrity are maintained'.* The application of the mitigation hierarchy should be applied to avoid or minimise impacts to terrestrial fauna where possible.

The EPBC Act also provides protection for listed 'threatened' species, including black cockatoos, which may potentially use habitat within the site. Any proposed action which is considered likely to result in a 'significant' impact upon these species, identified by the DoEE as Matters of National Environmental Significance (MNES), should be referred to the Commonwealth Department of Environment and Energy.

Based on the degraded condition of vegetation within the site, there are limited fauna habitat values remaining. Limited fauna habitat values were identified on site, in the form of primarily non-native foraging habitat (0.22ha), and no roosting or breeding activity has been identified (See **Figure 5**).

Opportunities to facilitate the retention of fauna habitat within the site are limited due to the small areas of vegetation within the site, and the proposed layout of the future development. Therefore, there will be opportunistic retention of areas of vegetation and/or individual trees within future POS or on lots where this is practical.

4.2.2 SP considerations for terrestrial fauna

Due to the cleared and degraded nature of vegetation within the site, limited fauna habitat values exist. No specific spatial response to fauna habitat values within the site has been provided for in the SP.

4.2.3 Future terrestrial fauna management requirements

Given the limited fauna habitat values within the site it is unlikely that fauna management will be required for this site.

PD31.05.24 - Attachment 2

4.3 Hydrology

4.3.1 Policy framework and management objective

In the context of environmental impact assessment, the EPA's objective for inland waters is *'to maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected'.*

The *State Water Strategy for Western Australia* (Government of WA 2003) and *Better Urban Water Management* (WAPC 2008) endorse the promotion of integrated water cycle management and application of water sensitive urban design (WSUD) principles to provide improvements in the management of stormwater, and to increase the efficient use of other existing water supplies.

4.3.2 SP considerations for hydrology

A LWMS has been prepared by (Pentium Water 2023) to support the SP. It provides a framework for the future delivery of a best practice approach to integrated water cycle management utilising WSUD principles. The structure plan responds to the requirements for flood mitigation, flow management and treatment of surface water within road reserves and public open space, as discussed in further detail below.

The drainage urban design has incorporated road reserve widths and proposed road cross section which facilitate the use of median swales along the major road reserves through the development (Army Street and Hollywood Street) (see below in **Plate 4**). The proposed median swales will provide opportunity for at-source treatment and pollutant retention of stormwater runoff from the adjacent roads, for passive irrigation of planting and for an improved urban design aesthetic including greater urban tree canopy. The retention and infiltration of stormwater within the median swales also reduces the volume of stormwater requiring management in the downstream open space areas.

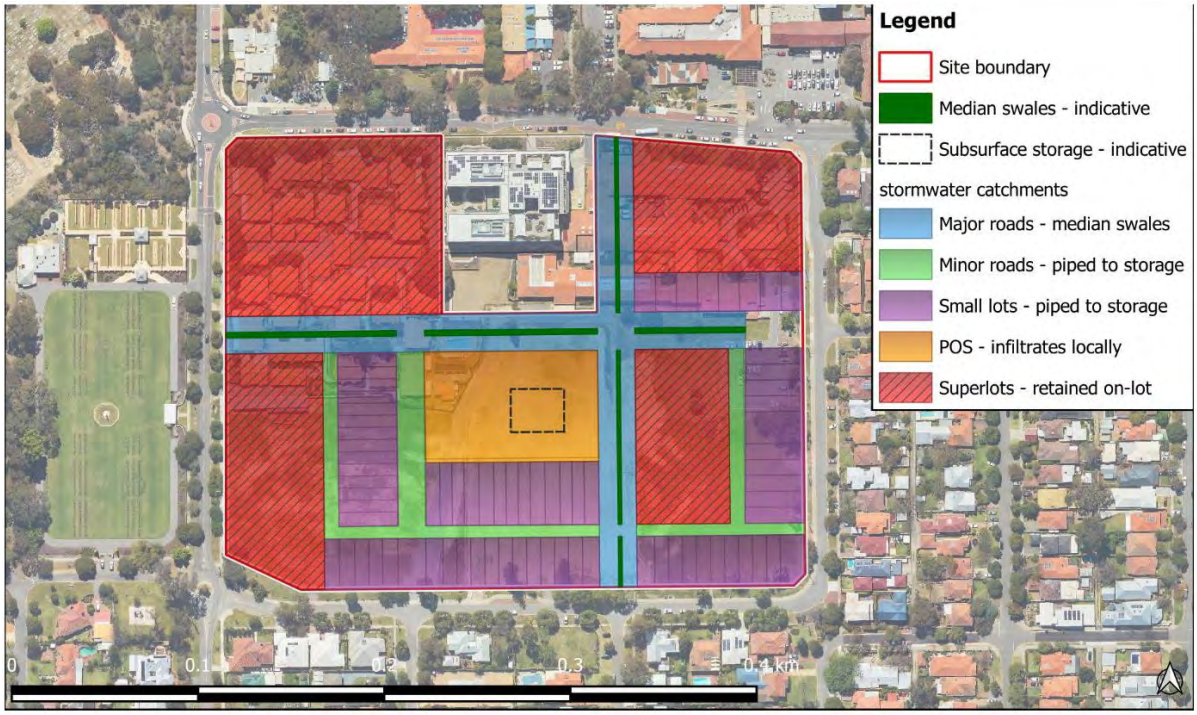

Plate 4: Stormwater management strategy (Pentium Water 2023)

When considering stormwater drainage within individual lots, the proposed apartment lots will manage stormwater within their lot boundaries as they will have adequate open space available to accommodate storage and infiltration systems to achieve this. In contrast, the medium density town house lots are proposed to be constructed with direct stormwater connections to the road drainage system given the difficulty that these lots may have in accommodating soakwells in small courtyard spaces.

Stormwater contribution from the medium density residential lots has been accounted for in the preliminary design of the development's stormwater drainage system. As with the apartment sites, the medical centre site is also proposed to contain its own stormwater on site. It is anticipated that the medical centre lot will have adequate space available for stormwater management (i.e. within or beneath car park areas) and it is also noted that the medical centre lot grades towards the north-east corner of the site making it impractical to convey stormwater from this site via the road reserve to the central public open space. The design of on-lot stormwater retention and disposal systems for the apartment and medical centre lots will need to be undertaken as part of development approvals for those respective lots (Pentium Water 2023).

The LWMS should be referred to for further detailed information regarding the groundwater and surface water strategy.

4.3.3 Future management requirements

The LWMS provides for the environmental management framework for groundwater and surface water within the site.

Environmental condition D2 of the WAPC's *Model Subdivision Conditions Schedule* 2021 (WAPC and DPLH 2021) will be attached to all subdivision approvals, requiring the preparation of an Urban Water Management Plan (UWMP) which states:

Prior to the commencement of subdivisional works, an urban water management plan is to be prepared and approved, in consultation with the Department of Water and Environmental Regulation, consistent with any approved Local Water Management Strategy/Drainage and Water Management Plan (Local Government)

4.4 Bushfire management

4.4.1 Policy framework and management objective

State Planning Policy 3.7 Planning in Bushfire Prone Areas (WAPC 2015a) stipulates that any development proposal which occurs partly or wholly within a bushfire prone area is required to be accompanied by a bushfire management plan. The preparation of the BMP is required to incorporate the following tasks:

- Classification of existing vegetation types within the site and surrounding 100 m, in accordance with *Australia Standard 3959 Construction of buildings in bushfire-prone areas* (AS 3959) (Standards Australia 2018).
- Assessment of bushfire hazard levels within the site and surrounding 100 m, in accordance with the *Guidelines for Planning in Bushfire Prone Areas* (WAPC and DFES 2015).
- Assessment of effective slope under areas of classified vegetation.
- Completion of an indicative Bushfire Attack Level (BAL) assessment and preparation of an associated BAL contour plan.
- Assessment of the SP design against the bushfire protection criteria, in accordance with the *Guidelines for Planning in Bushfire Prone Areas* (WAPC and DFES 2015).

4.4.2 SP considerations for bushfire management

Based on the outcomes of the BAL assessment and the BAL contour plan (Emerge Associates 2023a) all future lots will be subject to a BAL rating less than BAL-29, due to setbacks provided by public roads and in-lot setbacks, ensuring that development (i.e. future habitable buildings) within the site will be able to achieve a BAL rating of BAL-29 or less.

Areas of public open space, roadside swales, roadside verges will be designed and maintained to achieve a Low threat (exclusion 2.2.3.2(f)) classification in the post development scenario.

Further discussion in this regard is provided in the BMP (Emerge Associates 2023a).

4.4.3 Future bushfire management requirements

A BMP (Emerge Associates 2023a) has been prepared to support the SP, and outlines the key considerations that will need to be accommodated as part of future subdivision, detailed design and implementation in order to satisfy SPP 3.7 and the associated bushfire protection criteria. These include:

- *Element 1 Location:* future habitable buildings can be located in an area that will, on completion, be subject to a low or moderate bushfire hazard of BAL-29 or less.
- *Element 2 Siting and Design*: all future habitable buildings should be sited within the proposed development so that BAL-29 or less can be achieved, through the provision of appropriate separation distances based on the location of public roads and/or in lot setbacks. Areas of public open space will be designed to achieve a low threat (exclusion 2.2.3.2(f)) classification in the post development scenario.
- *Element 3 Vehicular Access*: The proposed structure plan provides for two access roads that will service the lots within the site.
- *Element 4 Water*: the development should be provided with an adequate water supply to support fire-fighting activities, which is addressed through the provision of a permanent and reticulated water supply to support onsite firefighting requirements.

Consideration of bushfire will be required for those areas of the SP designated as 'bushfire prone areas' (within the *Map of Bush Fire Prone Areas*, as published) at the time of subdivision. This will include the preparation of an updated/new BMP to support future subdivision applications, and a model subdivision condition will likely be applied requiring the implementation the approved BMP as well as the certification of BAL ratings predicted as part of subdivision in order to support the appropriate the construction of habitable buildings in accordance with AS 3959. The site's bushfire classification does not present any environmental limitations that would require the removal of native vegetation to mitigate the risk of bushfires.

5 Implementation

A summary of the SP responses to the environmental values and attributes within the site is provided in **Table 6**.

Table 6: Environmental management framework implementation

Factor	SP phase	Subdivision phase	Development phase
Flora and Vegetation	• Assessment of flora and vegetation values and preliminary consideration of potential retention opportunities.	• Detailed analysis of final subdivision layout to determine tree retention opportunities.	• If areas of retention are proposed, accommodate these as part of construction and landscaping works.
Terrestrial Fauna	• Assessment of fauna habitat and preliminary consideration.	• Retention not necessary given low quality and limited extent of non-native foraging habitat. • Detailed analysis of final subdivision layout to determine potential habitat retention.	• If areas of retention are proposed (for trees), accommodate these as part of construction and landscaping works.
Hydrology	• Assessment of the stormwater management drainage. • Preparation of a Local Water Management Strategy.	• Preparation of an Urban Water Management Plan.	• Implementation of the UWMP.
Bushfire management	• Preparation of a Bushfire Management Plan. • Determining a spatial layout that reduces the bushfire hazard to future development. Provision of public open space and road reserves to accommodate APZ setbacks.	• Complete a BMP including a BAL assessment to support subdivision	• Dwellings within 100 m of bushfire threat to demonstrate compliance with AS 3959.

6 Conclusions

This EAMS has been prepared on behalf of the proponent for the Nedlands Regis Structure Plan (see **Appendix A**). This EAMS has been prepared to support the structure plan, together with:

- Local Water Management Strategy (Pentium Water 2023)
- Ecological and Tree Assessment (Emerge Associates 2023b).

The SP design does not specifically need to provide for the future retention of existing flora, vegetation or fauna habitat values, due to the limited extent and significance of these values Notwithstanding this, the potential for retention of trees where possible can be considered.

This document provides an environmental management strategy to be implemented across the site for future subdivision and development stages. The key components of this management strategy are summarised as follows.

- Acid sulfate soils: Given the depth to groundwater within the site and the presence of no ASS within or near the site, ASS investigations and management considerations for the site are unlikely to be required at subdivision.
- Vegetation retention: completing a detailed analysis of the final development design and bulk earthworks requirements, to confirm any potential tree retention opportunities. No native vegetation was identified within the site, and as such there are no clearing implications that apply.
- Fauna management: while there are areas of low quality non-native black cockatoo foraging habitat within the site, there is no requirement to retain this, but there would be some habitat retention achieved through tree retention.
- Environmental impact: the site does not contain any environmental values of significance, nor does the development concept plan propose any impact on MNES including Black cockatoos.
- Hydrology: stormwater management requirements as outlined within the Local Water Management Strategy (LWMS) will be implemented through an Urban Water Management Plan (UWMP) for each stage of future subdivision.
- Bushfire risks: The site's bushfire classification doesn't present any environmental limitations that would require the removal of native vegetation to mitigate the risk of bushfires. To respond to the known bushfire hazards within and surrounding the site future development will be in accordance with the currently prepared BMP. This assumed that public open space (POS) corridor within the site will be classified as low threat vegetation (exclusion 2.2.3.2(f)) in the post development scenario and that areas of bushfire hazard surrounding the site are accounted for through construction and setback standards as per AS3959.

Overall, the environmental attributes and values of the site can be accommodated within the structure plan design or can be managed appropriately through the future subdivision and development phases in line with the relevant state and local government legislation, policies and guidelines and best management practices.

7 References

7.1 Legislation

Aboriginal Heritage Act 1972

Aboriginal Cultural Heritage Act 2021

Biodiversity Conservation Act 2016

Bush Fires Act 1954

Contaminated Sites Act 2003

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Figures

Figure 1: Site Location

Figure 2: Geology and Topographic Contours

Figure 3: Trees

Figure 4: Plant Communities and Vegetation Condition

Figure 5: Fauna Habitat

Figure 6: Environmental Features

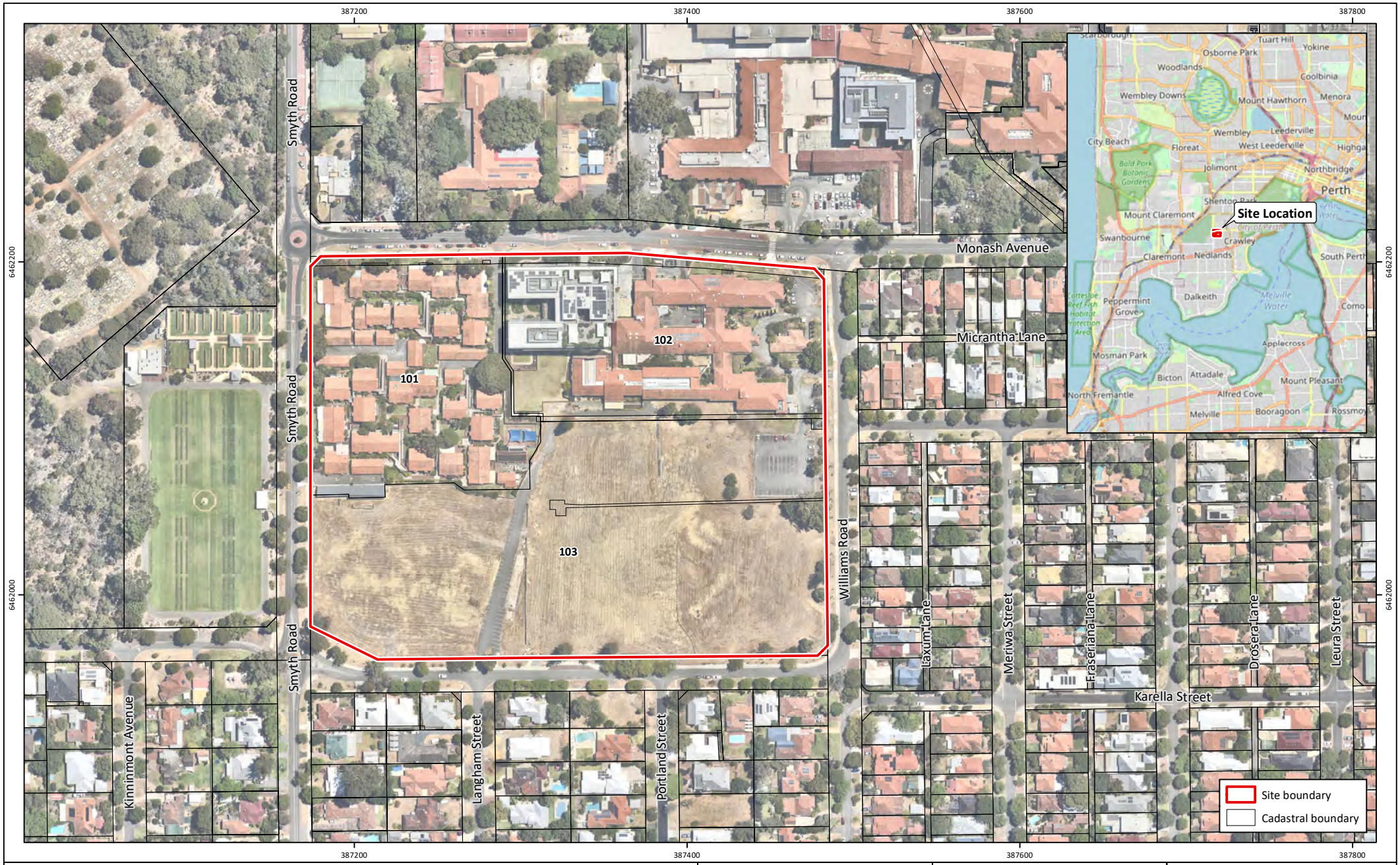

Figure 1: Site Location

Project:	Environmental Assessment and Management Strategy Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands
Client:	Hesperia

Plan Number:
EP23-028(04)--F07

Drawn:	GAR
Date:	25/08/2023
Checked:	SPL
Approved:	JDH
Date:	01/09/2023

N

0 50 100
Metres

Scale: 1:3,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used
©Landgate (2023). Nearmap Imagery date: 17/04/2023

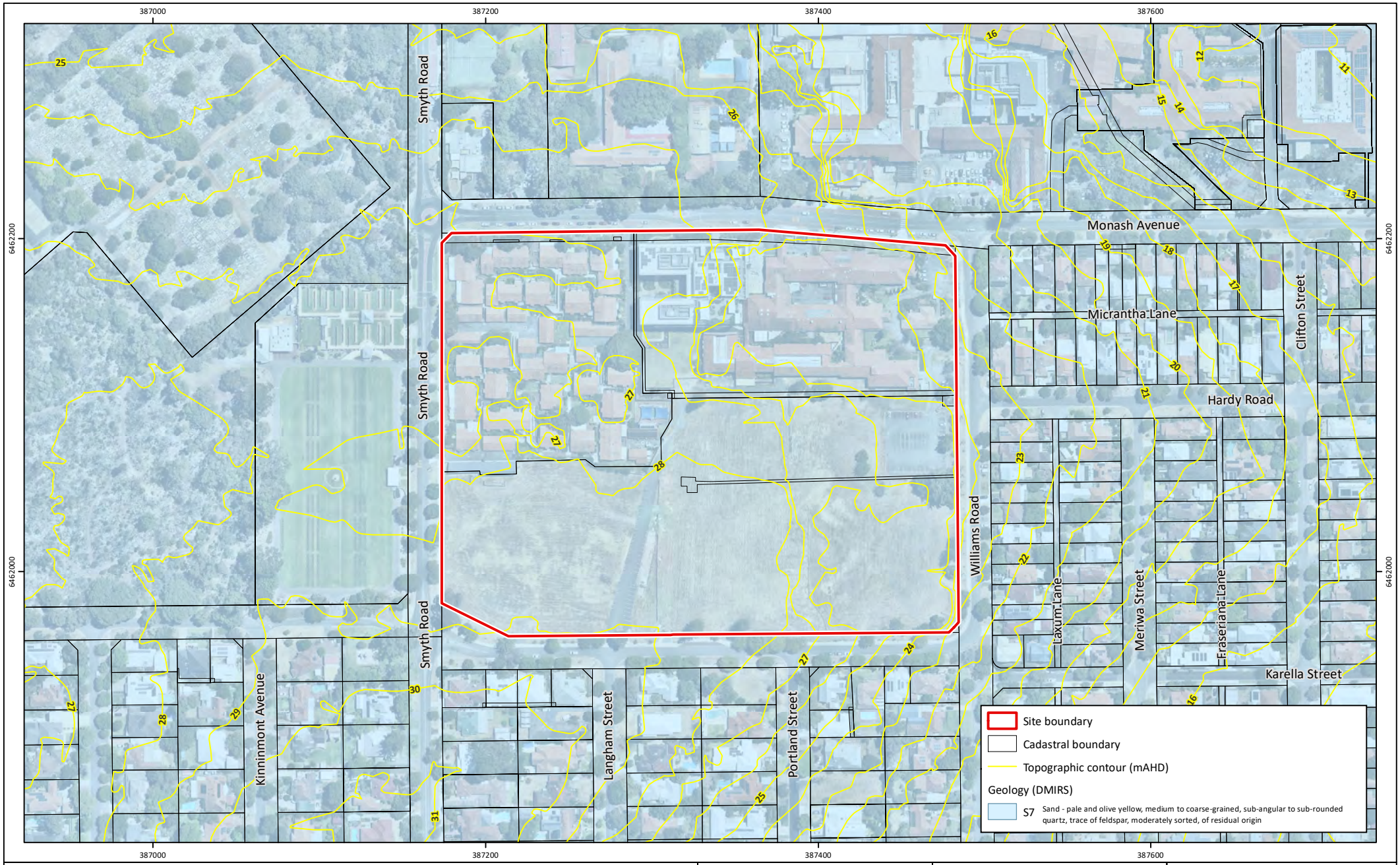

Figure 2: Geology and Topographic Contours

Project:	Environmental Assessment and Management Strategy Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands
Client:	Hesperia

Plan Number:
EP23-028(04)--F08

Drawn:	GAR
Date:	25/08/2023
Checked:	SPL
Approved:	JDH
Date:	01/09/2023

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Metres

Scale: 1:3,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

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©Landgate (2023). Nearmap Imagery date: 17/04/2023

Figure 3: Trees

Project: Environmental Assessment and Management Strategy
Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands

Client: Hesperia

Plan Number:
EP23-028(04)--F21

Drawn:	GAR
Date:	01/09/2023
Checked:	SPL
Approved:	JDH
Date:	01/09/2023

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Scale: 1:2,000@A4

GDA2020 MGA Zone 50

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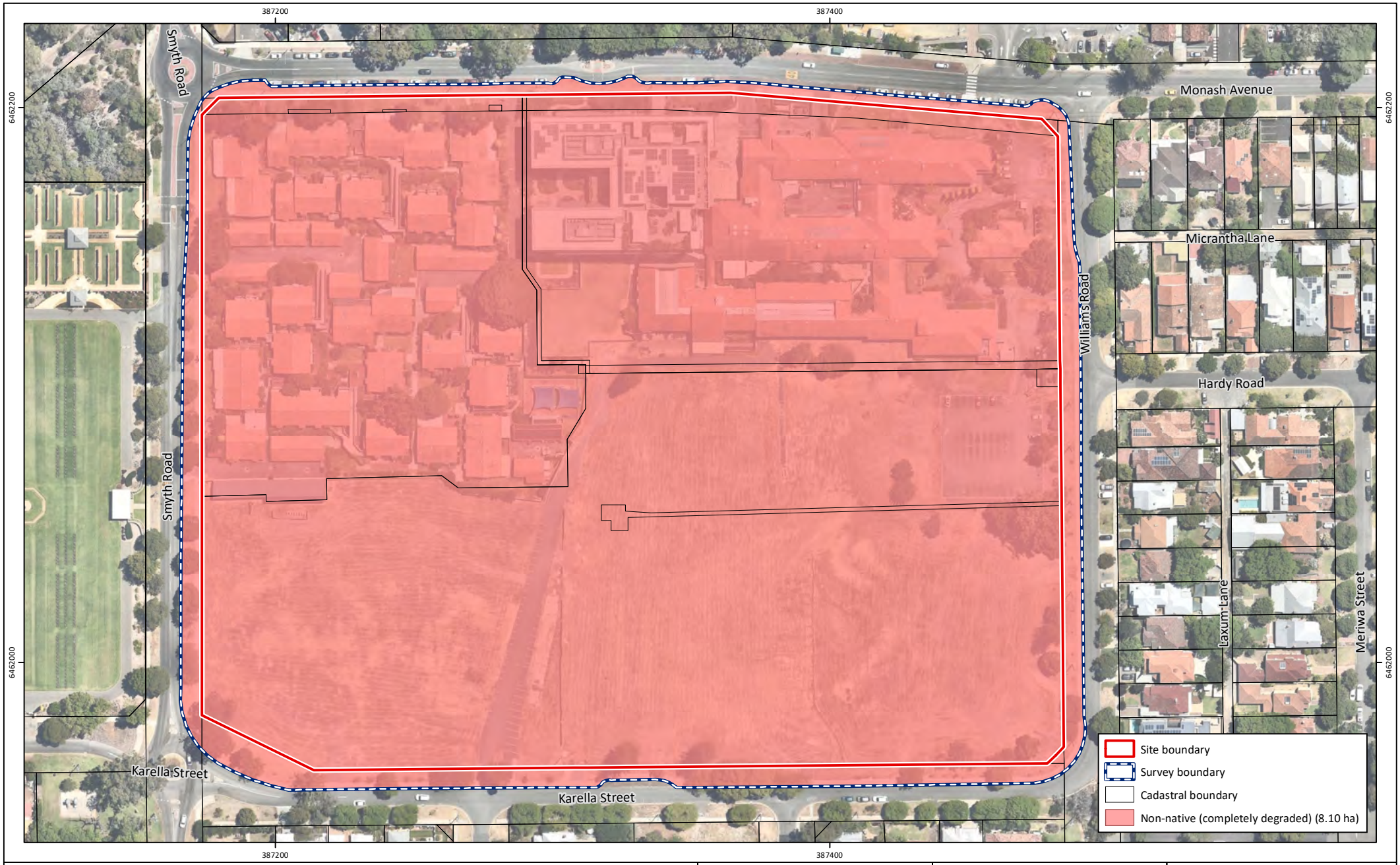

Figure 4: Vegetation Unit and Condition

Project: Environmental Assessment and Management Strategy
Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands
Client: Hesperia

Plan Number:
EP23-028(04)--F09
Drawn: GAR
Date: 25/08/2023
Checked: SPL
Approved: JDH
Date: 01/09/2023

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Metres
Scale: 1:1,800@A4
GDA2020 MGA Zone 50

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Figure 5: Black Cockatoo Foraging Habitat

Project:	Environmental Assessment and Management Strategy Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands
Client:	Hesperia

Plan Number:
EP23-028(04)--F10

Drawn:	GAR
Date:	25/08/2023
Checked:	SPL
Approved:	JDH
Date:	01/09/2023

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Scale: 1:2,000@A4

GDA2020 MGA Zone 50

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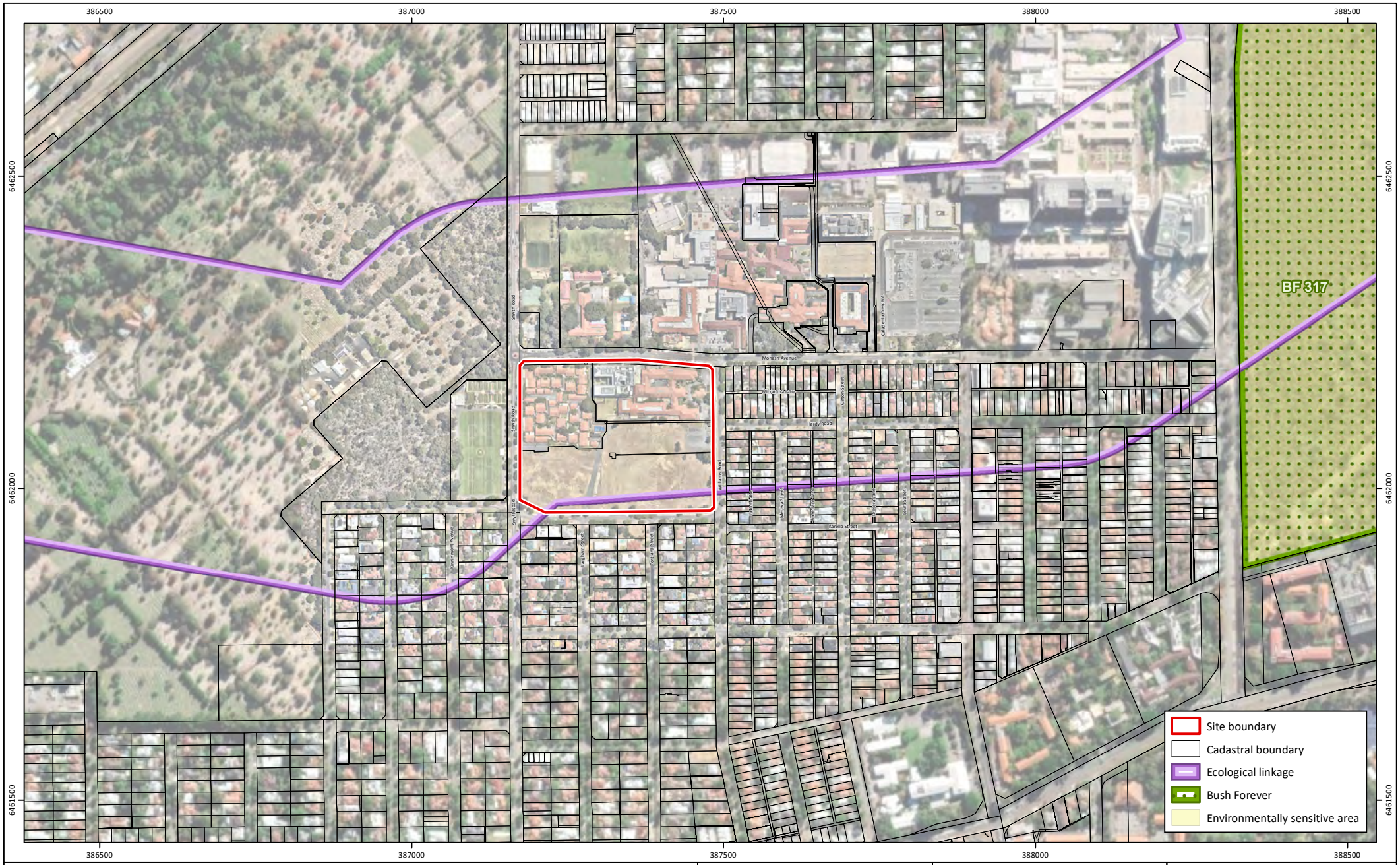

Figure 6: Environmental Features

Project:	Environmental Assessment and Management Strategy Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands
Client:	Hesperia

Plan Number:
EP23-028(04)--F11

Drawn:	GAR
Date:	25/08/2023
Checked:	SPL
Approved:	JDH
Date:	01/09/2023

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Metres

Scale: 1:8,000@A4

GDA2020 MGA Zone 50

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Appendix A

Nedlands Regis Master Plan (Hesperia)

Block	Area	% site area
A	2882.0	
B	2320.0	
C	5133.8	
D	2688.331	
E	3822.1	
F	2199.7	
G	3065.5	
H		
I	11141.4	
J	5606.6	
K	2674.1	
L	3366.9	
M	1931.3	
N	1931.3	
Total	48763.2	65.8%
Park	5937.3	8.0%
Street	13097.2	17.7%
Utility	135.2	

DESIGNER

- Use figured dimensions only
- Comply with relevant Australian Standards
- Comply with relevant Authorities' requirements

HESPERIA

Level 3/338 Barker Road Subiaco WA
PO Box 782 Subiaco WA 6904

N

REV	DATE	AMENDMENT
A	26/9/23	Issue for consultants

Notes
This scheme has been prepared for feasibility purposes only.
The scheme depicts a potential solution - subject to future statutory approval.

PROJECT
Nedlands Regis
118-120 Monash Road, Nedlands

CLIENT
for Hesperia

DRAWING TITLE
Hesperia Master Plan

JOB NO	DRAWN	SCALE	DRAWING NO.
2313		1.1500 at A3	**H1**
DATE	CHECKED	PLOT DATE	REVISION
		26/9/23	**A**

Appendix B

Ecological and Tree Assessment – Emerge Associates 2023

PERTH OFFICE
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Emerge Environmental Services Pty Ltd ABN 57144772510 trading as Emerge Associates

Document Reference: EP23-028(06)--009 ASF

Emerge contact: Tom Atkinson

13 September 2023

Attention: Callum Morton Smith
Hesperia
PO Box 782
Subiaco WA 6904

Delivered by email to: callum.morton-smith@Hesperia.com.au>

Dear Callum,

TREE AND ECOLOGICAL ASSESSMENT - LOTS 101, 102 AND 103 MONASH AVENUE NEDLANDS

1 INTRODUCTION

1.1 Background

Hesperia Pty Ltd are preparing the *Nedlands Regis Structure Plan* that will guide future residential, open space and special use development across Lot 101, Lot 102 and Lot 103 Monash Avenue in Nedlands (referred to herein as the 'site').

The site is located approximately 4 kilometres (km) south-west of the Perth Central Business District, within the City of Nedlands. It is approximately 7.41 hectares (ha) in size and is bounded by education, aged care and hospital facilities to the north, residential and mixed land uses to the east and south and Karrakatta Cemetery and Hollywood Reserve to the west. The location and extent of the site is shown in **Figure 1**.

A tree and ecological assessment of the site and adjacent road reserve was requested to inform the preparation of the *Environmental Assessment and Management Strategy* (EAMS) for the *Nedlands Regis Structure Plan*.

1.2 Purpose and scope of work

The scope of work was to undertake a preliminary tree assessment with reference to *AS 4970-2009 Protection of trees on development sites* and a reconnaissance survey with reference to EPA (2016)[1].

As part of this scope of work, the following tasks were undertaken:

- Desktop study to provide contextual information and determine the likelihood of occurrence of threatened and priority species or ecological communities.

[1] The Environmental Protection Authority (EPA) *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment* establishes standards for the assessment of flora and vegetation in Western Australia Environmental Protection Authority (EPA) 2016, *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment*, Perth.

- Field survey to record tree data and flora, vegetation units, vegetation condition and tree survey data.
- Analysis and mapping of contextual information, vegetation units, vegetation condition and threatened and priority flora or ecological communities (if present).
- Documentation of the desktop study, methods, results, discussion and conclusions.

2 METHODS

An ecologist from Emerge visited the site on 17 and 21 August 2023. During the two visits the site and road reserve were traversed on foot and assessment was made of trees and ecological values.

2.1 Preliminary tree assessment

All trees with a diameter at breast height (DBH) greater than 10 cm within the site[2] and all trees within road reserve were recorded using a handheld GPS unit and tablet with attributes assessed as outlined in **Table 1**. Following the survey, trees were mapped by species over aerial imagery.

Table 1: Attributes recorded for each tree

Attribute	Description
GPS location	The location was recorded using a handheld GPS unit
Tree species	Species and common name were identified
Status	Native to site
DBH (cm)	Trunk diameter measured at breast height (1.3 m)
Hollows present	The presence of any hollows was recorded
Black cockatoo hollows	If hollows were present, any potentially suitable for a black cockatoo were noted
General notes	Any additional observations

2.2 Ecological assessment

2.2.1 Vegetation Unit

Vegetation was described according to the dominant species present using the structural formation descriptions of the *National Vegetation Inventory System* (NVIS) (NVIS Technical Working Group 2017).

2.2.2 Vegetation condition

The condition of the vegetation was assessed using the Keighery (1994) scale (**Table 2**). Vegetation condition was mapped on aerial photography based on observations and notes recorded during the field survey to define areas with differing condition.

Table 2: Vegetation condition scale applied during the field assessment

Condition category	Definition (Keighery 1994)
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very good	Vegetation structure altered obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.

Table 3: Vegetation condition scale applied during the field assessment (continued)

Condition category	Definition (Keighery 1994)
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

2.2.3 Black cockatoo habitat

Three threatened species of black cockatoo occur in the south-west of Western Australia that have potential to occur in the site (referred to herein collectively as 'black cockatoos')[3]. Black cockatoo habitat was assessed as it could be a key value of vegetation.

Black cockatoo habitat is conventionally separated into breeding, roosting and foraging categories.

A breeding 'habitat tree' is defined as a native eucalypt that is typically known to support black cockatoo breeding such as marri, jarrah, blackbutt, tuart, wandoo, salmon gum or to a lesser extent flooded gum, with a DBH ≥50 cm or DBH ≥30 cm for wandoo or salmon gum. As any tree that has a suitable hollow may provide breeding habitat for black cockatoos, other tree species were also considered to be habitat trees if they contained a suitable hollow.

Tall native and non-native trees provide roosting habitat. The presence of active or historical roosts was determined through evidence of roosting activity, such as branch clippings, droppings or moulted feathers.

Foraging habitat was identified by assessing vegetation in the site and road reserve for plant species known to provide food for black cockatoos (Davies 1966; Saunders 1980; Johnstone and Storr 1998; Johnstone and Kirkby 1999; Groom 2011; Johnstone et al. 2011; DAWE 2022). Foraging habitat was classified as either 'native' or 'non-native' based on the predominant vegetation's naturalised status. It was also classified as either 'primary' or 'secondary' based on black cockatoo foraging preferences. Primary food plants were defined as those with historical and contemporary records of regular consumption by a black cockatoo species. Secondary food plants were defined as plants that black cockatoo species have been recorded consuming occasionally or that, based on their limited extent or agricultural origin, should not be considered a sustaining resource. A list of plant species classified as primary or secondary food plants is provided as **Attachment 1**.

Evidence of black cockatoo foraging, such as chewed fruits, was searched for within the site and allocated to a species where possible.

3 RESULTS

3.1 Tree inventory

A total of 96 trees were recorded in the site and road reserve including one planted native species (refer **Section 4.1**) and 24 non-native species. The preliminary tree survey results are presented in **Figure 1** and summarised in **Table 3**. Raw tree data is provided as **Attachment 2**.

[3] *Zanda latirostris* (Carnaby's black cockatoo) 'endangered' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Biodiversity Conservation Act 2016* (BC Act). *Zanda baudinii* (Baudin's black cockatoo) 'endangered' under the EPBC Act and the BC Act and *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) 'vulnerable' under the EPBC Act and the BC Act.

Table 4: Tree data summary

Location	Species	Non-native
Lot 101	**Corymbia citriodora*	3
	**Eucalyptus ?cladocalyx*	1
	**Eucalyptus camaldulensis*	6
	**Eucalyptus erythrocorys*	1
	**Eucalyptus torquata*	2
	**Jacaranda mimosifolia*	1
	**Lophostemon confertus*	1
	**Triadica sebifera*	1
Lot 102	**Agonis flexuosa*	5
	**Corymbia citriodora*	2
	**Eucalyptus ?robusta*	1
	**Heptapleurum actinophyllum*	1
	**Liquidambar styraciflua*	1
	**Phoenix canariensis*	1
	**Syzygium smithii*	2
Lot 103	**Araucaria heterophylla*	4
	**Brachychiton populneus*	1
	*Cupressaceae sp.	1
	**Eucalyptus ?robusta*	2
	**Eucalyptus camaldulensis*	1
	**Eucalyptus nicholii*	1
	**Melaleuca lanceolata*	1
	**Metrosideros* sp.	2
	**Olea europaea*	1
	**Phoenix canariensis*	1
Road reserve	**Callistemon* sp.	2
	Corymbia calophylla	1
	**Eucalyptus nicholii*	1
	**Eucalyptus* sp.	1
	**Heptapleurum actinophyllum*	1
	**Liquidambar styraciflua*	1
	**Lophostemon confertus*	18
	**Ulmus parvifolia*	27

Asterisk '*'denotes species not native to site.

3.2 Vegetation units

One vegetation unit was identified within the site, '**non-native**', and comprises a small number of scattered non-native trees and shrubs over non-native grassland and planted gardens.

3.3 Vegetation condition

The extent of vegetation by condition category within the site is detailed in **Table 4** (note includes buildings and hardstand).

Table 5: Vegetation condition categories within the site

Condition category (Keighery 1994)	Area (ha)
Pristine	0
Excellent	0
Very good	0
Good	0
Degraded	0
Completely degraded	7.41

3.4 Threatened and priority flora

No threatened or priority flora were recorded and none are expected to occur due to lack of suitable habitat (completely degraded).

3.5 Threatened and priority ecological communities

No threatened or priority ecological communities were recorded and none are expected to occur due to historical disturbance and modification of vegetation (completely degraded).

3.6 Black cockatoo habitat

Zanda latirostris (Carnaby's black cockatoo) and *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) are 'likely' to occur within the site.

These species were not recorded in the site or road reserve during the field survey.

One black cockatoo habitat tree without suitable hollows was recorded in the road reserve (marri) as shown in **Figure 2**.

No roosts or evidence of roosting were observed during the survey.

A total of 0.01 ha of primary native foraging habitat and 0.23 ha of secondary non-native foraging habitat for black cockatoo was mapped within the site and road reserve as shown in **Figure 2**.

4 DISCUSSION

4.1 Tree records

The majority of the trees within the site and road reserve are non-native, with *Ulmus parvifolia* (Chinese elm) being the most frequently recorded. The one native tree (marri) recorded in the road reserve is likely to have been planted based on review of historical aerial imagery (WALIA 2023) .

4.2 Vegetation

Vegetation within the site is '**non-native**' and occurs in 'completely degraded' condition and comprises a small number of scattered non-native trees and shrubs over non-native grassland and planted gardens.

Note the marri tree within the road reserve is a native species, which is assumed to have been planted. As such it is not 'native vegetation' as defined by the *Environmental Protection Act 1986* (EP Act).

4.3 Black cockatoo habitat

The marri in the road reserve does not have a suitable hollow and so would be considered a 'potential nesting tree' according to guidance provided by DAWE (2022). Trees without suitable

hollows cannot currently support black cockatoo breeding. However, they have the potential to form suitable hollows in the future. Based on the size and age of this tree, it will likely take many decades for hollows to form that are large enough to be suitable for use by black cockatoos for nesting.

Several Carnaby's black cockatoo roosting sites are known from the local area. The closest one is less than 500 m from the site. However, no roosting or secondary evidence of roosting such as branch clippings, droppings or feathers were observed within the site or road reserve and so there is no reason to suspect that black cockatoos roost in the site.

The site and road reserve contain primary and secondary foraging habitat for black cockatoos. The primary native foraging resource is associated with one marri tree. The secondary non-native foraging resource largely comprises non-native (Australian) myrtaceous species (*Agonis flexuosa*, *Corymbia* spp., and *Eucalyptus* spp.). However, it also includes exotic species *Liquidambar styraciflua* and *Syzygium smithii*. While there are records of black cockatoos consuming the fruit of secondary foraging species they are generally not as important as a food source compared to primary species like marri. The extent of foraging resource in the site is relatively small in comparison to extensive areas of foraging resources for black cockatoos that occur in the wider local area (e.g. Kings Park).

5 SUMMARY AND CLOSING

We trust that this letter provides sufficient detail on trees and ecological values within Lot 101, Lot 102 and Lot 103 Monash Avenue, Nedlands to inform preparation of the EAMS for the Nedlands Regis Structure Plan. Should you have any queries or require further information, please do not hesitate to contact the undersigned.

Yours sincerely
Emerge Associates

Tom Atkinson
PRINCIPAL ENVIRONMENTAL CONSULTANT - ECOLOGY

Encl: Figure 1: Trees
Figure 2: Black Cockatoo Habitat
Attachment 1: Black cockatoo foraging plants
Attachment 2: Tree data

6 REFERENCES

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Figures

Figure 1: Trees

Figure 2: Black Cockatoo Habitat

Figure 1: Trees

Project: Tree Assessment
Regis Project, Nedlands
Client: Hesperia

Plan Number:
EP23-028(06)--F05
Drawn: GAR
Date: 22/08/2023
Checked: TAA
Approved: TAA
Date: 13/09/2023

N

0 40 80
Metres
Scale: 1:2,000@A4
GDA2020 MGA Zone 50

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While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used
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Figure 2: Black Cockatoo Habitat

Project:	Tree Assessment Regis Project, Nedlands
Client:	Hesperia

Plan Number:
EP23-028(06)--F06

Drawn:	GAR
Date:	22/08/2023
Checked:	TAA
Approved:	TAA
Date:	13/09/2023

N

0 40 80
Metres

Scale: 1:2,000@A4

GDA2020 MGA Zone 50

emerge ASSOCIATES

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used
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Attachment 1

Black cockatoo foraging plants

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Black Cockatoo Foraging Plants

		Foraging category as assigned by Emerge			
Species name	**Common name**	**CBC**	**BBC**	**FRTBC**	**Literature references**
Acacia baileyana	Cootamundra wattle	Secondary	-	-	Groom 2011
Acacia pentadenia	Karri wattle	Secondary	-	-	Groom 2011
Acacia saligna	Orange wattle	Secondary	-	-	Groom 2011
Agonis flexuosa	Peppermint tree	Secondary	-	-	Groom 2011
Allocasuarina fraseriana	Sheoak	-	Secondary	Secondary	Johnstone & Storr 1998; Johnstone *et al.* 2010; Johnstone 2017; DoEE 2017
Allocasuarina spp.		Secondary	-	Secondary	Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017
Anigozanthos flavidus	Tall kangaroo paw	-	Secondary	-	Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017
Araucaria heterophylla	Norfolk island pine	Secondary	-	-	Groom 2011; DoEE 2017
Banksia ashbyi	Ashby's banksia	Primary	Secondary	-	Saunders 1980; Groom 2011; DoEE 2017
Banksia attenuata	Slender banksia	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia baxteri	Baxter's banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia carlinoides	Pink dryandra	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia coccinea	Scarlet banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia dallanneyi	Couch honeypot dryandra	Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia ericifolia	Heath-leaved banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia fraseri		Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia gardneri	Prostrate banksia	Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia grandis	Bull banksia	Primary	Secondary	-	Saunders 1980; Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia hookeriana	Hooker's banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia ilicifolia	Holly banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; Johnstone & Storr 1998; DoEE 2017
Banksia kippistiana		Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia leptophylla		Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia lindleyana	Porcupine banksia	Primary	Secondary	-	Johnstone *et al.* 2010; DoEE 2017

Species name	Common name	Foraging category as assigned by Emerge			Literature references
		CBC	BBC	FRTBC	
Banksia littoralis	Swamp banksia	Primary	Secondary	-	Saunders 1980; Groom 2011Johnstone & Storr 1998; Johnstone *et al.* 2010; DoEE 2017
Banksia menziesii	Firewood banksia	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia mucronulata	Swordfish dryandra	Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia nivea	Honeypot dryandra	Primary	Secondary	-	Saunders 1980; Groom 2011; DoEE 2017
Banksia nobilis	Golden dryandra	Primary	Secondary	-	Saunders 1980; Groom 2011; DoEE 2017
Banksia praemorsa	Cut-leaf banksia	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia prionotes	Acorn banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia prolata		Primary	Secondary	-	Johnstone *et al.* 2010; DoEE 2017
Banksia quercifolia	Oak-leaved banksia	Primary	Secondary	-	Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia sessilis	Parrot bush	Primary	Secondary	-	Saunders 1980; Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia speciosa	Showy banksia	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia spp.		Primary	Secondary	-	Saunders 1979; DSEWPaC 2012; DoEE 2017
Banksia squarrosa	Pingle	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Banksia tricuspis	Pine banksia	Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia undata	Urchin dryandra	Primary	Secondary	-	Groom 2011; DoEE 2017
Banksia verticillata	Granite banksia	Primary	Secondary	-	Saunders 1980; Groom 2011; DoEE 2017
Brassica campestris	Canola	Secondary	-	-	Groom 2011; DoEE 2017
Callistemon spp.		Secondary	Secondary	-	Johnstone *et al.* 2010; DoEE 2017
Callistemon viminalis	Captain cook bottlebrush	Secondary	-	-	Groom 2011
Callitris sp.		Secondary	-	-	Johnstone *et al.* 2010; Groom 2011
Carya illnoinensis	Pecan	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; Groom 2014; DoEE 2017
Casuarina cunninghamiana	River sheoak	Secondary	-	-	Groom 2011
Citrullus lanatus	Pie or afghan melon	Secondary	-	-	Johnstone *et al.* 2010; Groom 2011

Species name	Common name	Foraging category as assigned by Emerge			Literature references
		CBC	BBC	FRTBC	
Corymbia calophylla	Marri	Primary	Primary	Primary	Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017; Johnstone 2017; Saunders 1979; Johnstone & Kirkby 2008
Corymbia citriodora	Lemon scented gum	Secondary	Secondary	Secondary	Johnstone *et al.* 2010; DSEWPaC 2012; Groom 2011; Johnstone 2017
Corymbia ficifolia	Red flowering gum	Secondary	-	-	Groom 2011
Corymbia haematoxylon	Mountain marri	Secondary	-	Secondary	Groom 2011; DoEE 2012; DoEE 2017
Corymbia maculata	Spotted gum	-	-	-	-
Darwinia citriodora	Lemon-scented darwinia	Secondary	Secondary	-	Groom 2011; Johnstone *et al.* 2010
Diospryros sp.	Sweet persimmon	Secondary	Secondary	-	Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017
Eremophila glabra	Tarbush	Secondary	-	-	Groom 2011
Erodium aureum		Secondary	-	-	Groom 2011
Erodium botrys	Long storksbill	Secondary	Secondary	-	Groom 2011; Johnstone & Storr 1998; Johnstone *et al.* 2010
Erodium spp.		Secondary	Secondary	-	Johnstone *et al.* 2010; DoEE 2017
Eucalyptus caesia	Silver princess	Secondary	-	Secondary	Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017; Johnstone 2017
Eucalyptus camaldulensis	River red gum	-	-	Secondary	DoEE 2012; DoEE 2017
Eucalyptus decipiens	Red heart/moit	-	-	Secondary	Johnstone 2017
Eucalyptus diversicolor	Karri	-	-	Primary	Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017; Johnstone & Storr 1998
Eucalyptus erythrocorys	Illyarrie	Secondary	-	Secondary	DSEWPaC 2012; DoEE 2017; Johnstone 2017, Johnstone *et al.* 2010
Eucalyptus gomphocephala	Tuart	Secondary	-	Secondary	Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017
Eucalyptus grandis	Flooded gum, rose gum	-	-	Secondary	DoEE 2012; DoEE 2017
Eucalyptus lehmannii	Bushy yate	-	-	Secondary	Johnstone 2017
Eucalyptus leucoxylon	Yellow gum	Secondary	-	-	Groom 2014

Species name	Common name	Foraging category as assigned by Emerge			Literature references
		CBC	BBC	FRTBC	
Eucalyptus loxophleba	York gum	Secondary	-	-	Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017
Eucalyptus marginata	Jarrah	Primary	Secondary	Primary	Saunders 1980; Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DoEE 2017; Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone 2017
Eucalyptus patens	Blackbutt	Primary	-	Primary	Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017; Johnstone 2017; Groom 2011
Eucalyptus pleurocarpa	Tallerack	Secondary	-	-	Groom 2011
Eucalyptus preissiana	Bell-fruited mallee	Secondary	-	-	Groom 2011
Eucalyptus robusta	Swamp mahogany	Secondary	-	-	Johnstone *et al.* 2010; Groom 2011
Eucalyptus salmonophloia	Salmon gum	Primary	-	-	Johnstone *et al.* 2010; Groom 2011; DSEWPaC 2012; DSEWPaC 2012; DoEE 2017
Eucalyptus staeri	Albany blackbutt	-	-	Secondary	Johnstone & Storr 1998
Eucalyptus todtiana	Coastal blackbutt	Secondary	-	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011; Johnstone & Kirkby 2008
Eucalyptus wandoo	Wandoo	Primary	Secondary	Primary	Saunders 1980; Johnstone *et al* . 2010; Groom 2011; DSEWPaC 2012; DoEE 2017
Ficus sp.	Fig	Secondary	-	-	Groom 2011
Grevillea armigera	Prickly toothbrushes	Primary	-	-	Groom 2011
Grevillea bipinnatifida	Fuschia grevillea	Primary	-	-	Groom 2011
Grevillea hookeriana	Red toothbrushes	Primary	-	-	Groom 2011
Grevillea hookeriana subsp. api	Black toothbrushes	Primary	-	-	Groom 2011
Grevillea paniculata	Kerosene bush	Primary	-	-	Groom 2011
Grevillea paradoxa	Bottlebrush grevillea	Primary	-	-	Groom 2011
Grevillea petrophiloides	Pink poker	Primary	-	-	Groom 2011
Grevillea robusta	Silky oak	Primary	-	-	Johnstone *et al.* 2010; Groom 2011

Species name	Common name	Foraging category as assigned by Emerge			Literature references
		CBC	BBC	FRTBC	
Grevillea spp.		Primary	-	-	Saunders 1979; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017
Grevillea wilsonii	Native fuchsia	-	Secondary	-	Johnstone *et al.* 2010
Hakea auriculata		Primary	-	-	Saunders 1980; Groom 2011
Hakea candolleana		Primary	-	-	Groom 2011
Hakea circumalata	Coastal hakea	Primary	-	-	Groom 2011
Hakea commutata		Primary	-	-	Groom 2011
Hakea conchifolia	Shell-leaved hakea	Primary	-	-	Groom 2011
Hakea costata	Ribbed hakea	Primary	-	-	Groom 2011
Hakea cristata	Snail hakea	Primary	Secondary	-	Groom 2011; Johnstone *et al.* 2010
Hakea cucullata	Snail hakea	Primary	-	-	Groom 2011
Hakea cyclocarpa	Ramshorn	Primary	-	-	Saunders 1980; Groom 2011
Hakea eneabba		Primary	-	-	Groom 2011
Hakea erinacea	Hedgehog hakea	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011
Hakea falcata	Sickle hakea	Primary	-	-	Groom 2011
Hakea flabellifolia	Fan-leaved hakea	Primary	-	-	Groom 2011
Hakea gilbertii		Primary	-	-	Saunders 1980; Groom 2011
Hakea incrassata	Golfball or marble hakea	Primary	-	-	Johnstone *et al.* 2010; Groom 2011
Hakea lasiantha	Woolly flowered hakea	Primary	-	-	Johnstone *et al* . 2010; Groom 2011
Hakea lasianthoides		Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011
Hakea laurina	Pin-cushion hakea	Primary	-	-	Johnstone *et al.* 2010; Groom 2011
Hakea lissocarpha	Honeybush	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011
Hakea marginata		-	Secondary	-	Johnstone *et al.* 2010
Hakea megalosperma	Lesueur hakea	Primary	-	-	Groom 2011
Hakea multilineata	Grass leaf hakea	Primary	-	-	Groom 2011
Hakea neospathulata		Primary	-	-	Groom 2011
Hakea obliqua	Needles and corks	Primary	-	-	Saunders 1980; Groom 2011
Hakea oleifolia	Dungyn	Primary	-	-	Groom 2011

		Foraging category as assigned by Emerge			
Species name	**Common name**	**CBC**	**BBC**	**FRTBC**	**Literature references**
Hakea pandanicarpa subsp. crassifolia	Thick-leaved hakea	Primary	-	-	Groom 2011
Hakea petiolaris	Sea urchin hakea	Primary	-	-	Groom 2011
Hakea polyanthema		Primary	-	-	Groom 2011
Hakea preissii	Needle tree	Primary	-	-	Groom 2011
Hakea prostrata	Harsh hakea	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011
Hakea psilorrhyncha		Primary	-	-	Groom 2011
Hakea ruscifolia	Candle hakea	Primary	Secondary	-	Saunders 1980; Groom 2011; Johnstone *et al.* 2010
Hakea scoparia	Kangaroo bush	Primary	-	-	Groom 2011
Hakea smilacifolia		Primary	-	-	Groom 2011
Hakea spp.		Primary	Secondary	-	Saunders 1979; DSEWPaC 2012; DoEE 2017
Hakea stenocarpa	Narrow-fruited hakea	Primary	Secondary	-	Johnstone et al. 2010; Groom 2011
Hakea sulcata	Furrowed hakea	Primary	-	-	Groom 2011
Hakea trifurcata	Two-leaved hakea	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011
Hakea undulata	Wavy-leaved hakea	Primary	Secondary	-	Saunders 1980; Johnstone *et al.* 2010; Groom 2011
Hakea varia	Variable-leaved hakea	Primary	Secondary	-	Saunders 1980; Groom 2011
Harpephyllum caffrum	Kaffir plum	-	-	Secondary	Johnstone 2017
Helianthus annuus	Sunflower	Secondary	-	-	Johnstone *et al.* 2010; Groom 2011
Hibiscus sp.	Hibiscus	Secondary	-	-	Groom 2011
Isopogon scabriusculus		Secondary	-	-	Groom 2011
Jacaranda mimosifolia	Jacaranda	Secondary	Secondary	-	Johnstone *et al.* 2010; Groom 2011
Jacksonia furcellata	Grey stinkwood	Secondary	-	-	Groom 2011
Kingia australis	Kingia	-	Secondary	-	Johnstone *et al.* 2010
Lambertia inermis	Chittick	Secondary	-	-	Johnstone & Storr 1998; Groom 2011
Lambertia multiflora	Many-flowered honeysuckle	Secondary	-	-	Saunders 1980; Groom 2011

Species name	Common name	Foraging category as assigned by Emerge			Literature references
		CBC	BBC	FRTBC	
Liquidamber styraciflua	Liquid amber	Primary	-	Secondary	Johnstone *et al.* 2010; Groom 2011; Groom 2014; Personal observation
Lupinus sp.	Lupin	Secondary	-	-	Saunders 1980; Groom 2011
Macadamia integrifolia	Macadamia	Primary	Secondary	-	Johnstone *et al.* 2010; Grooms 2011; Groom 2014
Malus domestica	Apple	Secondary	Secondary	-	Johnstone *et al* . 2010; Johnstone & Storr 1998; DSEWPaC 2012; DoEE 2017; Groom 2011
Melaleuca leuropoma		Secondary	-	-	Saunders 1980; Groom 2011
Melia azedarach	Cape lilac or white cedar	Secondary	-	Primary	Johnstone *et al.* 2010; Groom 2011
Mesomeleana spp.		Secondary	-	-	Johnstone *et al.* 2010; Groom 2011
Olea europea	Olive	-	-	Secondary	Johnstone 2017
Persoonia longifolia	Snottygobble	-	-	Secondary	Johnstone & Storr 1998; Johnstone & Kirkby 1999; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017
Pinus canariensis	Canary island pine	Primary	-	-	Johnstone *et al.* 2010; Groom 2011
Pinus caribea	Caribbean pine	Primary	-	-	Johnstone *et al.* 2010; Groom 2011
Pinus pinaster	Pinaster or maritime pine	Primary	-	-	Groom 2011
Pinus radiata	Radiata pine	Primary	Secondary	-	Johnstone *et al.* 2010; Groom 2011
Pinus spp.		Primary	Secondary	-	Johnstone & Storr 1998; Saunders 1979; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017
Protea 'Pink Ice'		Secondary	-	-	Groom 2011
Protea repens		Secondary	-	-	Groom 2011
Protea spp.		Secondary	-	-	Johnstone *et al.* 2010
Prunus amygdalus	Almond tree	Secondary	-	-	Johnstone & Storr 1998; Johnstone *et al.* 2010; Groom 2011; DoEE 2017
Pyrus communis	European pear	-	Secondary	-	Johnstone & Storr 1998; Johnstone *et al.* 2010; DSEWPaC 2012; DoEE 2017
Quercus spp.	Oak	-	Secondary	-	Johnstone *et al.* 2010

Species name	Common name	Foraging category as assigned by Emerge			Literature references
		CBC	BBC	FRTBC	
Raphanus raphanistrum	Wild radish	Secondary	-	-	Groom 2011; DoEE 2017
Reedia spathacea		-	Secondary	-	Johnstone *et al.* 2010
Rumex hypogaeus	Doublegee	Secondary	-	-	Saunders 1980
Stenocarpus sinuatus		Secondary	-	-	Johnstone *et al.* 2010
Syzygium smithii	Lilly pilly	Secondary	-	-	Groom 2014
Tipuana tipu	Tipu or rosewood tree	Primary	-	-	Groom 2011, Groom 2014
Xanthorrhoea preissii	Grass tree	Secondary	Secondary	-	Groom 2011; Johnstone *et al.* 2010
Xylomelum occidentale	Woody pear	Secondary	-	-	Groom 2014

CBC=Carnaby's black cockatoo, BBC=Baudin's black cockatoo and FRTBC=Forest red-tailed black cockatoo

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Attachment 2

Tree data

Attachment 2 – Tree Data (EP23-028(06)—009 ASF)

Easting	Northing	Species	DBH	Height_m	Width_m	Tag	Location
387399.26	6462111.16	*Agonis flexuosa*	32	-9999	-9999	No tag	Lot 102
387403.53	6462110.61	*Agonis flexuosa*	19	-9999	-9999	No tag	Lot 102
387447.52	6462136.29	*Agonis flexuosa*	114	5	5	No tag	Lot 102
387479.00	6462113.69	*Agonis flexuosa*	127	10	5	224	Lot 102
387479.34	6462122.19	*Agonis flexuosa*	152	10	5	225	Lot 102
387481.77	6462011.05	*Araucaria heterophylla*	65	20	5	220	Lot 103
387326.29	6461965.81	*Araucaria heterophylla*	72	20	10	216	Lot 103
387355.05	6461968.77	*Araucaria heterophylla*	67	20	10	215	Lot 103
387327.70	6462101.41	*Araucaria heterophylla*	65	20	10	214	Lot 103
387460.24	6462052.55	*Brachychiton populneus*	60	15	10	218	Lot 103
387486.99	6461982.79	*Calistomen* sp.	-9999	-9999	-9999	No tag	Road reserve
387486.79	6461975.25	*Calistomen* sp.	-9999	-9999	-9999	No tag	Road reserve
387278.96	6461959.03	*Corymbia calophylla*	56	15	10	No tag	Road reserve
387305.76	6462120.39	*Corymbia citriodora*	-9999	-9999	-9999	No tag	Lot 102
387305.76	6462120.39	*Corymbia citriodora*	-9999	-9999	-9999	No tag	Lot 102
387274.97	6462197.04	*Corymbia citriodora*	51	20	10	213	Lot 101
387247.45	6462197.90	*Corymbia citriodora*	45	20	10	212	Lot 101
387284.80	6462133.75	*Corymbia citriodora*	101	25	20	201	Lot 101
387480.86	6462015.62	*Cupressaceae sp.*	-9999	10	5	No tag	Lot 103
387246.72	6462091.31	*Eucalyptus ?cladocalyx*	82	20	15	203	Lot 101
387178.98	6462155.19	*Eucalyptus camaldulensis*	48	10	10	206	Lot 101
387221.69	6462200.23	*Eucalyptus camaldulensis*	51	10	10	211	Lot 101
387478.44	6462077.50	*Eucalyptus camaldulensis*	32	15	10	223	Lot 103
387211.49	6462198.22	*Eucalyptus camaldulensis*	65	15	15	210	Lot 101
387194.92	6462193.59	*Eucalyptus camaldulensis*	63	15	15	209	Lot 101
387240.09	6462092.87	*Eucalyptus camaldulensis*	52	15	5	204	Lot 101
387175.90	6462150.14	*Eucalyptus camaldulensis*	82	25	15	205	Lot 101
387265.27	6462199.62	*Eucalyptus erythrocorys*	-9999	5	5	No tag	Lot 101
387177.65	6461971.93	*Eucalyptus nicholii*	-9999	-9999	-9999	No tag	Road reserve
387178.31	6461980.74	*Eucalyptus nicholii*	101	20	15	222	Lot 103
387189.23	6461965.51	*Eucalyptus* sp.	-9999	-9999	-9999	No tag	Road reserve
387178.92	6462200.12	*Eucalyptus torquata*	45	-9999	-9999	207	Lot 101
387187.77	6462193.61	*Eucalyptus torquata*	44	10	10	208	Lot 101
387446.82	6461968.47	*Eucalytptus ?robusta*	36	10	5	221	Lot 103
387388.74	6462112.77	*Eucalytptus ?robusta*	63	20	10	217	Lot 102
387477.48	6462054.36	*Eucalytptus ?robusta*	150	25	20	219	Lot 103
387475.41	6462106.60	*Heptapleurum actinophyllum*	-9999	-9999	-9999	No tag	Lot 102
387192.02	6461961.57	*Heptapleurum actinophyllum*	-9999	-9999	-9999	No tag	Road reserve
387258.39	6462121.42	*Jacaranda mimosifolia*	27	10	5	No tag	Lot 101
387213.12	6461956.08	*Liquidambar styraciflua*	-9999	-9999	-9999	No tag	Road reserve
387476.44	6462141.11	*Liquidambar styraciflua*	72	15	15	226	Lot 102
387168.89	6462023.02	*Lophostemon confertus*	-9999	-9999	-9999	No tag	Road reserve
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387479.60	6462044.88	*Melaleuca lanceolata*	-9999	-9999	-9999	No tag	Lot 103
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387472.02	6461968.26	*Metrosideros* sp.	-9999	-9999	-9999	No tag	Lot 103
387426.16	6462067.66	*Olea europaea*	-9999	-9999	-9999	No tag	Lot 103
387461.31	6462187.13	*Phoenix canariensis*	-9999	-9999	-9999	No tag	Lot 102
387426.95	6462061.56	*Phoenix canariensis*	-9999	-9999	-9999	No tag	Lot 103
387404.86	6462108.33	*Syzygium smithii*	42	-9999	-9999	No tag	Lot 102
387400.67	6462107.95	*Syzygium smithii*	40	-9999	-9999	No tag	Lot 102
387180.36	6462083.66	*Triadica sebifera*	29	7	5	No tag	Lot 101
387168.62	6462002.47	*Ulmus parvifolia*	-9999	-9999	-9999	No tag	Road reserve
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387441.46	6461959.08	*Ulmus parvifolia*	-9999	-9999	-9999	No tag	Road reserve
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387487.24	6462052.93	*Ulmus parvifolia*	-9999	-9999	-9999	No tag	Road reserve

Appendix 5: Landscape Masterplan

(Plan E)

NEDLANDS VILLAGE

Landscape Masterplan | October 2023 [B]

PLAN E

01 SITE MASTERPLAN

LEGEND

- SITE BOUNDARY
- 01 EXISTING TREES TO BE RETAINED WHERE POSSIBLE
- 02 NEW TREES ALONG PERIMETER STREET VERGE
- 03 SMALLER NEW TREES ALONG PERIMETER VERGE DUE TO EXISTING POWER LINES ALONG NORTHERN EDGE.
- 04 EXISTING EUCALYPTUS CITRIODORA TO BE RETAINED IF POSSIBLE
- 05 HARDY ROAD WITH INDENTED PARKING & MEDIAN SWALE, REFER TO STREETSCAPE DESIGN.
- 06 EVENTIDE LANE WITH INDENTED PARKING TO ONE SIDE, REFER TO STREETSCAPE DESIGN.
- 07 VILLAGE PARK, REFER TO DETAILED PLAN.
- 08 HOLLYWOOD STREET WITH INDENTED PARKING, REFER TO STREETSCAPE DESIGN.

PLAN E

LANDSCAPE ARCHITECTS

LEVEL 1 278 RAILWAY PDE WEST LEEDERVILLE WA 6007
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LANDSCAPE MASTERPLAN

HESPERIA
OCTOBER 2023

M1.102

REV B
1:1250 @ A3

0 12.5 25 37.5 62.5m

2310201 NEDLANDS VILLAGE

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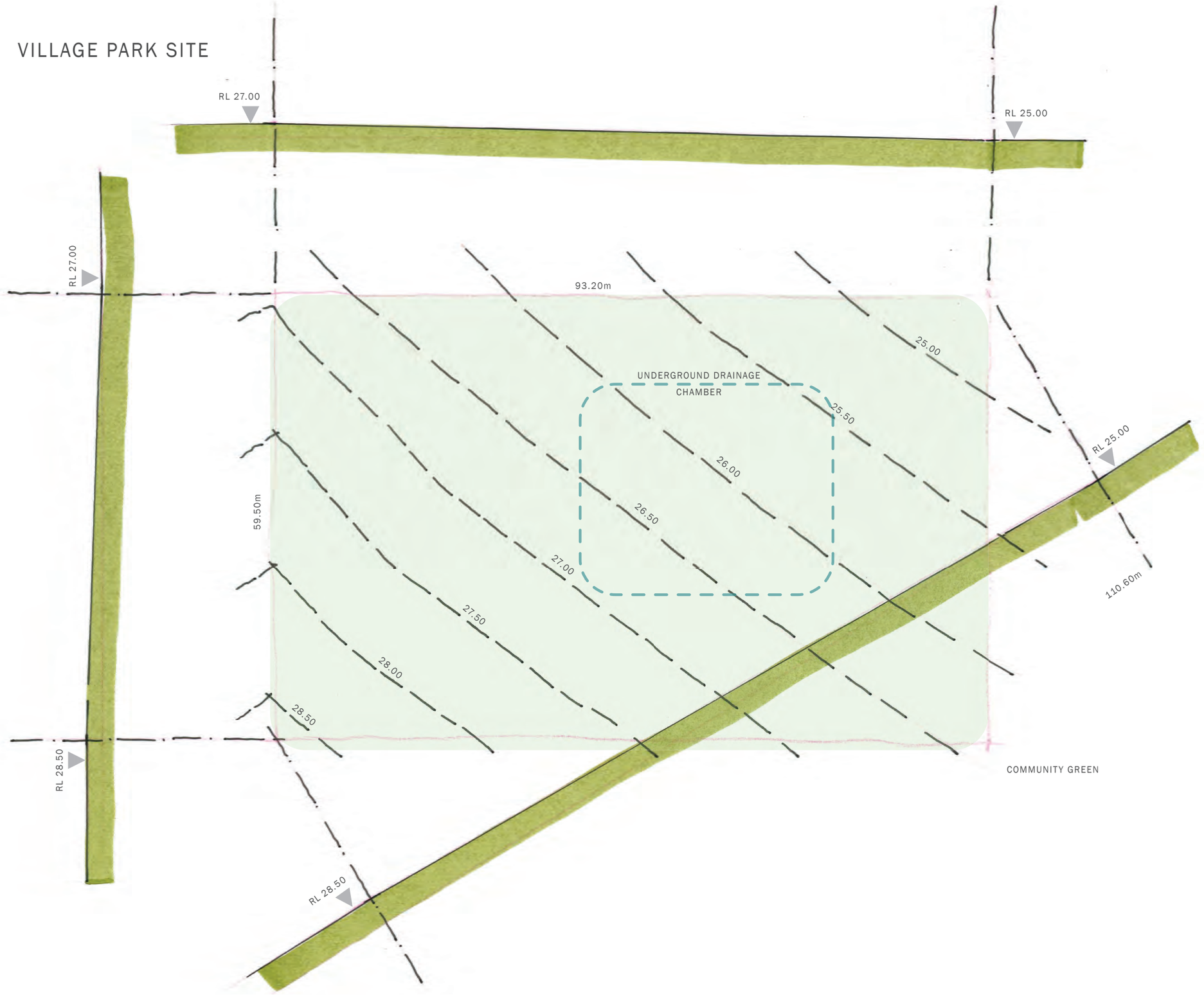
02 | VILLAGE PARK SITE



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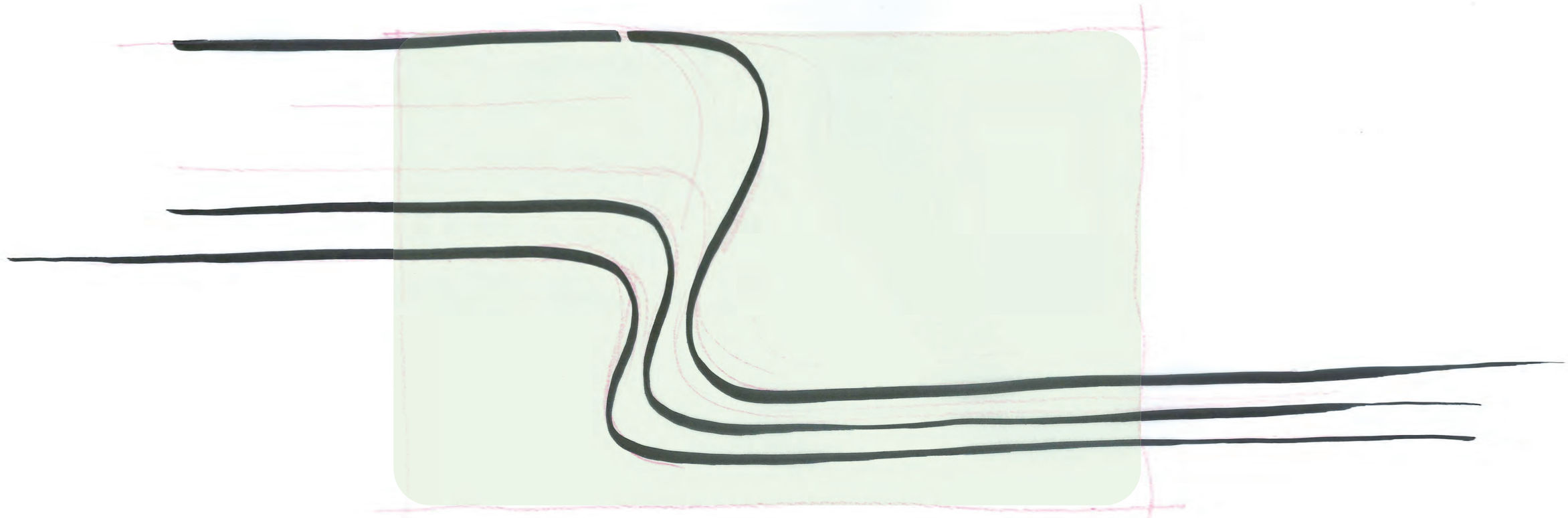
02 | VILLAGE PARK SITE PATTERN



SPACE IN BETWEEN CREATING RELATIONSHIPS THROUGH CONNECTION TO LAND AND COMMUNITY

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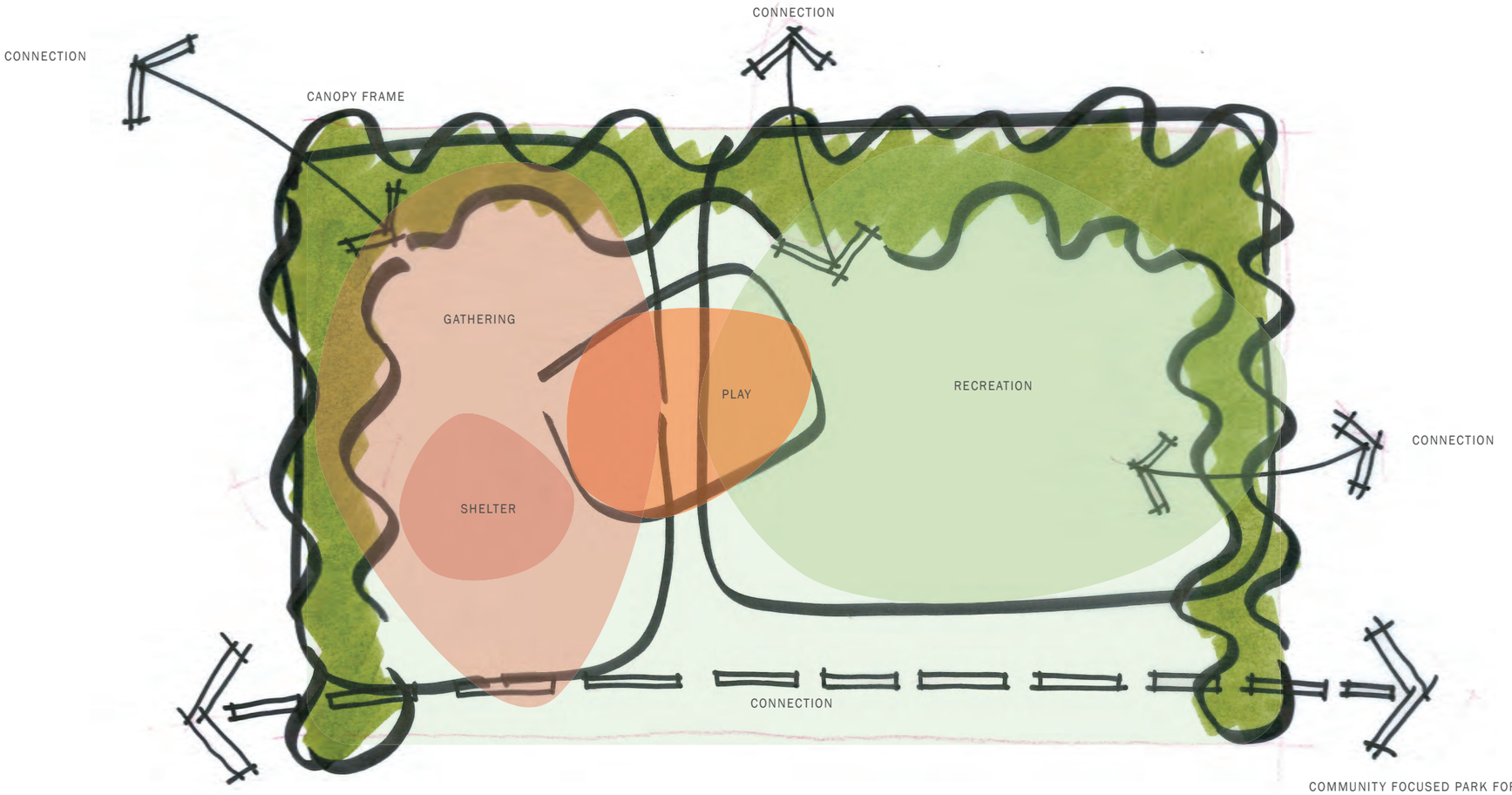
02 | VILLAGE PARK SITE RELATIONSHIPS



COMMUNITY FOCUSED PARK FOR GATHERING, PLAY AND RECREATION

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02 VILLAGE PARK MASTERPLAN

LEGEND

01 LARGE ARTWORK

02 LOW RETAINING WALLS TO ACCOMMODATE LEVEL DIFFERENCES ACROSS PARK

03 CIRCULAR TIMBER SEATS

04 LARGE CIRCULAR BENCH SEAT/GATHERING AREA

05 MIXED ORNAMENTAL LOW SHRUB AND GROUNDCOVER PLANTING

06 TERRACE WITH LOW RETAINING WALLS AND STEPS

07 SMALL PLAYGROUND WITH CUBBY, SLIDE AND LOW CLIMBING ELEMENTS

08 LARGE ARBOR WITH LONG COMMUNITY TABLE, BBQ AND SWING SEATS

09 TURF AND PLANTED TERRACES WITH LOW RETAINING WALLS AND SEATING

10 ACCESS PATHWAY THROUGH PARK AND TO ADJACENT LOTS

11 TERRACES WITH LOW RETAINING WALLS AND STEP ACCESS

12 OPEN TURF SPACE WITH UNDERGROUND DRAINAGE CHAMBER (SIZE TBC)

13 LARGE CURVING COMMUNITY BENCH SEAT

14 FORMAL TREE PLANTING ON GRID TO FRAME PARK

PLAN E

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M1.106

REV B
SCALE: 1:400 @ A3

0 4 8 12 20m

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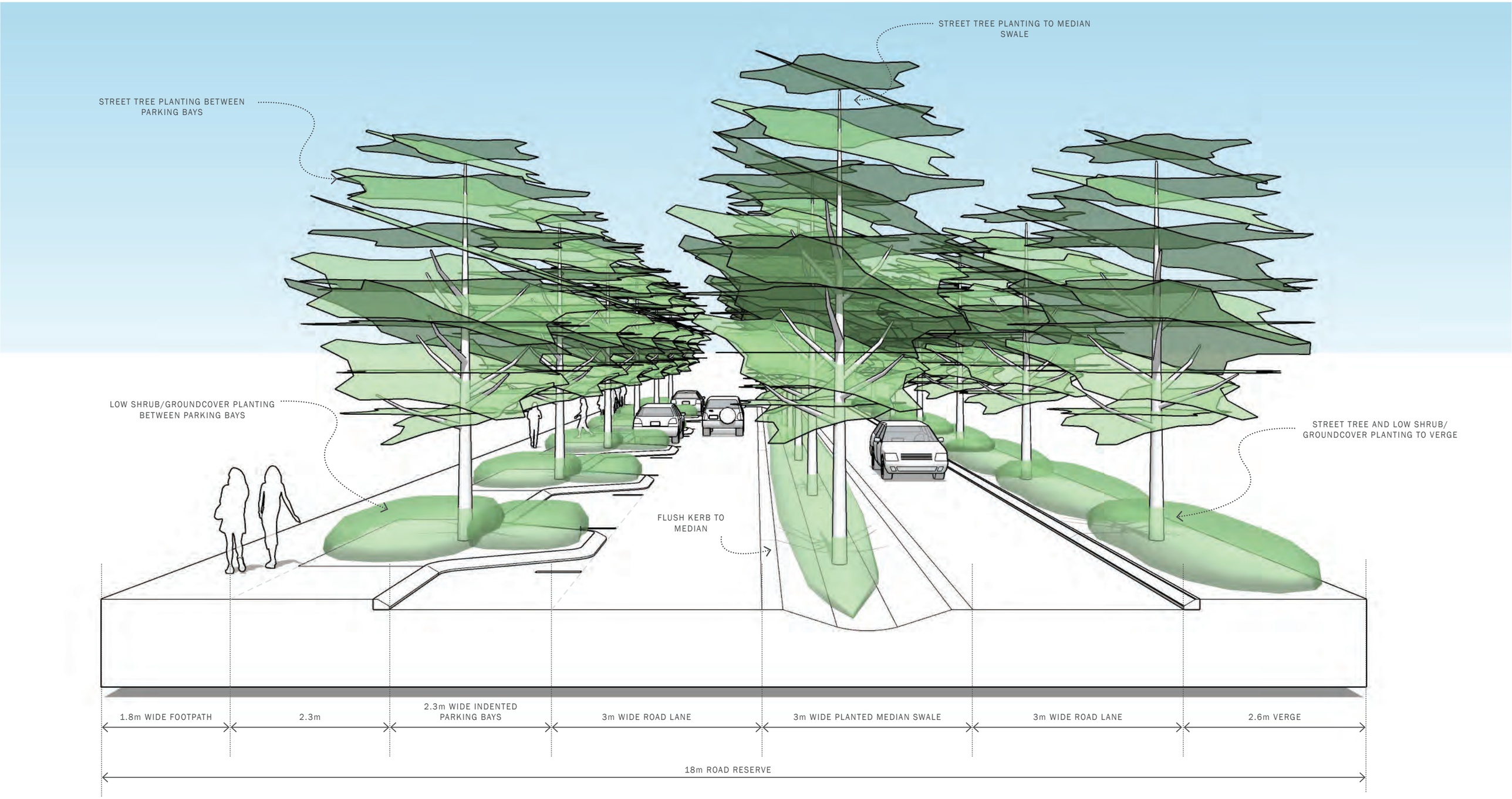
NEDLANDS VILLAGE

Streetscape Design | october 2023 [C]

01 | HARDY ROAD 18m ROAD, 3m MEDIAN & FOOTPATH WITH INDENTED PARKING ONE SIDE



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STREETSCAPE DESIGN

HESPERIA
OCTOBER 2023

C1.101

REV C
NTS

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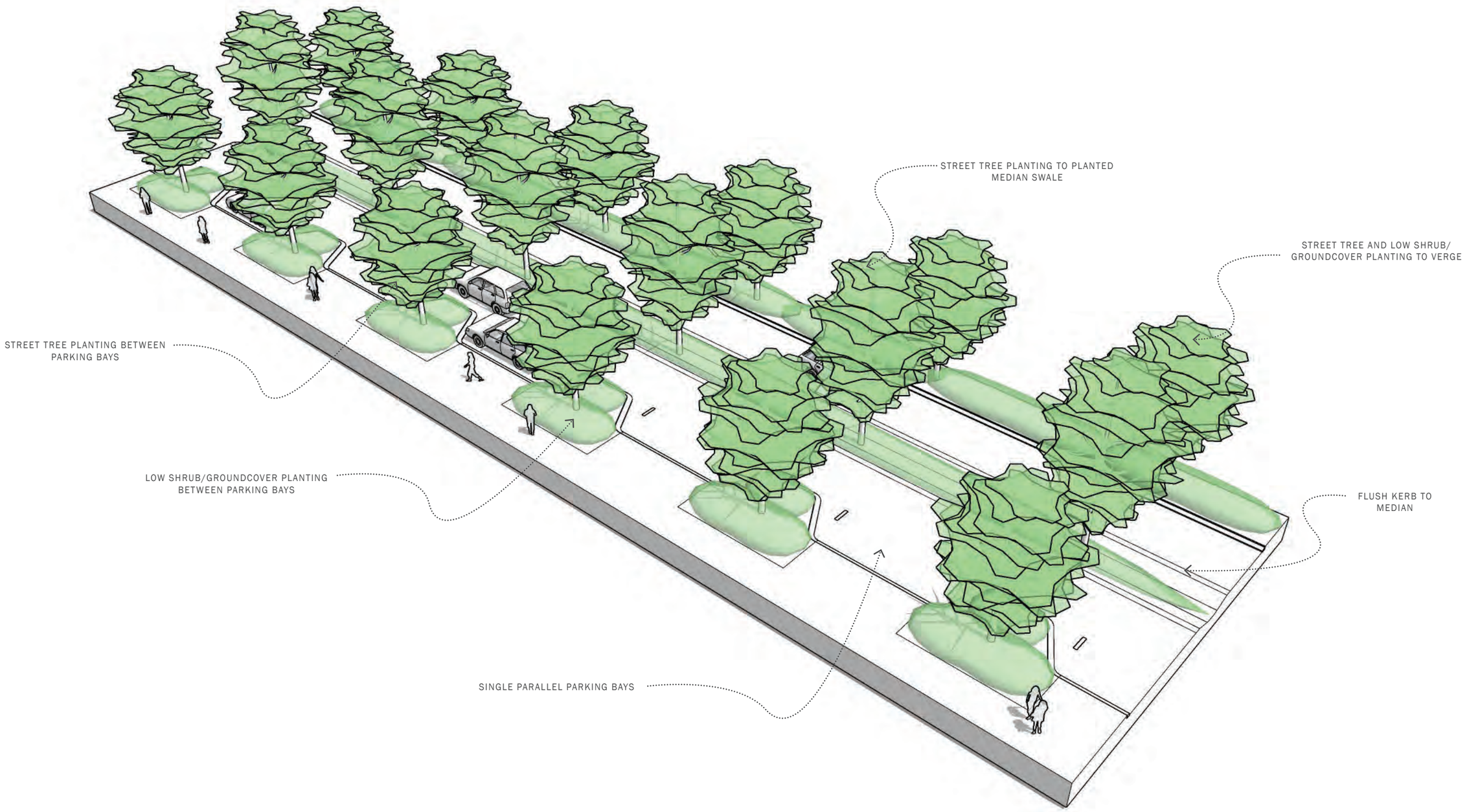
01 | HARDY ROAD 18m ROAD, 3m MEDIAN & FOOTPATH WITH INDENTED PARKING ONE SIDE



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REV C
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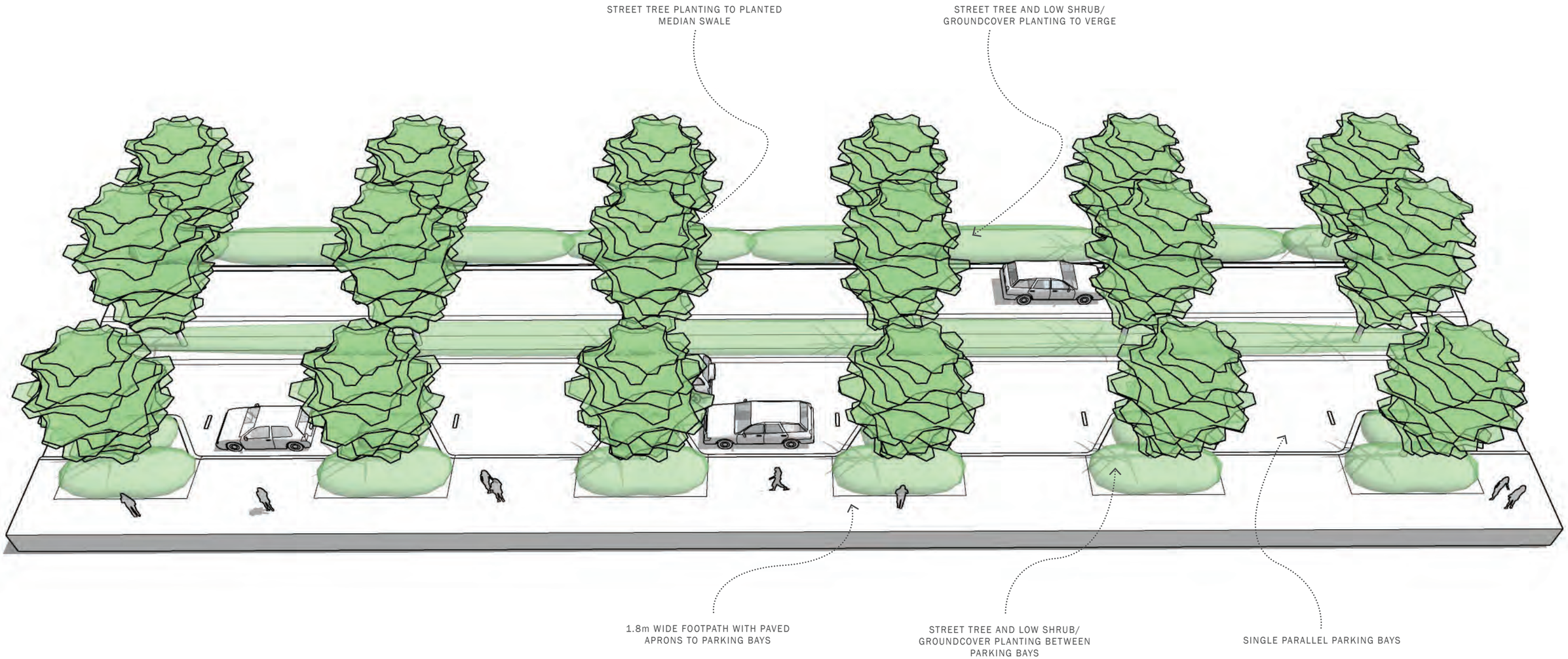
© PLAN E

01 | HARDY ROAD 18m ROAD, 3m MEDIAN & FOOTPATH WITH INDENTED PARKING ONE SIDE



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STREETSCAPE DESIGN

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2310201 NEDLANDS VILLAGE

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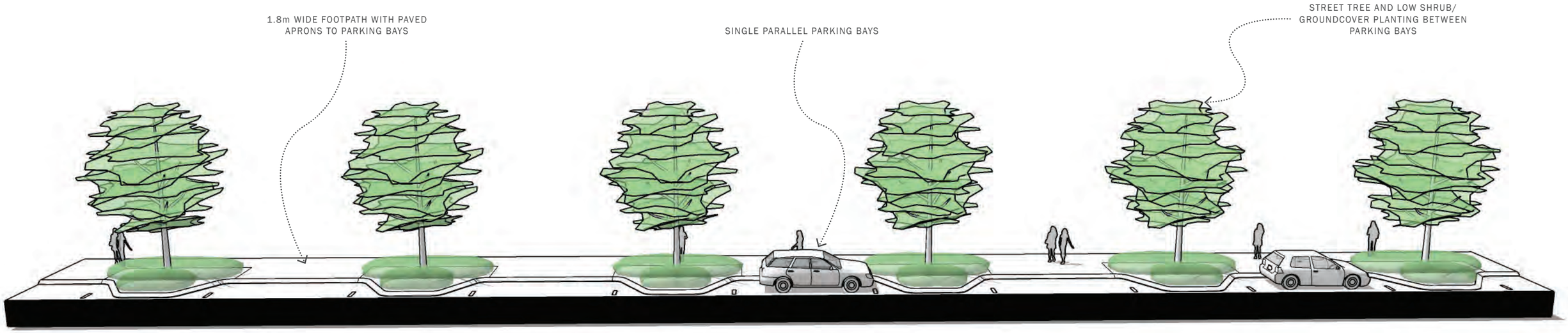
01 | HARDY ROAD 18m ROAD, 3m MEDIAN & FOOTPATH WITH INDENTED PARKING ONE SIDE



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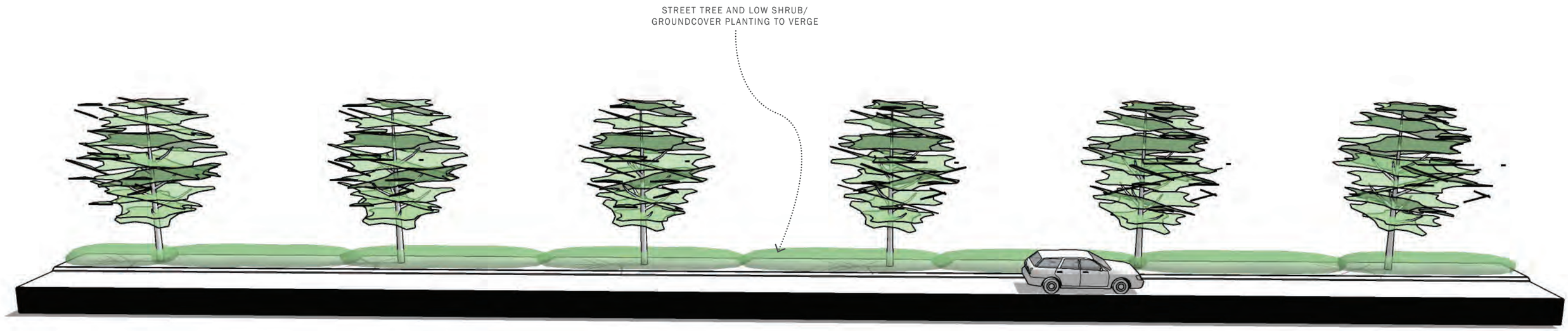

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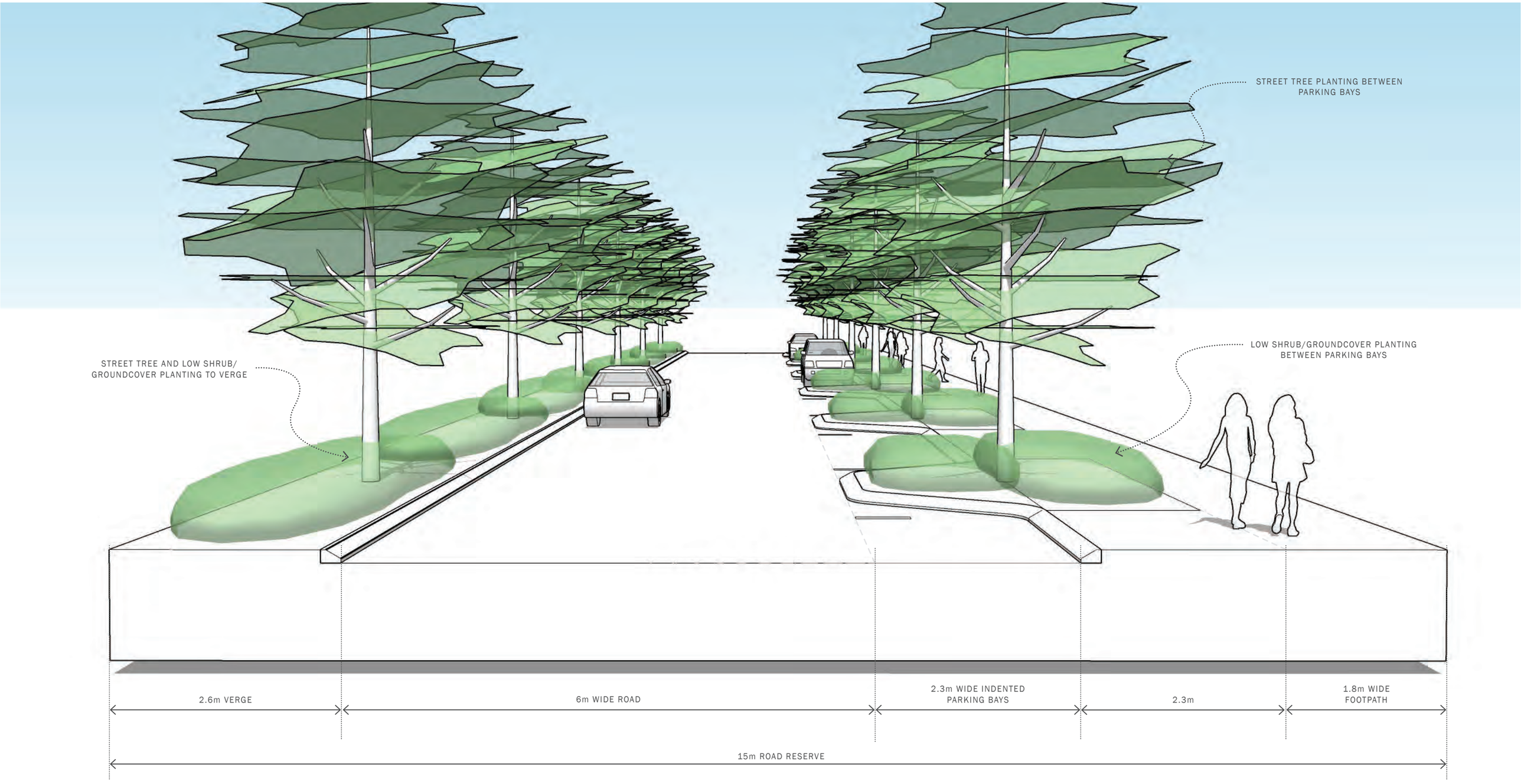

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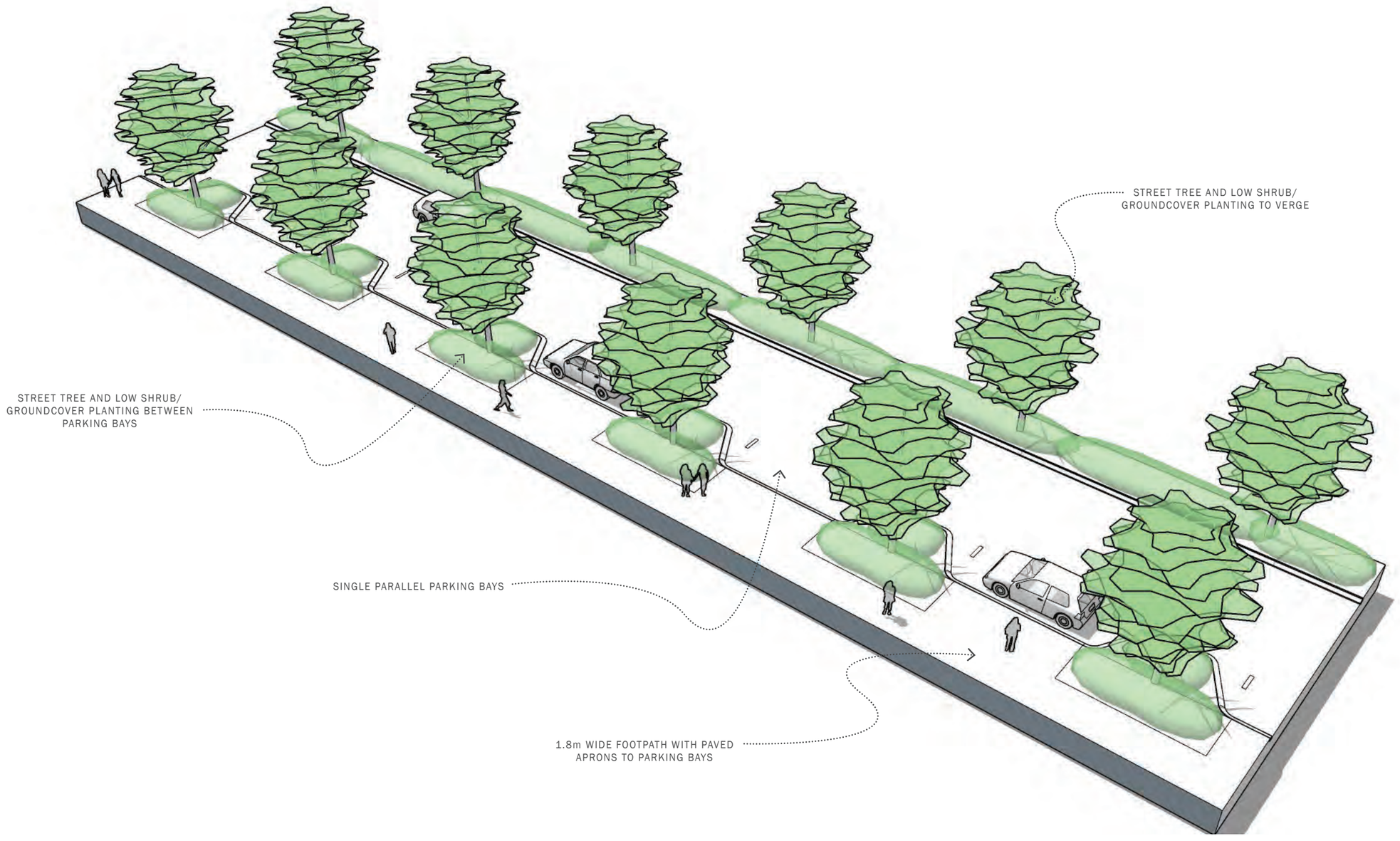

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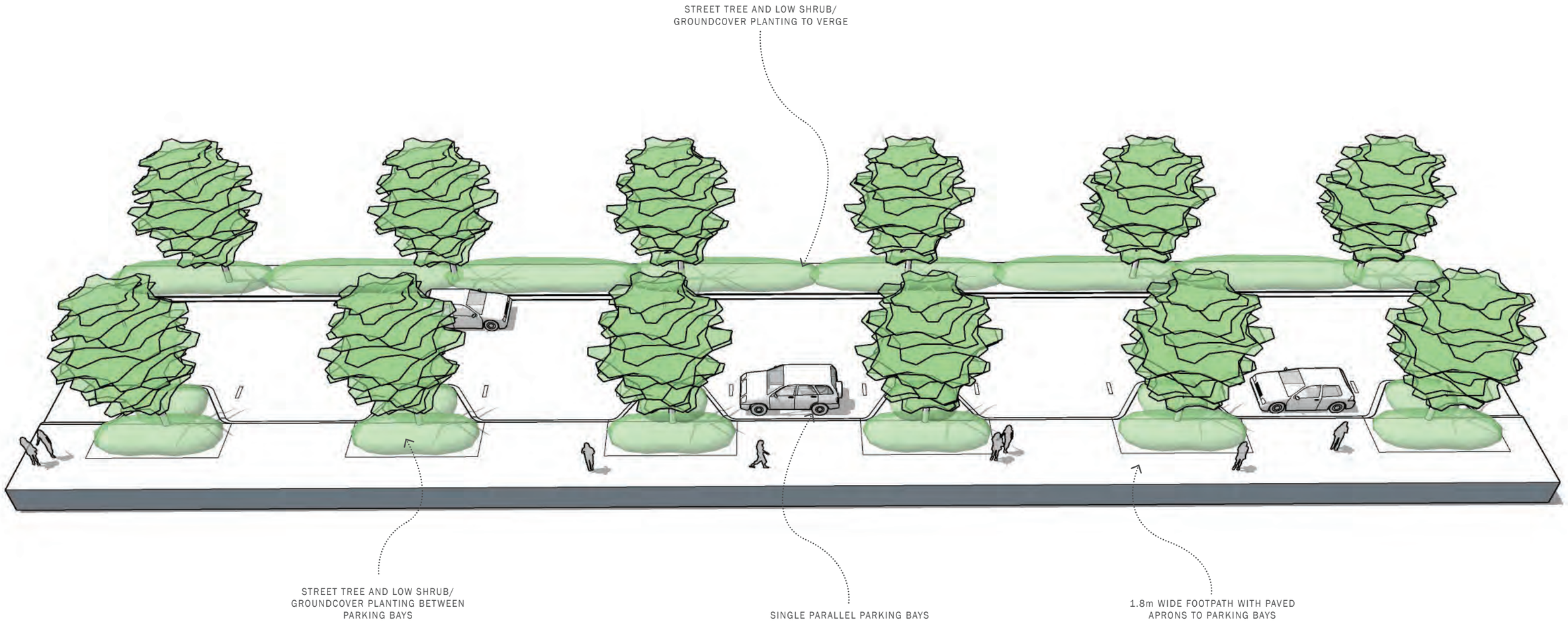

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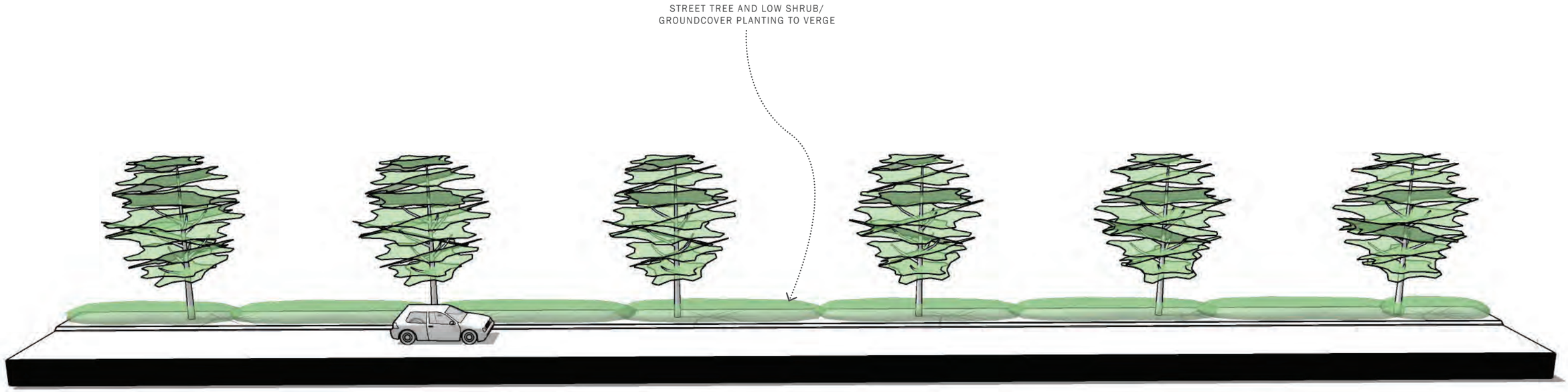

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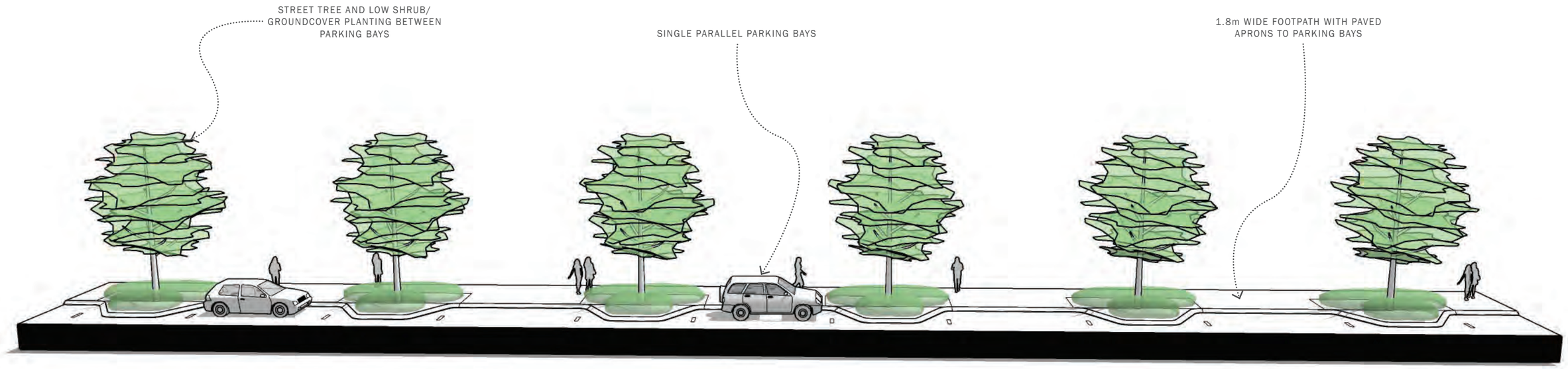

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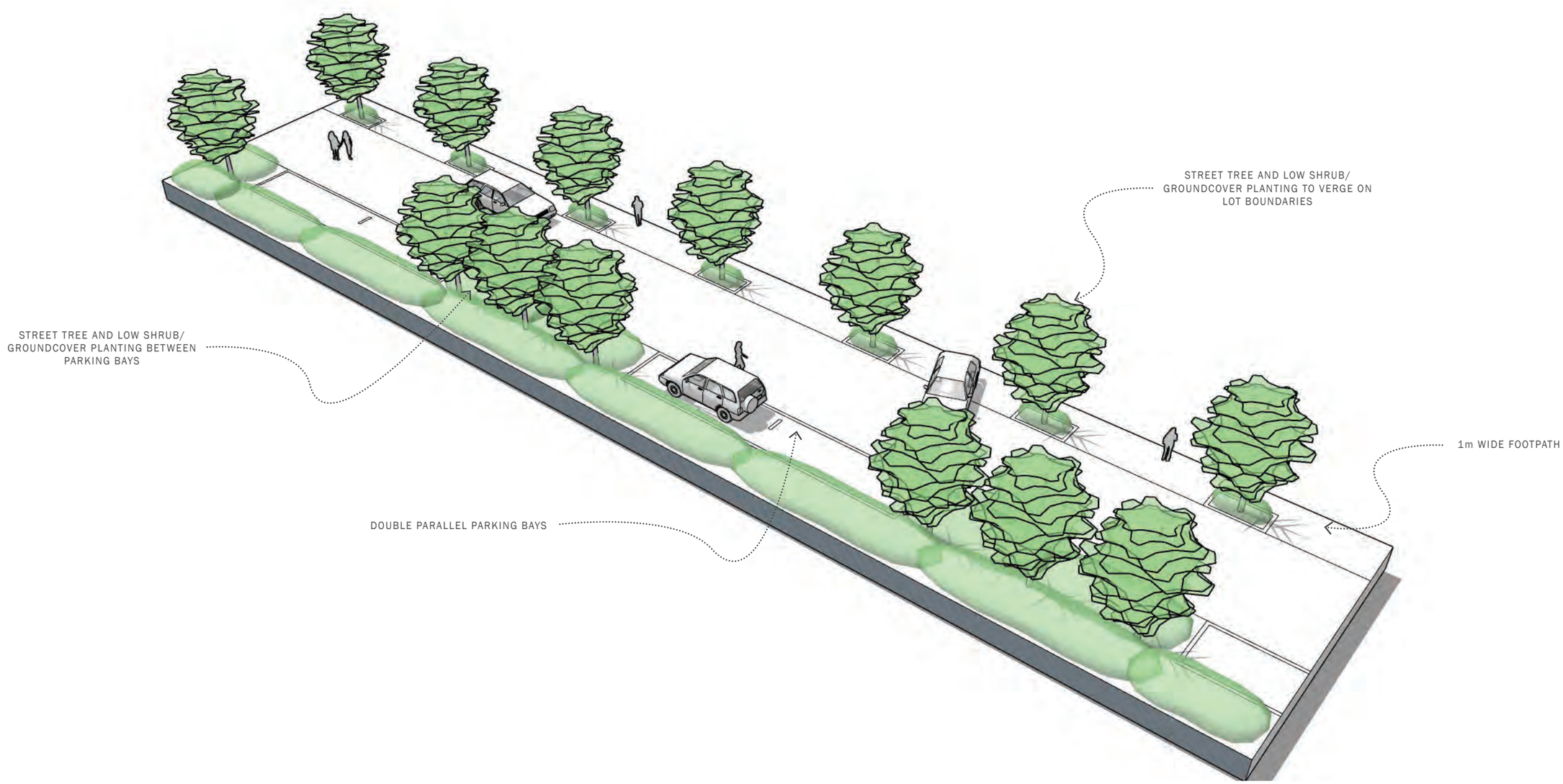

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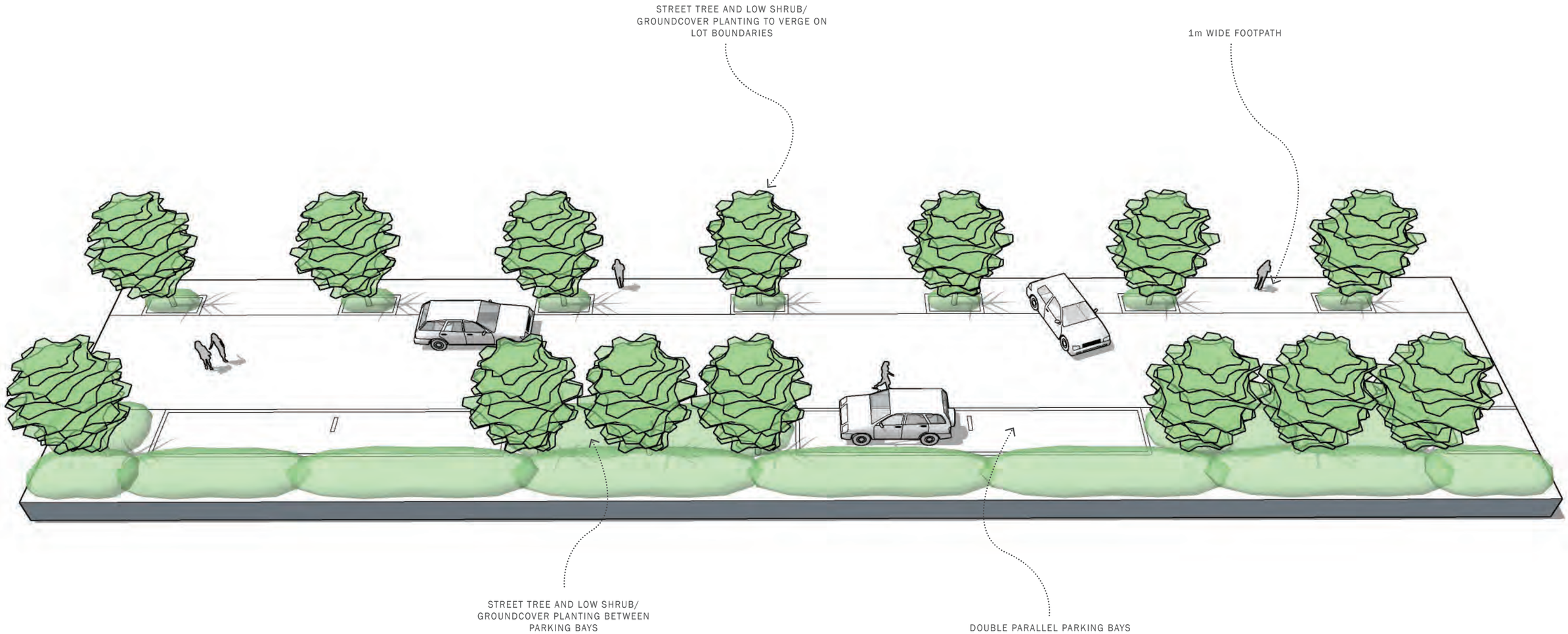

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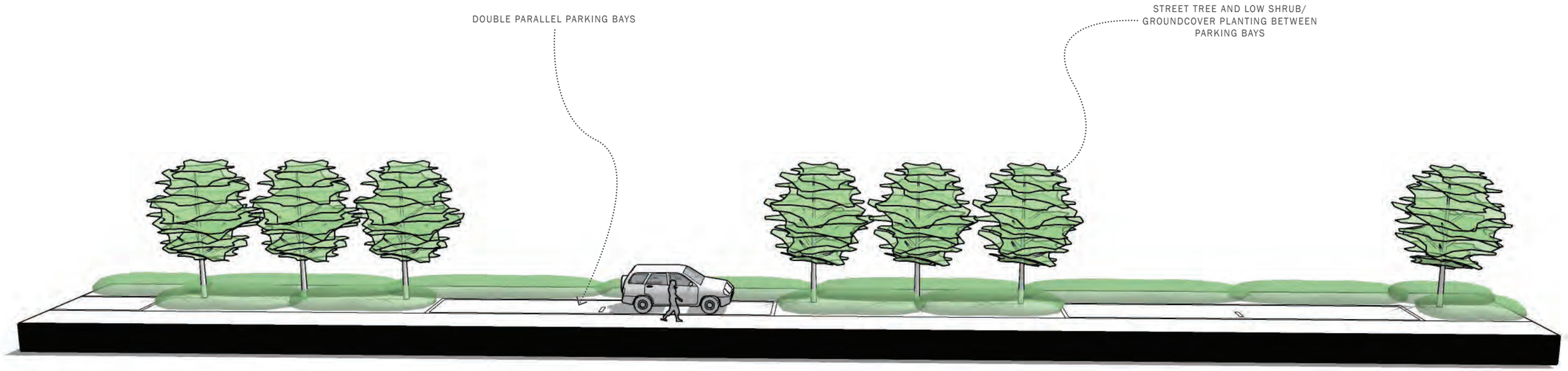

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Appendix 6: Local Water Management Strategy

(Pentium)

PENTIUM WATER

LOTS 101-102 MONASH AVE & LOT 103 KARELLA ST, NEDLANDS

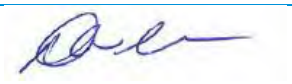
Local Water Management Strategy

HESNEDL_01
26/10/2023

Document Status

Version	Purpose of document	Authorised by	Reviewed by	Review Date
Rev 0	Final for Issue	DanWil	DanWil	22/08/2023
Rev 1	Final for Issue	HusKar	DanWil	26/10/2023
Rev 2	Final for Issue	HusKar	DanWil	26/10/2023

Approval for Issue

Name	Signature	Date
Daniel Williams		26/10/2023

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Executive Summary

In accordance with the Better Urban Water Management Guidelines (WAPC, 2008), this Local Water Management Strategy (LWMS) has been prepared on behalf of Hesperia in support of the Structure Plan for Lots 101-102 Monash Avenue and Lot 103 Karella Street, in the locality of Nedlands.

The proposed development area comprises 6.86 ha of land that has previously been developed with aged care and medical facilities, which have since largely been cleared from the site. The structure plan proposes a combination of medium density residential lots (ie. townhouses) and residential apartment lots, as well as a commercial / medical lot and a central public open space.

The site does not present any constraints to the proposed development from a water management perspective. There are existing water and wastewater servicing infrastructure with adequate capacity to support the proposed land use. There is also an absence of any sensitive environmental receptors, with the site having considerable depth to groundwater and being located on permeable sand with no watercourses or wetlands nearby.

Stormwater management for the site focuses on achieving at-source capture and infiltration of runoff where appropriate, to provide for passive irrigation of landscape treatments, improve runoff pollutant removal and reduce the overall stormwater infrastructure requirement. Flood storage of runoff during major (1% AEP) rainfall events is proposed to be via underground storage within the central POS to maximise the useability and amenity of the POS.

This LWMS defines the water management principles and objectives for the development as well as the proposed design approach for meeting these. The LWMS outlines the water management requirements for the future subdivision of the site, which will guide the preparation and implementation of future Urban Water Management Plans (UWMPs).

PD31.05.24 - Attachment 2

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1. INTRODUCTION

Hesperia is seeking to develop Lot 103 Karella Street, Lot 101 Monash Avenue and a portion of Lot 102 Monash Avenue in Nedlands to provide a mix of medium and high density residential and commercial / medical land uses. This Local Water Management Strategy (LWMS) has been prepared on behalf of Hesperia to support a Precinct Structure Plan for the site.

The subject site encompasses an area of 6.86 ha and is located approximately 5 km south-west of the Perth CBD, within the locality of Nedlands. The site is zoned 'Residential' under the City of Nedlands Local Planning Scheme No. 3 and is 'Urban' under the Perth Metropolitan Region Scheme. The development masterplan is provided as Appendix A and includes several proposed apartment sites, a medical centre, various forms of medium density housing, several road reserves and laneways, and a central public open space.

This LWMS describes the integrated water management that will be implemented for the development in line with Better Urban Water Management (BUWM) principles (WAPC 2008).

1.1. Design objectives

This LWMS has been prepared with consideration to State Planning Policy 2.9: Water Resources (Government of WA, 2007) and the following guidance documents:

- Better Urban Water Management (Department of Planning and Infrastructure, 2008)
- Stormwater Management Manual for Western Australia (Department of Water, 2004–2007).
- Decision Process for Stormwater Management in Western Australia (DWER 2017).
- Liveable Neighbourhoods (Western Australian Planning Commission, 2009).

The LWMS details the integrated water management strategies to facilitate future urban water management planning. The LWMS aims to achieve integrated water management through the following design objectives:

- Effectively manage the risk to human life, property damage and environmental degradation from water contamination, flooding, and waterlogging.
- Maintain and if possible, improve water quality (surface and groundwater) within the development in relation to pre-development water quality.
- Reduce potable water consumption within both public and private spaces using practical and cost-effective measures.
- Implement best management practices regarding stormwater and groundwater management.
- Incorporate where possible, low maintenance, cost-effective landscaping, and stormwater treatment systems.

1.2. Information sources

This LWMS has been prepared on the basis of a combination of publicly available datasets and mapping and site-specific information obtained from a geotechnical investigation and preliminary engineering design completed for the site by Tabec Consulting Engineers.

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2. EXISTING ENVIRONMENT

2.1. Site location and existing land uses

The site is located in the locality of Nedlands, approximately 5 km south-west of the Perth CBD, within the City of Nedlands local government area. The site area is 6.86 ha in size and has previously been used for aged care and health facilities. The site is bounded by:

- North – Hollywood Hospital and Hollywood Primary School
- East and South – established residential development
- West – Perth War Cemetery and Hollywood Reserve bushland

The site location and surrounding land uses is shown in Figure 1. The development concept for the site is provided in Appendix A.

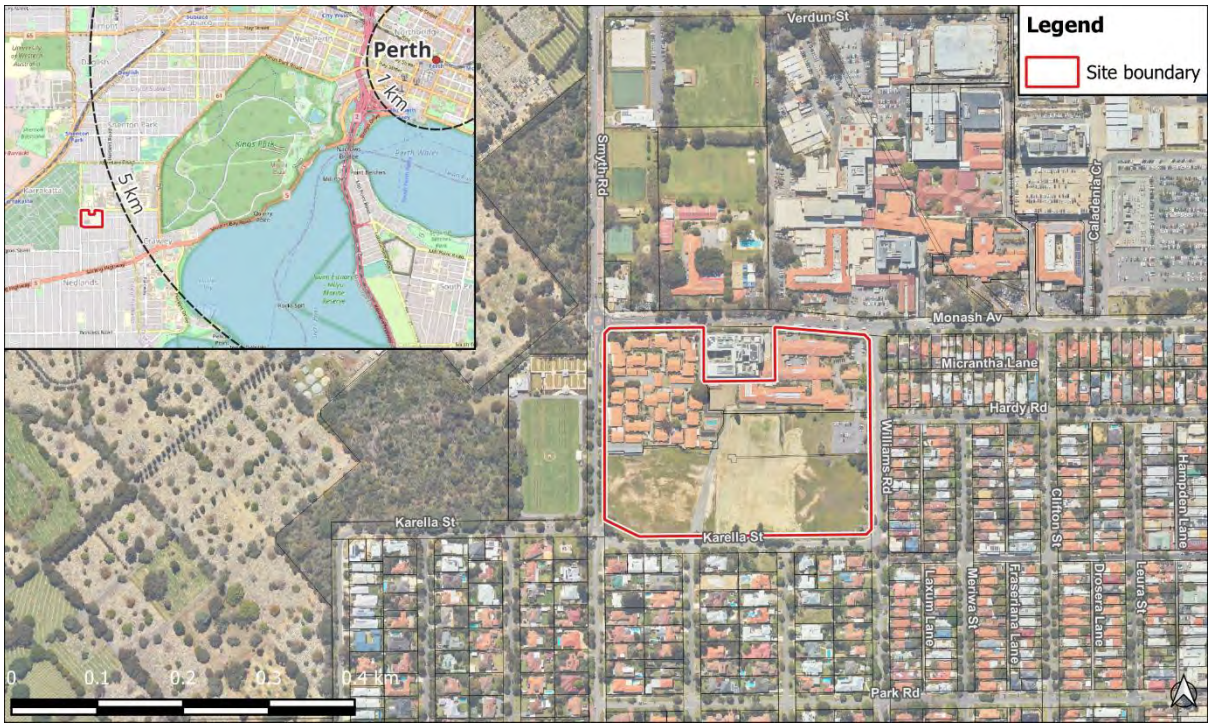

Figure 1: Site location

2.2. Topography

The existing ground surface elevation across the site ranges between approximately 29 m AHD in the south-west corner to 23 m AHD in the north-east corner, with a general grade from west to east. Topographic contours over the site are shown in 2.

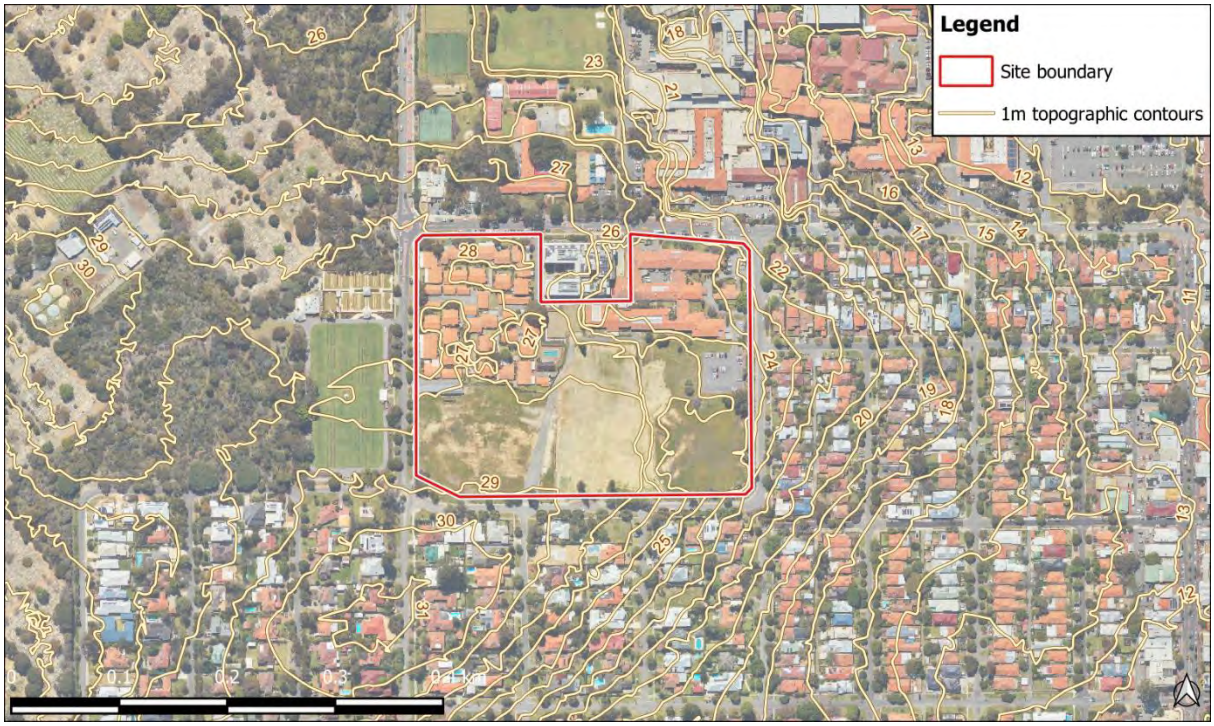

Figure 2: Site topography

2.3. Geology

2.3.1. Regional soil mapping

Environmental geological mapping of the site identifies the site as being comprised entirely of 'Sand (S7) - pale and olive-yellow medium to coarse-grained sub-angular quartz moderately sorted of residual origin modified by marine inundation' (Jordan, 1986), which is generally sand derived from weathering of Tamala limestone.

2.3.2. Site investigations

A geotechnical investigation of the site was undertaken by Douglas Partners in July 2023. The geotechnical investigation included 15 boreholes drilled by hand auger to a depth of 2.5m as well as 17 cone penetration tests to depths of between 6m and 18m, and permeability testing at six locations.

The geotechnical investigation concluded that the ground conditions across the site generally comprise:

- FILL / SAND SP, Gravelly SAND SP, and Sandy GRAVEL GP-GM – surficial granular fill materials encountered from surface to depths between 0.15 m and 2.0 m at all borehole locations. The fill within the boreholes was generally in a medium dense condition.
- SAND SP – yellow-brown becoming orange-brown sand, trace silt underlying the fill to a termination depth of 2.5 m within the boreholes and to depths between 6 m and 18 m within the CPT. The surficial sand within the CPT was generally loose and loose to medium dense to depths of between 2 m and 6 m before becoming medium dense. Some loose sand was also encountered above the inferred limestone at several locations.
- Inferred LIMESTONE – CPT refusal at a majority of CPT locations indicates the presence of limestone. The investigation method precludes an assessment on the type or strength of this rock.

The above findings support the geological mapping and indicate the presence of relatively deep loose to medium dense sandy soils, overlying limestone at estimated depths of between 6 and 18 m.

The permeability testing was undertaken at depths of between 1.0 and 1.3m and returned estimated permeability values between 9 and >20 m/d, with an average of 15 m/d.

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2.3.3. Acid sulfate soils

DWER regional Acid Sulphate Risk Mapping is provided below in Figure 3 which indicates there is no known risk of acid sulfate soils occurring within three metres of the natural soil surface.

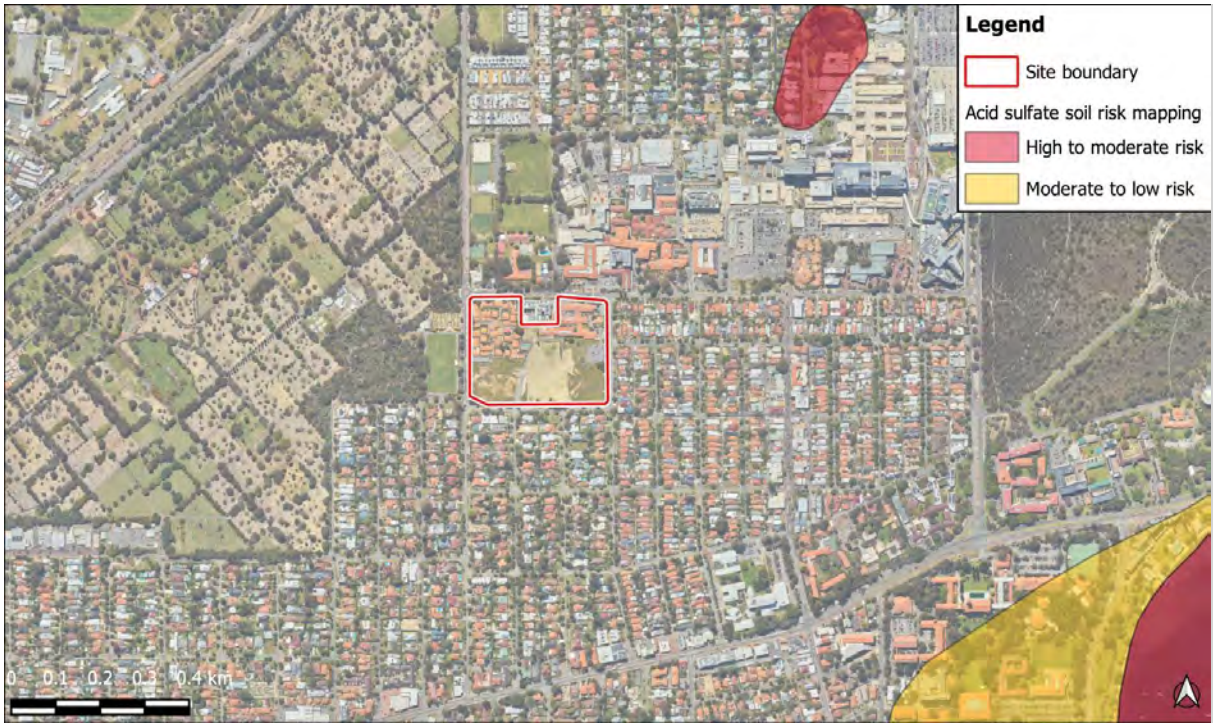

Figure 3: Acid sulfate soil risk mapping

2.4. Groundwater

2.4.1. Aquifers

The site is located in the Perth Groundwater Area and the City of Nedlands Groundwater Sub-area. Aquifers underlying the site include the Perth Superficial Swan aquifer and the Perth Yarragadee North aquifer which is a deep, confined aquifer.

The site is not located within a Public Drinking Water Source Protection Area.

2.4.2. Groundwater Level

Historical maximum groundwater level contours derived at a regional scale by the Department of Water and Environmental Regulation (DWER) are shown on Figure 4. These indicate that the maximum likely groundwater level beneath the site is approximately 4-5 mAHD. When compared to ground surface levels, this equates to a depth to groundwater of approximately 18-24 metres.

Given the extensive depth to groundwater, there has not been a requirement to undertake pre-development groundwater monitoring at the site to obtain more site-specific data.

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Figure 4: Historical maximum groundwater level

2.5. Surface water hydrology

2.5.1. Surface water features

Being situated on highly permeable sands and near the high point of the local landscape, there are no surface water features or significant drainage paths within the site. The main hydrological process at the site is infiltration of rainfall to the permeable sandy soils.

2.5.2. Local drainage systems

The site has previously been developed and it is expected that stormwater management for the existing development as well as the previous (now cleared) development over the site is via infiltration through soakwells or other sub-surface soakage devices.

The site is located approximately 1.3 km from the Swan River. The DWER floodplain mapping information indicates that the 1% AEP flood level for the adjacent section of the Swan River is 2.22 mAHD, which is more than 20 m below the site elevation.

No local stormwater network information is available on the City of Nedlands Intramaps online mapping tool. Pit-and-pipe drainage systems are evident along the existing road reserves which border the site, however it is anticipated that these collect runoff from the road reserves themselves and do not provide for any runoff or discharge from the site. As shown in Figure 5, there is also a Water Corporation main drainage system located approximately 400 m downstream (east) of the site. The City of Nedlands local drainage system is likely to connect into the Water Corporation system which services trapped low areas and provides an outlet to the Swan River. It is anticipated that the site does not currently form part of the contributing catchment to either the City of Nedlands or Water Corporation drainage systems.

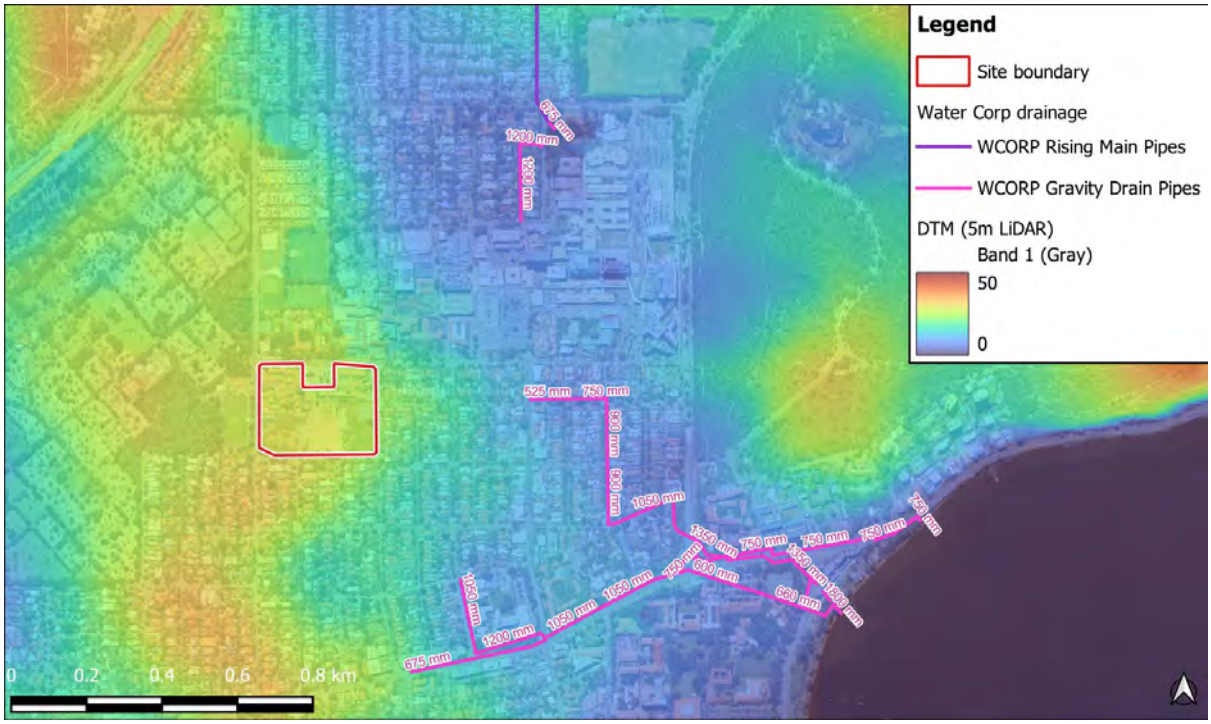

Figure 5: Water Corporation drainage network

2.5.3. Wetland mapping

There are no surface water bodies or wetlands within or near the site. The geomorphic wetland mapping is shown in Figure 6, which indicates that the nearest wetland is a small Resource Enhancement wetland (UFI 8193) located approximately 800 m to the north-east. The Swan River, which is mapped as a Conservation Category wetland (CCW) is located approximately 1.3 km to the east.

Figure 6: Geomorphic wetland mapping

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3. WATER SERVICING

The site is located within an established urban area and has previously supported development. Therefore, potable and wastewater servicing will be via the existing Water Corporation networks.

3.1. Potable water supply

The subject site is well serviced, with existing Water Corporation water mains on all boundaries of the site. This includes a DN180mm main in the northern verge of Monash Avenue, a DN150 main on the western side of Williams Road which also continues along the southern verge of Karella Street providing services to existing residents (Tabec, 2023). There is also a DN305 water distribution main in the eastern verge of Smyth Road, however lots are generally not directly serviced from the distribution main.

Water Corporation has confirmed their modelling indicates that the development demands do not have significant impact on system operation and minimum pressures are adequate. There are no other offsite upgrades or main extensions required in order to service the proposed development (Tabec, 2023).

3.2. Wastewater servicing

The site is currently serviced through two connections, including an existing DN150mm sewer in Williams Road and a separate DN150mm connection along Karella Street (Tabec, 2023).

There is also an existing sewer easement inside Lot 102, which contains an existing Water Corporation sewer to service Lot 101. Since existing facilities on Lot 101 are proposed to demolished, it will be possible for the existing sewer to be removed (Tabec, 2023).

Based on the lot yields provided for the CLE plan, Water Corporation has undertaken planning reviews to accommodate the additional flows generated from the proposed development. Water Corporation has advised there are no capacity issues with sewer, and therefore no upgrades are required downstream to accommodate sewer outfall. The sewer is able to be logically extended throughout the proposed subdivision (Tabec, 2023).

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4. WATER CONSERVATION STRATEGY

4.1. Proposed strategy

The State Water Plan (2007) is a strategic policy and planning framework to meet the state's water demands to the year 2030. More recently, the Waterwise Perth Action Plan (DWER, 2019) sets a target to reduce the average annual scheme water supplied to 110 kL/person. Water conservation measures will be adopted at the site to create a "Waterwise" development and minimise water-servicing requirements. The water conservation strategy will aim to reduce water demand through incorporating a variety of initiatives. These are described in more detail below.

4.2. Water conservation measures

The development will adopt the following water conservation measures:

- A Waterwise landscaping strategy which utilises largely native plant species with limited exotic species in select areas only to provide feature planting.
- Front yard Waterwise landscaping packages may be promoted to new home buyers. These may include the use of plant species with low water requirements, minimal turf, mulch, and soil conditioner to increase water retention.
- Outdoor private swimming pools or spas associated with a Class 1 building must be supplied with a cover or blanket.
- Builders will be required to fit Waterwise appliances and fittings within all display homes at the site. This will include the use of water efficient taps, showers, and water heating systems as well as Waterwise garden designs and irrigation schemes. Educational material will be made available via the use of education boards and pamphlets within any display homes that may be constructed.

4.3. Landscaping and irrigation requirements

4.3.1. Landscape concept

A landscape masterplan is provided in Appendix B and illustrates the intended landscape features and treatments through the POS areas as well as the streetscapes. Streetscape cross-section concepts are also provided in Appendix B.

The proposed development includes a large central POS area as well as two public access ways (PAWs). None of these public realm areas are proposed to contain above-ground stormwater infrastructure. As described in the following sections, stormwater is proposed to be managed with subsurface storage units in the central POS so as not to impact its form and function as a useable POS.

4.3.2. Irrigation water supply

The maximum potential long-term / permanent irrigation demand for the site is estimated as 6,000 kL/yr. This is based on an irrigation application area of 8,000 m^2 (and an average irrigation rate of 7,500 kL/ha/yr), which includes the 5,365 m^2 central POS area as well as verges surrounding the POS, two PAWs, verge areas and medians in Army Street and Hollowood Street. The actual permanently irrigated area may be less than this preliminary estimate.

There is currently no groundwater abstraction licence associated with the site. The site is located within the Perth – Superficial Swan groundwater resource area and the City of Nedlands subarea, which is shown as being fully allocated on the Department of Water and Environmental Regulation's online Water Register tool. A groundwater licence application will be submitted with DWER to determine whether a groundwater allocation can be obtained. If the groundwater licence application is refused, then alternative options will be pursued for securing a long-term irrigation source. These include amending the existing City of Nedlands groundwater licence to cover the subject site (if the additional

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irrigation area can be managed within the City of Nedlands' existing licence allocation), or trading with third parties for existing licences within the same resource area.

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5. STORMWATER MANAGEMENT

5.1. Drainage strategy

The stormwater management strategy for the site involves maximising opportunities for at-source treatment and dispersed infiltration of water to the ground, to minimise the downstream impact of stormwater retention requirements on the urban design and public open space (POS) useability.

To this end, the urban design has incorporated road reserve widths and proposed road cross-sections which facilitate the use of median swales along the main east-west road reserve (Hardy Road) as well as provide for opportunity for the use of flush kerbing and associated verge drainage areas between car bays in the other road reserves. Concept road cross-sections for the various road reserve widths are provided in Appendix B which demonstrate where these drainage measures could be employed.

The proposed median swales and verge drainage areas (eg. shallow swales, rain-gardens or tree pits) will provide opportunity for at-source treatment and pollutant retention of stormwater runoff from the adjacent roads, for passive irrigation of planting and for an improved urban design aesthetic including greater urban tree canopy. The exact location and design of these systems will be confirmed at detailed design. The retention and infiltration of stormwater within median swales and other street-scale devices will also provide the benefit of reducing the volume of stormwater requiring management in the downstream POS.

Flood detention requirements for the development will be provided by sub-surface storage and infiltration chambers, which will utilise the high infiltration potential of the natural soils in the central POS area and beneath Crossleigh Lane. The proposed use of underground storage will increase the useability of the central POS area. The preliminary sizing for the underground storage systems detailed herein conservatively excludes any reductions that will be achieved at detailed design stage through implementation of at-source infiltration measures. This demonstrates that the development proposal can accommodate drainage requirements even without the proposed at-source stormwater management measures (given the locations and extent of these are not yet confirmed).

The key design principles and objectives for the site are outlined in 1 and have been established in accordance with the design objectives outlined in Section 1.1.

Table 1: Stormwater management objectives

Objective	Criteria
Stormwater	
Ecological protection (15 mm event)	▪ The aim of 1 EY-1 hour (~15 mm) storm event is to capture and treat the first flush of rainfall runoff to minimise the export of pollutants to downstream drainage systems and the environment. ▪ Army Street will feature flush kerbs or kerb openings that direct runoff into adjacent landscaped median swales for at-source treatment and infiltration. ▪ Other opportunities for at-source treatment exist within the road network (eg. permeable paving for car bays, flush kerbing to rain-gardens or tree pits between car bays etc). ▪ Runoff from the smaller road reserves will enter a piped drainage system. Given the significant separation to groundwater and the suitable ground conditions it is recommended that drainage pits with soakage bases be considered to maximise close-to-source infiltration through the pit-and-pipe system.
Conveyance (20% AEP event)	▪ A pit and pipe system will convey up to and including the 20% AEP (5-year ARI) event to the downstream flood retention and infiltration chamber. Stormwater flows into the median swales which exceeds the storage and infiltration capacity of the swales will be captured by a “bubble’down” pit and be transferred into the piped drainage system. ▪ The piped drainage system will be designed so that roads will be passable in the 20% AEP event.

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Objective	Criteria
Stormwater	
Flood protection (1% AEP event)	▪ Flood conveyance pathways (including the road reserve) will be provided for safe passage of flows through the development during the 1% AEP event. ▪ The 1% AEP event will be contained in sub-surface storage and infiltration chambers located beneath the central POS and Crossleigh Lane ▪ Finished lot levels will be at least 0.3 m above the 1% AEP top water level of the urban drainage system and road reserve.

5.2. Preliminary drainage design

This section provides the preliminary drainage design details. Preliminary engineering design for the site has been completed by Tabec Consulting Engineers and are provided in Appendix C, including details of the earthworks, and indicative stormwater catchments and flow directions. Specific engineering plan references are provided in Table 2.

Table 2: Engineering plan summary

Drawing number	Title
2510-SK-003C	Preliminary Finished Levels Plan
2510-SK-004C	Preliminary Drainage Catchment Plan
2510-SK-005C	Preliminary Earthworks Cut-to-Fill Plan

5.3. Minor drainage system

5.3.1. Lots

The development masterplan is provided as Appendix A and includes a combination of medium density residential (ie. townhouse) and high density residential (ie. apartment) lots as well as a commercial / medical lot. The proposed apartment lots will manage stormwater within their lot boundaries as they will have adequate open space available to accommodate storage and infiltration systems to achieve this. In contrast, the medium density town house lots are proposed to be constructed with direct stormwater connections to the road drainage system given the difficulty that these lots may have in accommodating soakwells in small courtyard spaces etc. Stormwater contribution from the medium density residential lots has been accounted for in the preliminary design of the development's stormwater drainage system described herein.

As with the apartment sites, the medical centre site is also proposed to contain its own stormwater on site. It is anticipated that the medical/commercial/mixed-use lot will have adequate space available for stormwater management (ie. within or beneath car park areas) and it is also noted that this lot grades towards the north-east corner of the site making it impractical to convey stormwater from this site via the road reserve to the central POS.

The design of on-lot stormwater retention and disposal systems for the apartment and medical/commercial/mixed-use lots will need to be undertaken as part of building licences for those respective lots.

5.3.2. Road reserve

The drainage strategy seeks to maximise at-source treatment of stormwater within the road network, thus providing water quality improvement, passive landscape irrigation and reduction of downstream drainage infrastructure. Road reserves will utilise a combination of traditional pit-and-pipe drainage system (which collects runoff from the road and conveys it to the downstream flood storage systems comprising sub-surface infiltration chambers located beneath the central POS and Crossleigh road reserves) and at-source infiltration and treatment systems such as median swales, rain-gardens and tree pits.

PD31.05.24 - Attachment 2

Hardy Road (the main east-west road reserve through the development) is proposed to be an 18 m wide reserve which includes (in sections) a 3m wide median swale. Runoff from adjacent sections of the road will be directed via flush kerbing into planted swales along the proposed 3m wide median strips. The proposed medians will be planted and will provide for better urban tree canopy, a more pedestrian friendly streetscape and provide for at-source treatment and retention of stormwater within the median swales, thus reducing the amount and size of drainage infrastructure required. Conceptual cross-sections of the streetscapes, including the proposed median swales are provided in Appendix B.

The conceptual design for the median swales comprises approximately 0.3 to 0.35 m deep v-shaped swales with 1 in 3 batter slopes. Given the slight grade along these roads, it is likely that the median swales would incorporate several small weirs / check-dams along their length. These small structures would take the form of low, unobtrusive rock-pitched mounds and appear as part of the landscaped swale design. The purpose of the check-dams is to reduce flow velocities and erosion potential, and to increase the effective storage and infiltration within the median swales. Any rainfall events that exceed the median swale storage and infiltration capacity would flow to the lowest point in the swale where it would enter a “bubble-down” pit to transfer the flows into the piped stormwater network within the road reserve.

Other opportunities for at-source treatment within the road network have been considered in developing the road cross-sections provided in Appendix B, and these include:

- Flush kerbing adjacent to car bays to direct stormwater to vegetated areas (eg. garden bed, shallow swales, rain-gardens)
- Tree pits
- Permeable paving for car bays or other areas.

The exact location, extent and design of the above at-source treatment measures will be investigated as part of detailed design, will be incorporated in the design where possible and documented in future Urban Water Management Plans. It is also suggested that close-to-source infiltration be provided within the piped drainage system via the use of “bottomless” / soakage bases on drainage pits.

The road reserve piped drainage system will be designed to collect and convey the critical duration 20% AEP event, thus ensuring that the roads remain trafficable in these rainfall events.

5.4. Major drainage events

The objective for the major (1% AEP / 100-year ARI) rainfall event is to protect people and property from flood risk. The design criteria for this event include providing overland flow paths for stormwater via the road network to the low point in the development where the flood storage will be located, and to maintain 0.3 m freeboard from lot levels to the 1% AEP maximum water level in local drainage system.

Preliminary earthworks and stormwater catchment plans prepared by the civil engineers are provided in Appendix C. These demonstrate how the site will be graded to provide overland flow paths through the road reserve towards the low point in Hardy Road adjacent to the central POS and Crossleigh Lane near the eastern boundary of the site.

Stormwater modelling has been undertaken to determine the storage requirements in the central POS. The modelling incorporated subcatchment-scale hydrological modelling as well as routing runoff hydrographs through the proposed underground storage and infiltration systems to determine the required storage and footprint area.

Figure 7 and Figure 8 illustrates the stormwater management strategy in relation to the various catchment areas and how and where stormwater is managed for each.

PD31.05.24 - Attachment 2

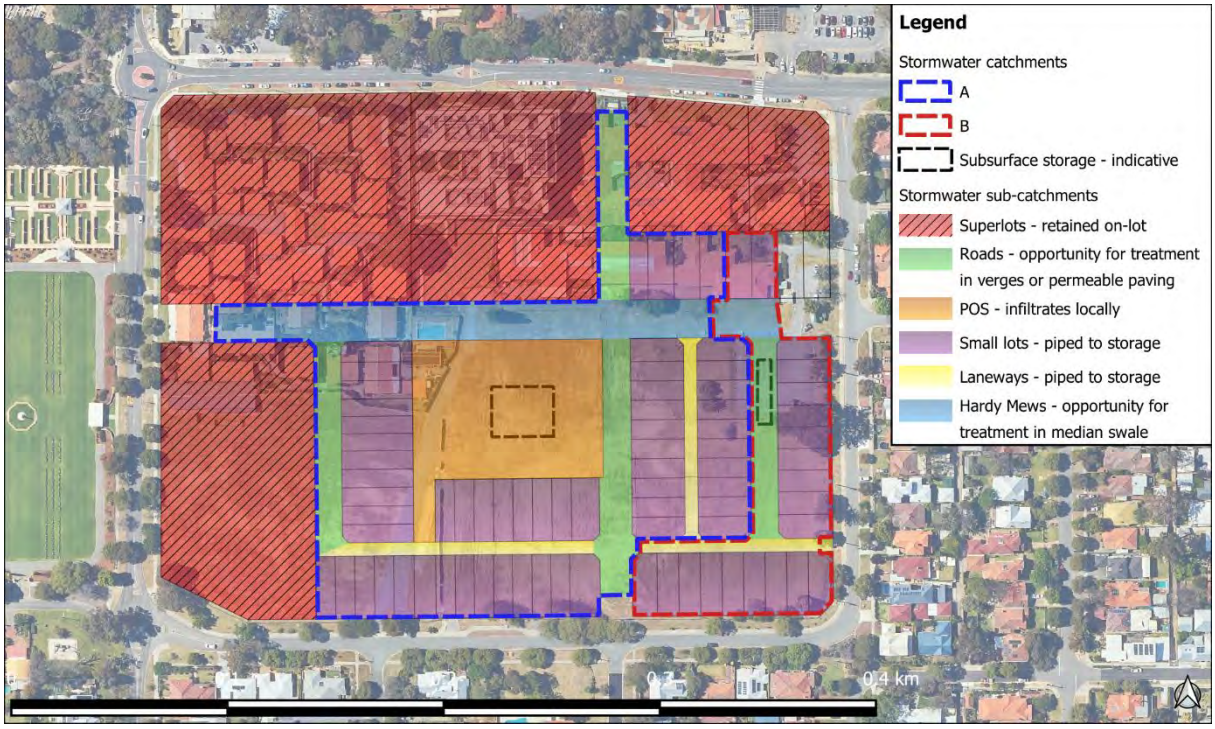

Figure 7: Stormwater management strategy

The flood storage within the central POS and Crossleigh Lane were modelled as underground storage and infiltration chambers of 1.5 m depth. Alternative design options were considered (eg. partial retention underground with supplementary storage above-ground for major rainfall events), however the preference for an entirely sub-surface storage solution is based on maximising the useability and amenity of the POS. A design infiltration rate of 8 m/d was used in the modelling, based on a combination of the site-specific permeability testing (refer to Section 2.3.2) and the City of Nedlands stormwater policy (City of Nedlands, 2023).

Appendix D provides a full description of the stormwater modelling undertaken, the results of which are presented below in Table 3 and Table 4.

Table 3: Modelled stormwater storage requirements within Central POS

Event AEP	Indicative chamber footprint (m^2) [a]	Storage volume (m^3)	Storage depth (m)
20%	610	205	0.33
1%	610	900	1.50

[a] Modelled sub-surface chamber footprint is based on a 1.5m height system such as Humes Stormtrap or similar. The exact footprint and volume requirements are subject to refinement at detailed design.

Table 4: Modelled stormwater storage requirements beneath Crossleigh Lane

Event AEP	Indicative chamber footprint (m^2) [a]	Storage volume (m^3)	Storage depth (m)
20%	207	109	0.52
1%	207	307	1.50

[a] Modelled sub-surface chamber footprint is based on a 1.5m height system such as Humes Stormtrap or similar. The exact footprint and volume requirements are subject to refinement at detailed design.

5.5. Non-structural controls

Non-structural controls to improve stormwater quality includes vegetation to be incorporated into the drainage areas to help prevent erosion, maintain soil infiltration, restrict water flows, and remove particulate and soluble pollutants. Native species will be

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selected based on their intended purpose, predominantly being for nutrient removal, and will be in accordance with the Vegetation guidelines for stormwater biofilters in the south-west of Western Australia (Monash University 2014).

Other non-structural control includes operation and maintenance practices such as:

- Street sweeping and litter removal.
- Dust and sediment management during construction works.
- Appropriate landscape irrigation and fertiliser practices.

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6. GROUNDWATER MANAGEMENT

As described in Section 2.4, the water table lies approximately 20 metres beneath the site. Given the significant depth to groundwater, no active management or control of groundwater levels will be required.

The significant depth to groundwater also reduces the risk of contamination of the superficial aquifer with typical urban pollutants such as nutrients (ie. from fertiliser use). The stormwater treatment approach (ie. the use of planted median swales for nutrient retention and uptake) as well as the implementation of appropriate landscape maintenance practices (ie. irrigation rates and fertiliser and herbicide usage) will further reduce the potential for the development to impact groundwater quality.

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7. MONITORING AND REPORTING

7.1. Pre-development monitoring

No pre-development monitoring has been undertaken at the site given the urban infill nature of the development and the fact that it possessed significant separation to groundwater and no surface water features.

7.2. Post-development monitoring

Post-development monitoring is proposed to be limited to the general function and performance of the stormwater drainage system to ensure that structural controls are operating correctly and to identify any on-going maintenance or design modification requirements. No groundwater or surface water level or quality monitoring is considered warranted for the development, noting the absence of any sensitive environmental receptors at the site and the low pollution generating potential of the (residential) development being proposed.

Monitoring requirements for the drainage infrastructure are outlined in the following section.

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8. IMPLEMENTATION

Table 5 outlines the key roles and responsibilities associated with water management during future development of the site.

Table 5: LWMS implementation roles and responsibilities

Principles	Role	Responsibility	Timescale
Monitoring	Monitoring of drainage infrastructure	The proponent	Bi-annual inspection of drainage infrastructure, including storage chamber, pits, pipes and any other structures (eg. check-dams in median swales) and unblocking / rectification as required until handover to CoN
Irrigation Bore	Bore construction, monitoring and maintenance	Proponent until POS handover. Bore to be serviced prior to pump handover to CoN	As per the bore licence conditions specified by the DWER until handover to the CoN.
Subdivision management	Construction and site work management	The Proponent	As required during construction until handover to the CoN.
	Waste and pollution management	The Proponent	As required during construction until handover to the CoN.
	Dust suppression and erosion Control	The Proponent	As required during construction.
POS and landscaped community areas	Maintenance of drainage infrastructure within POS and medians	The Proponent	As specified within the POS design documentation until handover to the CoN.
	Fertiliser application	The Proponent	As specified within the POS design documentation until handover to the CoN.
	Irrigation systems	The Proponent	As specified within the POS design documentation until handover to the CoN.

PD31.05.24 - Attachment 2

9. REFERENCES

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Appendix A: Development Masterplan

Block	Area	% site area
A	2882.0	
B	2320.0	
C	5133.8	
D	2688.331	
E	3822.1	
F	2199.7	
G	3065.5	
H		
I	11141.4	
J	5606.6	
K	2674.1	
L	3366.9	
M	1931.3	
N	1931.3	
Total	48763.2	65.8%
Park	5937.3	8.0%
Street	13097.2	17.7%
Utility	135.2	

DESIGNER

- Use figured dimensions only
- Comply with relevant Australian Standards
- Comply with relevant Authorities' requirements

HESPERIA

Level 3/338 Barker Road Subiaco WA
PO Box 782 Subiaco WA 6904

N

REV	DATE	AMENDMENT
A	26/9/23	Issue for consultants

Notes
This scheme has been prepared for feasibility purposes only.
The scheme depicts a potential solution - subject to future statutory approval.

PROJECT
Nedlands Regis
118-120 Monash Road, Nedlands

CLIENT
for Hesperia

DRAWING TITLE
Hesperia Master Plan

JOB NO	DRAWN	SCALE	DRAWING NO.
2313		1.1500 at A3	**H1**
DATE	CHECKED	PLOT DATE	REVISION
		26/9/23	**A**

Appendix B: Landscape Concepts

REGIS NEDLANDS

Landscape Masterplan | October 2023 [B]

01 | SITE MASTERPLAN

LEGEND

- SITE BOUNDARY
- 01 EXISTING TREES TO BE RETAINED WHERE POSSIBLE
- 02 NEW TREES ALONG PERIMETER STREET VERGE
- 03 SMALLER NEW TREES ALONG PERIMETER VERGE DUE TO EXISTING POWER LINES ALONG NORTHERN EDGE.
- 04 EXISTING EUCALYPTUS CITRIODORA TO BE RETAINED IF POSSIBLE
- 05 HARDY ROAD WITH INDENTED PARKING & MEDIAN SWALE, REFER TO STREETSCAPE DESIGN.
- 06 EVENTIDE LANE WITH INDENTED PARKING TO ONE SIDE, REFER TO STREETSCAPE DESIGN.
- 07 VILLAGE PARK, REFER TO DETAILED PLAN.
- 08 HOLLYWOOD STREET WITH INDENTED PARKING, REFER TO STREETSCAPE DESIGN.

PLAN E

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LANDSCAPE MASTERPLAN

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0 12.5 25 37.5 62.5m

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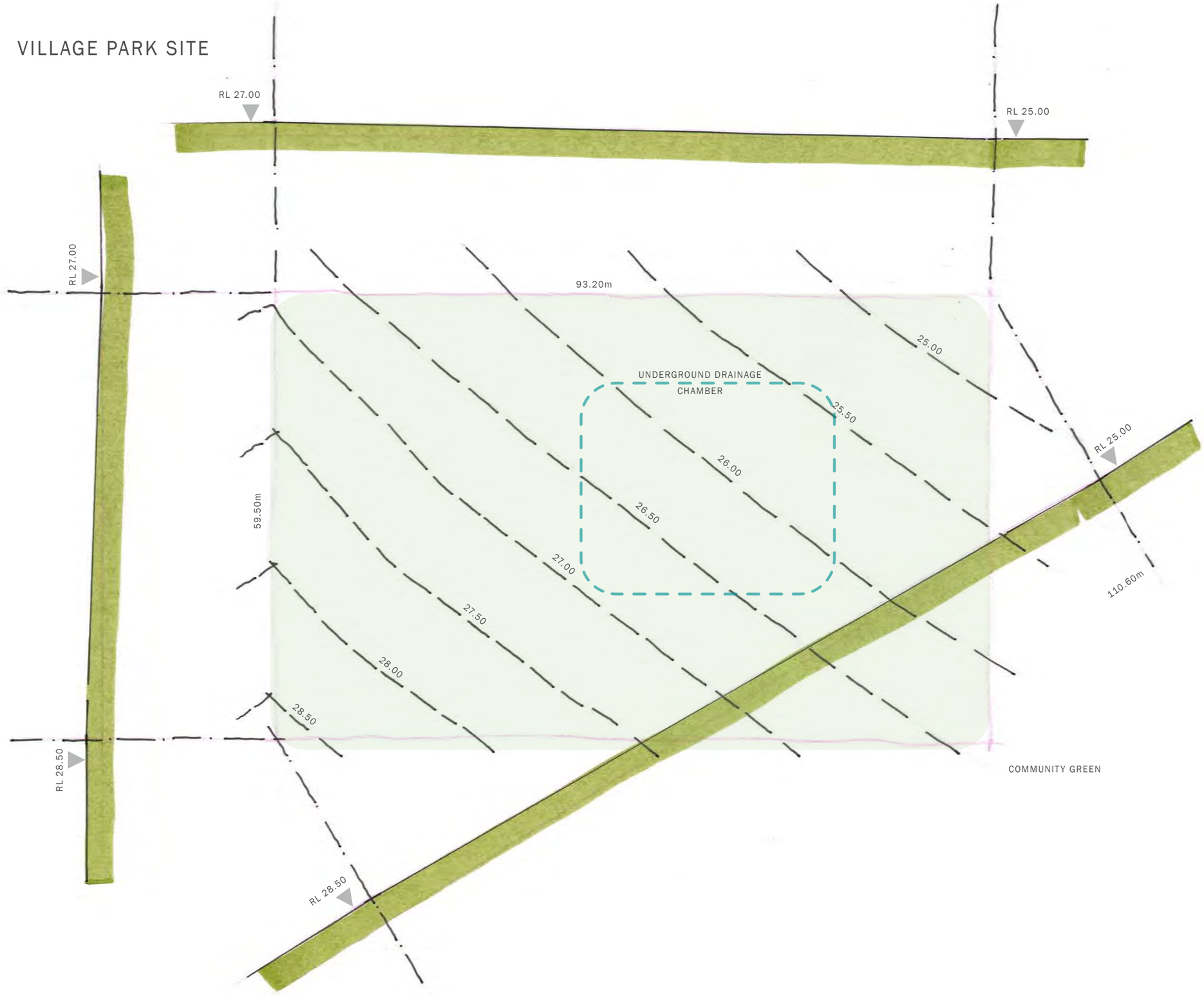
02 | VILLAGE PARK SITE



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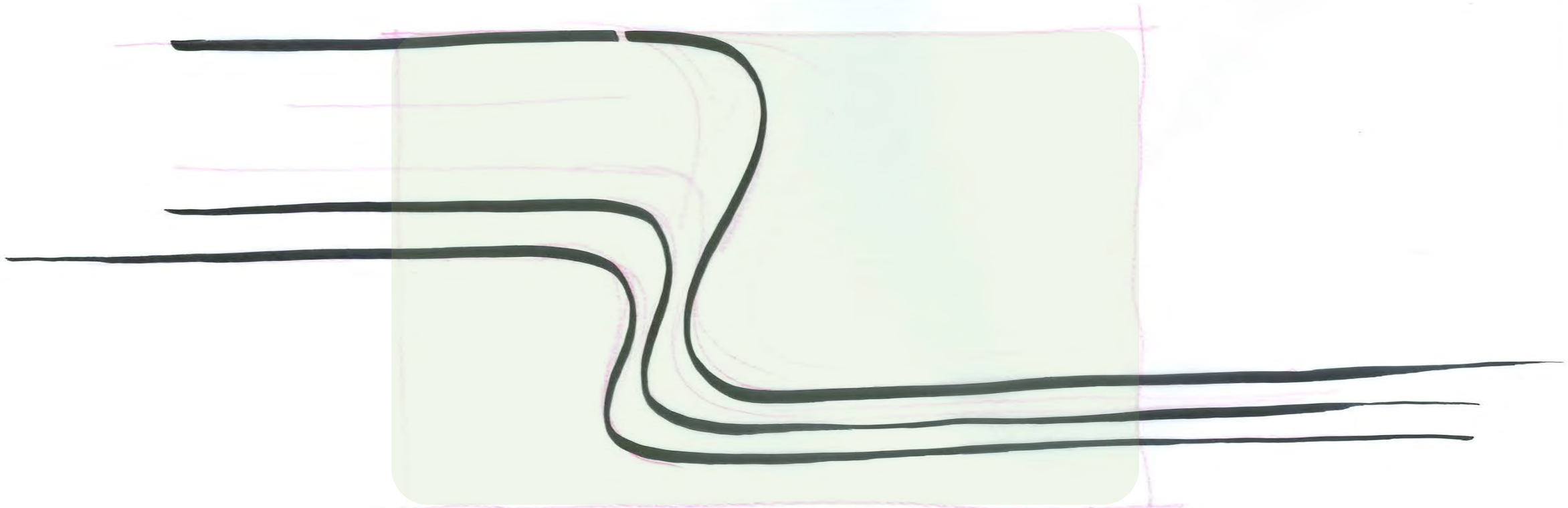
02 | VILLAGE PARK SITE PATTERN



SPACE IN BETWEEN CREATING RELATIONSHIPS THROUGH CONNECTION TO LAND AND COMMUNITY

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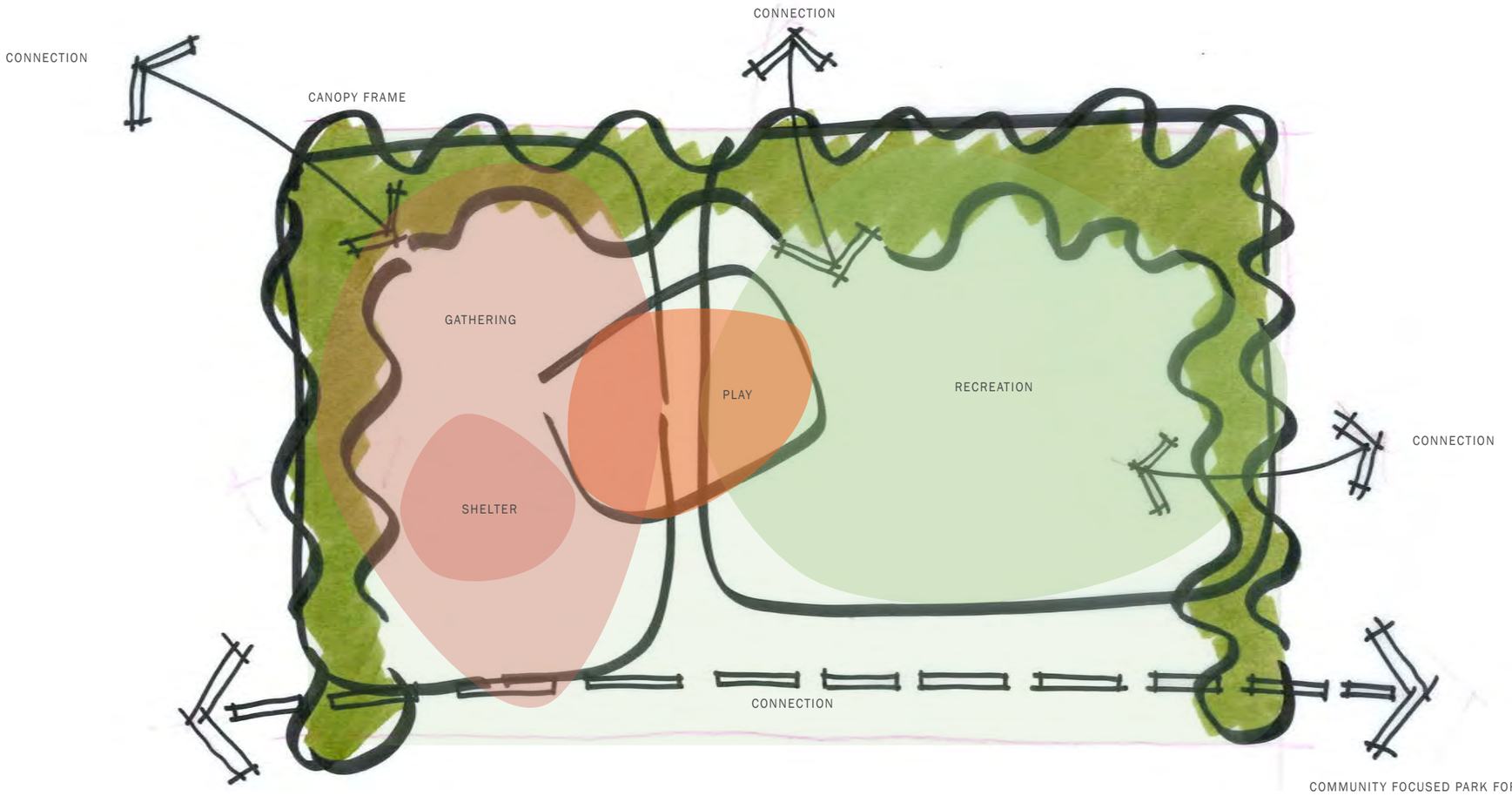
02 | VILLAGE PARK SITE RELATIONSHIPS



COMMUNITY FOCUSED PARK FOR GATHERING, PLAY AND RECREATION

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02 VILLAGE PARK MASTERPLAN

LEGEND

01 LARGE ARTWORK

02 LOW RETAINING WALLS TO ACCOMMODATE LEVEL DIFFERENCES ACROSS PARK

03 CIRCULAR TIMBER SEATS

04 LARGE CIRCULAR BENCH SEAT/GATHERING AREA

05 MIXED ORNAMENTAL LOW SHRUB AND GROUNDCOVER PLANTING

06 TERRACE WITH LOW RETAINING WALLS AND STEPS

07 SMALL PLAYGROUND WITH CUBBY, SLIDE AND LOW CLIMBING ELEMENTS

08 LARGE ARBOR WITH LONG COMMUNITY TABLE, BBQ AND SWING SEATS

09 TURF AND PLANTED TERRACES WITH LOW RETAINING WALLS AND SEATING

10 ACCESS PATHWAY THROUGH PARK AND TO ADJACENT LOTS

11 TERRACES WITH LOW RETAINING WALLS AND STEP ACCESS

12 OPEN TURF SPACE WITH UNDERGROUND DRAINAGE CHAMBER (SIZE TBC)

13 LARGE CURVING COMMUNITY BENCH SEAT

14 FORMAL TREE PLANTING ON GRID TO FRAME PARK

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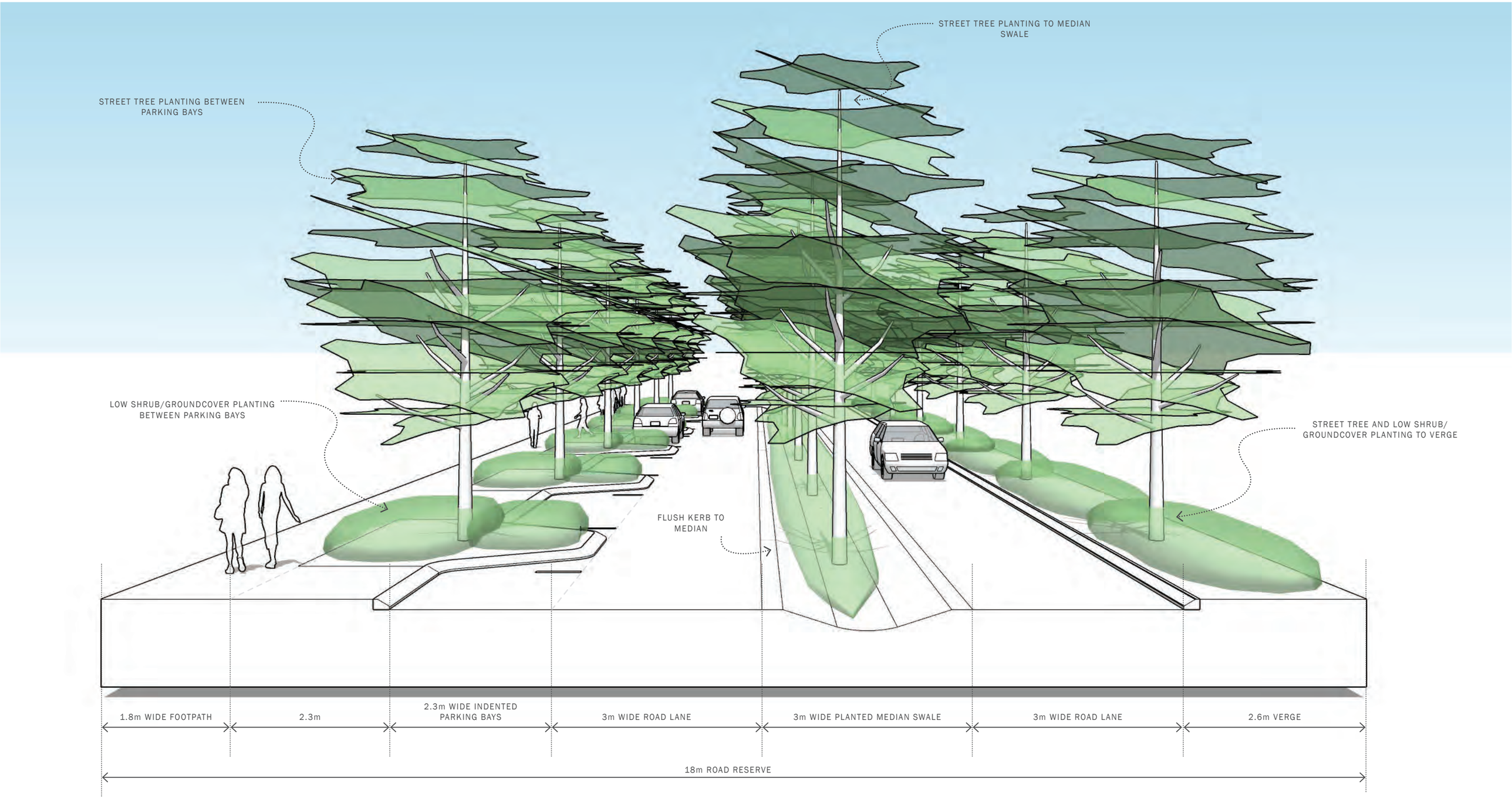
Streetscape Design | october 2023 [C]

01 | HARDY ROAD 18m ROAD, 3m MEDIAN & FOOTPATH WITH INDENTED PARKING ONE SIDE



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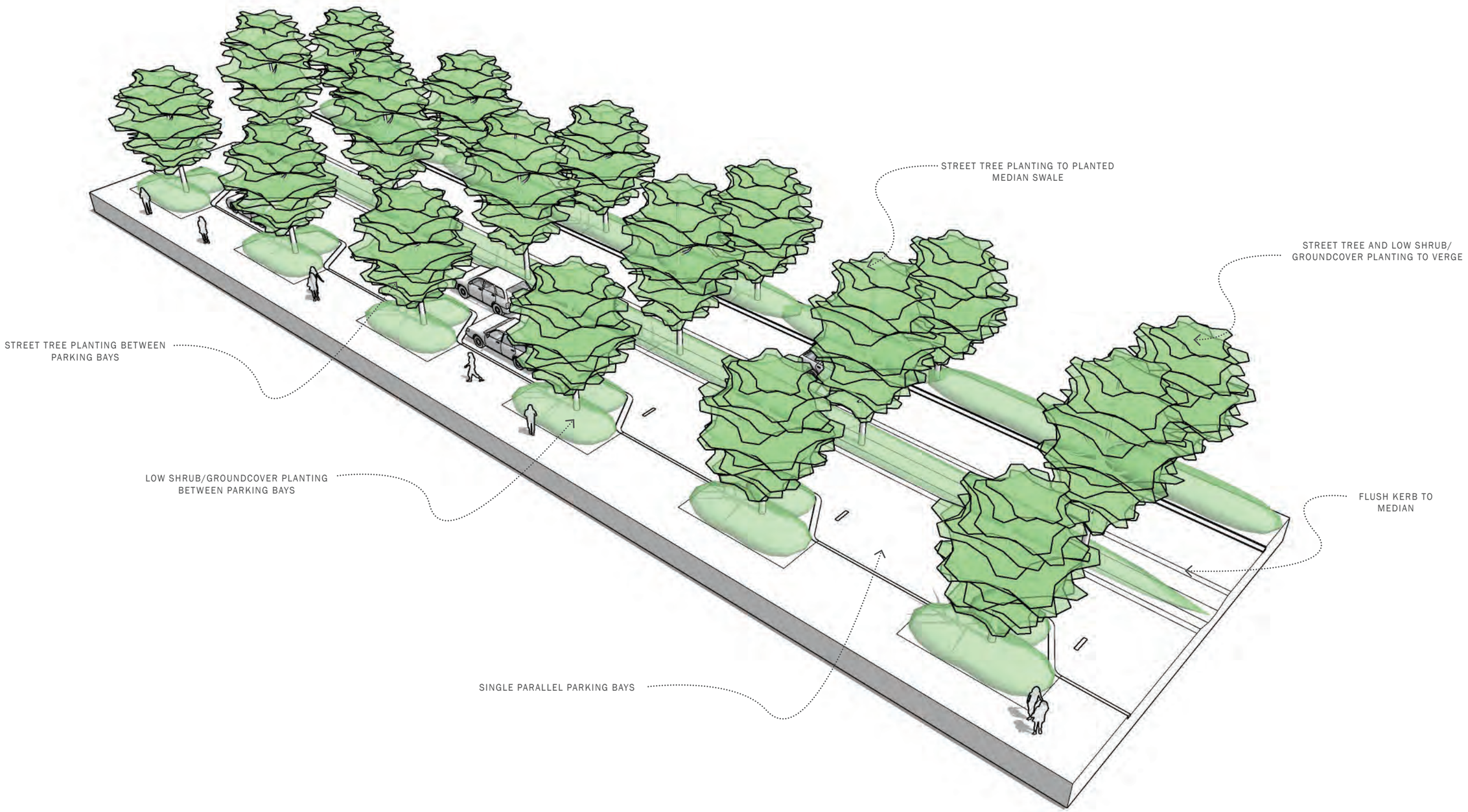

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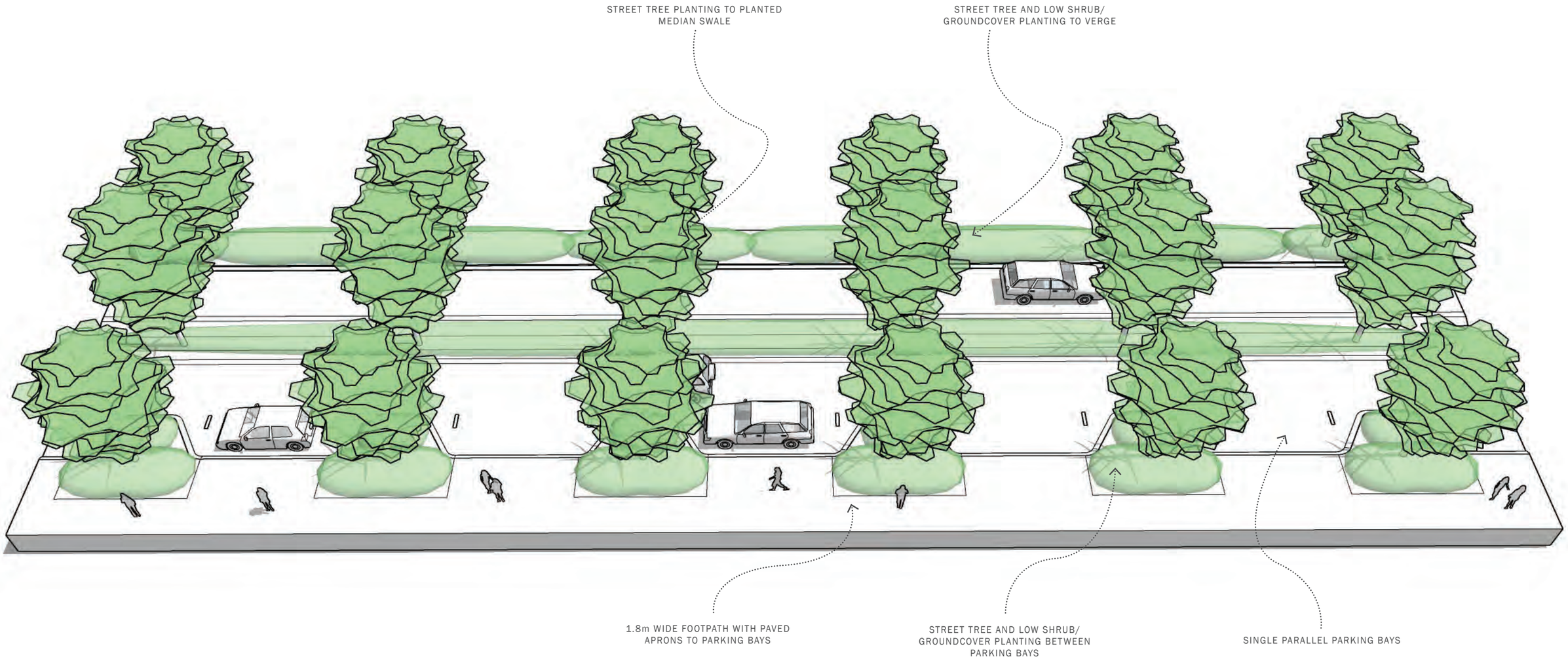

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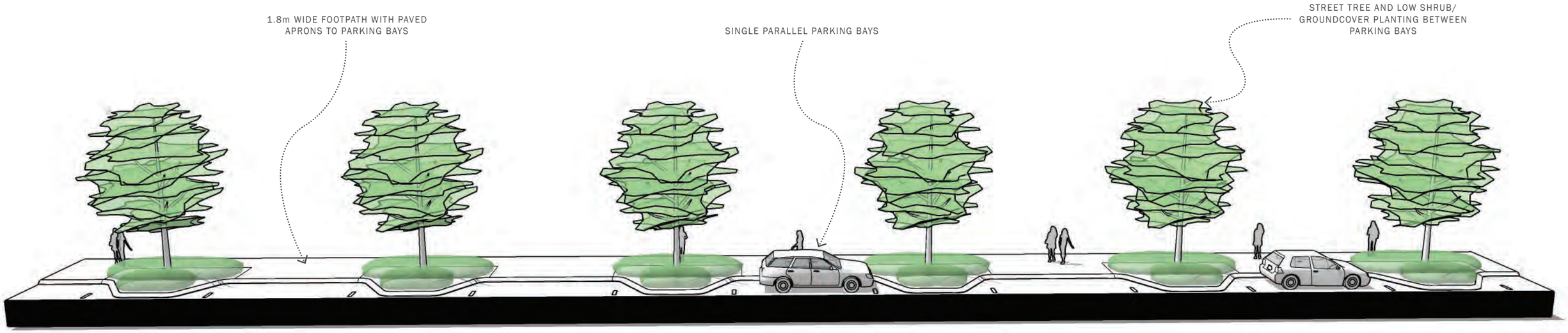

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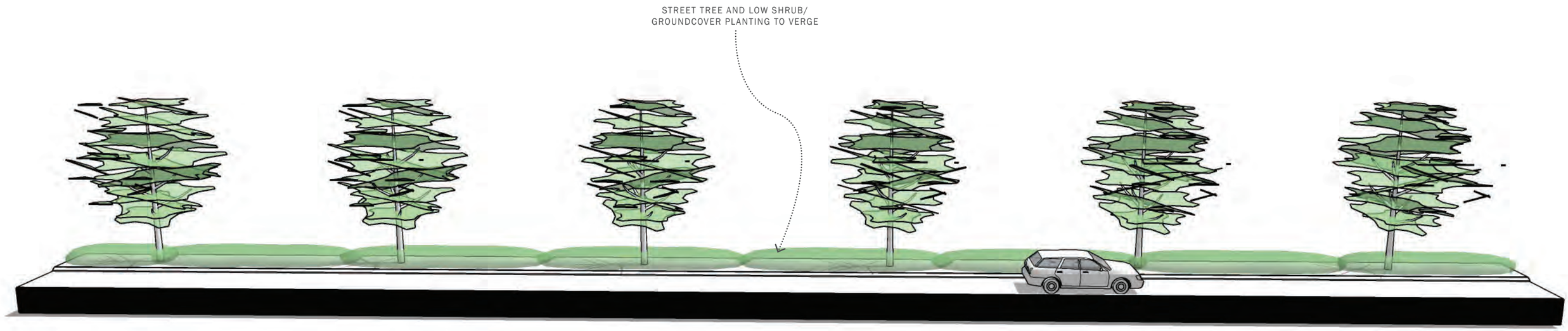

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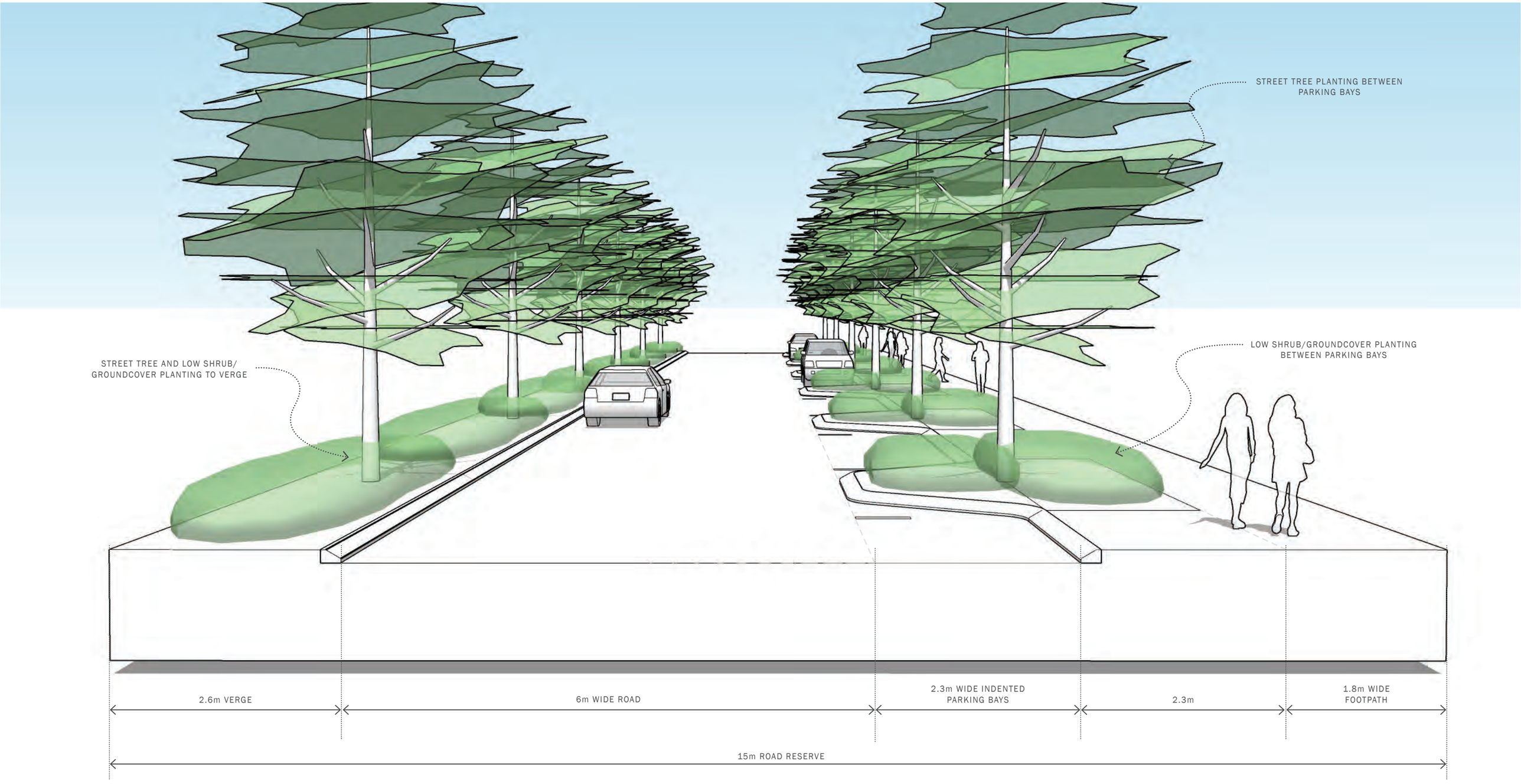
02 | HOLLYWOOD AVE - 15m ROAD, FOOTPATH WITH INDENTED PARKING TO ONE SIDE



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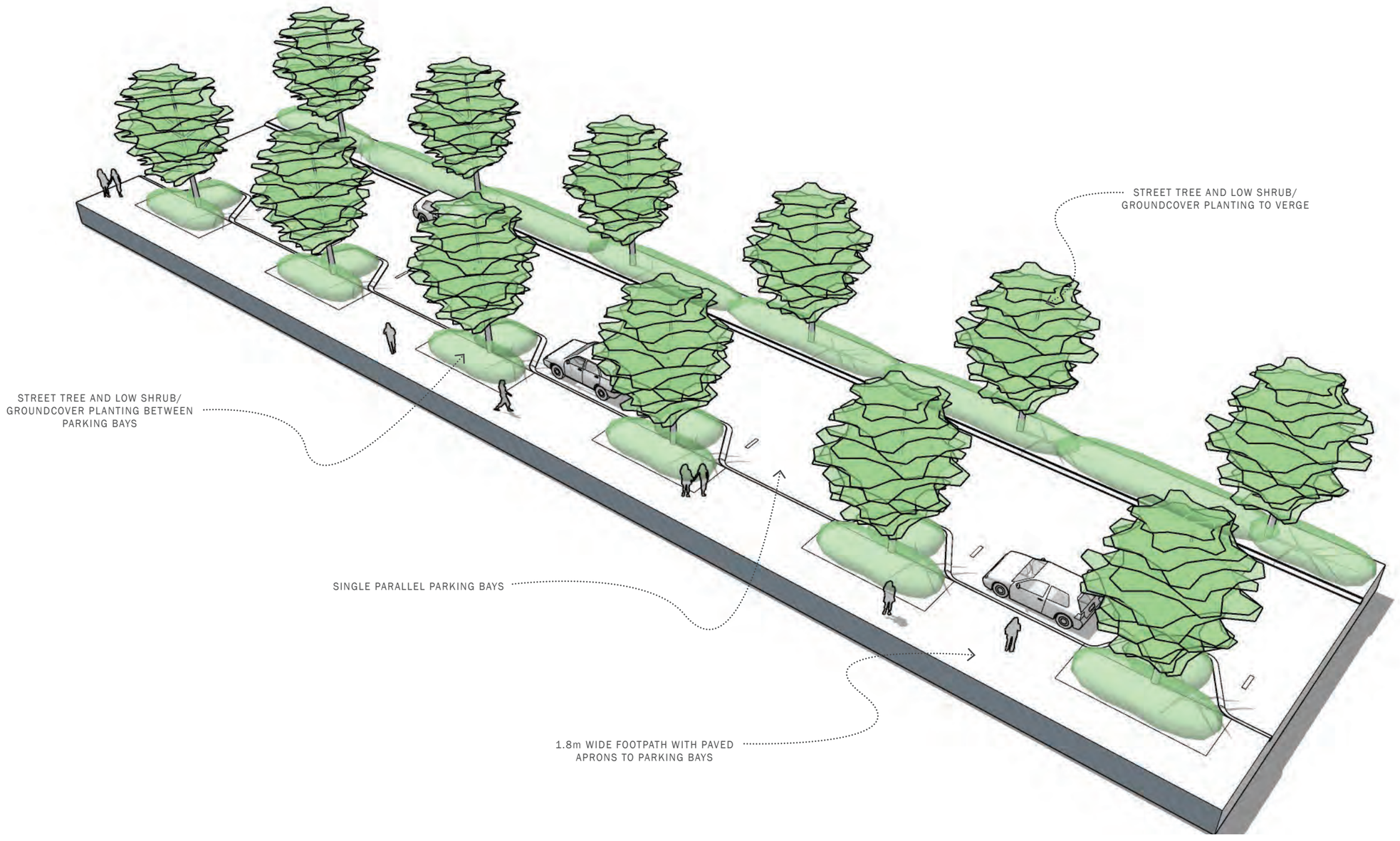
02 | HOLLYWOOD AVE - 15m ROAD, FOOTPATH WITH INDENTED PARKING TO ONE SIDE



PLAN E

LANDSCAPE ARCHITECTS

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STREETSCAPE DESIGN

HESPERIA
OCTOBER 2023

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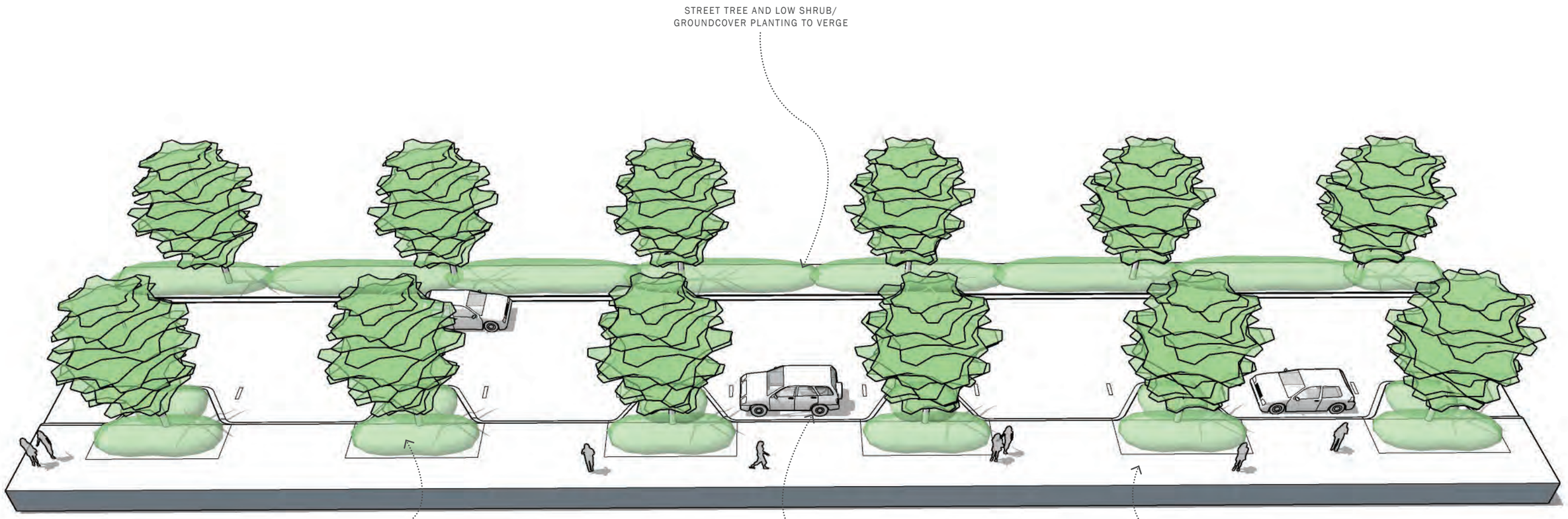

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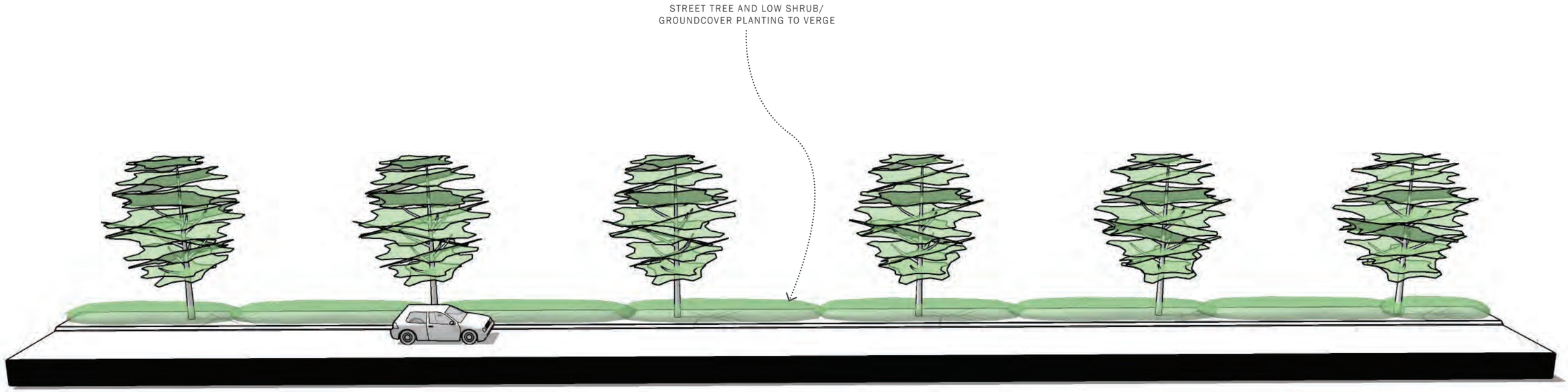

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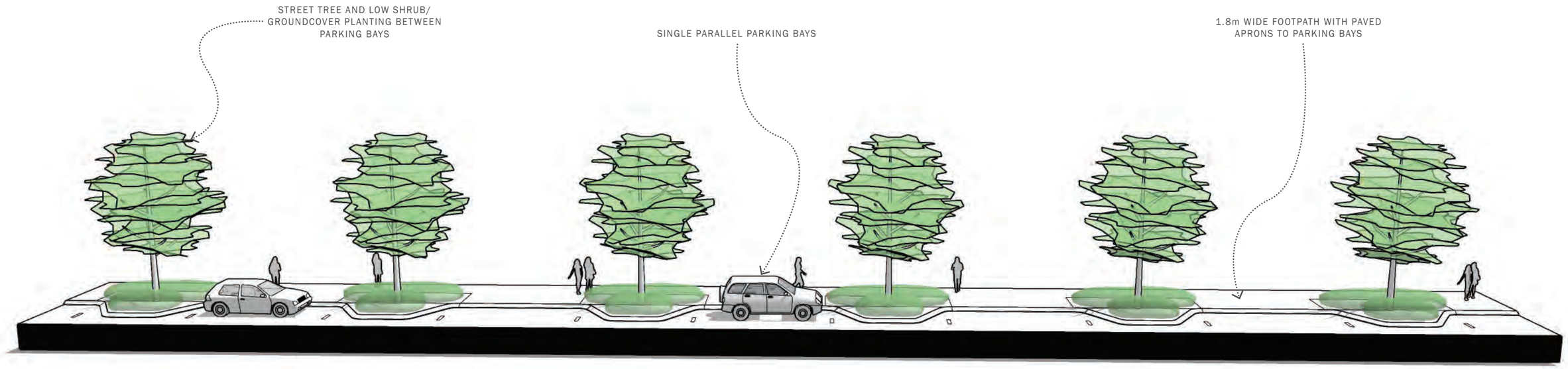

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03 | EVENTIDE LANE - 12.5m LANE, FLUSH PAVEMENT WITH REAR LOT ACCESS & PARKING TO ONE SIDE

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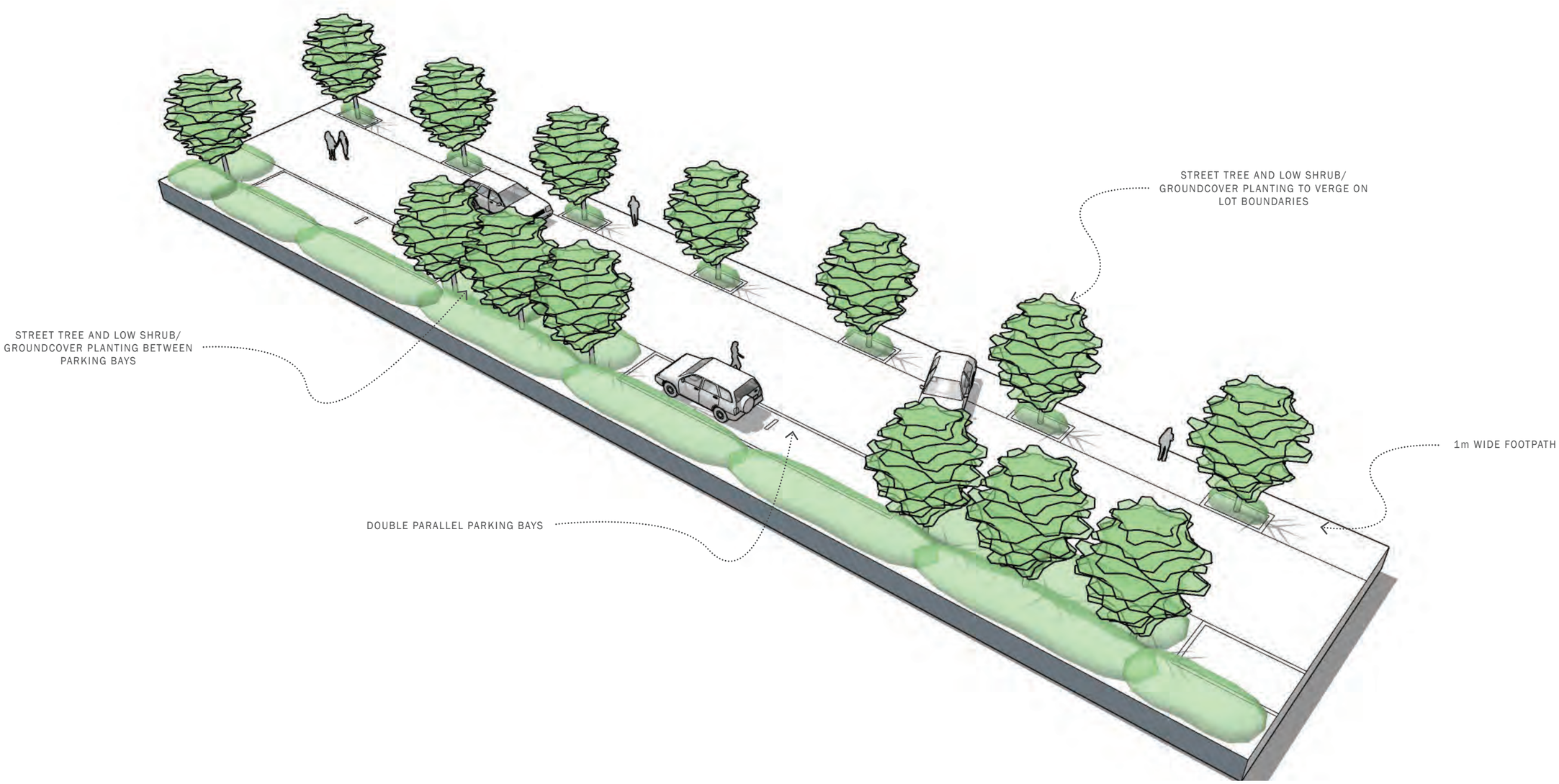

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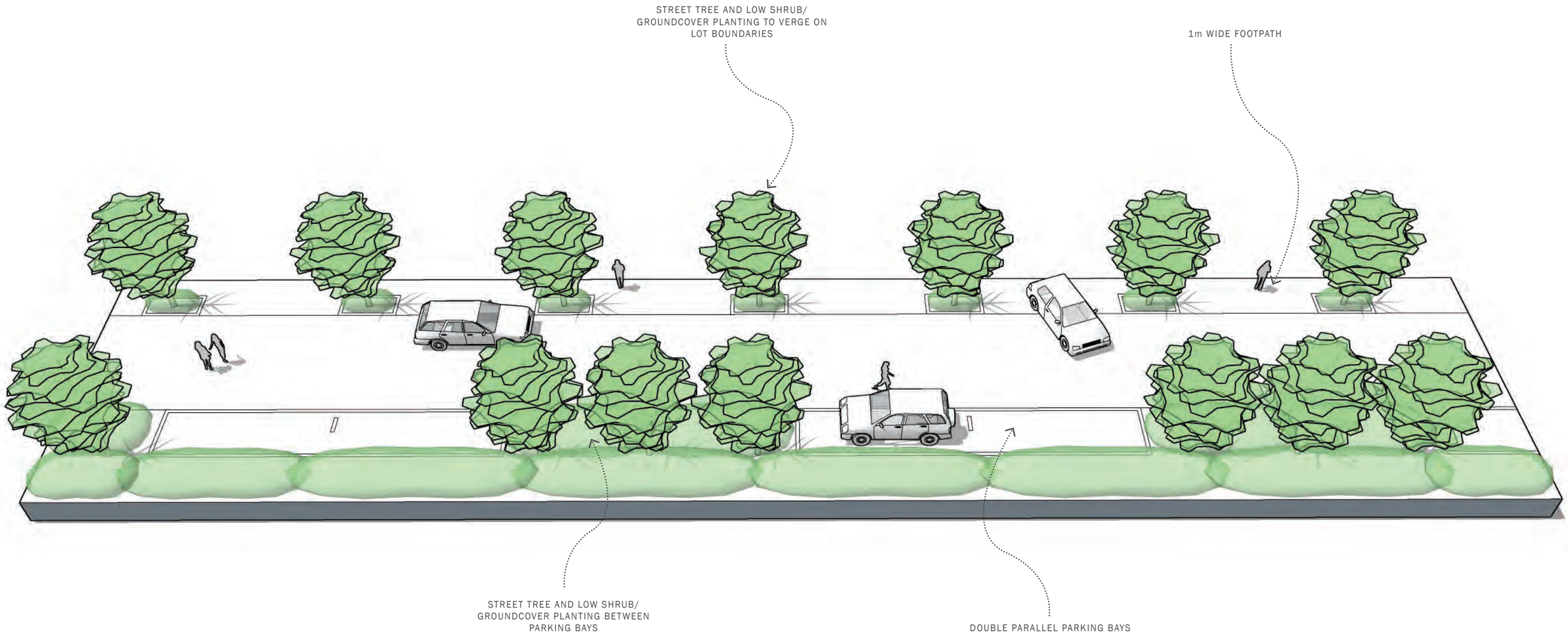

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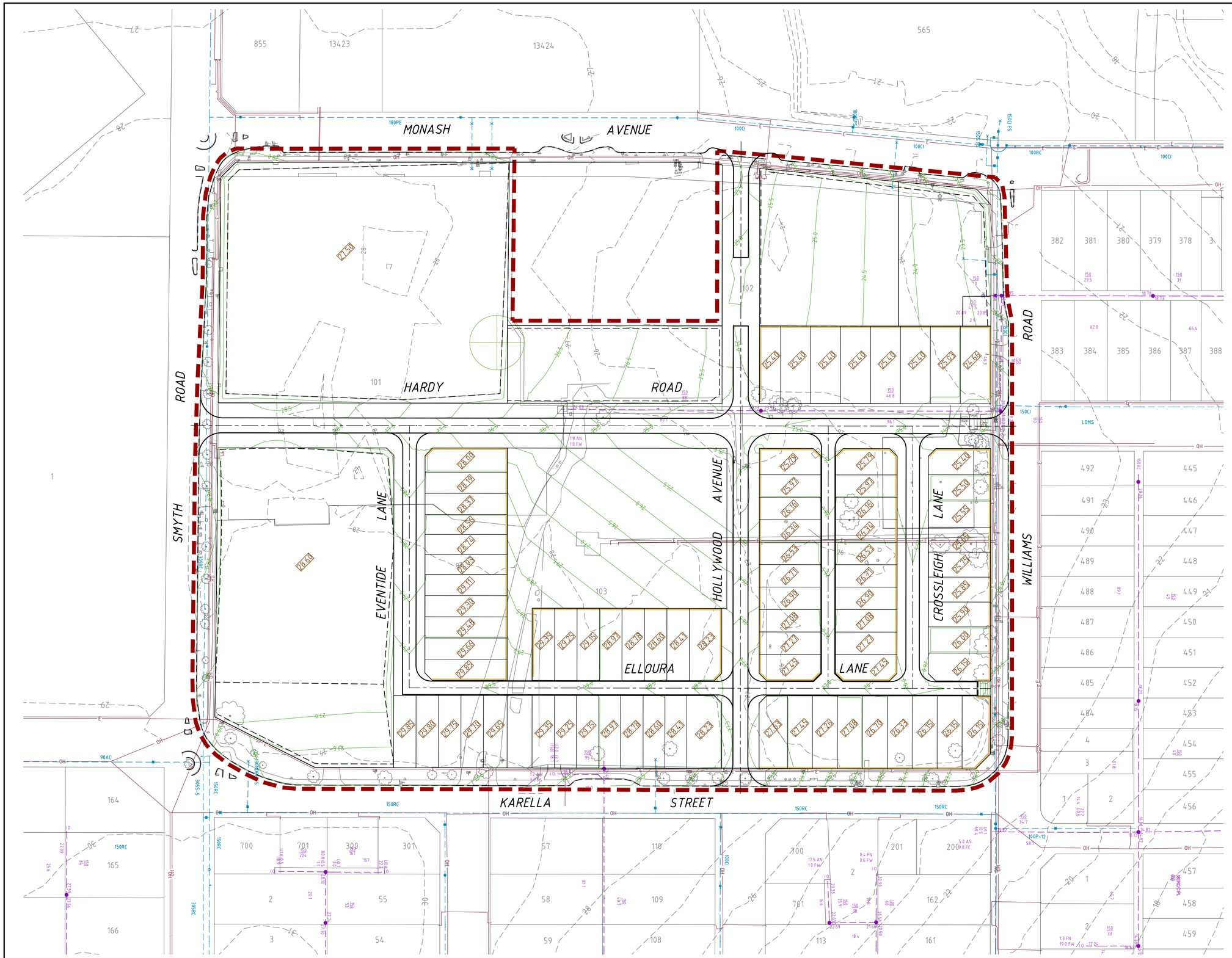
Appendix C: Preliminary Engineering Plans



No.	DATE	DRAWN	APPROVED	AMENDMENT
C	29.09.23	KM	JS	AMENDED TO REVISED PLANNING
B	22.08.23	KM	JS	FINISHED SURFACE CONTOURS AMENDED
A	28.07.23	MS	JS	PRELIMINARY ISSUE

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KM	JS	
DRAWN	CHECKED	DATE
MS	JS	

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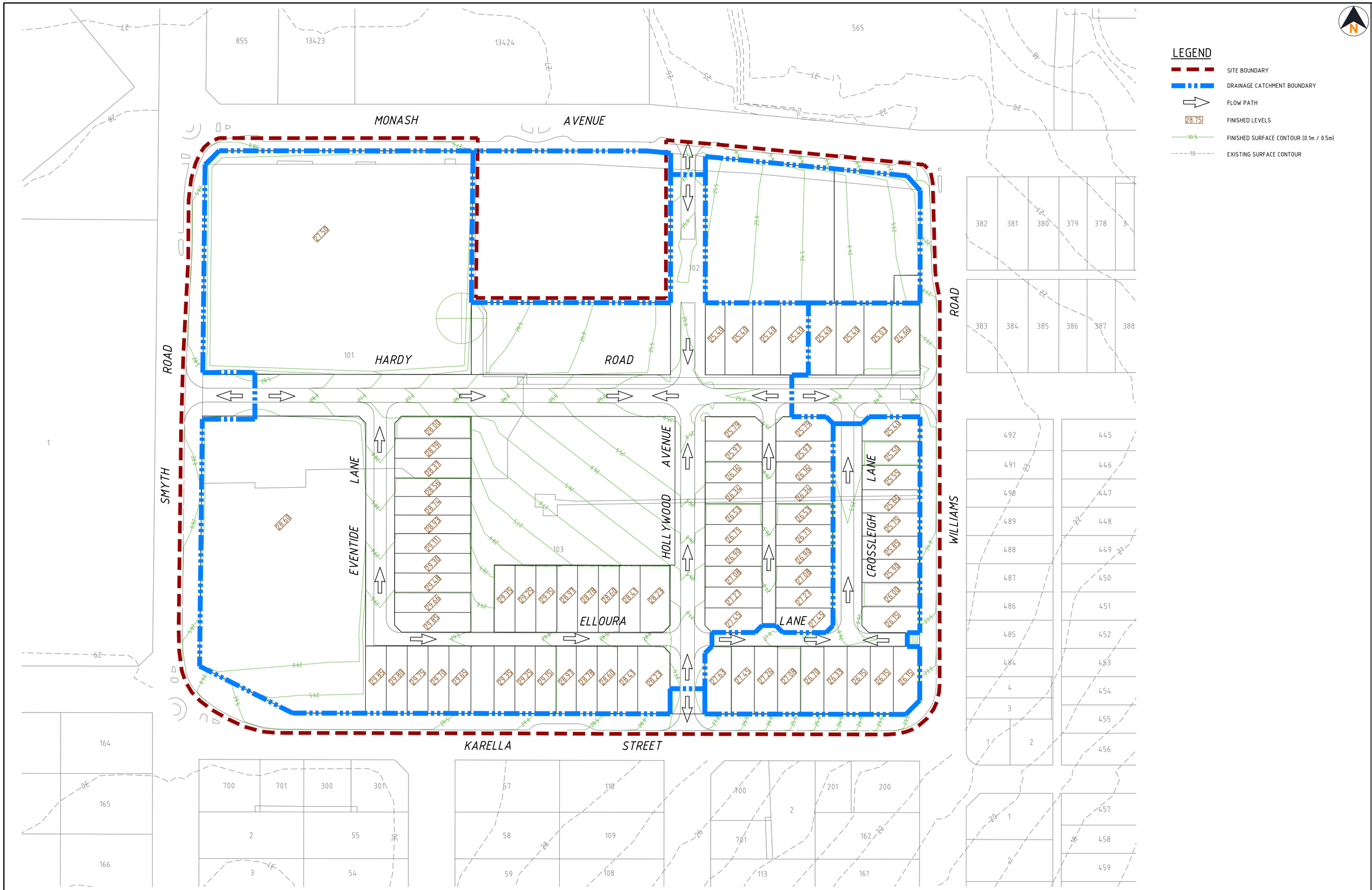
PROJECT: LOTS 101-103 MONASH AVENUE, NEDLANDS

TITLE: PRELIMINARY FINISHED LEVELS PLAN

DRAWING NUMBER: 2510-SK-003

ISSUE: C

Plotted By kmoore Plot Date: 29/09/23 - 08:12 Cad File: C:\TDS\data\TB-TDS\2510 - Regs Site Nedlands_96\CADD\CAD\2510-SK\2510-SK-003.dwg



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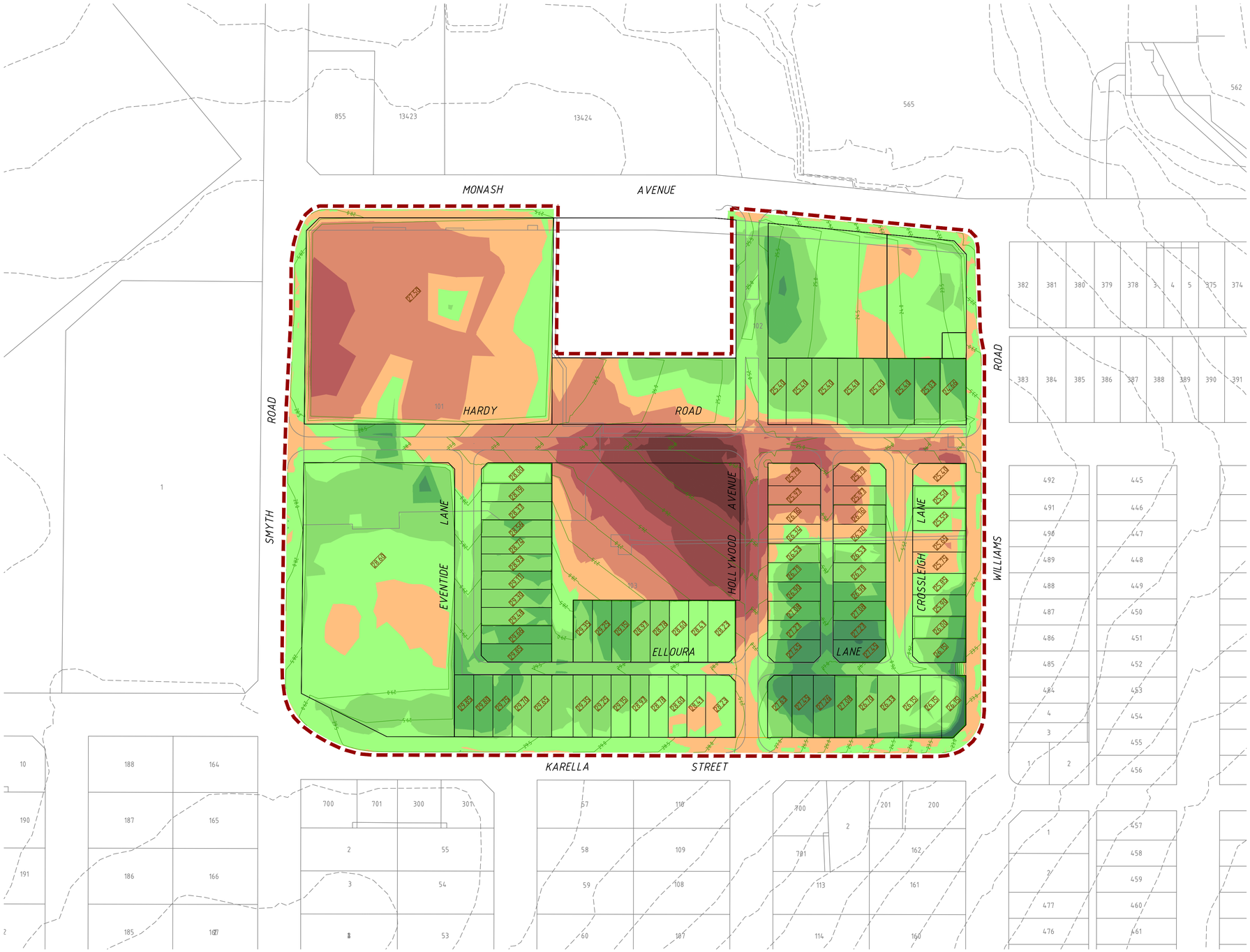
PROJECT: LOTS 101-103 MONASH AVENUE, NEDLANDS

TITLE: PRELIMINARY DRAINAGE CATCHMENTS

DRAWING NUMBER: 2510-SK-004 | ISSUE: C

Plotted By: kmoore Plot Date: 29/09/23 - 08:17 Cad File: C:\12dS\data\TB-12D\2510 - Regis Site Nedlands_96\CADD\CAD\2510-SK\2510-SK-004.dwg



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Fill 2.0 & above

HESPERIA
Lots 101-103 Monash Avenue, Nedlands

Preliminary Earthworks - Cut to Fill

DRAWING NUMBER 2510-SK-005

ISSUE C

SCALE 1:1000 0 20 40 60 A1

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Appendix D: Stormwater Modelling Summary

PD31.05.24 - Attachment 2

Appendix D

A detailed 1D stormwater drainage model was developed in XPSWMM to simulate the post-development hydrology, including the rainfall-runoff into the proposed sub-surface storage structures designed for the 1% AEP event.

Figure D.1 illustrates the modelled sub-catchments, whilst Table D.1 provides a breakdown of the modelled catchment types for each scenario.

The models were built up based on the assumptions as follows:

- Superlots were disregarded from the model as these are assumed to manage all stormwater on-site consistent with City of Nedlands requirements.
- Catchments A and B were assumed to contribute runoff to the road reserve drainage system and ultimately require flood storage in the central POS area and beneath Crossleigh Lane respectively.
- Medium density residential lots (ie. townhouses / row houses) were assumed for the purpose of the modelling to have direct stormwater connections to the road reserve drainage system due to the potential difficulty accommodating on-lot stormwater disposal systems on these very small lots.
- There are five land use types in the model with Hardy Road, streets consisting of Hollywood Avenue, Crossleigh and Eventide Lanes, laneway for Elloura Lane, townhouse lots and POS areas.

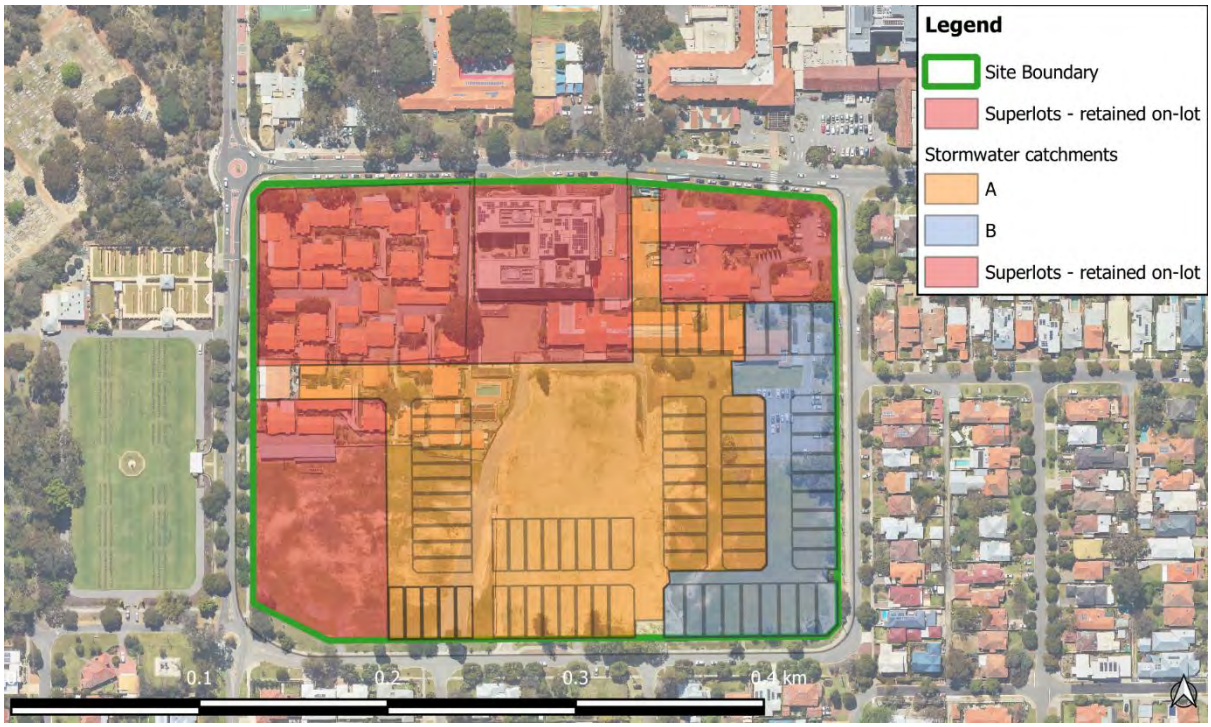

Figure D.1: Modelled stormwater catchments

Table D.1: Catchment area breakdown

Catchments	Total (ha)	Streets (ha)	Townhouse Lots (ha)	Laneway (ha)	POS / drainage (ha)	Hardy Road (ha)
A	3.066	0.425	1.503	0.130	0.594	0.414
B	0.919	0.118	0.650	0.051	-	0.099

PD31.05.24 - Attachment 2

Table D.2 further below provides the key model setup parameters and assumptions as well as modelled loss assumptions.

- Underground storages modelled as 1.5m height chambers (eg. Humes Stormtrap, as shown in Figure D.2, however noting the ultimate underground storage system will be determined at detailed design stage and its storage depth/volume/footprint refined accordingly)
- 8 m/d infiltration assumed for both underground systems (based on combination of site-specific permeability testing and City of Nedlands stormwater policy)
- The full range of design rainfall event durations and temporal pattern ensembles (with intensity-frequency-duration data derived in accordance with Australian Rainfall and Runoff 2019) were modelled to identify the critical duration for all relevant aspects of the drainage system.
- Runoff routing was modelled with the Laurenson routing method using sub-catchment areas, slopes and routing parameter calculated with the Manning's n values provided in Table D.2 below.

Table D.2: Model loss rates and manning's n (routing coefficient)

Land Use type	Initial loss (mm)	Continuing loss (proportion)	Continuing loss (Absolute mm/hr)	Manning's n
Streets	1.5	0.15	-	0.016
Laneways	1.0	0.10	-	0.016
Lots	1.0	0.15	-	0.020
POS / Drainage Area	20.0	-	3.0	0.200
Hardy Road	1.5	0.20		0.016

Figure D.2: Sub-surface storage example

The stormwater modelling of the post-development scenario indicates that the required "end-of-line" storage volume within the central POS is 205 m^3 and 900 m^3 for 20% and 1% AEP events respectively (when modelled with the assumed 1.5m deep subsurface storage system). The modelled subsurface chamber footprint area is 610 m^2. Storage volume beneath Crossleigh Lane is 109 m^3 and 307 m^3 for 20% and 1% AEP events respectively (when modelled with the assumed 1.5m deep subsurface storage system). The modelled subsurface chamber footprint area is 207 m^2.

Table D.3: Modelled storage volumes within Central POS

Event AEP	Indicative chamber footprint (m^2)	Storage volume (m^3)	Storage depth (m)
20%	610	205	0.33
1%	610	900	1.50

Table D.3: Modelled storage volumes beneath Crossleigh Lane

Event AEP	Indicative chamber footprint (m^2)	Storage volume (m^3)	Storage depth (m)
20%	207	109	0.52
1%	207	307	1.50

The modelling demonstrates that both sub-surface storage structures can manage stormwater runoff volumes from the entire catchment, including storing and infiltrating the 1% AEP with a Top Water Level below the ground surface.

Appendix 7: Transport Impact Assessment

(Flyt)

Transport Impact Assessment

MONASH AVENUE, NEDLANDS

PROJECT	Hesperia Nedlands – Transport Impact Assessment
FILE NAME	81113-842-FLYT-REP-0002 Rev2

Revision	Description	Originator	Review	Date
0	Draft	AJS	CAS/Project	21/08/23
1	Reviewed	AJS	CAS/Project	28/09/23
2	Issued	AJS	CAS	18/10/23

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1. INTRODUCTION

1.1 Development Introduction

This Transport Impact Assessment (TIA) has been prepared by Flyt in support of the proposed Precinct Structure Plan at 62 Monash Avenue in Nedlands. This mixed use development proposes to increase the intensification of the land and includes a mix of dwelling types which integrate into the surrounding area. The creation of a Precinct Structure Plan ensures a high level of design focus will be applied to manage the mixed-use components, higher levels of density and character.

The location of the proposed development is shown in Figure 1.

Figure 1 Location of the subject site (source: Metromap)

1.2 Transport Impact Assessment

This TIA has been prepared in accordance with the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 2 – Planning schemes, structure plans and activity centre plans). The Guidelines promote a three level assessment process, where the required level of assessment is dependent on the likely level of impact, as follows (and as shown in Figure 2):

- Low impact – less than 10 peak hour trips, no assessment required.
- Moderate impact – between 10 and 100 peak hour trips, Transport Impact Statement required.
- High impact – more than 100 peak hour trips, full Transport Impact Assessment required.

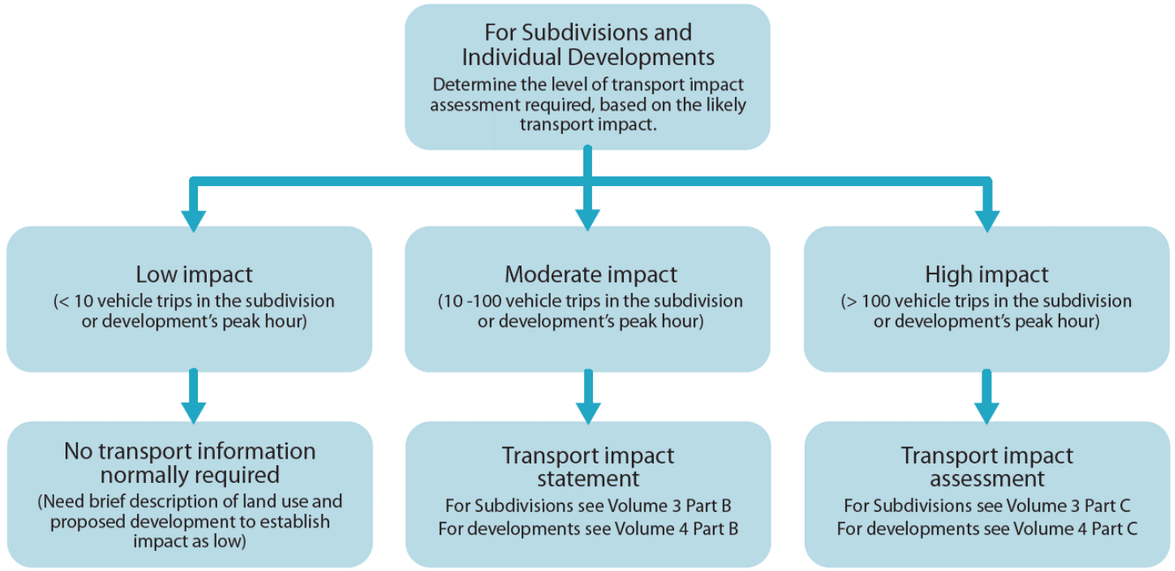


Figure 2 Level of transport impact assessment required (source: WAPC Transport Impact Assessment Guidelines, 2016)

As set out in section 5, the traffic attributable to the proposed development has been determined to have a high impact with more than 100 vehicle trips generated by the proposed structure plan area during the development's peak hour, therefore the required level of assessment is a TIA.

1.3 Report Structure

The report is structured as required by the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 4 – Individual Developments), with the following items addressed:

- Development proposals and site context (Section 2)
- Vehicle access and parking (Section 3)
- Provision for service vehicles (Section 4)
- Traffic volumes and vehicle types (Section 5)
- Pedestrian access and amenity (Section 6)
- Bicycle access and amenity (Section 7)
- Public transport access (Section 8)
- Summary (Section 9).

2. PROPOSED DEVELOPMENT AND SITE CONTEXT

2.1 Development Site Context

The subject site is located between Karella Street, Smyth Road, Monash Avenue and Williams Road in Nedlands and is situated opposite Hollywood Private Hospital and Hollywood Primary School. The site is in the City of Nedlands and as indicated by the South West Aboriginal Land and Sea Council website, the site sits within the Whadjuk Region.

The site is zoned Residential, with land zoned Special Use on the west and northern sides. Land to the east and south is also zoned Residential with density codes ranging between R10 – RAC3 (Figure 3). Opposite the subject site to the north is Hollywood Primary School, an early learning centre and Hollywood Private Hospital, and to the west is the Karrakatta Cemetery.

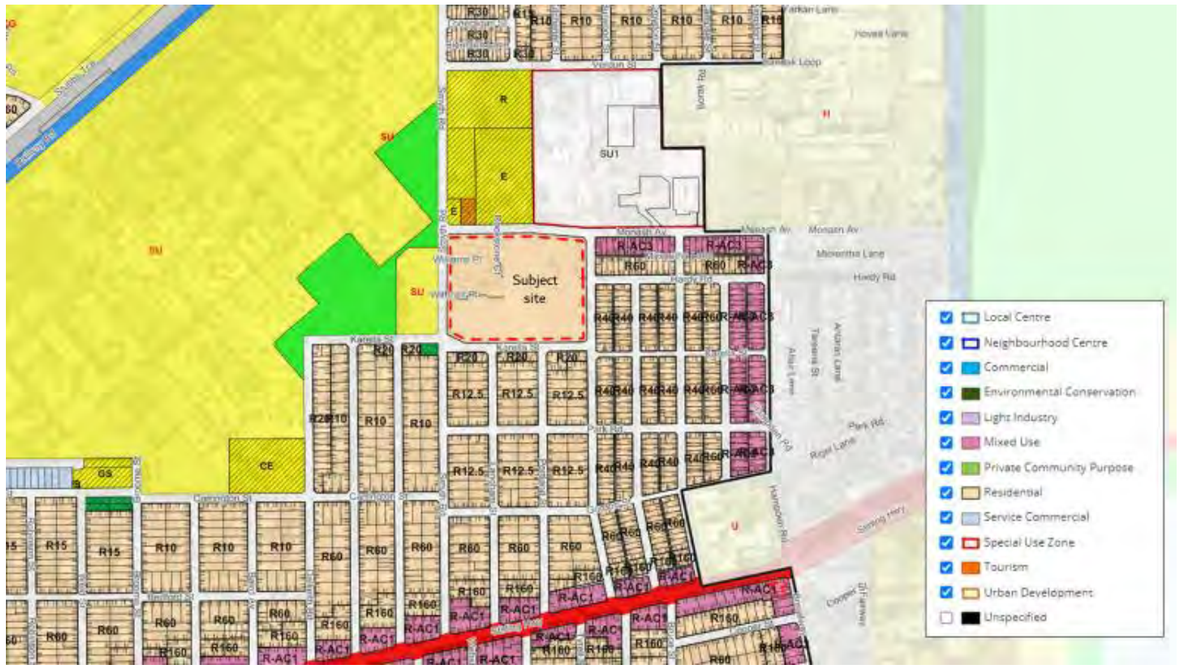


Figure 3 Local Planning Scheme No. 3 (source: City of Nedlands)

The subject site is within close proximity of a range of services and education facilities such as the QEII Medical Centre which includes a large number of medical services including the Perth Children's Hospital, Sir Charles Gairdner Hospital, Ronald McDonald charities, North Metropolitan Health Services, research institutes and clinics. Kings Park is located 1.1km to the east and the University of Western Australia is 1.5kms to the south.

Bus stops with access to the high frequency buses, 950 and the 999/998 are located within 600m - 1.1km distance from the subject site.

Figure 4 Aerial imagery of subject site (source: Metromap)

2.2 Development Site Current Usage

The northern part of the site is currently being used by Regis to provide aged care services with the southern portion of the site vacant. Trips associated with the current uses will be assessed as part of the traffic assessment in section 5.

2.3 Proposed Development

The proposed development includes the following facilities which have all been considered within this TIA:

- 78 townhouse lots
- Approximately 550 apartments across three sites
- A medical centre of approximately 15,900m^2 GFA
- No direct vehicle access from the external existing street network with all vehicle access proposed from internal streets
- Four new streets, a new laneway and associated intersections
- A pedestrian link from the site through to Langham Road
- Centralised Hollywood Commons park
- Retention of existing building at 118 Monash Avenue.

The proposed development plan is shown in Figure 5 and landscape master plan in Figure 6 – other site details are referred to throughout this TIA where required.

Figure 5 Proposed Subdivision Master Plan (source: Hesperia)

Figure 6 Proposed Subdivision Landscape Master Plan (source: Plan E)

3. VEHICLE ACCESS AND PARKING

3.1 Existing Road Network

The road hierarchy surrounding the subject site is shown in Figure 7 and posted speed limits are shown in Figure 8.

Figure 7 Road hierarchy surrounding the site (source: Main Roads WA)

Figure 8 Speed zoning surrounding the site (source: Main Roads WA)

In relation to the classifications of Monash Avenue and Smyth Road, the Main Roads classifications are:

Distributor B: Distributor B roads have a high degree of connectivity and typically connect to Primary Regional and other Distributor roads. While they often have reduced capacity, they usually have high traffic volumes travelling between industrial, commercial and residential areas. Indicative traffic volumes are more than 6,000 vehicles per day (vpd) with capacity for heavy vehicles.

Local Distributor: Local Distributor roads have a medium degree of connectivity and support the movement of traffic within local areas and connect access roads to higher order Distributors. Within built up areas, indicative traffic volumes are no higher than 6,000 vpd. Heavy vehicles are permitted but preferably only to service properties.

3.2 Monash Avenue

Monash Avenue is a Distributor B road with a default speed limit of 50km/h. Between 7.30am – 9.00am and 2.30pm – 4.00pm on school days, the speed limit reduces to 40km/h to facilitate safe access for children to and from Hollywood Primary School.

The carriageway is approximately 13m wide within a 20m road reserve and includes dedicated space for on-street embayed parking on both sides adjacent to the subject site. Parking is limited to a maximum of two hours Monday to Saturday 8.00am - 6.00pm. There is a zebra crossing 30m west of the intersection with Williams Road and a horizontal deflection device 35m from the intersection with Smyth Road.

Monash Avenue provides an integral link to the hospital precinct as well as providing an east – west connection to Winthrop Avenue.

Bus route 25 travels along Monash Avenue and provides connections between Claremont Station and Shenton Park Station via QEII Medical Centre and Hollywood Private Hospital.

Figure 9 Monash Avenue – view to east past subject site (source: Google Street View)

Trafficmap data for Monash Avenue (east of Smyth Road) recorded an average of 6,396 vehicles per week day in 2019/2020. 85th percentile speeds are shown to be below 2-10kms below the posted speed limit across most of the day as a result of the narrow carriageway, high turnover of on-street parking, the bus route, and high volumes of pedestrians. There is a consistent flow of vehicles across the day with peaks in the AM commuting time, lunch time, school pick up and the PM commuting time in the evening (see Figure 10).

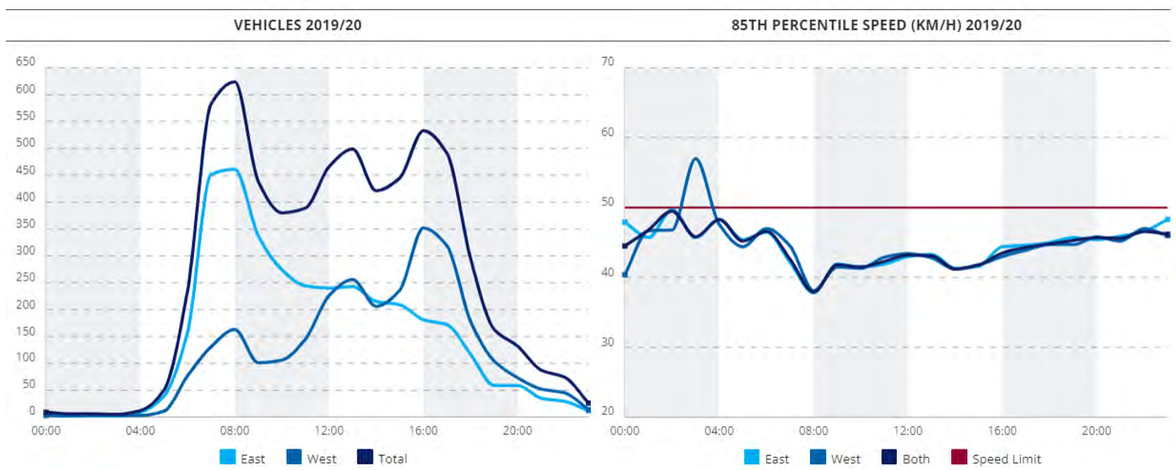


Figure 10 Trafficmap data volumes and 85th percentile speed (source: Main Roads WA)

3.3 Smyth Road

North of the site, Smyth Road is a Distributor B road and continues this designation onwards from Monash Avenue. Adjacent to the site, Smyth Road is a Local Distributor road and runs from Stirling Highway to the south and Aberdare Road to the north with a default speed limit of 50km/h.

Adjacent to the site, the carriageway is approximately 7.25m wide within a 20m road reserve without any designated space for on-street parking. Between 7.30am – 9.00am and 2.30pm – 4.00pm on school days, safe access to Hollywood Primary School is prioritised via a reduced 40km/h speed zone and a crossing guard. There are footpaths on both sides of the street, with the path on the eastern side measuring 2m and 1.5m on the western side.

Figure 11 Smyth Road view to north past subject site (source: Flyt)

Weekday Trafficmap data from Smyth Road (south of Monash Avenue) recorded an average of 9,103 vehicles per day in 2019/2020. These volumes exceed the capacity limits set by Main Roads WA for a Local Distributor road. 85th percentile speeds are generally above the posted speed limit of 50km/h with the exception of the school zone speed reduction times when vehicle speeds can reduce to 44km/h (still 4km higher than the speed limit). The data shows that speeding is a common behaviour along Smyth Road and options for traffic calming should be pursued.

The AM commuting time at 8.00am has the highest volume of vehicles however clear spikes are also evident at lunch time, school pick up and the PM commuting time in the evening.

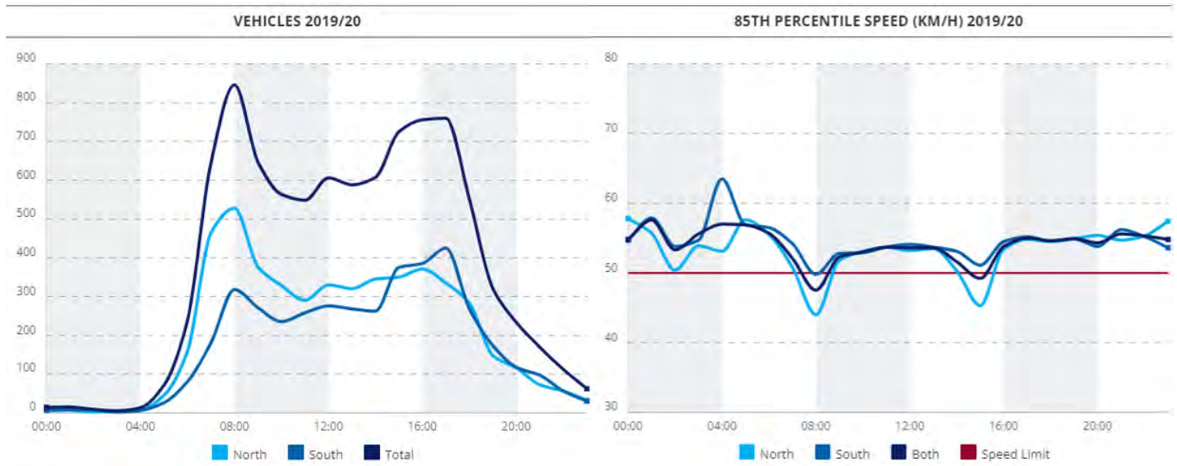


Figure 12 Trafficmap data volumes and 85th percentile speed (source: Main Roads WA)

3.4 Williams Road and Karella Street

Williams Road and Karella Street are local Access Roads and function as one continuous carriageway where Williams Road runs north-south and Karella Street runs east-west. Both streets have a default speed limit of 50km/h with No Stopping yellow line markings evident along both sides of the carriageway. The carriageway is approximately 6m wide within a 20m road reserve with on-street parking not permitted. There are footpaths on both sides of the street, with the path surrounding the subject site measuring 2.5m and 1.5m on the opposite side.

Figure 13 Williams Road view to south past subject site (source: Flyt)

Figure 14 Karella Street view to west past subject site (source: Flyt)

3.5 Intersection Configurations

The surrounding network intersections are described in the following sections to provide context to existing configurations and potential access arrangements for the proposed development.

3.5.1 Monash Avenue and Smyth Road

This three-way intersection is managed by a roundabout with all turning movements permitted. At the intersection, Monash Avenue and Smyth Road both have one lane travelling in each direction which are separated by a hard median with a pedestrian cut-through. An aerial image of this intersection is shown in Figure 15. This roundabout was converted from a stop sign T-Intersection in June 2019.

Figure 15 Monash Avenue and Smyth Road intersection (source: Metromap)

3.5.2 Karella Street and Smyth Road

This four-way intersection is managed by a roundabout with all turning movements permitted, with the exception of the western arm of Karella Street which allows inbound movements only. At the intersection, Karella Street and Smyth Road both have one lane travelling in each direction which are separated by a hard median with a pedestrian cut-through. An aerial image of this intersection is shown in Figure 16.

During a site visit conducted on August 1, 2023 a total of 24 people riding a bike and 13 people were recorded using this intersection between 8.00am and 9.00am.

Figure 16 Karella Street and Smyth Road intersection (source: Metromap)

3.5.3 Williams Road and Monash Avenue

This three way intersection is priority controlled with priority of movement given to Monash Avenue. All turning movements are permitted and both streets have one lane in each direction. There is a median on Williams Road which separates in and out-bound traffic. An aerial image of this intersection is shown in Figure 17.

Figure 17 Monash Avenue and Williams Road intersection (source: Metromap)

3.6 Existing On-Site Access and Parking

The subject site currently has three crossovers located on Monash Avenue, two along Smyth Road, six on Karella Street and three on Williams Road. These are shown in Figure 18.

The site currently accommodates a range of accommodation, residential dwellings and aged care related therapy centres along with associated parking facilities, with many of these located in basement parking areas and in carports for individual dwellings. Offices for aged care provider, Regis, are located on Monash Avenue.

The existing aged care facility on the corner of Monash Avenue and Williams Road has approximately 80 car parking bays associated with it, not including short term or drop off bays associated with the porte cochere operations.

Figure 18 Existing crossovers (source: Metromap)

3.7 Proposed Vehicle Access

The development of the site proposes to reduce the overall number of crossovers from 14 to four new intersections, removing many redundant crossovers most of which were associated with historical land uses along Karella Street.

The development proposes to create two streets through the site which would largely reflect the existing pattern of development in Nedlands. Internal streets and a laneway would all intersect the two main streets (Hollywood Avenue and Hardy Road). In addition to the main streets, both Eventide Way and Crossleigh Way will run north-south and Elloura Lane will run east-west providing rear access to development lots.

The location of these new streets and intersections is shown in Figure 19.

Figure 19 Proposed site layout (source: Hesperia)

Table 1 Proposed intersection analysis

Intersection	Proposed Intersection Description	Notes / Issues
1	All turning movements permitted, managed by Give Way sign	Intersection located at existing street tree and electrical pole. Within 20m of the bus stop which may require relocation and rebuilding to cater for DDA compliance. Sightlines comply with MRWA requirements.
2	All turning movements permitted. Located opposite Portland St and creates a four way intersection. Managed by Give Way sign on Hollywood Avenue.	Intersection located at existing street tree. Sightlines comply with MRWA requirements.
3	All turning movements permitted. Managed by Give Way sign on Hardy Road legs.	Located opposite Hardy St and creates a four way intersection. Would need stop or give way controls. Sightlines comply with MRWA requirements.
4	All turning movements permitted. Managed by Give Way sign on Hollywood Avenue leg.	Located at the bus stop which will require relocation and rebuilding to cater for DDA compliance. Existing crossovers removed, allocating additional space for on-street parking.

To inform planning on the site and the configuration, a review of the existing intersection controls in the immediate area was undertaken, as shown in Figure 20. This showed that intersection controls are generally give way or stop sign controlled, with the controlled leg varying depending on the locational factors. This same approach has been applied to designing the precinct network.

Figure 20 Existing intersection controls on immediate network

3.8 Internal Streets

The detailed planning and design of the internal street configurations relating to cross sections, landscaping, drainage, parking layouts and pedestrian crossing points will all be progressed within the following stages of design development. The details in this TIA provide the framework for future design development and to provide the City of Nedlands with an understanding of the form of street configurations which would inform the subdivision process.

3.8.1 Hollywood Avenue

Hollywood Avenue will run north-south and have a number of different configurations in a 15m or 13m reserve. It will be a two-way carriageway with 6m pavement width. In the section from Monash Avenue South, Hollywood Avenue will provide access to the existing Regis site as well as new development site M.

There will be no through access on Hollywood Avenue from Monash Avenue to Hardy Road, with a mid-block filter feature being utilised to allow for pedestrians and cyclists, but not vehicles. This section will also feature a turnaround head included to cater for errant vehicle turnaround. On-street parking will be included. The location of the proposed filter feature is shown in Figure 21 and an example of a potential filter treatment, from the City of Melville, shown in Figure 22. The finalised design of the treatment would be undertaken at subsequent stages of project and development delivery. The indicative landscape plan cross section of Hollywood Avenue is shown in Figure 23 and long section is shown in Figure 24.

Figure 21 Location of proposed mid-block filter on Hollywood Avenue

Figure 22 Example of potential filtering treatment (source: Google)

Figure 23 Indicative cross section - Hollywood Avenue (source: Plan E)

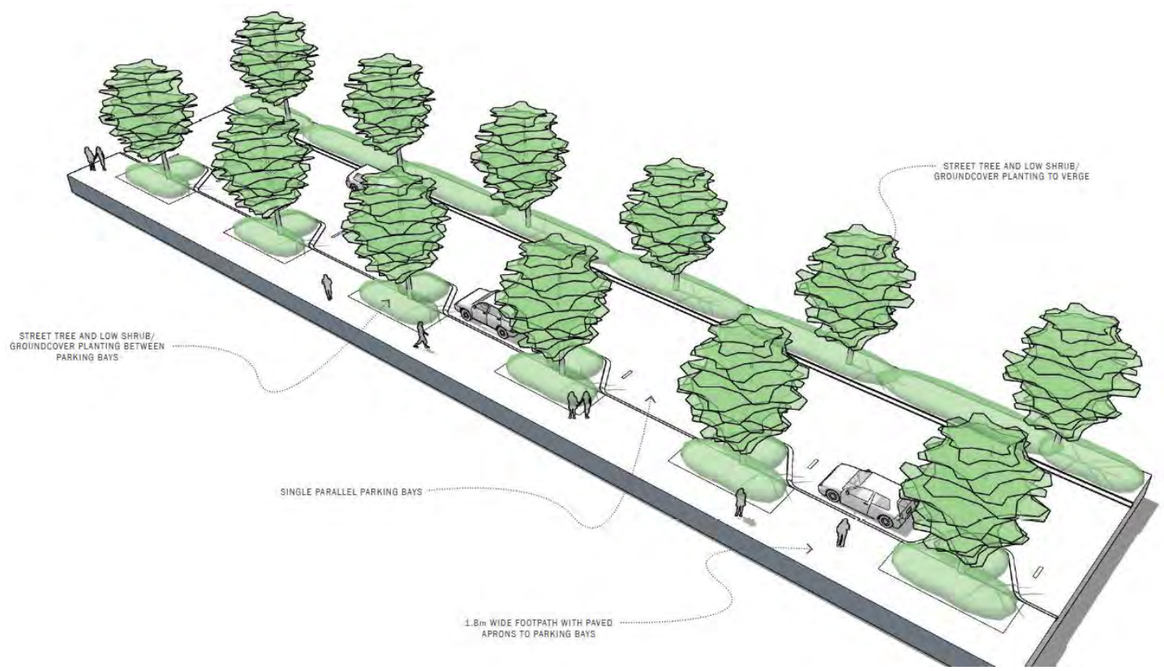


Figure 24 Indicative long section - Hollywood Avenue (source: Plan E)

The intersection of Hollywood Avenue and Monash Ave will be a give way sign controlled intersection with the give way on Hollywood Avenue.

Where Hollywood Avenue meets Hardy Road, there will be a give way sign controlled or stop sign controlled intersection. The section of Hollywood Avenue between Hardy Road and the filtering landscape feature will provide access to the adjoining development site and townhouse lots. On-street parking will be included.

South of Hardy Road, the reserve width will reduce to 13m, with Hollywood Commons catering for a pedestrian connection running north-south on the eastern side of Hollywood Avenue. On-street parking will be included. From Elloura Lane, the reserve will widen again to 15m and intersect with Karella Avenue. It is proposed to have Hollywood Avenue as a give way or stop sign controlled leg of the intersection.

3.8.2 Hardy Road

Hardy Road will run east-west through the site along the alignment of the existing Hardy Road reserve. Through the site the carriageway will sit in an 18m reserve with on-street parking included alongside a footpath and landscaping features on both sides of the reserve. It will be a two-way carriageway with 6m pavement width. The indicative cross section of Hardy Road is shown in Figure 25.

Figure 25 Indicative cross section Hardy Road (source: Plan E)

Hardy Road will run from Smyth Road through to Williams Road with give way controls at Smyth Road and a four-way stop sign control at the intersection of Williams Road. Internal intersections of Hardy Road are proposed to be give way controlled with Hardy Road being the through movement. The indicative long section is shown in Figure 26.

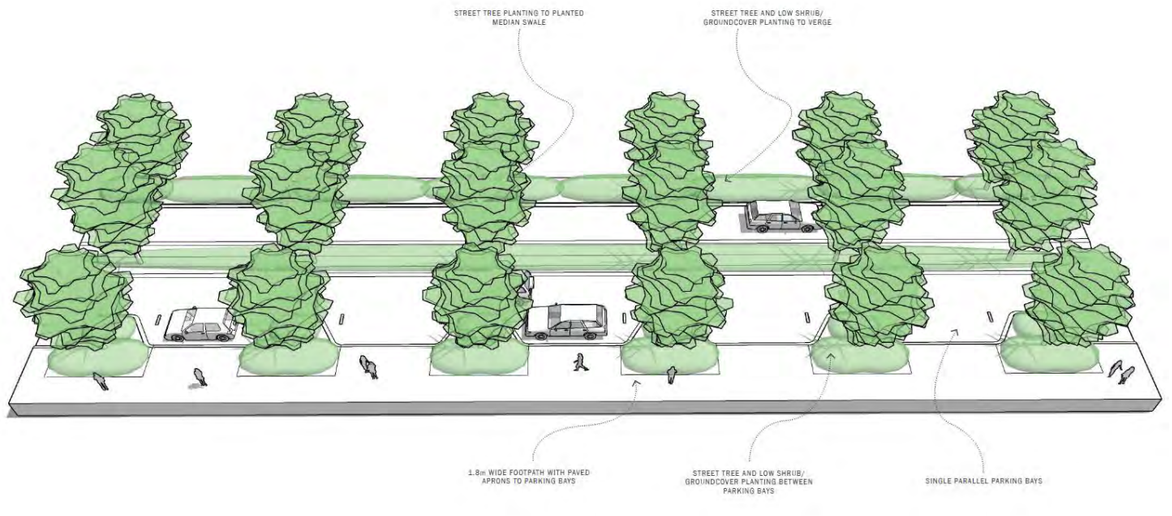


Figure 26 Indicative long section Hardy Road (source: Plan E)

In addition to the landscaping elements proposed along the verges, design consideration will be given to introducing on-street calming and landscaping elements to ensure that a slower speed environment is delivered. The forms of treatments being considered would reflect some of the appropriate design treatments considered within the DoT "Planning and Designing for Active Transport in Western Australia" guideline which could include:

- Form of chicane treatments adjacent to parking bays and driveway access to reduce speed
- Mid-block single lane slow point to reduce potential for faster through movements
- Other horizontal deflection measures to reduce speeds.

The ultimate configuration of these treatments, and their locations to maximise traffic management, would be determined during the detailed design stage of the project in conjunction with the CoN.

3.8.3 Eventide Way

Eventide Way will be a lower order access street which will provide access to development sites fronting Smyth Road and townhouses overlooking Hollywood Commons. The reserve is proposed to be 12.5m wide which would include on-street parking on the western side of the carriageway and footpaths. It would connect to Elloura Lane and will be a two-way carriageway with 6m pavement width.

The proposed cross section for Eventide Way is shown in Figure 27 and the long section in Figure 28. The eastern side of the carriageway will allow for the access crossovers into the individual lots fronting the commons.

Figure 27 Indicative cross section Eventide Way (source: Plan E)

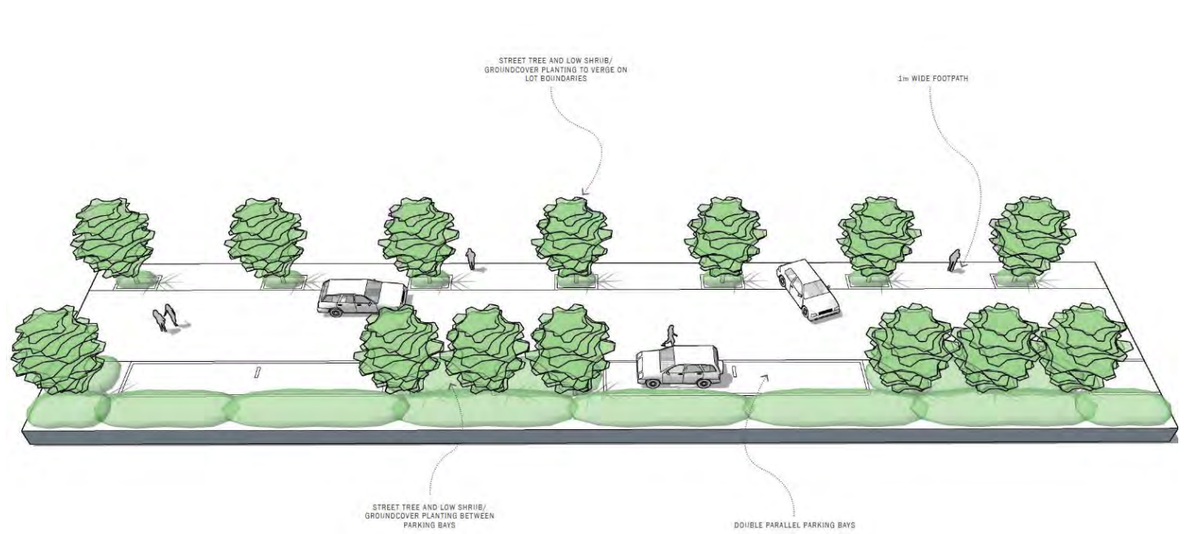


Figure 28 Indicative long section Eventide Way (source: Plan E)

3.8.4 Crossleigh Way

As with Eventide Way, Crossleigh Way will sit in a 12.5m wide reserve with access to development sites on the Williams Road frontage. Space for an additional laneway has also been provided for those lots fronting Hollywood Avenue and Crossleigh Way. That configuration will rely on development outcomes. It would connect Hardy Road to Elloura Lane and will be a two-way carriageway with 6m pavement width.

3.8.5 Elloura Lane

Elloura Lane is proposed to have a carriageway width of 6m. These specifications align with Liveable Neighbourhoods guidelines for rear loaded lots along laneways and have a maximum target speed of 15km/h and are proposed to carry a maximum of 300 vpd. The laneway will connect through from Eventide Way to Williams Road and intersect with both Hollywood Avenue and Crossleigh Way. 2m truncations have been applied to intersections.

3.9 Intersections

The proposed approach to the configuration of intersections within the development is shown in Figure 29. These controls were utilised in the network assessment completed in section 5.

Figure 29 Proposed intersection controls summary

3.10 Proposed On-Street Parking

Options for on-street parking will be provided within the development area, with final design configurations being progressed through more detailed stages of the development. Street reserves have been configured to allow for on-street parking to be provided on most carriageways which will provide for short term visitation. Given the location of the development, it would be expected that all on-street parking within internal streets would be time restricted at a minimum. Allocation of spaces per user group (ACROD, service, short term, motorcycle) would be based on City of Nedlands requirements.

Given the location of the new proposed intersection of Hollywood Avenue and Monash Avenue, there would also be the potential for up to seven additional bays being created on Monash Avenue to cater for existing land uses that front Monash Avenue. The overall volume of on-street parking which eventuates would be subject to a range of factors, including site access requirements, design standards and landscaping, but could yield nearly 40 on-street parking bays. Indicative locations for on-street bays within the internal street network are shown in Figure 30.

Figure 30 Potential locations for on-street managed parking bays

3.11 Required Parking

Parking rates for the residential development will align with the relevant state planning policies including SPP 7.3 "Residential Design Codes Volume 2 – Apartments" for Location B. Based on the potential yields proposed within the precinct, the level of on-site parking provided for residential land uses could range between 820 to over 1,000 bays. Based on significant survey data within inner Perth, at full build these bays would likely be 65% - 75% occupied, resulting in an overnight off-street parking volume of between 530 – 740 vehicles.

The provision of residential parking is dependent upon the ultimate dwelling mix and operation of the commercial and medical centres and will be assessed during the later stages of planning. The volumes provided set out an indicative outcome based on existing guidelines and known occupancy rates within inner suburban developments.

Parking within the medical centre and the commercial development would be required inline with the rates outlined in the City of Nedlands Local Parking Policy 1.4: Parking. For the purposes of the assessment completed within section 5, a volume of 200 parking bays were allocated to site M and N.

4. PROVISION FOR SERVICE VEHICLES

4.1 Service Movements

Waste collection will be conducted by the City of Nedlands. The existing and proposed road network will need to accommodate the swept path movements of a large 11-12.5m waste collection vehicle. Where required in the precinct, truncations have been included to allow for movement of service vehicles along rear lane ways, in particular Elloura Lane.

The swept path movements of larger vehicles may not be lane correct at tight corner radii. Tight corner radii are acceptable at low volume intersections with no lane markings and are in fact recommended to maintain slow vehicle speeds for a safer walking environment.

Details relating to onsite servicing, waste and deliveries for the apartment sites would be resolved during the subsequent stages of planning and development application processes. All servicing would be proposed to be completed on lower order streets within the development rather than Monash Avenue and Smyth Road. Townhouses fronting both Williams Road and Karella Street would be serviced from the rear of the properties.

For the medical and commercial lots, servicing would be access via crossovers provided via Hollywood Avenue and from Williams Road.

5. TRAFFIC VOLUMES AND VEHICLE TYPES

5.1 Assessment Introduction

In order to inform the proposed development layout and treatment of the surrounding street network, analysis of the traffic impacts have been undertaken. This level of analysis covers the detailed information required to understand traffic implications for the site. Assessment completed comprised of the following:

- Completion of site traffic data collection for the network, including turning movements during peak periods and gap data
- Review of information from Main Roads TrafficMap, including all count, heavy vehicle and speed data for use
- Development of 2023 Base Year site and network models using Main Roads WA parameters for the AM and PM peak hour in SIDRA Intersection 9.1
- Development of Opening Year site and network models using Main Roads WA parameters for the AM and PM peak hour in SIDRA Intersection 9.1
- Development of a Full Build site and network model which nominally uses a 10 year horizon to reflect the WAPC reporting requirements (rather than actual timing or delivery of development on site which may be delivered prior to or after a ten year horizon)
- Assessment of historical traffic trends to understand network characteristics
- Testing of a network that covers double forecast site traffic within the Full Build scenario to understand if there were any issues associated with network performance when tested to a higher level of capacity.

All SIDRA outputs are included within Appendix A.

5.2 Modelling Timeframes and Network

Network modelling has been undertaken in SIDRA Intersection 9.1 Plus version 9.1.1.200 for the following periods:

- AM 2023 Base Peak Hour (determined by Traffic Map data assessment for all weekdays along Smyth Road and Monash Avenue)
- PM 2023 Base Peak Hour (determined by Traffic Map data assessment for all weekdays along Smyth Road and Monash Avenue)
- AM Peak Hour Development Opening (determined by Traffic Map data assessment for all weekdays along Smyth Road and Monash Avenue)
- PM Peak Hour Development Opening (determined by Traffic Map data assessment for all weekdays along Smyth Road and Monash Avenue)
- AM Peak Hour Development Full Build (determined by Traffic Map data assessment for all weekdays along Smyth Road and Monash Avenue)
- PM Peak Hour Development Full Build (determined by Traffic Map data assessment for all weekdays along Smyth Road and Monash Avenue).

The layout of the base network modelled is shown in Figure 31 and the opening year / forecast year network is shown in Figure 32. All networks focus on the main routes and intersections along Monash and Smyth given the very low levels of traffic associated with other side streets. Given the level of traffic associated with the development, discussed in section 5.3, side streets would not display any capacity or volume issues when taking into consideration mid-block capacity. Site observations in 2023 confirmed the low levels of background traffic.

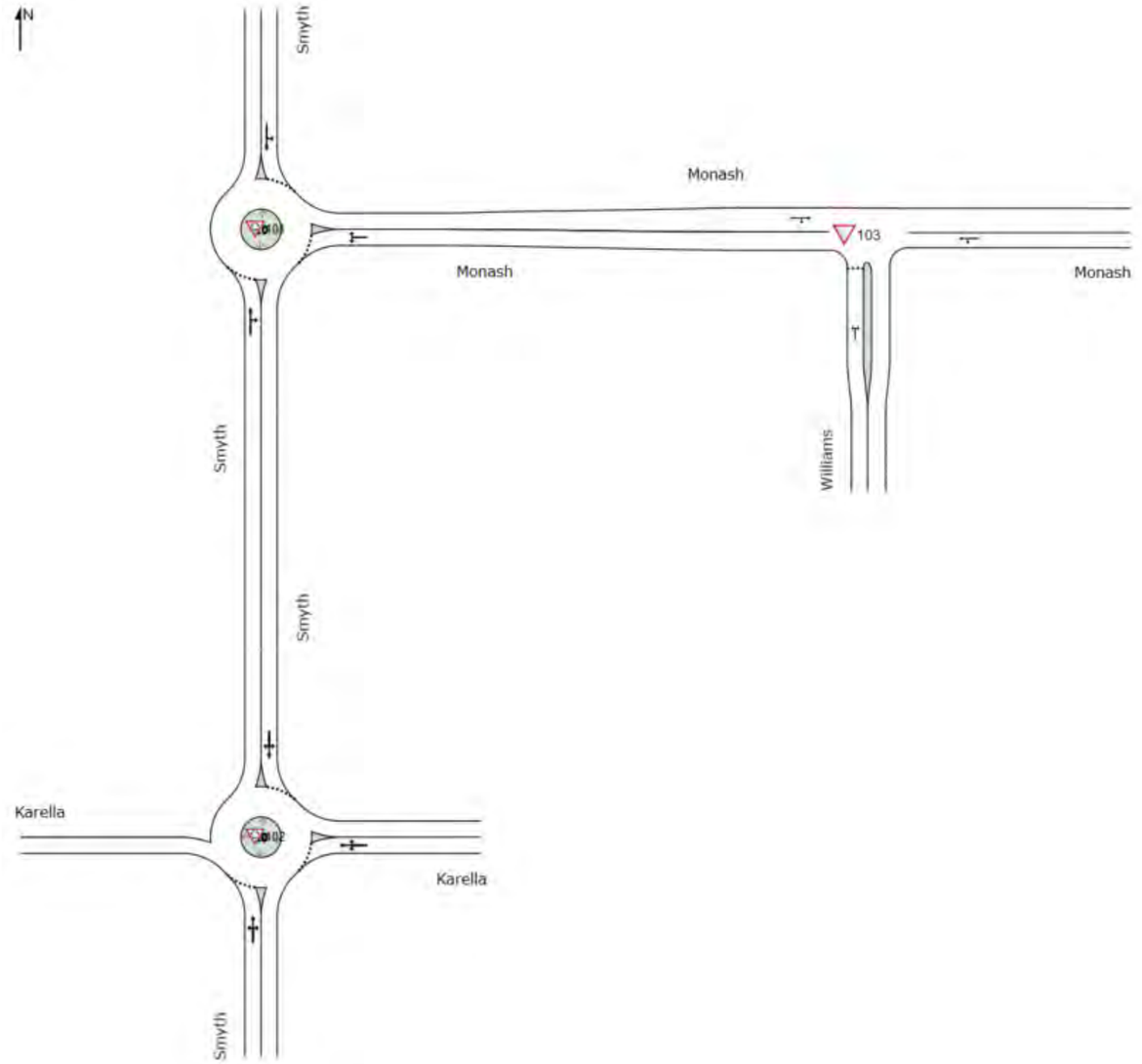


Figure 31 SIDRA Network – 2023 Base Models

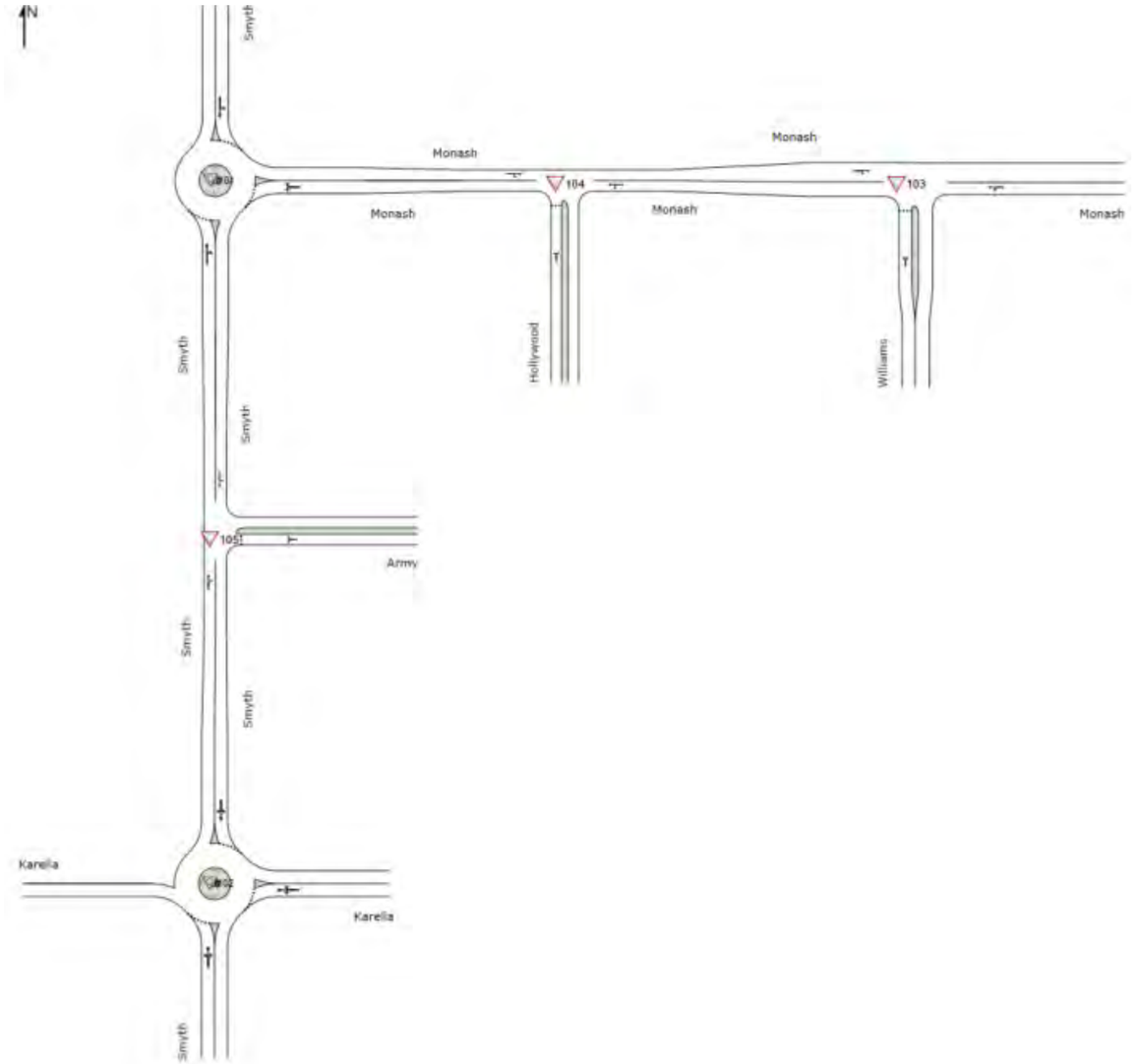


Figure 32 Forecast year network layout

The opening year and forecast year models include the new intersections along Monash Avenue and Smyth Road at Hollywood Street and Hardy Road. Both of those intersections were initially tested as Give-Way controlled T-Intersections so as to inform and alterations required within the site plan. All measurements for the modelling exercise were extracted from aerial imagery in Metromap.

Traffic volumes were taken from survey data collected during August 2023 and then balanced using the data taken from Main Roads WA Traffic Map data for Monash Avenue and Smyth Road. In all instances, volumes that were higher were used for this exercise and then other volumes smoothed out to reflect a more conservative approach. (for instance, if the 2023 observations had a high recorded volume on approach to an intersection than shown in Main Roads Traffic Map data, the 2023 data prevailed).

For the forecast year volumes, no deduction of traffic volumes was made for the existing land uses on site. This would lead to some double counting and slightly higher volumes in the forecast year model however this amount was deemed to be of a low value that would not materially impact the results of the modelling exercise.

5.3 Trip Generation

Residential traffic generation rates were extracted from a survey database for properties within the City of Vincent and Town of Claremont for similar types of residential development. These rates are based on empirical survey data and reflect up-to-date levels of vehicle generation per unit. WAPC rates in relation to trip volume are not representative in this instance and updated survey outcomes from Main Roads WA are similar.

For the medical centre, peak hour trip rates were initially sourced from Main Roads WA Supplement to the Traffic Impact Assessment Guidelines, which stipulate trip rates for a medical centre. Main Roads WA outline that these rates are based on medical centre complex sites which had higher rates than a typical urgent care site. Weekday rates for the AM peak are 17 per 100m^2 floor area and 13.4 per 100m^2 floor area in the PM peak. These rates are based on the survey of one location in Cannington for a site that is around 400m^2 in area.

Again, these were considered inappropriate. Trip generation rates for the site for the purpose of this assessment were then based on development application information taken from the St Johns Hospital site in Subiaco and the application for the decked parking structure at Hollywood Hospital. Those applications focused on a rate per parking bay which governs the capacity available and thus is a direct driver of traffic generation. No discount was made for existing uses, even though there are 80 on-site bays.

For the commercial development located within precinct B2, trip rates have been sourced from the WAPC rates for commercial land uses, which recommends two trips per 100m^2 GFA. This commercial development has been assessed as a supporting café (retail food). The trip rates associated with these uses are relatively high for footprint area within WAPC guidance. These would however be inappropriate in this location as the majority of the visitors would be walk – up and associated with the residential or medical land uses within the precinct and surrounding area. The level of trips for that use, therefore, would be minimal.

Rates used are shown in Table 2 with peak hour volumes for full build out shown in Table 3.

Table 2 Trip generation rates

Unit	AM Peak Hour Trip Rate			PM Peak Hour Trip Rate		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Dwellings (Unit)	0.11	0.23	0.34	0.24	0.16	0.4
Medical centre (Bay – 200)	0.29	0.04	0.33	0.07	0.21	0.28
Commercial	6.4	1.6	8	1.6	6.4	8

Table 3 Trip generation – forecast for full build

Unit	AM Peak Hour Trip Rate			PM Peak Hour Trip Rate		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Dwellings (Unit)	71	139	209	139	115	254
Medical centre (Bay – 200)	58	9	67	14	42	56
Commercial	1	2	3	2	1	3

The total forecast traffic generation for the site at full build out based on this assessment is 279 vehicle trips in the AM peak and 313 vehicle trips in the PM peak.

The base year (2023) AM and PM peak hour traffic volumes for the network adjacent to the site are shown in Figure 33 and Figure 34. The volumes formed the basis for the modelling exercise and reflect an average weekday for the respective peak hours based on site observations completed in August 2023 and data extracted from Main Roads WA Traffic Map. These volumes reflect all existing traffic movements in the area, including the land uses currently on the subject site, adjacent hospitals and school.

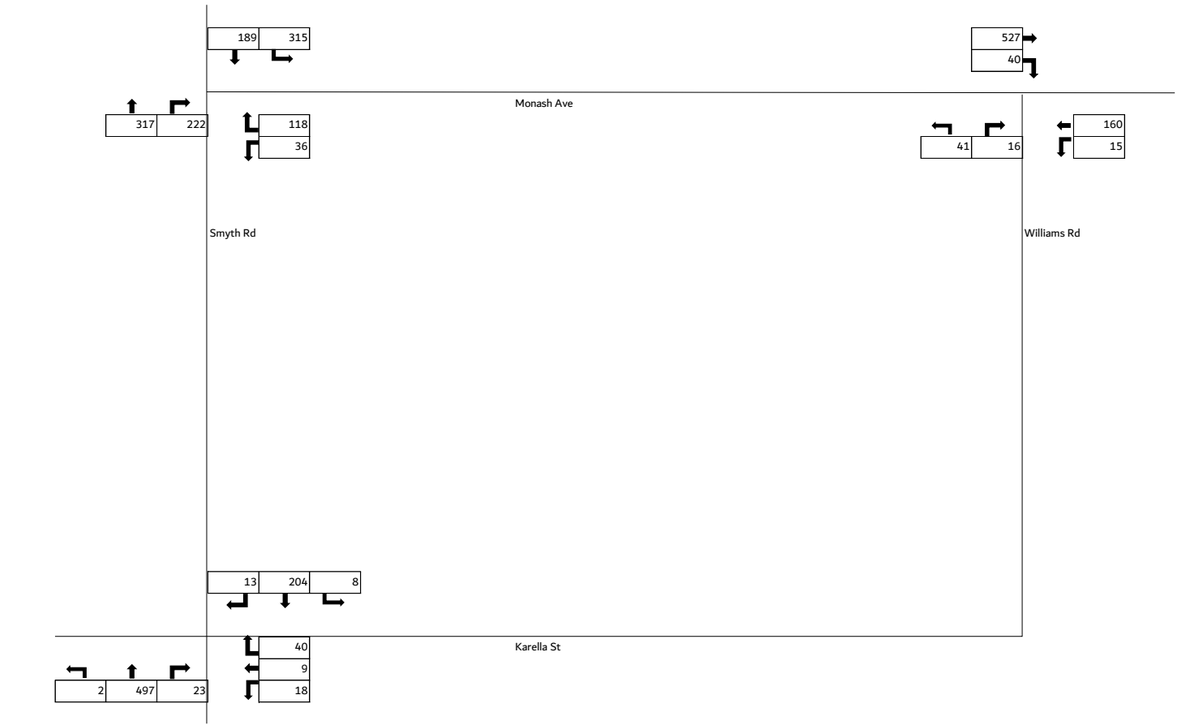


Figure 33 Traffic volumes - 2023 Base AM

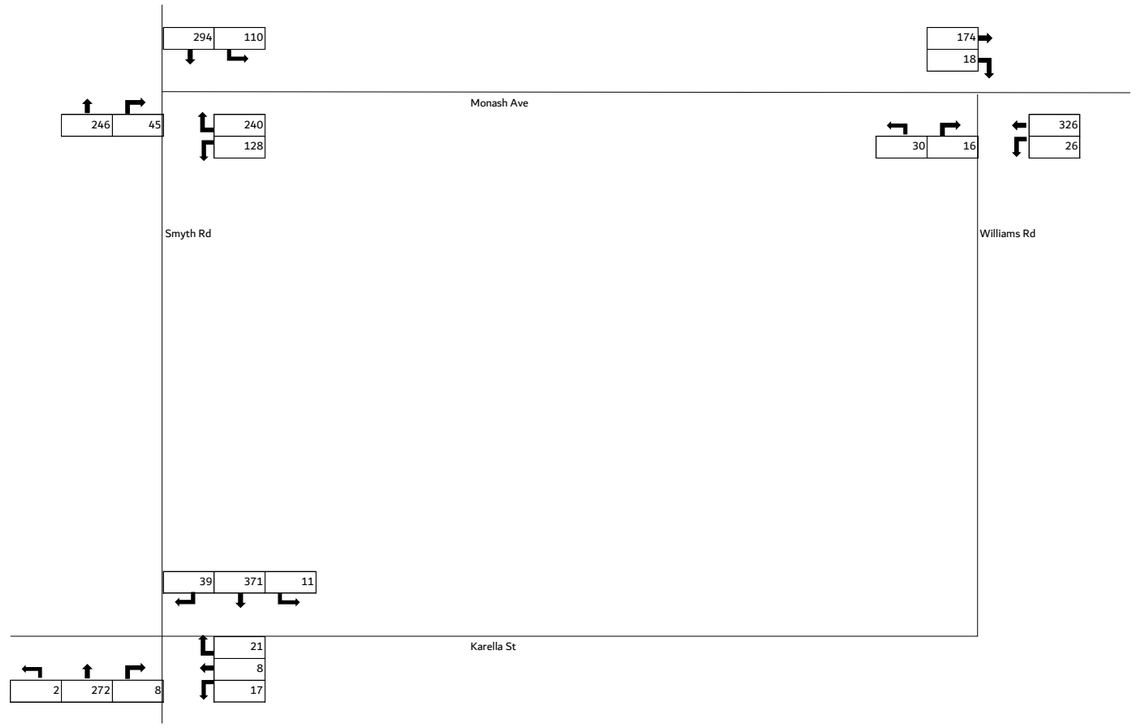


Figure 34 Traffic volumes - 2023 Base PM

The "opening year" forecast traffic volumes are shown in Figure 35 and Figure 36. These volumes reflect a scenario three years after the base network which includes an overall uplift of 3% on all turning movements within the network – 1% for each year. The actual level of traffic expected would be relatively static given the nature of development in the area and the form of network. Examination of historical traffic volumes also indicates that the actual level of increase would be relatively low.

No development based traffic has been attributed to the network as the assumption has been made that no generation would be present but the network would be developed for subdivision to progress. Building commencement would be likely, however trips have not been allocated to any construction activities.

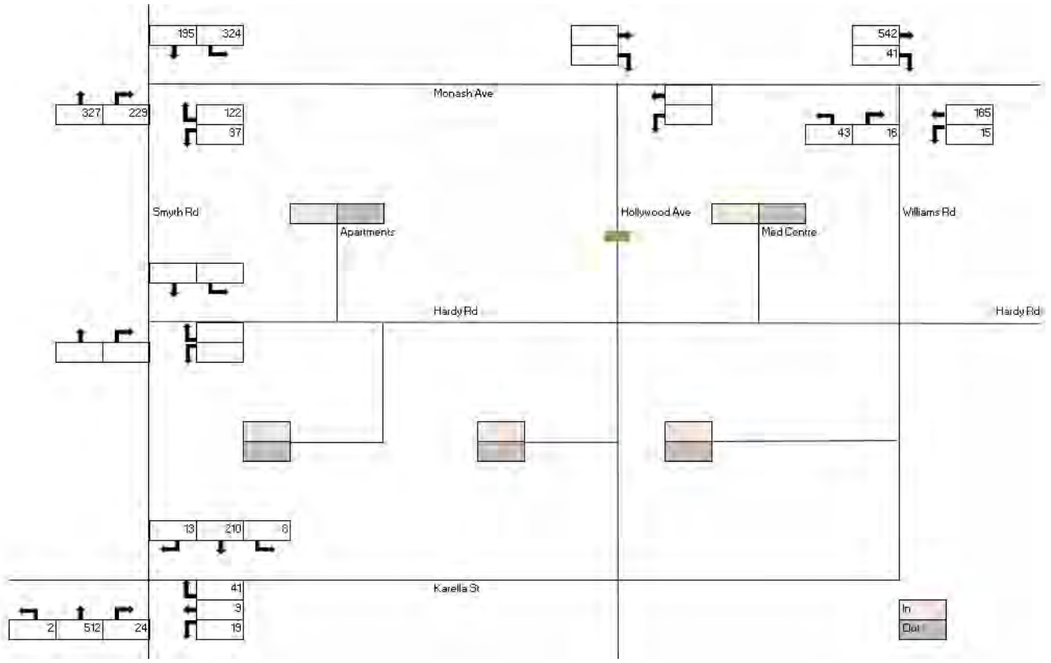


Figure 35 Traffic volumes - 2023 Opening AM

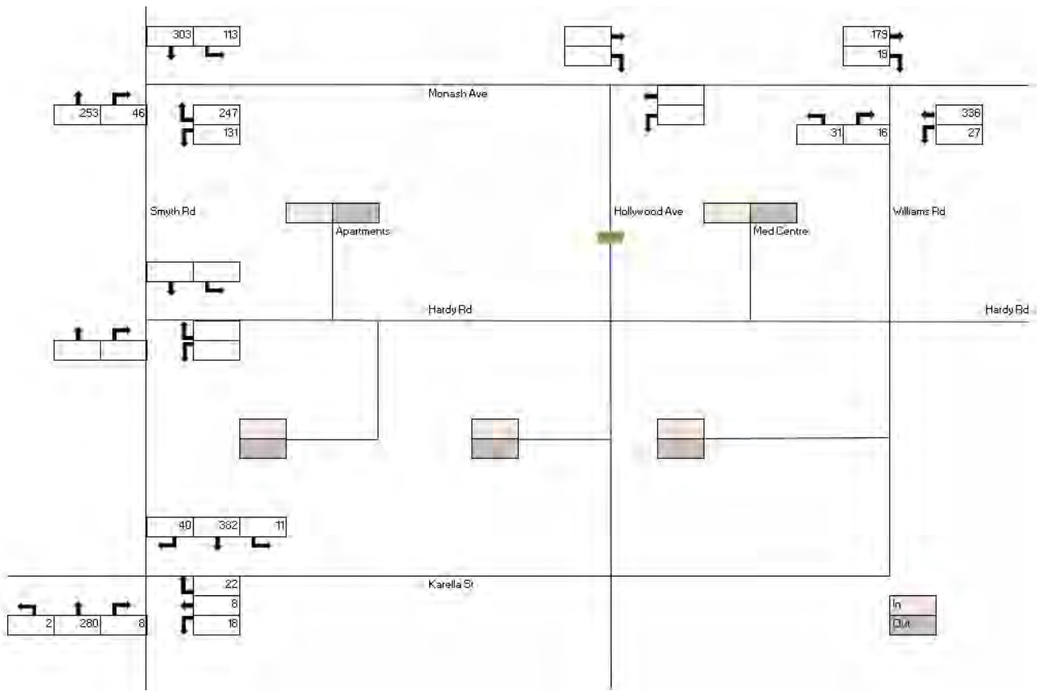


Figure 36 Traffic volumes - 2023 Opening PM

For the full build out scenario, all of the trips associated with the development during the peak hours has been attributed – those volumes are set out in Table 3. In addition, base year background traffic has been increased by 10% to reflect other alterations to the network and development trip loading within the area.

The distribution of trips to exit locations on the network is also shown. This distribution was based on the existing movement of traffic through the network and desire lines through to the sub-regional and regional road network using travel time to external destinations. Reference was also made to the assessment completed for Hollywood Hospital.

Traffic attributed to the development was allocated to the nearest intersection based on direction of travel. Those volumes were then added on to the background traffic – no redistribution of background traffic resulting from the development was completed.

As per the opening year, all traffic currently attributed to development on this site was retained on the network. Although this double counts some existing traffic, it represents a conservative approach to the assessment.

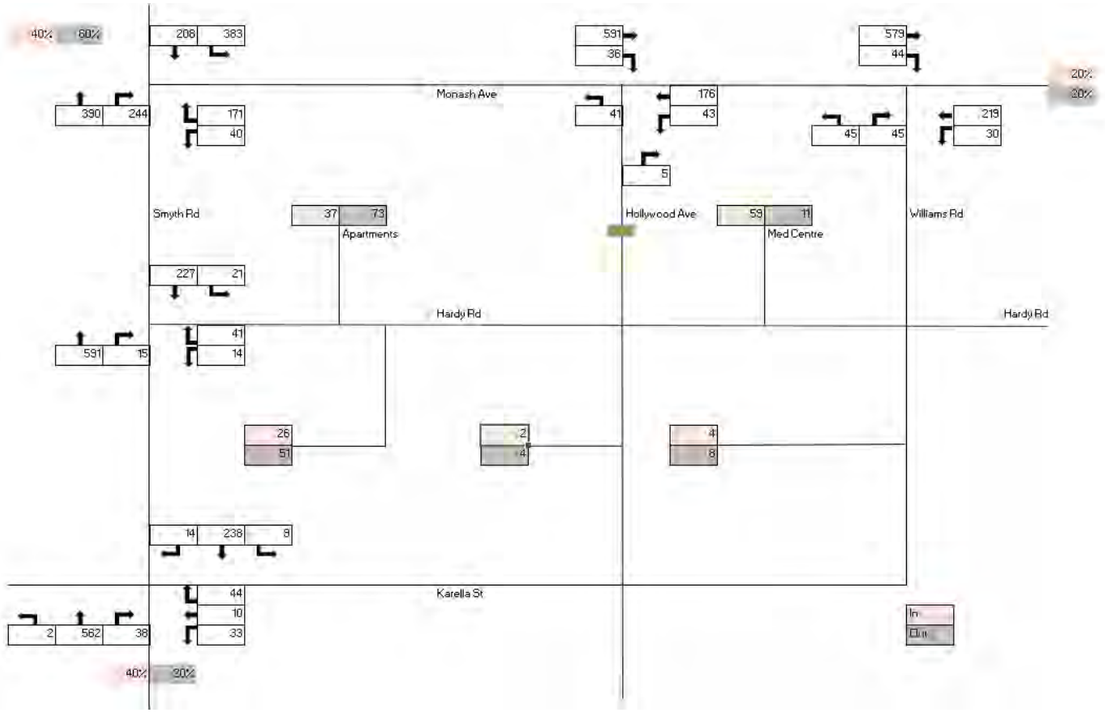


Figure 37 Traffic volumes and distribution - full build AM

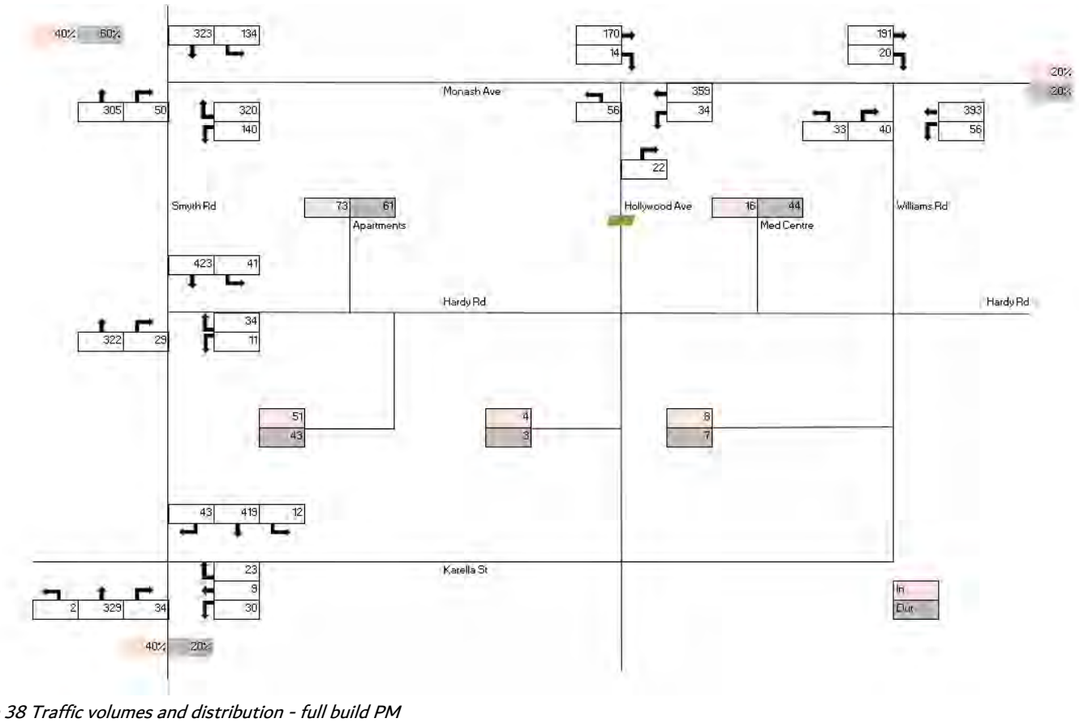


Figure 38 Traffic volumes and distribution - full build PM

5.4 Model Outcomes – Base Year

The base year AM and PM peak hours were modelled as a network. The full results of the modelling are contained within Appendix A. The headline Level of Service (LOS) outputs for lanes are shown in Figure 39. These results reflect the observed operation of the network during both peak periods. The network caters for a high volume of traffic but the flows are largely unobstructed and the network does not break down.

During the AM peak, the interaction of school based trips with the commuting flows is generally aided by the presence of both manned crossing guard and a zebra crossing located to the west of the intersection of Monash Avenue and Williams Road. The main flows along Smyth Street are generally uninterrupted, with only minor issues observed with vehicles turning into and out of a day care centre and the school.

There were no issues observed with traffic flowing from the intersection of Monash Avenue and Williams Road, with significant gaps occurring in flows to aide turning movements. The Base Year 2023 model operates well and provides a basis from which forecast year operation can be compared.

Figure 39 Level of Service - base year AM and PM models

5.5 Model Outcomes – Opening Year

The opening year scenario was modelled in a network and included the opening of the two internal roads proposed within the development being Hardy Road and Hollywood Streets. Given that there would be no trip generating development within the opening year scenario, nominal volumes were included within the intersection models to allow for the intersections to be processed. Traffic that is already associated with the Regis Site forms part of the network already and would already be taken into account.

As shown in Figure 40, the network as a whole continues to perform at acceptable LOS. Full outputs from the models are included in Appendix A.

These model results indicate that the network is continuing to perform at similar levels to the base year network and within acceptable traffic engineering parameters.

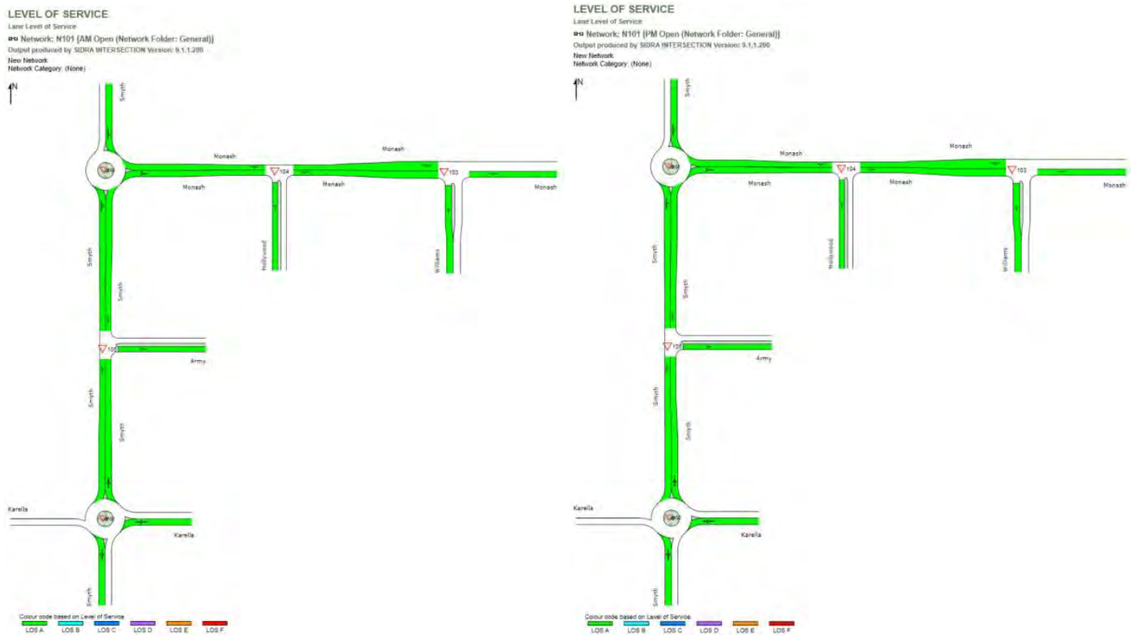


Figure 40 Level of Service – opening year AM and PM models

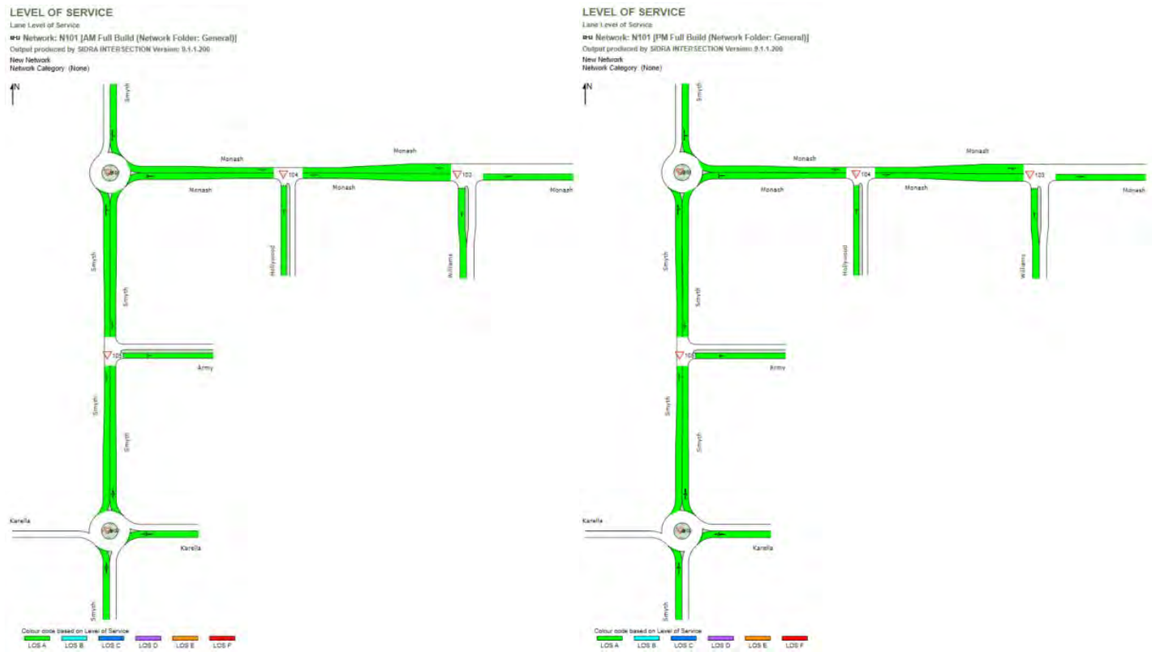


Figure 41 Level of Service – full build AM and PM models

5.6 Model Outcomes – Full Build

The full build models include all traffic generation for the development sites (as set out in Table 3) and an uplift in background traffic by 10% at all approaches. Full outputs from the models are included in Appendix A, with the headline LOS plots for lanes shown in Figure 41. Also provided are Movement Summary tables for:

- Monash Avenue and Smyth Road AM (Table 4) and PM (Table 7)
- Karella Street and Smyth Road AM (Table 5) and PM (Table 8)
- Monash Avenue and Williams Road AM (Table 6) and PM (Table 9).

None of the key traffic engineering performance indicators in these outputs, tested as a network model, show any underlying elements which would result in significant congestion or requirement for additional capacity – at intersections or mid-block. These outputs, which include the impact of the full development, show the network operating within satisfactory limits. As is the case now, the network will see localised heavy flows and movements at certain times (commuting and school drop off / pick up) but the overall metrics are satisfactory.

Table 4 Movement summary - Monash Avenue and Smyth Road AM peak full build

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	411	2.0	411	2.0	0.574	5.2	LOS A	2.0	14.4	0.59	0.56	0.59	38.0
3	R2	All MCs	257	2.0	257	2.0	0.574	8.5	LOS A	2.0	14.4	0.59	0.56	0.59	27.5
Approach			667	2.0	667	2.0	0.574	6.5	LOS A	2.0	14.4	0.59	0.56	0.59	35.7
East: Monash															
4	L2	All MCs	42	2.0	42	2.0	0.216	2.6	LOS A	0.5	3.8	0.48	0.51	0.48	25.5
6	R2	All MCs	180	2.0	180	2.0	0.216	4.9	LOS A	0.5	3.8	0.48	0.51	0.48	32.9
Approach			222	2.0	222	2.0	0.216	4.5	LOS A	0.5	3.8	0.48	0.51	0.48	32.0
North: Smyth															
7	L2	All MCs	403	2.0	403	2.0	0.593	6.1	LOS A	2.1	15.2	0.70	0.60	0.71	37.2
8	T1	All MCs	219	2.0	219	2.0	0.593	6.1	LOS A	2.1	15.2	0.70	0.60	0.71	37.2
Approach			622	2.0	622	2.0	0.593	6.1	LOS A	2.1	15.2	0.70	0.60	0.71	37.2
All Vehicles			1512	2.0	1512	2.0	0.593	6.0	LOS A	2.1	15.2	0.62	0.57	0.63	35.3

Table 5 Movement summary – Karella Street and Smyth Road AM peak full build

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
1	L2	All MCs	5	0.0	5	0.0	0.464	4.1	LOS A	1.5	10.6	0.32	0.42	0.32	42.7
2	T1	All MCs	592	2.0	592	2.0	0.464	4.1	LOS A	1.5	10.6	0.32	0.42	0.32	40.6
3	R2	All MCs	40	0.0	40	0.0	0.464	7.4	LOS A	1.5	10.6	0.32	0.42	0.32	41.9
Approach			637	1.9	637	1.9	0.464	4.3	LOS A	1.5	10.6	0.32	0.42	0.32	40.8
East: Karella															
4	L2	All MCs	35	0.0	35	0.0	0.088	5.0	LOS A	0.2	1.2	0.42	0.59	0.42	41.0
5	T1	All MCs	11	0.0	11	0.0	0.088	5.0	LOS A	0.2	1.2	0.42	0.59	0.42	40.7
6	R2	All MCs	46	0.0	46	0.0	0.088	8.3	LOS A	0.2	1.2	0.42	0.59	0.42	35.5
Approach			92	0.0	92	0.0	0.088	6.7	LOS A	0.2	1.2	0.42	0.59	0.42	39.1
North: Smyth															
7	L2	All MCs	9	0.0	9	0.0	0.198	3.8	LOS A	0.5	3.3	0.17	0.41	0.17	40.1
8	T1	All MCs	251	2.0	251	2.0	0.198	3.8	LOS A	0.5	3.3	0.17	0.41	0.17	42.3
9	R2	All MCs	15	0.0	15	0.0	0.198	7.0	LOS A	0.5	3.3	0.17	0.41	0.17	40.4
Approach			275	1.8	275	1.8	0.198	4.0	LOS A	0.5	3.3	0.17	0.41	0.17	42.2
All Vehicles			1003	1.7	1003	1.7	0.464	4.4	LOS A	1.5	10.6	0.29	0.44	0.29	41.0

Table 6 Movement summary - Monash Avenue and Williams Road AM peak full build

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Williams															
1	L2	All MCs	47	0.0	47	0.0	0.137	4.2	LOS A	0.2	1.3	0.51	0.62	0.51	24.0
3	R2	All MCs	47	0.0	47	0.0	0.137	9.7	LOS A	0.2	1.3	0.51	0.62	0.51	33.8
Approach			95	0.0	95	0.0	0.137	6.9	LOS A	0.2	1.3	0.51	0.62	0.51	31.4
East: Monash															
4	L2	All MCs	32	0.0	32	0.0	0.134	3.4	LOS A	0.0	0.0	0.00	0.06	0.00	38.6
5	T1	All MCs	231	2.0	231	2.0	0.134	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	39.5
Approach			262	1.8	262	1.8	0.134	0.4	NA	0.0	0.0	0.00	0.06	0.00	39.4
West: Monash															
11	T1	All MCs	609	2.0	609	2.0	0.324	0.0	LOS A	0.2	1.2	0.08	0.08	0.08	39.5
12	R2	All MCs	46	0.0	46	0.0	0.324	6.3	LOS A	0.2	1.2	0.08	0.08	0.08	36.8
Approach			656	1.9	656	1.9	0.324	0.4	NA	0.2	1.2	0.08	0.08	0.08	39.4
All Vehicles			1013	1.7	1013	1.7	0.324	1.1	NA	0.2	1.3	0.10	0.12	0.10	38.7

Table 7 Movement summary - Monash Avenue and Smyth Road PM peak full build

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	318	2.0	318	2.0	0.400	6.1	LOS A	1.1	8.0	0.65	0.60	0.65	38.1
3	R2	All MCs	53	2.0	53	2.0	0.400	9.3	LOS A	1.1	8.0	0.65	0.60	0.65	27.5
Approach			371	2.0	371	2.0	0.400	6.5	LOS A	1.1	8.0	0.65	0.60	0.65	37.3
East: Monash															
4	L2	All MCs	147	2.0	147	2.0	0.500	5.4	LOS A	1.4	10.2	0.67	0.65	0.67	29.3
6	R2	All MCs	334	2.0	334	2.0	0.500	8.3	LOS A	1.4	10.2	0.67	0.65	0.67	35.8
Approach			481	2.0	481	2.0	0.500	7.4	LOS A	1.4	10.2	0.67	0.65	0.67	34.5
North: Smyth															
7	L2	All MCs	140	2.0	140	2.0	0.346	3.9	LOS A	1.1	7.5	0.26	0.42	0.26	40.0
8	T1	All MCs	340	2.0	340	2.0	0.346	3.9	LOS A	1.1	7.5	0.26	0.42	0.26	40.0
Approach			480	2.0	480	2.0	0.346	3.9	LOS A	1.1	7.5	0.26	0.42	0.26	40.0
All Vehicles			1332	2.0	1332	2.0	0.500	5.9	LOS A	1.4	10.2	0.51	0.55	0.51	36.7

Table 8 Movement summary – Karella Street and Smyth Road PM peak full build

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
1	L2	All MCs	2	0.0	2	0.0	0.289	4.1	LOS A	0.7	5.1	0.27	0.43	0.27	42.9
2	T1	All MCs	344	2.0	344	2.0	0.289	4.1	LOS A	0.7	5.1	0.27	0.43	0.27	40.9
3	R2	All MCs	33	0.0	33	0.0	0.289	7.3	LOS A	0.7	5.1	0.27	0.43	0.27	42.0
Approach			379	1.8	379	1.8	0.289	4.4	LOS A	0.7	5.1	0.27	0.43	0.27	41.0
East: Karella															
4	L2	All MCs	31	0.0	31	0.0	0.074	6.3	LOS A	0.2	1.1	0.56	0.65	0.56	40.3
5	T1	All MCs	9	0.0	9	0.0	0.074	6.3	LOS A	0.2	1.1	0.56	0.65	0.56	39.9
6	R2	All MCs	24	0.0	24	0.0	0.074	9.6	LOS A	0.2	1.1	0.56	0.65	0.56	34.3
Approach			64	0.0	64	0.0	0.074	7.5	LOS A	0.2	1.1	0.56	0.65	0.56	38.8
North: Smyth															
7	L2	All MCs	13	0.0	13	0.0	0.338	3.8	LOS A	0.9	6.6	0.17	0.42	0.17	40.0
8	T1	All MCs	440	2.0	440	2.0	0.338	3.8	LOS A	0.9	6.6	0.17	0.42	0.17	42.2
9	R2	All MCs	45	0.0	45	0.0	0.338	7.0	LOS A	0.9	6.6	0.17	0.42	0.17	40.3
Approach			498	1.8	498	1.8	0.338	4.1	LOS A	0.9	6.6	0.17	0.42	0.17	42.0
All Vehicles			941	1.7	941	1.7	0.338	4.4	LOS A	0.9	6.6	0.24	0.44	0.24	41.4

Table 9 Movement summary - Monash Avenue and Williams Road PM peak full build

Vehicle Movement Performance														
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Williams															
1	L2	All MCs	35	0.0	35	0.0	0.092	4.9	LOS A	0.1	0.9	0.49	0.65	0.49	25.5
3	R2	All MCs	40	0.0	40	0.0	0.092	6.8	LOS A	0.1	0.9	0.49	0.65	0.49	34.5
Approach			75	0.0	75	0.0	0.092	5.9	LOS A	0.1	0.9	0.49	0.65	0.49	32.5
East: Monash															
4	L2	All MCs	56	0.0	56	0.0	0.238	3.5	LOS A	0.0	0.0	0.00	0.06	0.00	38.6
5	T1	All MCs	411	2.0	411	2.0	0.238	0.1	LOS A	0.0	0.0	0.00	0.06	0.00	39.5
Approach			466	1.8	466	1.8	0.238	0.5	NA	0.0	0.0	0.00	0.06	0.00	39.3
West: Monash															
11	T1	All MCs	201	2.0	201	2.0	0.115	0.0	LOS A	0.1	0.6	0.13	0.14	0.13	39.2
12	R2	All MCs	21	0.0	21	0.0	0.115	8.4	LOS A	0.1	0.6	0.13	0.14	0.13	36.3
Approach			222	1.8	222	1.8	0.115	0.8	NA	0.1	0.6	0.13	0.14	0.13	39.1
All Vehicles			763	1.6	763	1.6	0.238	1.1	NA	0.1	0.9	0.09	0.14	0.09	38.6

5.7 Model Outputs – Double Forecast Trips Test

In order to understand if there was any impact on the network with a much higher traffic generation outcome, or to understand if the surrounding network could cater for a higher volume, the full build input traffic generation levels were doubled and then tested as a network within SIDRA.

As can be seen from the headline LOS plots in Figure 42, the performance of the network is still satisfactory, with no underlying issues in terms of traffic engineering metrics. The Degree of Saturation (DOS) along Smyth Street does increase nominally to the 0.6-0.8 range on both approaches to Monash Avenue, which is the busiest point on this network.

To further test the capacity of the network, an additional 50% background traffic was added on to all approaches and it was only at this point of testing where approaches to Monash Avenue were recording LOS C and D – which is still at acceptable levels of performance but at a stage where network conditions have deteriorated to a poor level.

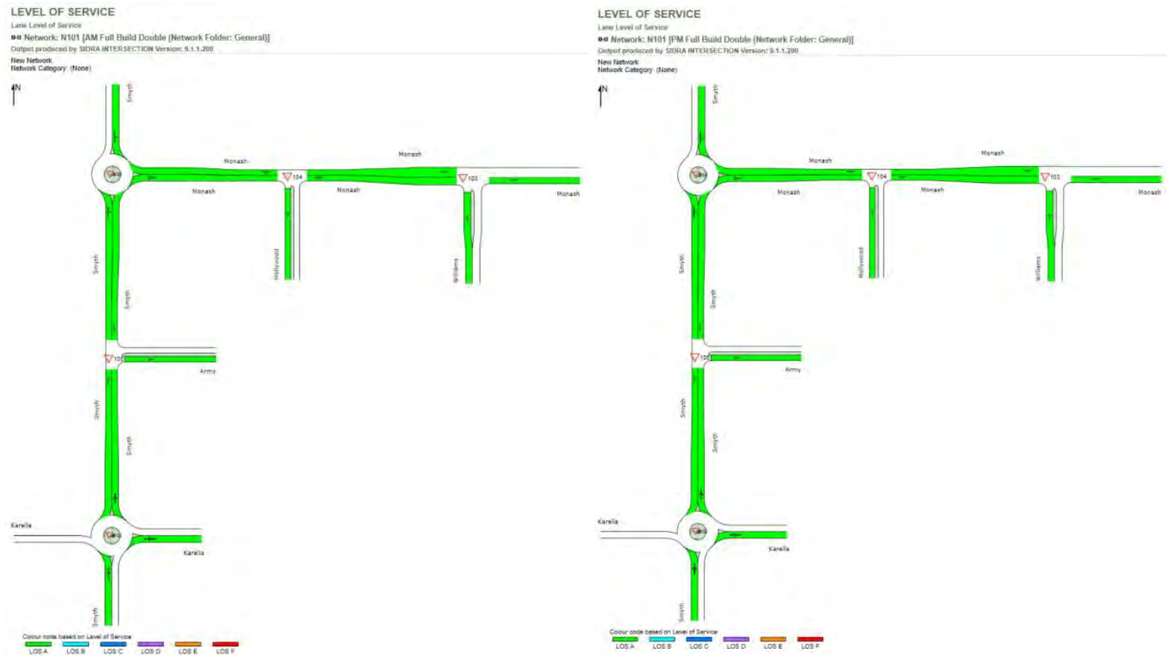


Figure 42 Level of Service – full build with double development traffic generation AM and PM models

5.8 Model Outcomes

The modelling approach has examined base year, opening year and full build scenarios as well as a test which has doubled the volume of development traffic on top of an additional 10% background traffic compared to the base year. None of these scenarios show any sign of significant deterioration in traffic engineering metrics. The network will continue to be busy and the additional trips associated with the proposed development will see additional traffic on the network resulting in a reduction in some traffic engineering metrics.

That traffic, although resulting in busier conditions across average weekday peak times, will not result in any issues that would require any additional capacity or reconfiguration of intersections at existing or proposed locations. The internal intersections, given the level of traffic that would be generated from the proposed yields, would not result in any form of congestion or measurable delays during peak periods.

6. PEDESTRIAN ACCESS AND AMENITY

6.1 Existing Pedestrian Network

The area has a high level of pedestrian connectivity with paths on both sides of most roads, which predominantly travel along the main desire lines except at roundabout intersections. Surrounding the site, the paths are generally wide and in relatively good condition with few obstructions. Driveways regularly intersect the footpath allowing vehicles to have priority of movement and this would need to be updated to provide a continuous treatment for pedestrians.

There is some shade provided by established trees which it typical given the age of the suburb, and which will improve over time given the recent street tree planting along the edge of the subject site. The above ground power cables limit the extent of the shade. All effort should be made to retain all existing trees providing shade canopy.

On Monash Avenue, there is a zebra crossing which provides a safe crossing opportunity to the hospital's main entrance as well as a median cut through outside of the primary school which is managed by a crossing guard during school arrival and pick up times.

Monash Avenue is a Distributor Road catering for a range of trips, vehicle movements and modes of travel. During the site visit conducted at 11.00am on Tuesday April 4, 2023, the footpaths were busy with people walking to and from the hospital, people walking to access their vehicle, cyclists using the footpath to avoid the carriageway, people in wheelchairs, staff taking breaks, as well as elderly residents going for a walk and waiting for a taxi. The footpaths would become more congested during school drop off and pick up times. There is currently not enough space for the full range of user groups users to comfortably use the footpath at the same time.

The Monash Avenue carriageway was observed to have a constant flow of traffic being a combination of through movements to Winthrop Avenue, bus route 25, on-street parking turnover, and drivers accessing the hospitals in the area. While traffic was generally slow as a result of the turnover of on-street parking, some drivers were observed speeding and generally exhibiting unsafe behaviour, which could be considered typical for Perth streets.

Monash Avenue has capacity to carry a high volume of vehicles, however the land uses either side demand a slower speed and safe environment.

The road surface and drainage has recently been upgraded along Smyth Road, and provides a high quality road base which reduces the noise of vehicles along here. There is a median and 1.8m wide pedestrian cut-through (staffed by a crossing guard at school times) which allows for safer pedestrian crossings.

Figure 43 Monash Avenue (source: Flyt)

Figure 44 Monash Avenue (source: Flyt)

Figure 45 Monash Avenue (source: Flyt)

Figure 46 Pedestrian median cut-through on Smyth Road (Source: Flyt)

The 15 minute walking catchment is shown in Figure 47, where walking is shown to be an efficient mode of transport with a 360° catchment as a result of the grid layout of the street network, and the paths through Karrakatta Cemetery. Destinations within this catchment include Hollywood Primary School, Hollywood Subiaco Bowls Club, Karrakatta Cemetery, Dot Bennett Park, QE11 Medical Centre, Kings Park, Itsara Thai Restaurant, Bodyscape Yoga, UWA Library and Early Learning Centre, and the various businesses, cafes, restaurants and shops along Hampden Road.

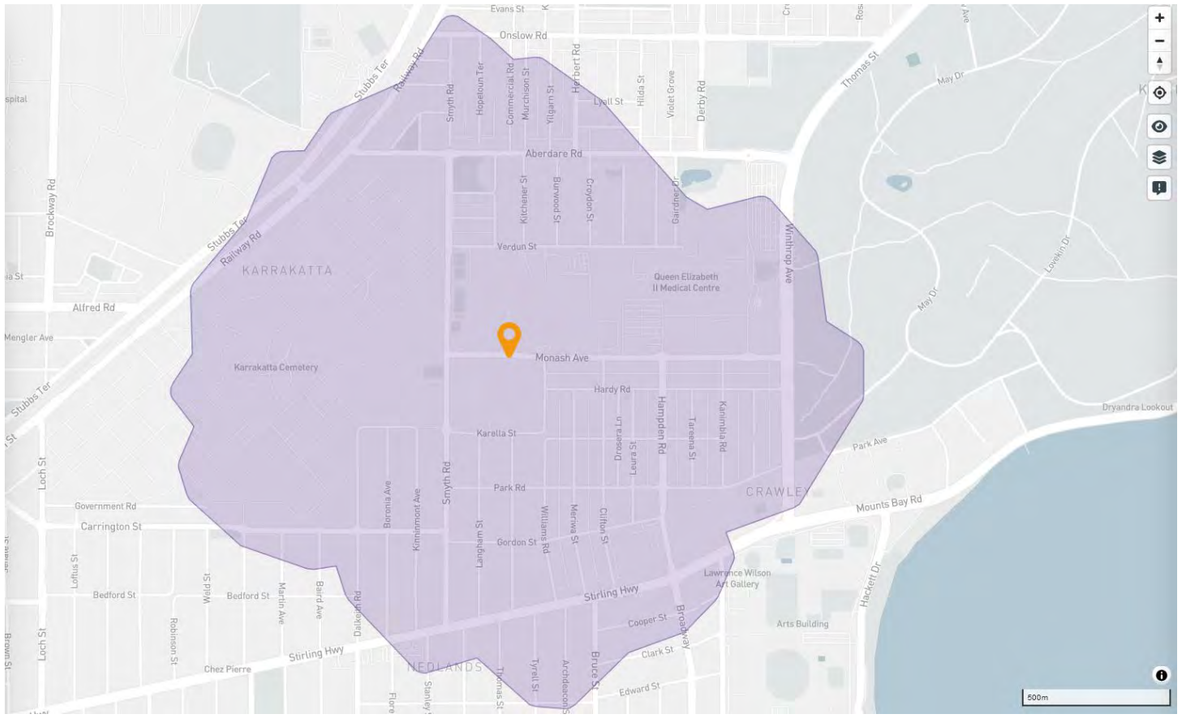


Figure 47 15 minute walking catchment (source: Planwisely)

The Department of Planning, Lands and Heritage's (DPLH) Urban Tree Canopy Dashboard provides an interactive snapshot of the extent of tree canopy coverage across the Perth and Peel regions. The urban tree canopy is an essential part of creating healthy, liveable neighbourhoods, where more dense and mature tree canopies can support active travel along walking and cycling paths.

In 2018, the street blocks in the suburb of Nedlands had 20% canopy cover from trees over 3m tall, resulting in 80% of the street block area without any canopy cover (as shown in Figure 48). The Perth Metropolitan area has an average of 12% canopy cover from trees over 3m tall in street blocks.

Figure 48 shows that the subject site has 0-5% tree canopy as a result of the site being cleared recently. Retaining street trees and planting additional green landscaping throughout the site would reduce the heat throughout summer and create a more inviting and pleasant pedestrian environment which is a critical element in encouraging people to walk and cycle.

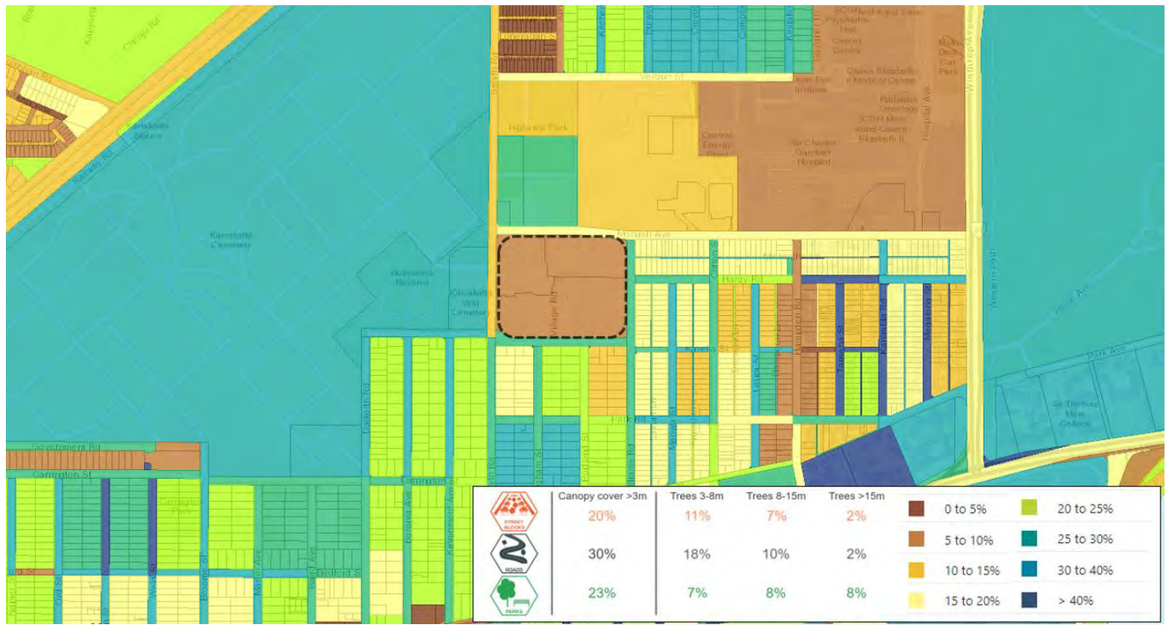


Figure 48 Urban tree canopy (source: Department of Planning, Lands and Heritage)

Figure 49 Internal pedestrian connections

6.2 Proposed Pedestrian Network

All vehicle access is proposed from within the subject site, with no direct vehicle access from the surrounding street network which means that the pathways and pedestrian connections around the perimeter of the site will be mostly uninterrupted, providing continuous and safe walkways.

Within the subject site, Hardy Road and Hollywood Avenue will have footpaths on a single side (northern verge for Hardy Road and Eastern verge for Hollywood Avenue). Combined with extensive landscaping elements and a shady environment, this will create a high quality walking spine for residents and visitors. Eventide Way is proposed to have a footpath on the side of the reserve that provides rear loaded vehicle access to maximise the landscaping elements. The internal network, including indicative path connections through Hollywood Commons, is shown in Figure 49.

The creation of filtered permeability through the Hollywood Avenue corridor will allow pedestrian and cyclist access into the area to be separated from vehicle access points. This will provide a safe corridor through to Hollywood Primary School from the development area and the surrounding neighbourhood to the south and east.

The surrounding community will also benefit as a result of the site becoming more permeable allowing residents to the south of the site to walk directly to Monash Avenue and the primary school, and from the east towards Karrakatta Cemetery.

Detailed pedestrian access to each development will be assessed during the later stages of planning, with more details on landscaping planning provided as part of the overall suite of documents submitted in support of the development.

7. BICYCLE ACCESS AND AMENITY

7.1 Existing Bicycle Network

The Fremantle Line Principal Shared Path is located a cycling distance of 1.1km north east from the subject site which provides a very high quality cycling route with connections to Perth City and onwards, as well as more local destinations including Subiaco, Claremont, Cottesloe, and North Fremantle.

While there are no dedicated cycle lanes or paths along Monash Avenue, there are excellent cycling options throughout Kings Park providing route options away from Winthrop Avenue.

Given the proximity of the subject site to Perth City, Subiaco and other destinations and employment centres, cycling should be encouraged and supported as a viable mode option.

During a site visit at the intersection of Karella Street and Smyth Road, 24 people were recorded riding a bike with a relatively even split between commuting, recreational and trips to school. This intersection and east-west route appears to be a popular route for people riding a bike.

Figure 50 Existing cycling network (source: Department of Transport)

A heatmap of bicycle activity in the vicinity of the subject site is shown in Figure 51. This is produced by cyclists tracking their trips using the commercial product Strava with the 15 minute cycling catchment shown in Figure 52. The heatmap data shows that those bicycle riders using the Strava software to track their rides, has the highest levels of cycling along the Fremantle Line Principal Shred Path (PSP). Other frequently used cycle routes include Aberdare Road, Smyth Road, Stirling Highway, Thomas Road and various paths through Kings Park.

Figure 51 Strava heatmap for cycling activity (source: Strava.com)

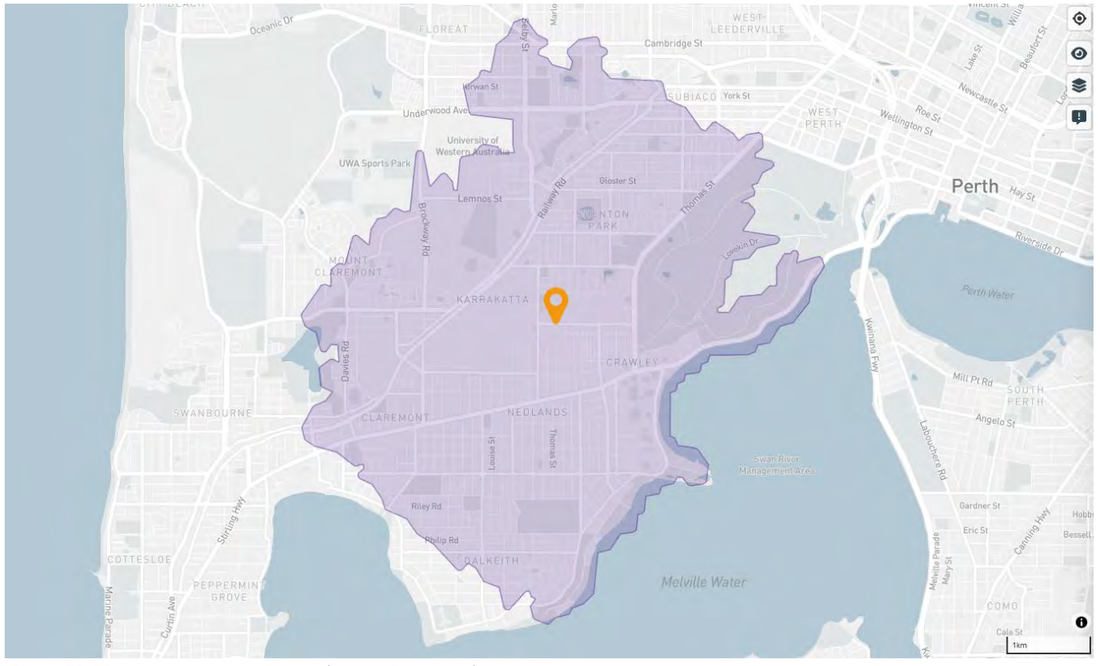


Figure 52 15 minute cycling catchment (source: Planwisely)

7.2 Proposed Cycling Network

Cycle lanes are currently being installed along Aberdare Road to the north as part of the Long Term Cycle Network (LTCN) which is shown in Figure 53. Smyth Road is considered to be a Local Route, with connections from the subject site further south to existing links shown in Figure 50. There are no other known or proposed cycling infrastructure upgrades at the time of this report.

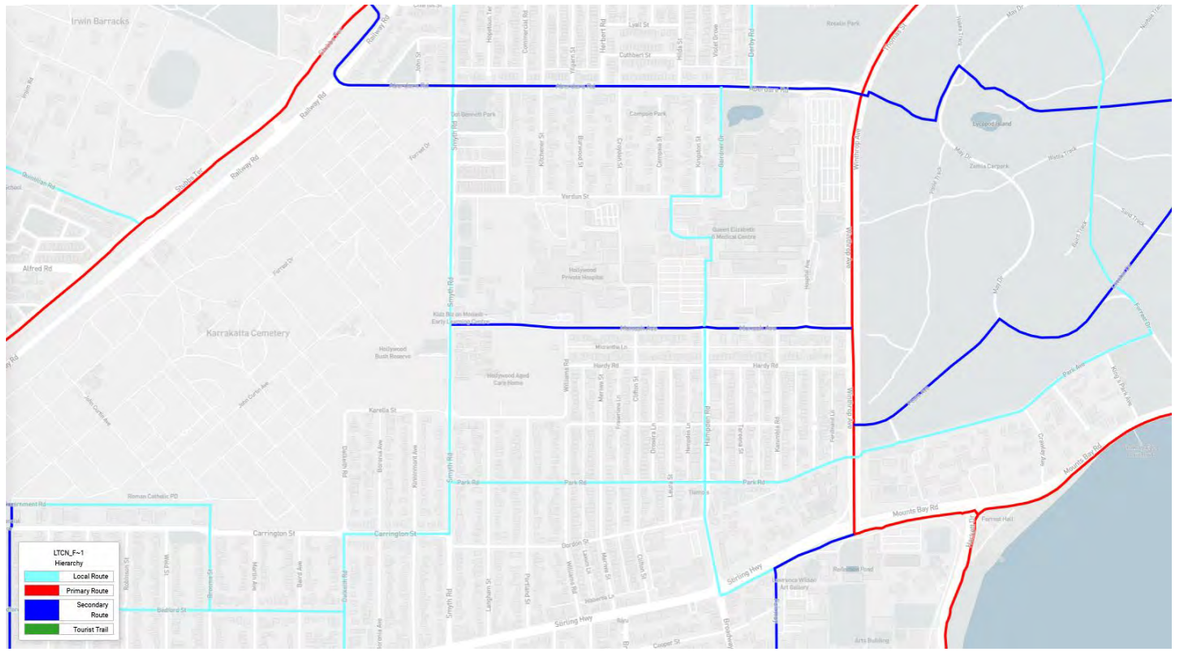


Figure 53 Long Term Cycle Network (source: Planwisely)

7.3 Development Proposals Bicycle Network and Facilities

Cycling trips are expected to be generated by residents commuting to work, as well as recreational trips on weekends. The inclusion of high quality paths through the site, or for vehicle speeds to be 30km/h or under which safely allows people to ride on the road mixed with vehicles, will create a safe cycling environment within the subject site.

There is an opportunity for Hardy Road Street to become a viable east-west cycling option for local trips and the inclusion of a filtering treatment on Hollywood Avenue will provide for a legible north-south connection from the development and surrounding neighbourhood through to Hollywood Primary School.

7.4 Required Bike Parking

The provision of bike parking will be provided in line with the requirements of SPP 7.3 “Residential Design Codes Volume 2 – Apartments” which requires 0.5 bicycle parking bays per dwelling. It is highly recommended that residential bike parking be provided at a minimum rate of one space per dwelling, acknowledging the reality that most people own at least one bike and this site is within an inner city context.

Bike parking within the medical centre and commercial development would be assessed on an individual basis, noting that the City of Nedlands does not require bike parking and end of trip facilities within their parking policy or scheme. Provision of adequate end of trip facilities should be a priority within the development to support the suppression of trips, even if the City of Nedlands does not consider that a planning priority.

Austroads Guidelines for Bicycle Parking Facilities outlines a generic rate of 0.15 spaces per staff member for long stay and 0.1 spaces per patient at maximum patient capacity. For a commercial development such as an office, 0.45 spaces per 100m^2 GFA are required for staff and 0.05 spaces per 100m^2 GFA for visitors.

8. PUBLIC TRANSPORT ACCESS

8.1 Existing Services

The subject site is located within a 1-12 minute walk to frequent and regular public transport services. Proximity of the site to excellent public transport services is shown in Figure 54.

Figure 54 Public transport access (source: Metromap)

Bus route 25 runs along Monash Avenue and Smyth Road and provides connections to Claremont Station and Shenton Park Station via Hollywood Hospital and QE11 Medical Centre. This bus route runs between Shenton Park Station and Hollywood Private Hospital every 20 minutes from 5.29am to 6.14pm. Services to Claremont Station are less frequent.

High frequency bus routes, 950 and 998/999, operate from the QE11 Medical Centre. The 950 bus route provides regular and direct connections to Morley via Elizabeth Quay Bus Station and Beaufort Street. The 998/999 provide connections across Perth including the University of Western Australia (UWA), Stirling, Dianella, Bayswater, Curtin University, Fiona Stanley Hospital, Murdoch University, Fremantle and Cottesloe. The high frequency bus routes run every 10-15 minutes.

Bus routes 96 and 97 operate from QE11 Medical Centre and provide connections to Leederville Station, Subiaco Station and down to UWA. Services run every 15-20 minutes. Bus route 103 runs between Elizabeth Quay Bus Station and Claremont Station via QE11 Medical Centre with infrequent services every 45-60 minutes.

The Purple CAT bus runs between UWA and Elizabeth Quay Bus Station via QE11 Medical Centre with services every 10 minutes during peak times. Shenton Park Station is located a walking/cycling distance of 1.8km with services running every 6 minutes during peak times providing direct connections to Fremantle and Perth.

The extent of weekday public transport accessibility is set out in Figure 55, with a twenty minute trip on bus or train extending from Mosman Park in the south, Wembley Downs to the north, Central Perth to the east and parts of Dalkeith to the south.

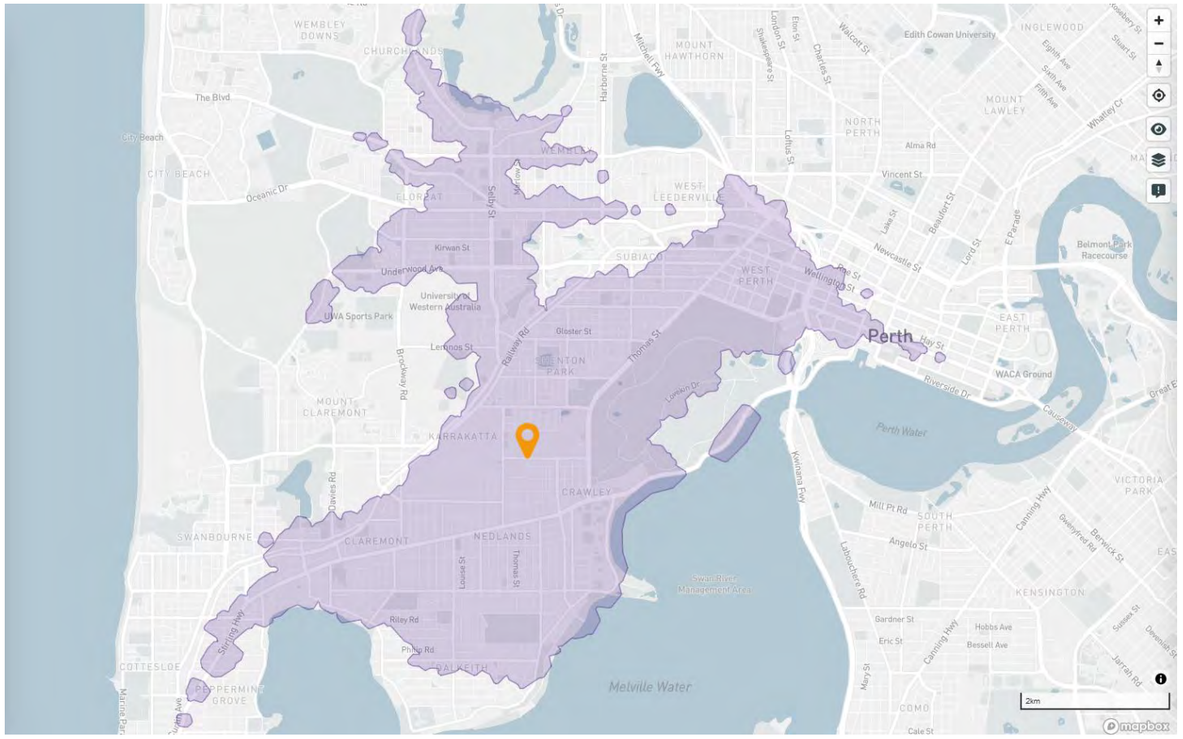


Figure 55 20 minute weekday morning public transport catchment (source: Planwisely)

9. SITE SPECIFIC ISSUES

9.1 Road Safety

Within the immediate area surrounding the subject site, there were a total of 20 reported incidents in the last five years since November 2017, where nine were recorded at intersections and 11 in a mid-block location. Of those nine at an intersection, five were recorded at the intersection of Monash Avenue and Smyth Road with three occurring prior to the roundabout being installed. Three crashes occurred at the roundabout intersection of Smyth Road and Karella Street (with two involving a bicycle) and one at Williams Road and Monash Avenue.

For mid-block incidents, four involved entering or leaving a driveway and four involved parking with most occurring on Monash Avenue. Removal of crossovers being proposed would assist in reducing this risk in the future, with movements confined to intersections rather than site crossovers.

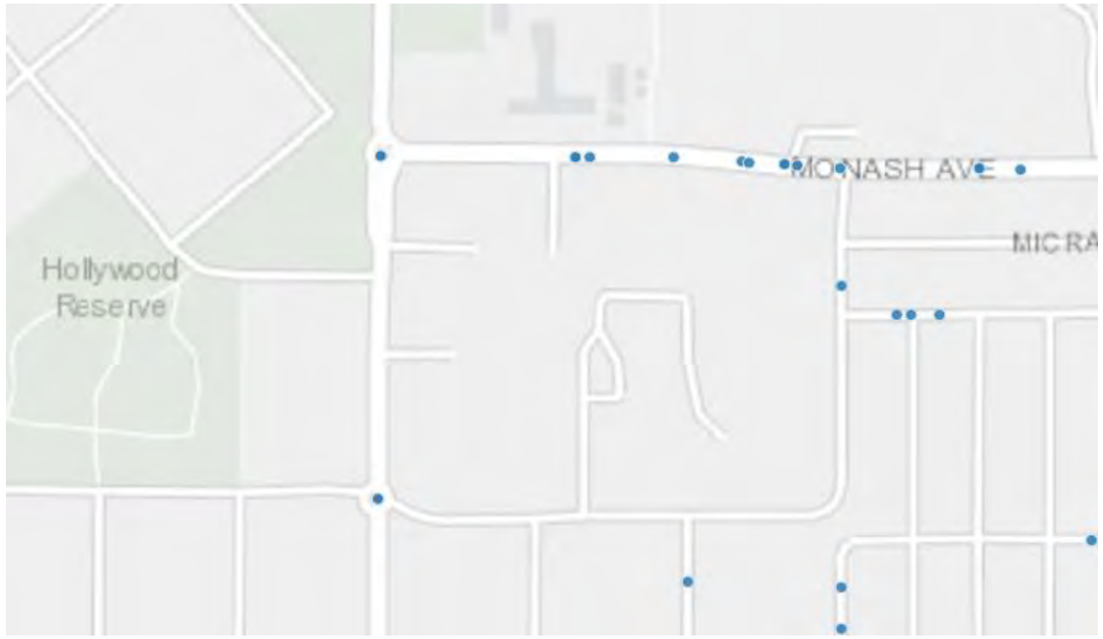


Figure 56 Crash Information (source: Main Roads WA)

In respect to Blackspot locations, there are a number of intersections in proximity to the site that qualify. It should be noted that the intersection of Monash Avenue and Smyth Road was converted into a roundabout in 2019. The crash analysis for each intersection is shown in Figure 57 and Figure 58.

It would be expected, given the potential increase in traffic associated with the proposed development, that risk profiles relating to traffic incidents may increase, however removal of direct crossovers to Monash Avenue and an internal network designed to accommodate slower speeds would reduce this risk. The use of intersections along Smyth Street and Monash Avenue to control movements would also limit mid-block risk issues.

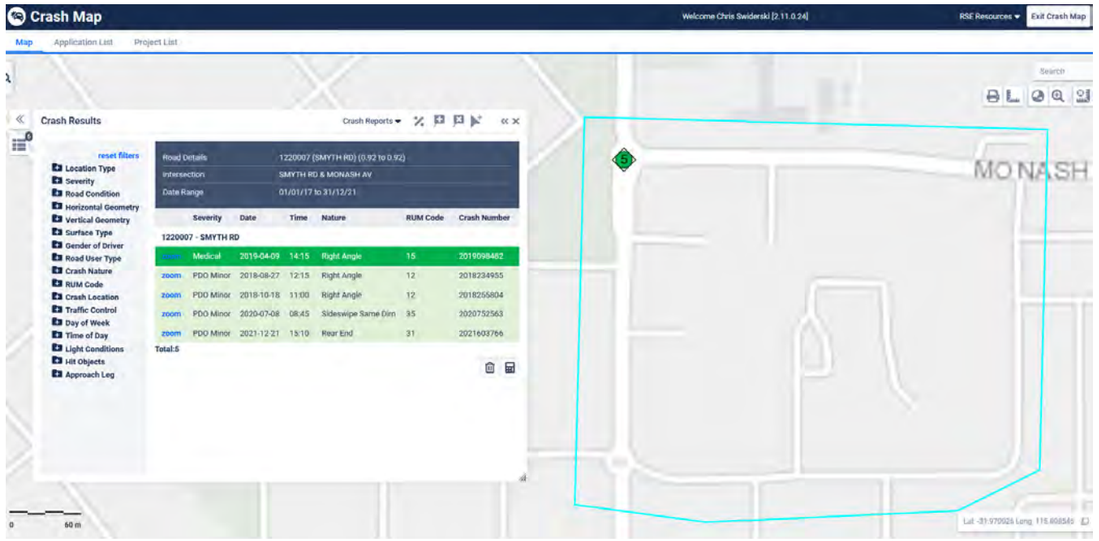


Figure 57 Crash reporting - intersection of Monash Ave and Smyth Rd (source: Main Roads WA)

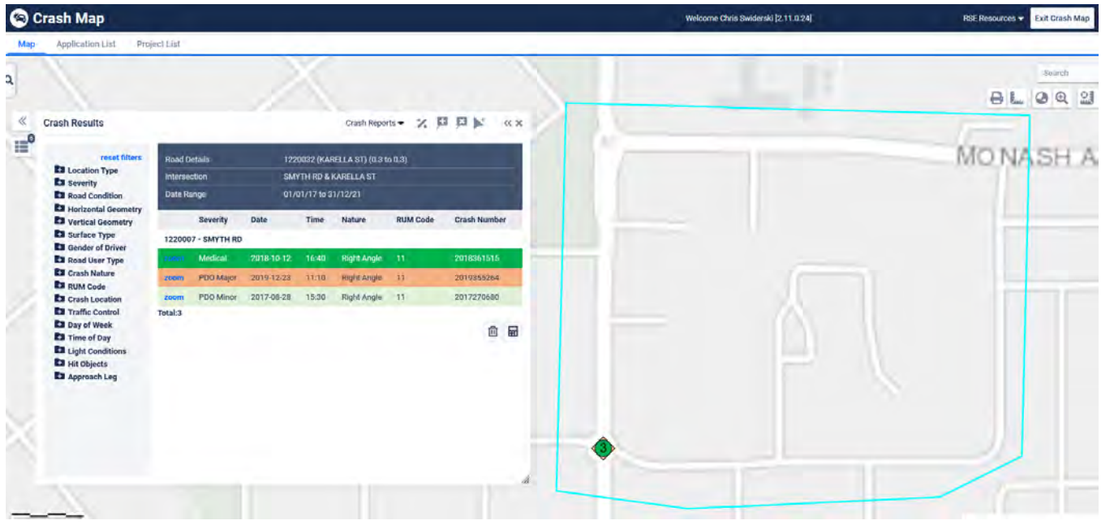


Figure 58 Crash reporting - intersection of Karella Street and Smyth Rd (source: Main Roads WA)

10. SUMMARY

10.1 Introduction

This Transport Impact Assessment (TIA) has been prepared by Flyt in support of the proposed Precinct Structure Plan at 62 Monash Avenue in Nedlands. This mixed use development proposes to increase the intensification of the land and includes a mix of dwelling types which integrate into the surrounding area. The creation of a Precinct Structure Plan ensures a high level of design focus will be applied to manage the mixed-use components, higher levels of density and character.

The subject site is located between Karella Street, Smyth Road, Monash Avenue and Williams Road in Nedlands and is situated opposite Hollywood Private Hospital and Hollywood Primary School. The site is in the City of Nedlands and as indicated by the South West Aboriginal Land and Sea Council website, the site sits within the Whadjuk Region.

10.2 Site Context and Proposed Development

The site is zoned Residential, with land zoned Special Use on the west and northern sides. Land to the east and south is also zoned Residential with density codes ranging between R10 – RAC3 (Figure 3). Opposite the subject site to the north is Hollywood Primary School, an early learning centre and Hollywood Private Hospital, and to the west is the Karrakatta Cemetery.

The subject site is within close proximity of a range of services and education facilities such as the QE11 Medical Centre which includes a large number of medical services including the Perth Children's Hospital, Sir Charles Gairdner Hospital, Ronald McDonald charities, North Metropolitan Health Services, research institutes and clinics. Kings Park is located 1.1km to the east and the University of Western Australia is 1.5kms to the south.

The proposed development includes the following facilities which have all been considered within this TIA:

- 78 townhouse lots
- Approximately 550 apartments across three sites
- A medical centre of approximately 15,900m^2 GFA
- No direct vehicle access from the external existing street network with all vehicle access proposed from internal streets
- Four new streets, a new laneway and associated intersections
- A pedestrian link from the site through to Langham Road
- Centralised Hollywood Commons park
- Retention of existing building at 118 Monash Avenue.

10.3 Proposed Vehicle Access

The development of the site proposes to reduce the overall number of crossovers from 14 to four controlled intersections, removing many redundant crossovers most of which were associated with historical land uses along Karella Street.

The development proposes to create two main streets through the site:

- Hollywood Street is proposed to run north-south from Monash Avenue in the north and Karella Street to the south
    - This proposed corridor aligns with Portland Street to the south
    - There will be no through access from Hardy Road to Monash Road, with filtered permeability allowing only pedestrian and cycling movements
    - The reserve will vary from 13-15m, with a reduced width alongside the Hollywood Commons open space area
- Hardy Road is proposed to run east-west between Williams Road to the east and to Smyth Road to the west
    - This proposed corridor aligns with Hardy Road to the east providing a continuation of the carriageway and reserve

Internal streets and a laneway would all intersect the two main streets (Hollywood Avenue and Hardy Road). In addition to the main streets, both Eventide Way and Crossleigh Way will run north-south and Elloura Lane will run east-west providing rear access to development lots. The proposed forms of intersection control are entirely consistent with the forms applied to other three and four-way intersections in the area.

10.4 Proposed On-site Parking

Options for on-street parking will be provided within the development area, with final design configurations being progressed through more detailed stages of the development. Street reserves have been configured to allow for on-street parking to be provided on most carriageways which will provide for short term visitation. Given the location of the development, it would be expected that all on-street parking within internal streets would be time restricted at a minimum. Allocation of spaces per user group (ACROD, service, short term, motorcycle) would be based on City of Nedlands requirements.

The overall volume of on-street parking which eventuates would be subject to a range of factors, including site access requirements, design standards and landscaping, but could yield up to 40 on-street parking bays.

Parking rates for the residential development will align with the relevant state planning policies including SPP 7.3 "Residential Design Codes Volume 2 – Apartments". Parking for the medical centre will be provided in line with the relevant parking ratios required by the City of Nedlands Local Planning Policy 41: Parking.

The provision of parking will be dependent upon the ultimate dwelling mix and commercial land uses and will be assessed during the later stages of planning.

10.5 Provision for Service Vehicles

Waste collection will be conducted by the City of Nedlands. The existing and proposed road network will need to accommodate the swept path movements of a large 11m waste collection vehicle.

Details relating to onsite servicing for apartment and commercial sites dealing with waste and deliveries would be resolved during the subsequent stages of planning.

10.6 Proposed Pedestrian and Bicycle Network/Facilities

All vehicle access is proposed from within the subject site, with no direct vehicle access proposed from the surrounding street network with the exception of the commercial development site on the corner of Monash Avenue and Williams Road. This means that the pathways around the perimeter of the site will be mostly uninterrupted, providing continuous and safe walkways. Provision of shade and landscaped corridors along street reserves has been a priority for the design development.

Within the subject site, Hardy Road and Hollywood Avenue will have footpaths on a single side (northern verge for Hardy Road and Eastern verge for Hollywood Avenue). Combined with extensive landscaping elements and a shady environment, this will create a high quality walking spine for residents and visitors. Eventide Way is proposed to have a footpath on the side of the reserve that provides rear loaded vehicle access to maximise the landscaping elements.

The path network through Hollywood Common and proposed landscaping would further enhance the pedestrian network and streetscape.

10.7 Traffic Assessment

Given the existing site is mostly vacant, any form of permitted development would result in the generation of additional traffic on the network that is not there at present. Therefore, any impact on the performance of adjoining intersections and roads would primarily be due to traffic associated with this proposed development.

An assessment of the network and the traffic generated by the development was undertaken using SIDRA. This assessment looked at base year conditions (2023), an opening year scenario (three years) and a full build scenario (nominally ten years but timing would be dependent on development outcomes). All three scenarios, for both AM and PM peak hours, showed that the existing and future networks operate well within accepted traffic engineering parameters for model outputs.

Forecast year scenarios were tested using a 10% uplift on background traffic and a 50% uplift on background traffic, as well as a doubling of traffic generated by the proposed development. None of these scenarios indicated that the network would result in conditions that would be considered to have failed. This assessment shows that the network is capable of catering for traffic volumes generated by the development within peak hours and no specific alteration to network capacity or intersections are proposed.

10.8 Public Transport

The subject site is located within a 1-12 minute walk to frequent and regular public transport services including:

- Bus route 25 which provides connections to Claremont Station and Shenton Park Station via Hollywood Hospital and QE11 Medical Centre
- High frequency bus routes, 950 and 998/999 which provide regular and direct connections to Morley via Elizabeth Quay Bus Station and Beaufort Street
- Bus routes 96 and 97 which provide connections to Leederville Station, Subiaco Station and UWA
- Bus route 103 runs between Elizabeth Quay Bus Station and Claremont Station via QE11 Medical Centre
- The Purple CAT bus runs between UWA and Elizabeth Quay Bus Station via QE11 Medical Centre with services every 10 minutes during peak times
- Shenton Park Station is located a walking/cycling distance of 1.8km with services running every 6 minutes during peak times providing direct connections to Fremantle and Perth.

The site has excellent public transport accessibility, with a wide catchment area covering large parts of the inner western suburbs and Central Perth.

APPENDIX A

SIDRA Outputs

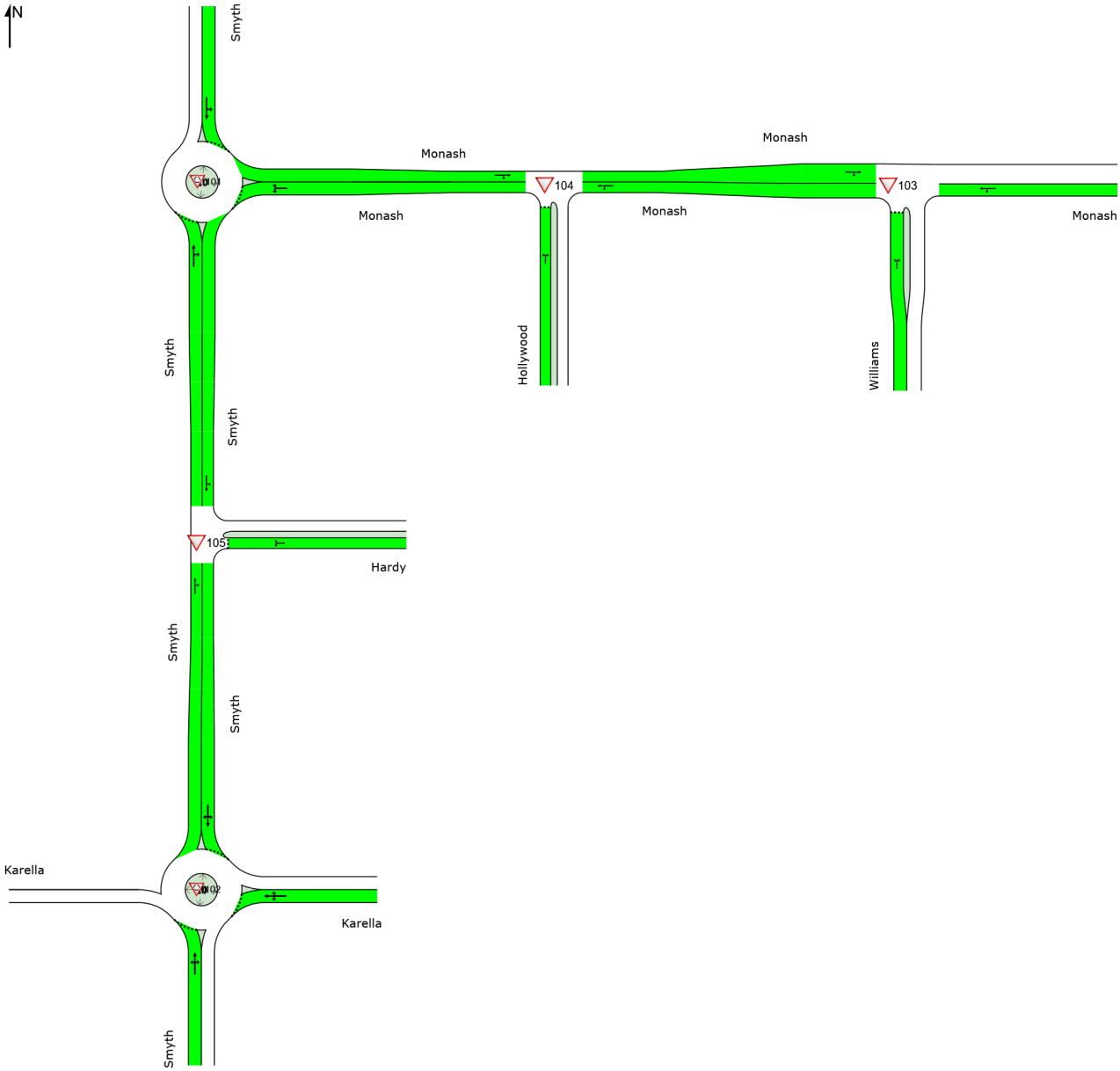
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio per lane

Network: N101 [AM Full Build (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Degree of Saturation

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

SIDRA INTERSECTION 9.1 | Copyright © 2000-2022 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: FLYT PTY LTD | Licence: NETWORK / 1PC | Processed: Thursday, 28 September 2023 11:53:02 AM
Project: C:\Users\Chris\Dropbox (Flyt Pty Ltd)\Flyt Pty Ltd Team Folder\Projects\81113-842 - Hesperia Nedlands TIA\3_Project Docs\Modelling \Computer Models\Nedlands Site.sip9

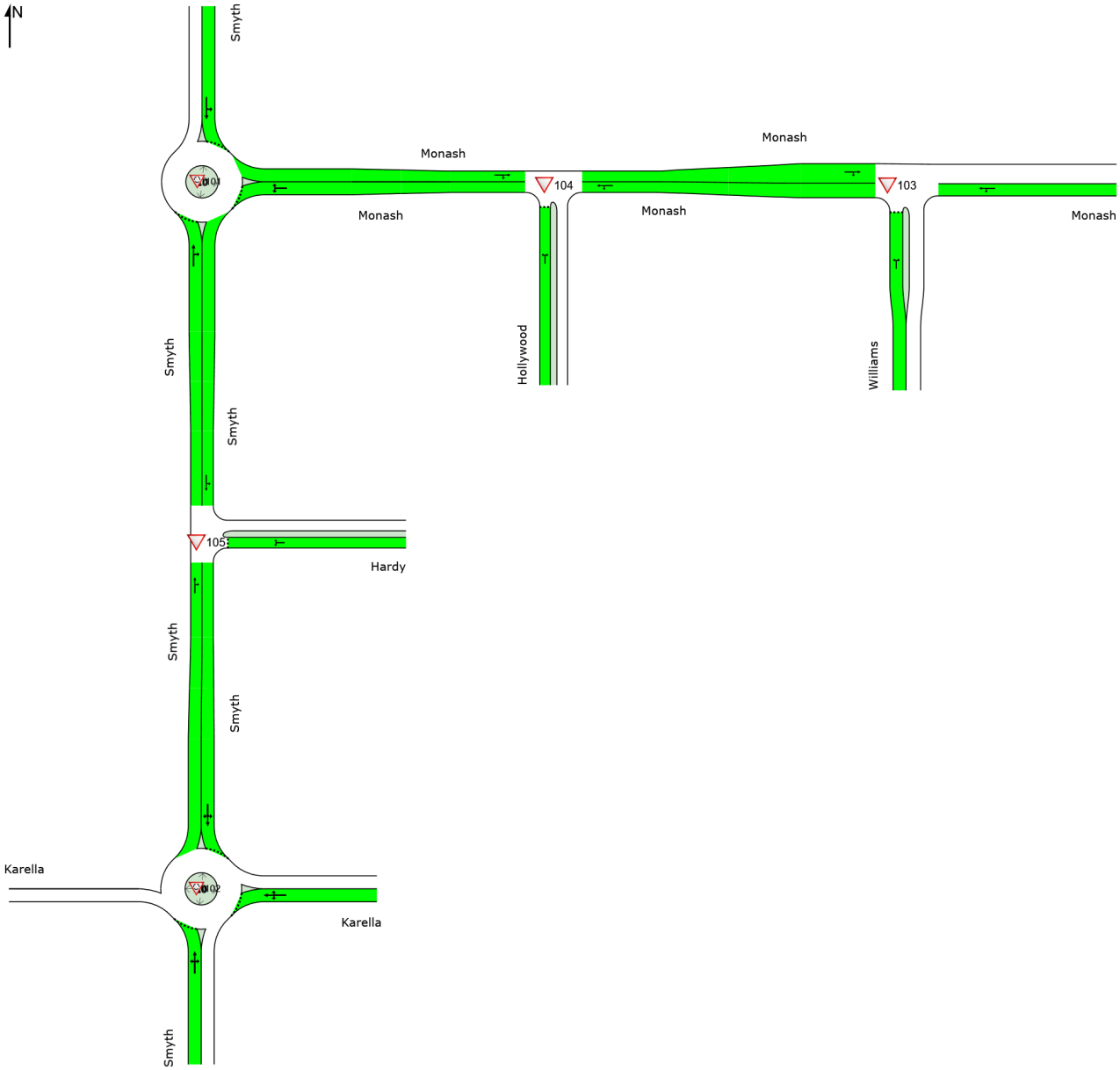
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [AM Full Build (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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Project: C:\Users\Chris\Dropbox (Flyt Pty Ltd)\Flyt Pty Ltd Team Folder\Projects\81113-842 - Hesperia Nedlands TIA\3_Project Docs\Modelling \Computer Models\Nedlands Site.sip9

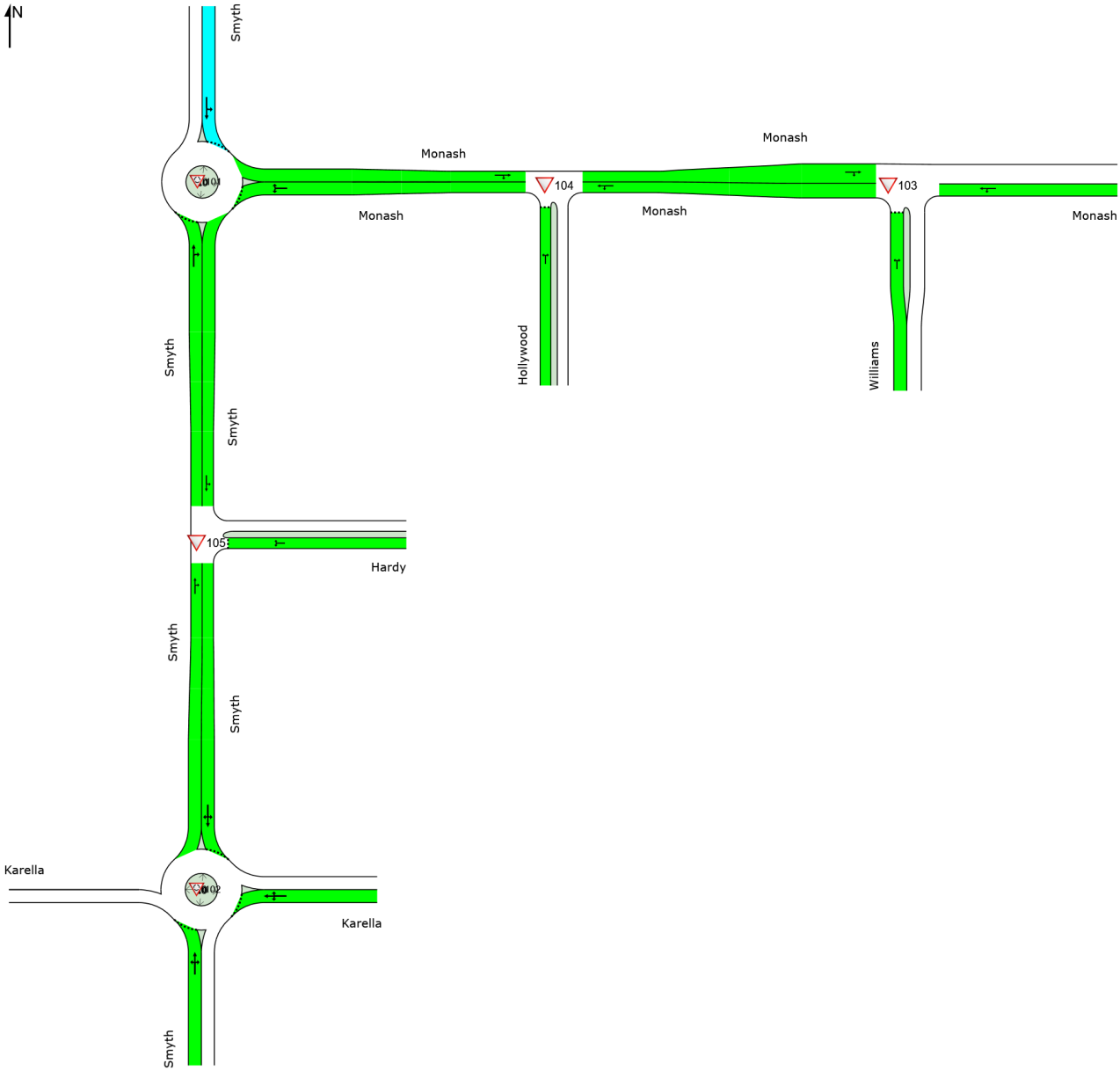
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [AM Full Build (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Proportion Queued

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 0.99]	[1.0]

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Organisation: FLYT PTY LTD | Licence: NETWORK / 1PC | Processed: Thursday, 28 September 2023 11:53:02 AM
Project: C:\Users\Chris\Dropbox (Flyt Pty Ltd)\Flyt Pty Ltd Team Folder\Projects\81113-842 - Hesperia Nedlands TIA\3_Project Docs\Modelling \Computer Models\Nedlands Site.sip9

MOVEMENT SUMMARY

Site: 101 [Smyth and Monash AM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	411	2.0	411	2.0	0.574	5.2	LOS A	2.0	14.4	0.59	0.56	0.59	38.0
3	R2	All MCs	257	2.0	257	2.0	0.574	8.5	LOS A	2.0	14.4	0.59	0.56	0.59	27.5
Approach			667	2.0	667	2.0	0.574	6.5	LOS A	2.0	14.4	0.59	0.56	0.59	35.7
East: Monash															
4	L2	All MCs	42	2.0	42	2.0	0.216	2.6	LOS A	0.5	3.8	0.48	0.51	0.48	25.5
6	R2	All MCs	180	2.0	180	2.0	0.216	4.9	LOS A	0.5	3.8	0.48	0.51	0.48	32.9
Approach			222	2.0	222	2.0	0.216	4.5	LOS A	0.5	3.8	0.48	0.51	0.48	32.0
North: Smyth															
7	L2	All MCs	403	2.0	403	2.0	0.593	6.1	LOS A	2.1	15.2	0.70	0.60	0.71	37.2
8	T1	All MCs	219	2.0	219	2.0	0.593	6.1	LOS A	2.1	15.2	0.70	0.60	0.71	37.2
Approach			622	2.0	622	2.0	0.593	6.1	LOS A	2.1	15.2	0.70	0.60	0.71	37.2
All Vehicles			1512	2.0	1512	2.0	0.593	6.0	LOS A	2.1	15.2	0.62	0.57	0.63	35.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 102 [Karella and Smyth AM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
1	L2	All MCs	5	0.0	5	0.0	0.464	4.1	LOS A	1.5	10.6	0.32	0.42	0.32	42.7
2	T1	All MCs	592	2.0	592	2.0	0.464	4.1	LOS A	1.5	10.6	0.32	0.42	0.32	40.6
3	R2	All MCs	40	0.0	40	0.0	0.464	7.4	LOS A	1.5	10.6	0.32	0.42	0.32	41.9
Approach			637	1.9	637	1.9	0.464	4.3	LOS A	1.5	10.6	0.32	0.42	0.32	40.8
East: Karella															
4	L2	All MCs	35	0.0	35	0.0	0.088	5.0	LOS A	0.2	1.2	0.42	0.59	0.42	41.0
5	T1	All MCs	11	0.0	11	0.0	0.088	5.0	LOS A	0.2	1.2	0.42	0.59	0.42	40.7
6	R2	All MCs	46	0.0	46	0.0	0.088	8.3	LOS A	0.2	1.2	0.42	0.59	0.42	35.5
Approach			92	0.0	92	0.0	0.088	6.7	LOS A	0.2	1.2	0.42	0.59	0.42	39.1
North: Smyth															
7	L2	All MCs	9	0.0	9	0.0	0.198	3.8	LOS A	0.5	3.3	0.17	0.41	0.17	40.1
8	T1	All MCs	251	2.0	251	2.0	0.198	3.8	LOS A	0.5	3.3	0.17	0.41	0.17	42.3
9	R2	All MCs	15	0.0	15	0.0	0.198	7.0	LOS A	0.5	3.3	0.17	0.41	0.17	40.4
Approach			275	1.8	275	1.8	0.198	4.0	LOS A	0.5	3.3	0.17	0.41	0.17	42.2
All Vehicles			1003	1.7	1003	1.7	0.464	4.4	LOS A	1.5	10.6	0.29	0.44	0.29	41.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 103 [Monash and Williams AM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Williams															
1	L2	All MCs	47	0.0	47	0.0	0.137	4.2	LOS A	0.2	1.3	0.51	0.62	0.51	24.0
3	R2	All MCs	47	0.0	47	0.0	0.137	9.7	LOS A	0.2	1.3	0.51	0.62	0.51	33.8
Approach			95	0.0	95	0.0	0.137	6.9	LOS A	0.2	1.3	0.51	0.62	0.51	31.4
East: Monash															
4	L2	All MCs	32	0.0	32	0.0	0.134	3.4	LOS A	0.0	0.0	0.00	0.06	0.00	38.6
5	T1	All MCs	231	2.0	231	2.0	0.134	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	39.5
Approach			262	1.8	262	1.8	0.134	0.4	NA	0.0	0.0	0.00	0.06	0.00	39.4
West: Monash															
11	T1	All MCs	609	2.0	609	2.0	0.324	0.0	LOS A	0.2	1.2	0.08	0.08	0.08	39.5
12	R2	All MCs	46	0.0	46	0.0	0.324	6.3	LOS A	0.2	1.2	0.08	0.08	0.08	36.8
Approach			656	1.9	656	1.9	0.324	0.4	NA	0.2	1.2	0.08	0.08	0.08	39.4
All Vehicles			1013	1.7	1013	1.7	0.324	1.1	NA	0.2	1.3	0.10	0.12	0.10	38.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 104 [Hollywood and Monash AM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Hollywood															
1	L2	All MCs	43	0.0	43	0.0	0.042	4.0	LOS A	0.1	0.4	0.31	0.48	0.31	32.2
3	R2	All MCs	5	0.0	5	0.0	0.042	9.1	LOS A	0.1	0.4	0.31	0.48	0.31	32.2
Approach			48	0.0	48	0.0	0.042	4.5	LOS A	0.1	0.4	0.31	0.48	0.31	32.2
East: Monash															
4	L2	All MCs	45	0.0	45	0.0	0.122	3.4	LOS A	0.0	0.0	0.00	0.09	0.00	37.6
5	T1	All MCs	185	5.0	185	5.0	0.122	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	37.4
Approach			231	4.0	231	4.0	0.122	0.7	NA	0.0	0.0	0.00	0.09	0.00	37.5
West: Monash															
11	T1	All MCs	622	5.0	622	5.0	0.356	0.0	LOS A	0.1	1.0	0.06	0.06	0.06	39.1
12	R2	All MCs	38	0.0	38	0.0	0.356	6.0	LOS A	0.1	1.0	0.06	0.06	0.06	38.2
Approach			660	4.7	660	4.7	0.356	0.3	NA	0.1	1.0	0.06	0.06	0.06	39.0
All Vehicles			939	4.3	939	4.3	0.356	0.6	NA	0.1	1.0	0.06	0.09	0.06	38.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 105 [Smyth and Hardy AM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	622	3.0	622	3.0	0.333	0.0	LOS A	0.1	0.4	0.03	0.02	0.03	48.8
3	R2	All MCs	16	0.0	16	0.0	0.333	6.5	LOS A	0.1	0.4	0.03	0.02	0.03	40.8
Approach			638	2.9	638	2.9	0.333	0.2	NA	0.1	0.4	0.03	0.02	0.03	47.9
East: Hardy															
4	L2	All MCs	15	0.0	15	0.0	0.102	4.2	LOS A	0.1	0.9	0.56	0.71	0.56	32.9
6	R2	All MCs	43	0.0	43	0.0	0.102	9.4	LOS A	0.1	0.9	0.56	0.71	0.56	32.9
Approach			58	0.0	58	0.0	0.102	8.1	LOS A	0.1	0.9	0.56	0.71	0.56	32.9
North: Smyth															
7	L2	All MCs	22	0.0	22	0.0	0.136	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	47.1
8	T1	All MCs	240	3.0	240	3.0	0.136	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	47.6
Approach			262	2.7	262	2.7	0.136	0.4	NA	0.0	0.0	0.00	0.05	0.00	47.5
All Vehicles			958	2.7	958	2.7	0.333	0.7	NA	0.1	0.9	0.05	0.07	0.05	44.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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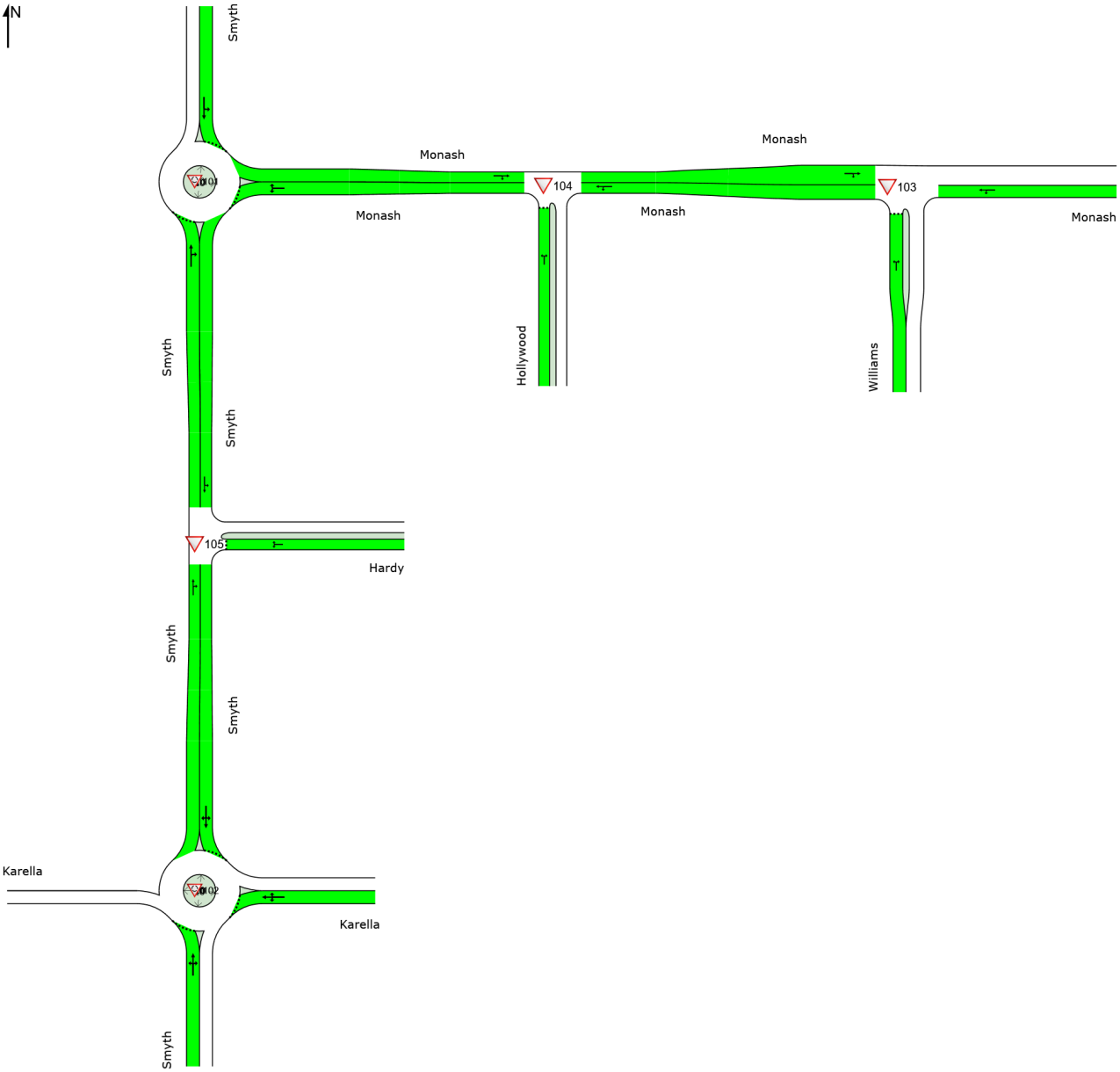
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio per lane

Network: N101 [PM Full Build (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Degree of Saturation

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

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Organisation: FLYT PTY LTD | Licence: NETWORK / 1PC | Processed: Thursday, 28 September 2023 11:53:10 AM
Project: C:\Users\Chris\Dropbox (Flyt Pty Ltd)\Flyt Pty Ltd Team Folder\Projects\81113-842 - Hesperia Nedlands TIA\3_Project Docs\Modelling \Computer Models\Nedlands Site.sip9

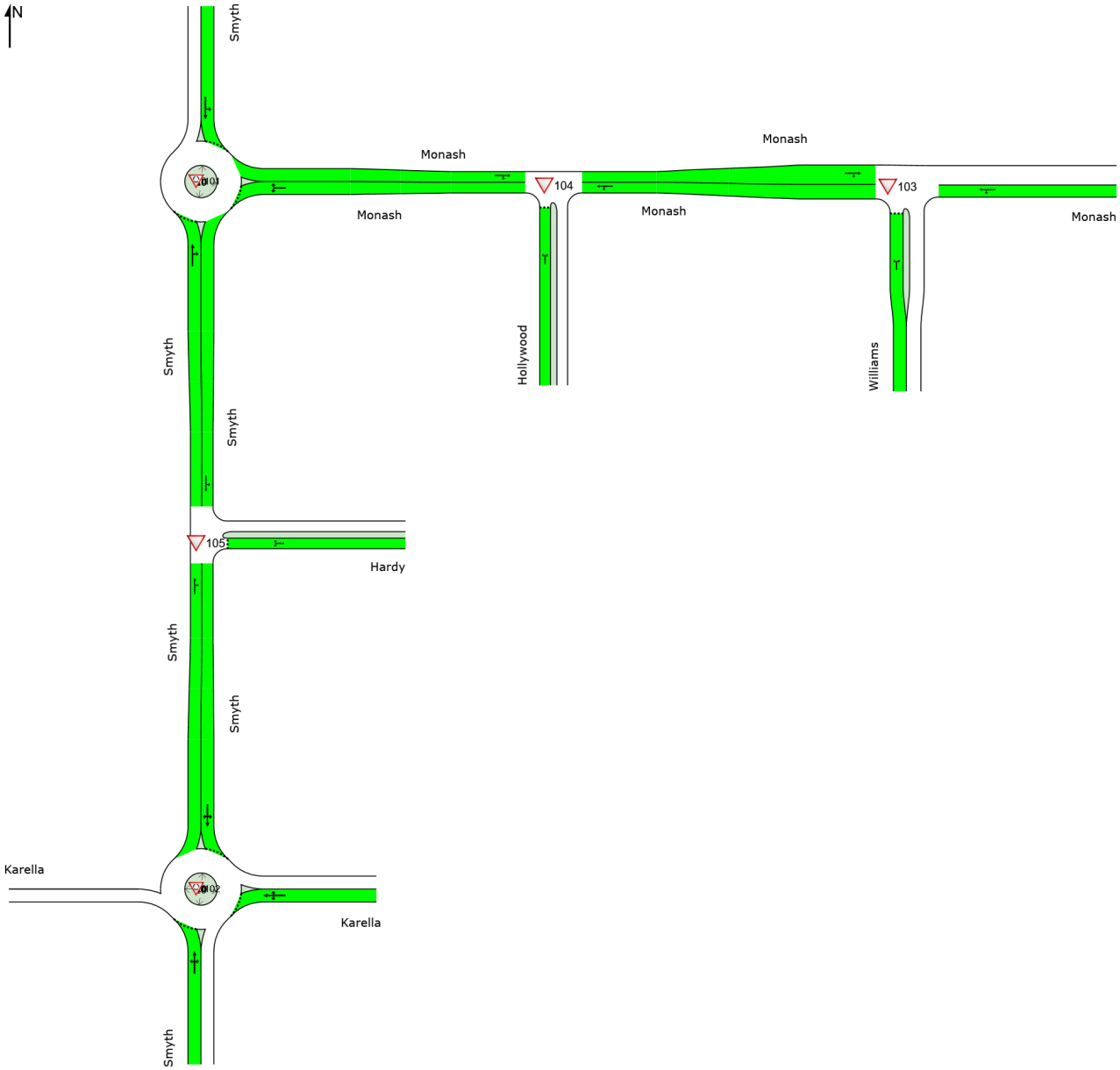
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [PM Full Build (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

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Organisation: FLYT PTY LTD | Licence: NETWORK / 1PC | Processed: Thursday, 28 September 2023 11:53:10 AM
Project: C:\Users\Chris\Dropbox (Flyt Pty Ltd)\Flyt Pty Ltd Team Folder\Projects\81113-842 - Hesperia Nedlands TIA\3_Project Docs\Modelling \Computer Models\Nedlands Site.sip9

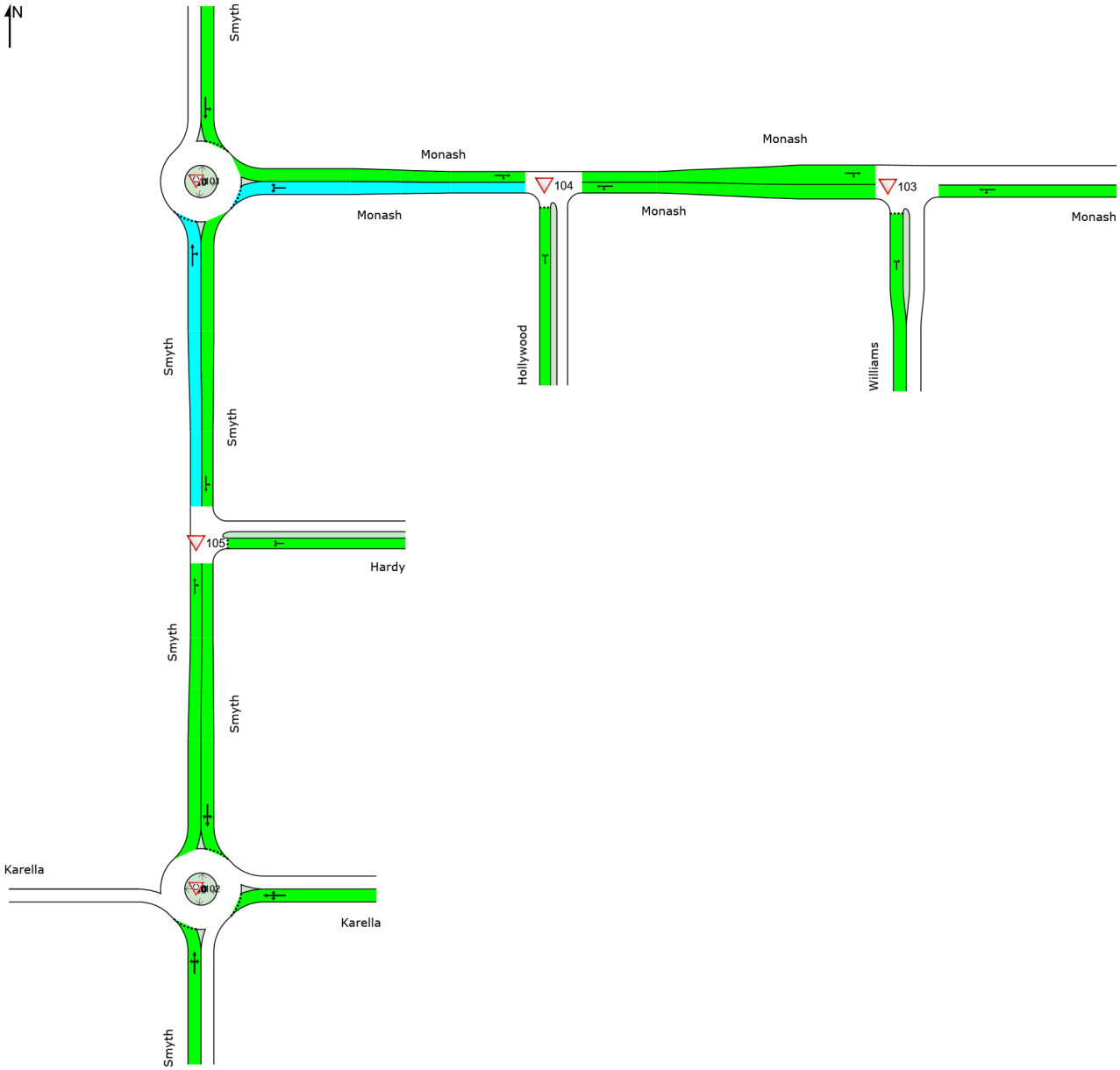
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [PM Full Build (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Proportion Queued

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 0.99] [1.0]

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Organisation: FLYT PTY LTD | Licence: NETWORK / 1PC | Processed: Thursday, 28 September 2023 11:53:10 AM
Project: C:\Users\Chris\Dropbox (Flyt Pty Ltd)\Flyt Pty Ltd Team Folder\Projects\81113-842 - Hesperia Nedlands TIA\3_Project Docs\Modelling \Computer Models\Nedlands Site.sip9

MOVEMENT SUMMARY

Site: 103 [Monash and Williams PM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Williams															
1	L2	All MCs	35	0.0	35	0.0	0.092	4.9	LOS A	0.1	0.9	0.49	0.65	0.49	25.5
3	R2	All MCs	40	0.0	40	0.0	0.092	6.8	LOS A	0.1	0.9	0.49	0.65	0.49	34.5
Approach			75	0.0	75	0.0	0.092	5.9	LOS A	0.1	0.9	0.49	0.65	0.49	32.5
East: Monash															
4	L2	All MCs	56	0.0	56	0.0	0.238	3.5	LOS A	0.0	0.0	0.00	0.06	0.00	38.6
5	T1	All MCs	411	2.0	411	2.0	0.238	0.1	LOS A	0.0	0.0	0.00	0.06	0.00	39.5
Approach			466	1.8	466	1.8	0.238	0.5	NA	0.0	0.0	0.00	0.06	0.00	39.3
West: Monash															
11	T1	All MCs	201	2.0	201	2.0	0.115	0.0	LOS A	0.1	0.6	0.13	0.14	0.13	39.2
12	R2	All MCs	21	0.0	21	0.0	0.115	8.4	LOS A	0.1	0.6	0.13	0.14	0.13	36.3
Approach			222	1.8	222	1.8	0.115	0.8	NA	0.1	0.6	0.13	0.14	0.13	39.1
All Vehicles			763	1.6	763	1.6	0.238	1.1	NA	0.1	0.9	0.09	0.14	0.09	38.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Smyth and Monash PM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	318	2.0	318	2.0	0.400	6.1	LOS A	1.1	8.0	0.65	0.60	0.65	38.1
3	R2	All MCs	53	2.0	53	2.0	0.400	9.3	LOS A	1.1	8.0	0.65	0.60	0.65	27.5
Approach			371	2.0	371	2.0	0.400	6.5	LOS A	1.1	8.0	0.65	0.60	0.65	37.3
East: Monash															
4	L2	All MCs	147	2.0	147	2.0	0.500	5.4	LOS A	1.4	10.2	0.67	0.65	0.67	29.3
6	R2	All MCs	334	2.0	334	2.0	0.500	8.3	LOS A	1.4	10.2	0.67	0.65	0.67	35.8
Approach			481	2.0	481	2.0	0.500	7.4	LOS A	1.4	10.2	0.67	0.65	0.67	34.5
North: Smyth															
7	L2	All MCs	140	2.0	140	2.0	0.346	3.9	LOS A	1.1	7.5	0.26	0.42	0.26	40.0
8	T1	All MCs	340	2.0	340	2.0	0.346	3.9	LOS A	1.1	7.5	0.26	0.42	0.26	40.0
Approach			480	2.0	480	2.0	0.346	3.9	LOS A	1.1	7.5	0.26	0.42	0.26	40.0
All Vehicles			1332	2.0	1332	2.0	0.500	5.9	LOS A	1.4	10.2	0.51	0.55	0.51	36.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Karella and Smyth PM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
1	L2	All MCs	2	0.0	2	0.0	0.289	4.1	LOS A	0.7	5.1	0.27	0.43	0.27	42.9
2	T1	All MCs	344	2.0	344	2.0	0.289	4.1	LOS A	0.7	5.1	0.27	0.43	0.27	40.9
3	R2	All MCs	33	0.0	33	0.0	0.289	7.3	LOS A	0.7	5.1	0.27	0.43	0.27	42.0
Approach			379	1.8	379	1.8	0.289	4.4	LOS A	0.7	5.1	0.27	0.43	0.27	41.0
East: Karella															
4	L2	All MCs	31	0.0	31	0.0	0.074	6.3	LOS A	0.2	1.1	0.56	0.65	0.56	40.3
5	T1	All MCs	9	0.0	9	0.0	0.074	6.3	LOS A	0.2	1.1	0.56	0.65	0.56	39.9
6	R2	All MCs	24	0.0	24	0.0	0.074	9.6	LOS A	0.2	1.1	0.56	0.65	0.56	34.3
Approach			64	0.0	64	0.0	0.074	7.5	LOS A	0.2	1.1	0.56	0.65	0.56	38.8
North: Smyth															
7	L2	All MCs	13	0.0	13	0.0	0.338	3.8	LOS A	0.9	6.6	0.17	0.42	0.17	40.0
8	T1	All MCs	440	2.0	440	2.0	0.338	3.8	LOS A	0.9	6.6	0.17	0.42	0.17	42.2
9	R2	All MCs	45	0.0	45	0.0	0.338	7.0	LOS A	0.9	6.6	0.17	0.42	0.17	40.3
Approach			498	1.8	498	1.8	0.338	4.1	LOS A	0.9	6.6	0.17	0.42	0.17	42.0
All Vehicles			941	1.7	941	1.7	0.338	4.4	LOS A	0.9	6.6	0.24	0.44	0.24	41.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 104 [Hollywood and Monash PM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Hollywood															
1	L2	All MCs	56	0.0	56	0.0	0.081	4.8	LOS A	0.1	0.8	0.44	0.60	0.44	31.4
3	R2	All MCs	23	0.0	23	0.0	0.081	6.4	LOS A	0.1	0.8	0.44	0.60	0.44	31.4
Approach			79	0.0	79	0.0	0.081	5.3	LOS A	0.1	0.8	0.44	0.60	0.44	31.4
East: Monash															
4	L2	All MCs	33	0.0	33	0.0	0.215	3.4	LOS A	0.0	0.0	0.00	0.04	0.00	38.1
5	T1	All MCs	378	3.0	378	3.0	0.215	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	38.9
Approach			411	2.8	411	2.8	0.215	0.3	NA	0.0	0.0	0.00	0.04	0.00	38.7
West: Monash															
11	T1	All MCs	179	3.0	179	3.0	0.104	0.0	LOS A	0.0	0.3	0.08	0.09	0.08	38.9
12	R2	All MCs	13	0.0	13	0.0	0.104	7.5	LOS A	0.0	0.3	0.08	0.09	0.08	38.1
Approach			192	2.8	192	2.8	0.104	0.5	NA	0.0	0.3	0.08	0.09	0.08	38.8
All Vehicles			681	2.5	681	2.5	0.215	0.9	NA	0.1	0.8	0.07	0.12	0.07	37.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 105 [Smyth and Hardy PM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	339	5.0	339	5.0	0.205	0.0	LOS A	0.1	0.9	0.11	0.13	0.11	45.8
3	R2	All MCs	29	0.0	29	0.0	0.205	10.4	LOS B	0.1	0.9	0.11	0.13	0.11	40.2
Approach			368	4.6	368	4.6	0.205	0.8	NA	0.1	0.9	0.11	0.13	0.11	44.2
East: Hardy															
4	L2	All MCs	11	0.0	11	0.0	0.072	5.1	LOS A	0.1	0.7	0.55	0.74	0.55	33.2
6	R2	All MCs	33	0.0	33	0.0	0.072	8.4	LOS A	0.1	0.7	0.55	0.74	0.55	33.2
Approach			43	0.0	43	0.0	0.072	7.6	LOS A	0.1	0.7	0.55	0.74	0.55	33.2
North: Smyth															
7	L2	All MCs	39	0.0	39	0.0	0.256	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	47.1
8	T1	All MCs	448	5.0	448	5.0	0.256	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	47.6
Approach			487	4.6	487	4.6	0.256	0.4	NA	0.0	0.0	0.00	0.04	0.00	47.5
All Vehicles			899	4.4	899	4.4	0.256	0.9	NA	0.1	0.9	0.07	0.11	0.07	43.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix 8: Pre-lodgement letterbox drop correspondence

NEDLANDS VILLAGE

NEDLANDS VILLAGE

Dear Neighbour,

Hesperia is pleased to share an update regarding our Nedlands Village site (bound by Monash Avenue, Karella Street and Smyth Road). Hesperia purchased the site earlier this year from Regis Healthcare, which continues to operate the aged care facilities on Monash Avenue.

Overview

We intend to transform the 6.86 ha landholding into a new vibrant and inclusive precinct that draws upon the best elements of the Nedlands neighbourhood and its strong sense of community.

The project will see the introduction of townhouses and low to medium-rise apartment offerings as well as a medical precinct along Monash Avenue which will include day surgeries and clinics. A centrally located community park with generous landscaping, playgrounds and plenty of open space is also being delivered along with strong pedestrian connections linking the precinct.

Precinct Structure Plan to be released for public comment

We are now working towards lodging a Precinct Structure Plan, which is the first step in the relevant planning and approvals process. This plan will set out how the land is intended to be used, proposed density, access arrangements, infrastructure and other elements in order to facilitate future subdivision and then development.

The public comment period for the Precinct Structure Plan will be managed by the City of Nedlands and it will provide the local community with an opportunity to review and offer feedback on our plans for the site.

Register for Updates and Provide your Feedback

We encourage you to keep up to date with our progress on Nedlands Village, view the masterplan and provide initial feedback by visiting nedlandsvillage.au

You will then have another opportunity to provide your formal feedback when the Precinct Structure Plan is advertised by the City of Nedlands later this year.

scan me :

Sincerely,

Hesperia & the Nedlands Village Team

Hesperia are specialists in creating and managing sustainable projects and systems that solve pressing environmental, social, and economic problems. There is no 'typical' Hesperia project, though each venture is ambitious in aspiration, intelligent in design, and value-adding in outcome. We use our resources — our business, investments, expertise, and imagination — to transform landscapes for the better, maximising positive impact for an enduring and meaningful legacy we can all be proud of.

For more information: hesperia.com.au

Architectural Design Review Assessment *City of Nedlands Design Review Panel*		
Design quality evaluation		**Date: 18/03/2024**
Application: 15 Karella Street, Nedlands (Nedlands Village PSP)		
Review No.: 2		**Time:** 2pm
Panel: • **Simon Anderson – Chair** • Simon Venturi – Deputy Chair • Dominic Snellgrove • Tony Blackwell **City of Nedlands Representatives:** • Nathan Blumenthal – A/Manager Urban Planning • Aviva Micevski – Coordinator Statutory Planning • Chantel Weerasekera – Senior Urban Planner (Statutory)		
Apply the applicable rating to each Design Element		*Supported*
		Further information required
		Not supported
		Yet to be addressed
Summary	Site Context The site has a combined area of 7.41ha. The lots are currently zoned 'Residential' with additional use rights in accordance with LPS 3 Clause Table 4 'A3'. The A3 provisions include Car park, Office, Medical centre, Place of worship, Residential aged care facility and Shop. In addition, the existing A3 includes built form provisions (max 6 storeys or 3 storeys for interface with residential uses) where no structure plan is in place. Application History The application is for a Precinct Structure Plan (PSP) that has been prepared by CLE on behalf of Hesperia. Precinct Structure Plans are guiding documents on how an area could be developed in the future. It outlines land use, density, and development (including built form), access arrangements, infrastructure, environmental assets and community facilities at a precinct scale to facilitate future subdivision and development. Assessment will be done in accordance with SPP 7.2 Precinct Design Guidelines. This is the second time the proposal has been reviewed by the DRP.	
Strengths of the proposal	• The site permeability and connectivity within the surrounding precinct has been improved by the inclusion of the new north south pedestrian right of way. The three vehicle access points are supported and provide an adequate level of access to the site. • The hardscaped BBQ area in the central community park is better located giving the surrounding properties some breathing space.	
Design Element 1 – **Urban Ecology**	*This Element considers the interrelationship of the built, cultural and natural components of the urban environment. It is a holistic consideration that aims to create healthy relationships between people, the built environment and ecological systems.*	
	1a. Comments	

		• The built environment within the PSP should be reflective of the wider character of Nedlands, this includes larger street setbacks allowing for increased landscaping. • Overhead powerlines on Williams Road may limit the street trees which are able to be planted. Hence alternative measures should be factored into the PSP to provide for a well-treed streetscape outcome through provisions made within the adjoining properties. <u>1b. Suggested amendments/improvements</u> • Include design guidelines as part of the PSP package as this will provide further understanding of the entire PSP and the relationships that the built form and landscape will have with the public and private realm. • See other comments below.
Design Element 2 – **Urban Structure**		*This Element considers the physical framework of a precinct – the pattern and scale of street blocks, lots and public spaces, and the organisation and scale of streets, roads and paths.*
		<u>2a. Comments</u> • Important that streetscape activation is locked in via the PSP stage. <u>2b. Suggested amendments/improvements</u> • Commit to all parking being sleeved by active uses to provide high quality streetscape activation whilst minimising dead spaces and streetscapes dominated by parking within the PSP. • The southern interface (Hardy Road) of the North-East RAC-1 lot is to be designated as a primary interface to ensure that the streetscape is activated and provides good quality street engagement.
Design Element 3 – **Public Realm**		*This Element considers all public spaces including streets, plazas, civic squares and other areas used by and accessible to the community.*
		<u>3a. Comments</u> • Shortfall of POS will be met financially via cash in lieu, discussion with the City. <u>3b. Suggested amendments/improvements</u> • The 'central park' should be constructed as early as possible and prior to the surrounding properties being occupied to ensure that residents have access to public open space from day 1 and are not negatively impacted by adjoining construction.
Design Element 4 – **Movement**		*This Element considers the network and services that facilitate movement and access of people and goods within, to and from precincts; including roads, streets, paths, public transport and parking.*
		<u>4a. Comments</u> • Strongly support the addition of the pedestrian right of way between the public open space and Karella Street. The Panel strongly endorses its place within the final PSP. <u>4b. Suggested amendments/improvements</u> • An additional pedestrian linkage between Eventide Way and Langham Street should be provided by way of an easement or pedestrian accessway (PAW). This linkage should be additional and not at the expense of other PAWs. Including this linkage will move this design element from orange to green.

Design Element 5 – **Land Use**		*This Element considers the economic, social and civic functions of the precinct and how they relate to its immediate context and surrounding areas.*
		5a. Comments • Nil. 5b. Suggested amendments/improvements • Nil.
Design Element 6 – **Built Form**		*This Element considers built form and scale and the relationships between buildings, and between buildings and the public realm.*
		6a. Comments • There remains no justification of the proposed building heights, plot rations or R-code densities within the PSP, or how the yield was determined. • Six storeys on the south side of the south-west site is not an appropriate taper or interface to the adjoining R20 single residential properties. It will also likely cause excessive over-shadowing of the POS after noon. • The eastern portion of the south-west is currently nine levels which interfaces with single residential lots to the east which is not appropriate. 6b. Suggested amendments/improvements • The south-west lot is not acceptable in its current form. The lot should have additional design guidance as below: o There should be further lot boundary setbacks to the southern and eastern boundaries above the third storey of the built form. o The built form should be 3 storeys to Karella Street with further height being positioned towards Hardy Road. • The eastern side of the south-west lot closer to Hardy currently designated as nine levels should have an upper-level setback to better transition to the adjacent single residential properties and ensure that there is no over-shadowing of the POS mid-afternoon at the equinoxes. • Provide justification as to why the building heights are as proposed. This justification should follow strategic documents at both a local and state level. Reference should be made to SPP 7.2. section 2.8 page 31. • Design Guidelines should be included as part of the PSP package to ensure that the built form outcomes are appropriate to both the PSP but also the wider built environment. • The PSP should not include additional height or plot ratios beyond the specified R-Code. Any height variations should be addressed as part of Development Application process.
SUMMARY		• Comments made in Design Review 1 remain relevant and should be considered further. • The PSP could work well, if appropriately amended as outlined here, in providing new housing and commercial offerings to the community which is respectful of the local context and helps reinforce the Nedlands 'sense of place'. • Design guidelines, including indicative architectural solutions to the more constrained single residential lots, should be prepared as soon as possible and included within the PSP. These controls will provide the

	Panel with further understanding of the potential future built form outcome.
OVERALL RECOMMENDATION	Not Supported

Design Review progress	
	Supported
	Further information required
	Not yet supported
	Yet to be addressed

	DR1	*DR2*	*DR3*
Design Element 1- Urban Ecology			
Design Element 2- Urban Structure			
Design Element 3- Public Realm			
Design Element 4- Movement			
Design Element 5- Land Use			
Design Element 6- Built form			

Architectural Design Review Assessment *City of Nedlands Design Review Panel*	
Design quality evaluation	**Date:** 5 February 2024
Application: Nedlands Village Precinct Structure Plan	
Review No.: 1	**Time:** 2:00pm

Panel:

- **Simon Anderson – Chair**
- Simon Venturi – Deputy Chair
- Dominic Snellgrove
- Tony Blackwell

City of Nedlands Representatives:

- Roy Winslow – A/ Director Planning and Development
- Nathan Blumenthal – A/ Manager Urban Planning
- Chantel Weerasekera – Senior Urban Planner (Statutory)

Apply the applicable rating to each Design Principle		*Supported*
		Further information required
		Not supported
		Yet to be addressed

Summary	Site Context The site has a combined area of 7.41ha. The lots are currently zoned 'Residential' with additional use rights in accordance with LPS 3 Clause Table 4 'A3'. The A3 provisions include Car park, Office, Medical centre, Place of worship, Residential aged care facility and Shop. In addition, the existing A3 includes built form provisions (max 6 storeys or 3 storeys for interface with residential uses) where no structure plan is in place. Application History The application is for a Precinct Structure Plan (PSP) that has been prepared by CLE on behalf of Hesperia. Precinct Structure Plans are guiding documents on how an area could be developed in the future. It outlines land use, density, and development (including built form), access arrangements, infrastructure, environmental assets and community facilities at a precinct scale to facilitate future subdivision and development. The PSP is currently out for public consultation. Assessment will be done in accordance with SPP 7.2 Precinct Design Guidelines.
Strengths of the proposal	• Experienced, diverse and capable team including a landscape and ESD professional. • Suitable site ripe for re-development and renewal. • The emergence of site permeability and connectivity with the extension of Portland Street and Hardy Road into and through the site. • Important north-south pedestrian linkages beginning to emerge as important, legible, through-site links. • The mediation and mitigation of height and scale at Karella Street and William Road has the capacity to successfully manage the impression of built form at the interface with single lot residential streetscape. • A commitment to 5 Star Green Star Certification.

Principle 1 – **Urban Ecology**		*This Element considers the interrelationship of the built, cultural and natural components of the urban environment. It is a holistic consideration that aims to create healthy relationships between people, the built environment and ecological systems.*
		1a. Comments • Inconsistencies between the stated design principles and the delivery, eg in terms of meaningfully adapting the positive attributes of "Nedlands Character" and, at a more detail level, the routes indicated on various plans with regard to achieving pedestrian paths / good permeability. • The pedestrian easement between Monash Avenue and Hardy Road isn't clearly identified on all of the detailed plans in the PSP. • Appears to be inconsistency between the plans in relation to number of street trees proposed. • Heavy planting within the streets is good. However, some verges are completely planted out hindering pedestrian access, both across and along the streets on the affected sides. • Furthermore, there is a lack of more detailed information as to whether the number of trees on Eventide Way can be achieved given that these are rear access lots requiring crossovers and driveways to each lot. • Level of tree retention is unclear, and at best appears to be rather limited. • Limited information provided for landscaping within the sites and that which has been shown, appears to be somewhat contradictory. • No consideration has been given as to how the trees could be accommodated within laneways to improve amenity, eg small garden areas to the rear of the properties adjoining these laneways. Note: this is a common and distinguishing positive feature of Nedlands laneways. • It is not clear in the document as to which of the various plans is the final Landscape Master Plan (or Structure Plan). At the presentation, this was identified as "Slide 18" which is rendered in muted colours and textures. Note: this plan shows significantly fewer street trees than any of the other plans. Also, the median treatment in Hardy Road is not as shown in the landscape details. Plus significant areas of what appear to be landscape spaces are shown within the large private lots (on Smyth Road), yet there is no commitment or mechanism as to how much or where this might be allocated. As such this document could be construed as misleading. • Further to the above concerns, additional information is required with regard to the stormwater swales and whether these are expected to be sufficient to manage all the stormwater on this road, especially given the longitudinal cross fall and the complications this adds to the equation. 1b. Suggested amendments/improvements • Review inconsistencies referred to above. • Improve pedestrian / bicycle / micro-mobility permeability. • Consider adding more 'committed' landscape to the sites, not just trees on the verges. Consider setting a canopy coverage requirement for both public and private realms.

		• Ground truth, ie provide more detailed diagrams indicating how various issues can be resolved, such as: conflicts between trees in the verge and crossovers/driveways; and passive surveillance in the laneways. • Consider further commitment to retention of existing trees and improvement of the black cockatoo habitat. • Consider the provision of social/affordable housing.
Principle 2 – **Urban Structure**		*This Element considers the physical framework of a precinct – the pattern and scale of street blocks, lots and public spaces, and the organisation and scale of streets, roads and paths.*
		2a. Comments • The South-West block is large and the buildings are high in this context. Anything above 3 storeys on this interface is considered to present an uncomfortable relationship with the existing and future foreseeable two-storey maximum height, R20 single residential dwellings on Karella Street. • Similarly, there has been no consideration of any mechanisms for achieving passive surveillance within these laneways, eg nominating granny flats, or studios with appropriately located fenestration above garages at each end, or as otherwise required. • Furthermore, the terminology relating to sleeving and/or hiding car parking in the text is weak (p8). • The narrow east-west block might pose a challenge for achieving optimum passive solar design. 2b. Suggested amendments/improvements • Consider dividing the large south western block into smaller sections, or provide additional guidelines as to how this would be developed, including building envelopes (tied into overshadowing considerations), setbacks, access, circulation, internal landscape requirements and car parking. • Ground truth, ie provide more detailed diagrams, indicating how various detailed issues can be resolved, such as: passive solar design outcomes – particularly on all of the long, narrow, east-west lots. • Subject to the results of the above bullet point, review the street pattern and lot configurations for the east-west lots in particular. • Clearly indicate the green link connecting Karella Street with Monash Avenue on all plans. • Strengthen the terminology relating to sleeving and/or hiding car parking. • Consider roads which terminate at the central POS to create a vista. • Consider another green link connecting Eventide Way with Karella Street.
Principle 3 – **Public Realm**		*This Element considers all public spaces including streets, plazas, civic squares and other areas used by and accessible to the community*
		3a. Comments • The central location of the POS is good as a focal point. • The amount of POS has the capacity to be perceived as ungenerous. There is a contradiction in the portions of the Mixed Use zone being excluded from POS calculations, despite potential ability to be developed as residential.

		3b. Suggested amendments/improvements • Acknowledging the fact that no additional POS area is likely to be able to be found after the adoption of the Structure Plan, eg at subdivision stage - take a more philosophical response to the provision of POS to respond better to the Nedlands context, character and community. The Panel suggests that a worst-case scenario should be used for this purpose, eg maximum percentage of residential land use as opposed to commercial. • Further explore the provision of curated spaces within the POS to cater from a wide variety of uses and demographics. • The provision of community spaces, ie the whole POS should form part of Stage 1.
Principle 4 - **Movement**		*This Element considers the network and services that facilitate movement and access of people and goods within, to and from precincts; including roads, streets, paths, public transport and parking.*
		4a. Comments • The east-west Hardy Road extension is supported. However, the detailing, particularly of the median, is inconsistent. • The current proposed site permeability does not immediately reflect the broader Nedlands context, or good walkable neighbourhood / urban design principles. • The scale and configuration of the larger street blocks are not particularly walkable. 4b. Suggested amendments/improvements • Consider more coherent and enhanced site permeability, linked, and responding to the existing pattern of streets and laneways. • Further explore north-south Green Corridors to supplement vehicular links and enhance permeability. This may include a response to Langham Street which extrapolates a mix of green corridor and street/laneway from Karella Street through to Monash Avenue. • Western side of the site is particularly lacking connection to the rest of Nedlands to the south.
Principle 5 - **Land Use**		*This Element considers the economic, social and civic functions of the precinct and how they relate to its immediate context and surrounding areas.*
		5a. Comments • Generally no concerns with proposed land uses. • No indication of housing mix provided. 5b. Suggested amendments/improvements • Explore and illustrate commercial tenancy opportunities at ground level and how nodes of activity will develop the hierarchy of spaces and places further. • Consider introducing housing mix controls.
Principle 6 – **Built Form**		*This Element considers built form and scale and the relationships between buildings, and between buildings and the public realm.*
		6a. Comments

		• The presented three dimensional studies are inconsistent with the presented PSP. • The buildings at the interface with existing residential development in the south-west corner are too high. • Design guidelines and further detail are needed, especially for the smaller residential lots and particularly regarding achieving: deep soil areas; canopy coverage; passive surveillance and amenity in the laneways; good passive solar design outcomes. • Rear laneway access to townhouses is supported, subject to the above. • Do not support the removal of plot ratio controls. • No justification for variations to height and plot ratio controls in terms of community benefit as outlined in SPP 7.2. section 2.8 page 31. • Five storey podiums are inappropriate for any locations adjoining existing lower-density residential development. Typically, two-three storeys would be more in keeping for this scenario. • The current maximum building height on Monash Avenue appears to be four storeys and typically all buildings are set back some distance from the road property boundary. The Applicant needs to provide further justification as to why it would be reasonable to go beyond this height limit for the podium. The built form diagrams also need to be more specific as to the setbacks proposed for any towers sitting above the podium. • Overshadowing implications from the mixed-use R-AC1 sites needs to be demonstrated and proven not to detrimentally impact upon any of the lower height residential development and POS to the south. The implications for Hardy Road should also be considered. • There are inconsistencies between various plans and diagrams as to the maximum heights allowable. This needs to be clear in the final document. • Further clarity is required with regard to setbacks throughout the PSP area. The built Form Controls diagram/page, (slide 17) is ambiguous in this regard – referring to “PSP controls”. • In addition to the above, reference to 2 meter setbacks for primary frontages is not in character with the historic ‘Nedlands built form’. • The same is also likely to apply regarding the 2 meter setbacks for secondary frontages on larger lots. <u>6b. Suggested amendments/improvements</u> • Consider tapering down the 8/9 storey (depending on which drawing you are looking at) building where interfacing with the townhouses in order to respond to the existing low-density outside the remit of the structure plan. • Provide detailed cross sections through varying street edge conditions illustrating the high-quality public domain outcomes that can be delivered in the realisation of built form and ensure that these are consistent from one document to another. • Consider overshadowing implications related to the higher buildings being located to the north of the site. • Consider the preparation of a series of templates to show how the built form on typical lots, particularly the east-west blocks, will work. All lots

		adjoining the central POS also need special consideration and hence templates to demonstrate how they would work. • Develop detailed case for any proposed variations to primary height, plot ratio and setback controls through specific reference to SPP 7.2. Without a strong case the proposal should reinstate the primary controls of the proposed zonings.
SUMMARY		The proposal is a good start for a site ripe for re-development and renewal. Further detail is required particularly in relation to landscaping, urban permeability and built form outcomes. The proposed heights will be contingent on the streetscape and POS contributions, plus any impact on amenity. Whilst it is very useful for the Panel to have access to the background research which has informed the PSP, it is also important that the applicant provide a draft of the stand-alone PSP document, ie as proposed to become part of the TPS/planning framework, so that this document can be assessed independently. Please note the DRP did not consider the following issues as they are believed to be planning rather than design issues: • How the proposed densities in terms of number of dwellings fit into the City's housing target. • Whether the location is appropriate for the high density elements of the proposal in terms of distances from shops and access to high frequency public transport.
OVERALL RECOMMENDATION		Not yet supported

Design Review progress	
	Supported
	Further information required
	Not yet supported
	Yet to be addressed

	DR1	*DR2*	*DR3*
Principle 1 – **Urban Ecology**			
Principle 2 – **Urban Structure**			
Principle 3 – **Public Realm**			
Principle 4 – **Movement**			
Principle 5 – **Land Use**			
Principle 6 – **Built Form**			

Architectural Design Review Assessment City of Nedlands Design Review Panel		
Design Quality Evaluation	**Date: 18/03/2024**	
Application: 15 Karella Street, Nedlands (Nedlands Village PSP)		
Review No.: 2	**Time: 2pm**	
Panel: • **Simon Anderson – Chair** • Simon Venturi – Deputy Chair • Dominic Snellgrove • Tony Blackwell **City of Nedlands Representatives:** • Nathan Blumenthal – A/Manager Urban Planning • Aviva Micevski – Coordinator Statutory Planning • Chantel Weerasekera – Senior Urban Planner (Statutory)		
Apply the applicable rating to each Design Element	*Supported*	
	Further Information Required	
	Not Supported	
	Yet to be Addressed	
Design Element	**DRP 2 Comments**	**Proponent Responses**
Summary	<u>Site Context</u> The site has a combined area of 7.41ha. The lots are currently zoned 'Residential' with additional use rights in accordance with LPS 3 Clause Table 4 'A3'. The A3 provisions include Car park, Office, Medical centre, Place of worship, Residential aged care facility and Shop. In addition, the existing A3 includes built form provisions (max 6 storeys or 3 storeys for interface with residential uses) where no structure plan is in place. <u>Application History</u> The application is for a Precinct Structure Plan (PSP) that has been prepared by CLE on behalf of Hesperia. Precinct Structure Plans are guiding documents on	

	how an area could be developed in the future. It outlines land use, density, and development (including built form), access arrangements, infrastructure, environmental assets and community facilities at a precinct scale to facilitate future subdivision and development. Assessment will be done in accordance with SPP 7.2 Precinct Design Guidelines. This is the second time the proposal has been reviewed by the DRP.	
Strengths of the Proposal	• The site permeability and connectivity within the surrounding precinct has been improved by the inclusion of the new north south pedestrian right of way. The three vehicle access points are supported and provide an adequate level of access to the site. • The hardscaped BBQ area in the central community park is better located giving the surrounding properties some breathing space.	Noted.
Design Element 1 – **Urban Ecology**	*This Element considers the interrelationship of the built, cultural and natural components of the urban environment. It is a holistic consideration that aims to create healthy relationships between people, the built environment and ecological systems.*	
	1a. Comments • The built environment within the PSP should be reflective of the wider character of Nedlands, this includes larger street setbacks allowing for increased landscaping. • Overhead powerlines on Williams Road may limit the street trees which are able to be planted. Hence alternative measures should be factored into the PSP to provide for a well-treed streetscape outcome through provisions made within the adjoining properties. 1b. Suggested amendments/improvements • Include design guidelines as part of the PSP package as this will provide further understanding of the entire PSP and the relationships that the built form and landscape will have with the public and private realm. • See other comments below.	The project team considers that the PSP is reflective of the wider character of Nedlands in the sense that landscaping is being prioritised throughout the precinct and existing, familiar thoroughfares are being extended, with care taken not to encourage rat-running by non-local traffic. The nature of the development (apartment sites and townhouses, as encouraged by the City's Local Planning Strategy and State policies) means that the precinct will not be a facsimile of some other parts of Nedlands, most of which date back over a century and were laid out in a different era. A more relevant precedent for the townhouse components of the PSP is the Hollywood High School redevelopment precinct, whilst the provision of apartments is an important and site-appropriate component of the housing supply strategy in terms of volumes and mix that will, with thoughtful design at the development stage, be appropriate to the area. Landscaping, including street trees, have been a key priority for this PSP as evidenced by the Landscape Master Plan submitted

			with the document at Appendix 5 and referenced in Part 2 of the PSP report at Figures 13 and 14. The verges around the site are subject to the CoN and Western Power planned underground power scheme. We have been advised that this will commence around Q1 2026 in this area, and this will create further opportunities for landscaping and tree plantings additional to those already identified and committed. The Design Guidelines for this precinct go well beyond the level of detail required at the structure planning stage of the planning process, but we acknowledge that their content is of interest to the City and in terms of timing, we are now in a position to share a draft. Incorporation of the Design Guidelines into the PSP as an appendix to Part 1 would be acceptable to the project team provided this provides a valid statutory head of power and does not delay the PSP.
Design Element 2 – **Urban Structure**		*This Element considers the physical framework of a precinct – the pattern and scale of street blocks, lots and public spaces, and the organisation and scale of streets, roads and paths.*	
		2a. Comments • Important that streetscape activation is locked in via the PSP stage. 2b. Suggested amendments/improvements • Commit to all parking being sleeved by active uses to provide high quality streetscape activation whilst minimising dead spaces and streetscapes dominated by parking within the PSP. • The southern interface (Hardy Road) of the North-East RAC-1 lot is to be designated as a primary interface to ensure that the streetscape is activated and provides good quality street engagement.	Streetscape activation and parking presentation at the development stage is addressed by the provisions of the PSP (Part 1, particularly sections 4.2.2(b) and (c) and 4.2.4(a) and (b) and the Apartment Code, as relevant. Activation and street engagement are both required under the 'Secondary' interface provisions applied to this frontage via Plan B and Part 1, section 4.2.4(c). The 'Primary' frontage is intended for mixed-use sites where commercial ground-floor tenancies are proposed, which is not the case for the frontage in question because it faces away from the busier Monash Avenue and Williams Road streetscapes and toward residential areas.
Design Element 3 – **Public Realm**		*This Element considers all public spaces including streets, plazas, civic squares and other areas used by and accessible to the community.*	
		3a. Comments	The POS will be finished approx. 18months prior to the first home being complete and person moving into the development.

		• Shortfall of POS will be met financially via cash in lieu, discussion with the City. 3b. Suggested amendments/improvements • The 'central park' should be constructed as early as possible and prior to the surrounding properties being occupied to ensure that residents have access to public open space from day 1 and are not negatively impacted by adjoining construction.	
Design Element 4 - **Movement**		*This Element considers the network and services that facilitate movement and access of people and goods within, to and from precincts; including roads, streets, paths, public transport and parking.*	
		4a. Comments • Strongly support the addition of the pedestrian right of way between the public open space and Karella Street. The Panel strongly endorses its place within the final PSP. 4b. Suggested amendments/improvements • An additional pedestrian linkage between Eventide Way and Langham Street should be provided by way of an easement or pedestrian accessway (PAW). This linkage should be additional and not at the expense of other PAWs. Including this linkage will move this design element from orange to green.	The Panel's support for the new PAW is noted. The project team does not consider that an additional pedestrian linkage is necessary between Eventide Way and Langham Street in terms of public access, as the new PAW mentioned above will be sufficient. The proposed route linking into Eventide Way is also not legible, as it doesn't lead to a destination (e.g. POS, bus stops, primary school), rather, it leads into a mews that is intended for private accesses to the adjacent residential sites. The notion of the apartment site to the west being separated from the townhouses to the east is supported by the project team in principle, but we don't consider that a pedestrian link (either a public PAW or an easement) is necessary to achieve it, as the relevant sites will be subject to the provisions of the Residential Design Codes and the Apartment Code at the development stage and these impose setback and building interface requirements.
Design Element 5 – **Land Use**		*This Element considers the economic, social and civic functions of the precinct and how they relate to its immediate context and surrounding areas.*	
		5a. Comments • Nil. 5b. Suggested amendments/improvements Nil.	Noted.

Design Element 6 – **Built Form**		*This Element considers built form and scale and the relationships between buildings, and between buildings and the public realm.*	
		6a. Comments • There remains no justification of the proposed building heights, plot rations or R-code densities within the PSP, or how the yield was determined. • Six storeys on the south side of the south-west site is not an appropriate taper or interface to the adjoining R20 single residential properties. It will also likely cause excessive over-shadowing of the POS after noon. • The eastern portion of the south-west is currently nine levels which interfaces with single residential lots to the east which is not appropriate. 6b. Suggested amendments/improvements • The south-west lot is not acceptable in its current form. The lot should have additional design guidance as below: o There should be further lot boundary setbacks to the southern and eastern boundaries above the third storey of the built form. o The built form should be 3 storeys to Karella Street with further height being positioned towards Hardy Road. • The eastern side of the south-west lot closer to Hardy currently designated as nine levels should have an upper-level setback to better transition to the adjacent single residential properties and ensure that there is no over-shadowing of the POS mid-afternoon at the equinoxes. • Provide justification as to why the building heights are as proposed. This justification should follow strategic documents at both a local and state level. Reference should be made to SPP 7.2. section 2.8 page 31. • Design Guidelines should be included as part of the PSP package to ensure that the built form outcomes are appropriate to both the PSP but also the wider built environment.	Hesperia has responded to the State's and City's density targets for the site, expressed in documents such as the Central Sub-regional Planning Framework and the City's Local Planning Strategy. The neighbouring properties have been considered, hence the lower density 2-3 storey townhouses being positioned along the interfaces with existing low density residential neighbourhoods and more generous height and built form allowances toward the north and west. The project team provided extensive justification for the building heights proposed in the PSP in the lodged PSP and in our responses to the DR1 minutes. As discussed at DR2, plot ratio controls are now proposed to be as per the Apartment Code for the relevant density code (pursuant to a modification agreed by the proponent) subject to two variations. As discussed at DR2, Section 2.8 of the Precinct Design Guide addresses height bonuses offered in planning frameworks that are linked to a particular community benefit. The height provisions in this PSP are not bonuses; they are variations to the Residential Design Codes (including the Apartment Code), akin to setback variations or any other variations, to be assessed at the PSP stage on merit rather than implemented in an ad hoc manner at the DA stage, the latter being a less transparent and less certain pathway for all stakeholders. The Design Guidelines for this precinct go well beyond the level of detail required at the structure planning stage of the planning process, but we acknowledge that their content is of interest to the City and in terms of timing, we are now in a position to share a draft. Incorporation of the Design Guidelines into the PSP as an appendix to Part 1 would be acceptable to the project team provided this provides a valid statutory head of power and does not delay the PSP.

	• The PSP should not include additional height or plot ratios beyond the specified R-Code. Any height variations should be addressed as part of Development Application process.	Inclusion of targeted, scenario-tested variations to building heights in the PSP is beneficial because it provides the community and prospective land purchasers with certainty. Relying on departures from the PSP at the development stage to secure (for example) additional height is statutorily possible but not as transparent as the up-front approach we have proposed.
Summary	• Comments made in Design Review 1 remain relevant and should be considered further. • The PSP could work well, if appropriately amended as outlined here, in providing new housing and commercial offerings to the community which is respectful of the local context and helps reinforce the Nedlands 'sense of place'. • Design guidelines, including indicative architectural solutions to the more constrained single residential lots, should be prepared as soon as possible and included within the PSP. These controls will provide the Panel with further understanding of the potential future built form outcome.	Noted; refer to comments above.
OVERALL RECOMMENDATION	Not Supported	

Design Review progress	
	Supported
	Further information required
	Not yet supported
	Yet to be addressed

	DR1	*DR2*	*DR3*
Design Element 1- Urban Ecology			
Design Element 2- Urban Structure			
Design Element 3- Public Realm			
Design Element 4- Movement			
Design Element 5- Land Use			
Design Element 6- Built form			

Nedlands Reserve Precinct Structure Plan – Draft Schedule of Submissions, March 2024

Key Themes	Number of Submissions	Applicant Response
Overall comments		We acknowledge and appreciate the extensive public interest in this project, as evidenced by the number of responses received, the attendance at the two community engagement sessions in February and traffic and input from the public via Hesperia's project website. We note that of the 102 submissions, approximately 62 (61%) were fully supportive of the PSP in its current form, which is a strong and positive outcome.
Concerns with increase in traffic – inability for existing road network to accommodate more traffic.	22	State Planning Policy No. 7.2: Precinct Design, being the guiding document for the preparation of Precinct Structure Plans in Western Australia, requires Precinct Structure Plans to be accompanied by a Transport Impact Assessment ('TIA') prepared in accordance with the Transport Impact Assessment Guidelines (WAPC, 2016), by a qualified consultant. This PSP is accompanied by a TIA prepared by Flyt, and this was published as Appendix 7 of the PSP. The project team is aware that Monash Avenue provides access to major attractors including Hollywood Primary School, child-care centres, Hollywood Hospital and the broader QEII Medical Centre (refer to PSP report, Part 2, sections 2.1.1-2.1.3 and 5.4). We also understand that the same applies to Smyth Road, which is a key link between Aberdare Road and Stirling Highway, and that anecdotally: • Intersection priorities in Portland Street and Langham Street to the south, both of which lead to Stirling Highway, are not always respected by motorists; and • Hardy Road is sometimes used by motorists as a rat-run to avoid Monash Avenue (see below for more on this topic). It is therefore clear to the project team that there are pre-existing considerations relevant to the local road network that the City of Nedlands is managing. The TIA has been prepared in this context and concludes that: • *"An assessment of the network and the traffic generated by the development was undertaken using SIDRA. This assessment looked at base year conditions (2023), an opening year scenario (three years) and a full build scenario (nominally ten years but timing would be dependent on development outcomes). All three scenarios, for both AM and PM peak hours, showed that the*

		existing and future networks operate well within accepted traffic engineering parameters for model outputs." • *"Forecast year scenarios were tested using a 10% uplift on background traffic [3 years] and a 50% uplift on background traffic [10 years], as well as a doubling of traffic generated by the proposed development. None of these scenarios indicated that the network would result in conditions that would be considered to have failed. This assessment shows that the network is capable of catering for traffic volumes generated by the development within peak hours and no specific alteration to network capacity or intersections are proposed."* The above is derived from 'Level of Service' testing undertaken within the SIDRA modelling environment and indicates that there is capacity within the existing road network to accommodate the type of development proposed in the PSP. This is representative of industry standards and it does not mean that there are not legitimate community concerns about traffic in particular places at particular times of day, which is something the City of Nedlands is managing. That said, we note that recorded traffic volumes along Smyth Road actually decreased over the past 10 years according to traffic count data published by Main Roads (north of Monash, average volumes of 11,860 per day were recorded in 2011 and 10,866 in 2021). The project team is aware that the City of Nedlands is regularly contacted about such issues and takes steps to respond. Going forward, any developer/s active within the PSP area may become involved in discussions with the City about traffic management to the extent this is attributable to their project/s.
Concerns with proposed new road network and rat run traffic	18	The design approach for the PSP aims to integrate the precinct into the existing neighbourhood, and not create an enclave. The extension of existing streets into the precinct, either as streets or pedestrian links, is an important element of this strategy (refer to PSP report, Part 2, sections 2.1.3 and 5.2). The prevailing grid pattern evident in the existing suburbs creates excellent permeability and legibility (wayfinding without signage) but requires careful road design treatments. The project team is aware that Monash Avenue provides access to major attractors including Hollywood Primary School, child-care centres, Hollywood Hospital and the broader QEII Medical Centre (refer to PSP report, Part 2, sections 2.1.1-2.1.3 and 5.4). Motorists will sometimes seek alternative, quieter bypass route. In this case, the proposed Hardy Road extension could be seen as such a route and measures, including those listed below, will be taken to address this.

		Although the PSP stage of the planning process doesn't lock in specific road design outcomes, it can set objectives and the approach to discouraging rat-running includes the following: • Provision of an 18m wide road reserve in lieu of the 20m reserve in place further east along Hardy, which creates a visibly tighter road cross-section. • Provision of a median separating each of the two traffic lanes, avoiding the presentation of a wide, open street. • Prioritisation of tree and landscape planting along both verges and the median, and provision of embayed parking, which create a subtle sense of constraint and encourages lower vehicle speeds. • Tight truncations, which encourage low vehicle speeds at intersections. • Provision of a kinked section of carriageway adjacent to the central POS, which disrupts the viewline from either end of Hardy Road for motorists and reduces the attractiveness of the route. This measure was not shown in the lodged PSP but has emerged during the course of the design development process that has occurred since lodgement and will be incorporated from now on. • Subject to the City's agreement, traffic prioritisation for Williams Road in lieu of Hardy Road at that intersection, forcing east-west motorists to give way to those travelling north-south. Overall, the measures listed above will create a sense of entry into a new precinct and disrupt any long, open viewlines for motorists that might encourage rat-running. It will not, however, diminish the permeability and legibility that is such a positive attribute of a grid-based movement network, especially for pedestrians and cyclists. The project team does not consider that any other streets are attractive as rat-runs. The Portland Street extension terminates for motorists at Hardy Road and other roads are low-order laneways and mews. It is the developer's intention that some of the traffic calming measures listed above as applicable to the Hardy Road extension will also be incorporated into the Portland Street extension, where applicable.
Loss of Character / Nedlands leafy green feel	8	The PSP report (Part 2) provides an extensive account of the design analysis process that was used by the project team to inform the PSP. In relation to character and greenery: • Section 2.1.1 notes that the Perth Biodiversity Project includes the PSP area in an ecological linkage between Kings Park and the Shenton Bushland but that the site currently contributes little to the

		functionality of that linkage. The PSP will increase tree canopy cover on the site through plantings on public and private land. • Section 2.1.2 observes that *"the established suburban environment…features an abundance of mature street trees that form green network links…"* • Section 5.1 states that *"The precinct's urban structure will be responsive to the established urban fabric to allow existing green network links to be extended"* and that there are *"significant opportunities to expand and improve on the quality and connectivity of the surrounding natural environment"*. • Section 5.3 states that the PSP's approach is to emphasise *"street tree and low shrub/groundcover planting to provide amenity, shade and structure to all streets"*. • Section 5.3 also notes that the DPLH Urban Canopy Dashboard indicates Nedlands as having more canopy cover within street blocks (20%) than Perth as a whole (12%). The project team is therefore well aware of the context of this site in terms of its leafy character. In response to the findings of the analysis described above, the PSP: • Prioritises tree and garden plantings in the public realm, as evidenced by Section 5.3, Section 5.4 and Appendix 5 of the PSP. • Advocates, at significant cost to the developer, sub-surface drainage infrastructure to ensure that all of the central POS is useable, maximising flexibility for tree plantings and landscaping. • Promotes tree-lined pedestrian access linkages to facilitate pedestrian movements and deliver amenity and canopy. • Facilitates the implementation of the Apartment Code (which requires a 10% of each apartment site to be set aside as a Deep Soil Area and planted with trees) and the R-Codes (which have provisions for Deep Soil Areas and tree plantings for the townhouse lots). • Proposes, at significant cost to the developer, the provision of semi-mature and mature trees from the outset; many subdivisions use immature trees that take longer to create a canopy. We understand the submitters' concerns and believe that we have made a significant effort to understand the characteristics of the area and implement design responses accordingly. Furthermore, we note that the site currently is unusable and has only a handful of existing trees. The project team intends to plant up to 200 trees, plus extensive ground covers, shrubs and smaller plants, which will far exceed the existing level of public realm planting in the surrounding area.

Inadequate provision of Open Space.	8	The PSP report (Part 2) addresses the POS policy area in detail in Section 5.5. The introduction to this states that *"This PSP is required to meet the standard WAPC requirement that 10% of the gross subdivisible area of the site be set aside as creditable open space, of which 8% must be unrestricted"* [i.e. not constrained by drainage or other infrastructure]. There is provision in the relevant WAPC policies (specifically *Liveable Neighbourhoods* and DC 2.3: Public Open Space) for POS contributions to be made in the form of land and/or cash-in-lieu of land. The manner in which POS contributions are calculated is described in Section 5.5 of the PSP report (Part 2) in the context of these policies. POS provision is not finalised until the subdivision stage of the planning process, however, a PSP can set objectives to be implemented at that stage. This PSP makes provision for 9.6% of the gross subdivisible area of the PSP area to be set aside for useable, unrestricted POS, which exceeds the 8% threshold for unrestricted POS. This calculation does not count pedestrian access ways, which will be planted out and therefore perform a role akin to POS in terms of physical and visual amenity. If included, the PAWs would bring the POS figure up to approximately 12.5%. The regular shape and consolidated nature of the POS optimises its useability. Furthermore, delivery of 100% of the central POS as useable, unrestricted POS has been made possible by Hesperia's commitment to providing sub-surface drainage infrastructure to enable stormwater management. This infrastructure is costly to Hesperia but ensures that there are no infrastructure-related constraints applicable to the POS. The POS calculation described above does not enable any weight to be given to the communal open space provided within apartment sites pursuant to the Apartment Code. For buildings with more than 10 dwellings, 6sqm per dwelling up to a maximum of 300sqm – the size of a common, modern suburban lot – is required as communal open space. Deep Soil Areas, *"seating and play areas", "recreation facilities such as a pool, half-court basketball, tennis court or play equipment"* and *"other facilities responding to particular community needs such as a dog exercise area or garden plots"* are all examples given in the Code (Section 3.4) of the kind of spaces that could be, and are, provided, and these reduces demand for public open space relative to (for example) green title homes, for the equivalent population.
Concerns with location of Open Space – should be more accessible to the public.	4	The proposed POS is in a central location and will be highly accessible to the public, including existing community members and future residents of the new precinct. As stated in Section 5.3 of the PSP report (Part 2), the POS *"will…help to soften the built environment and provide visual amenity. It is located at the cruciform of key movement routes, Hardy Road and Hollywood Avenue, with clear visual links"* and will

		"provide a strong heart and green space for the neighbourhood". It will have a high degree of accessibility, having public road frontages via Hardy Road and Hollywood Avenue and being connected to Karella Street and Monash Avenue by (additionally) three pedestrian access linkages, one public route to Karella and two easement arrangements to Monash. The project team did investigate alternate locations for the POS during the early design phases of work, including along the periphery of the PSP area. It was determine that, due to site levels and servicing constraints, a significant portion of the POS would have been needed for above-ground bioswales to capture drainage. Therefore, the project team decided that the centralised POS would be a better outcome for the community as it would enable below-ground drainage and 100% useability. The project team attended both community engagement events for the PSP and from our discussions there, we note that the POS could be perceived as being internalised relative to the adjacent residential areas. This, we believe, is a product of the PSP map looking like it is delivering an 'island' of development with an apparently stark delineation between the 'old' and the 'new'. On the ground, in future, there will be a visual difference between this precinct and the surrounds in the same way that there is a visual difference between the Hollywood High School redevelopment and adjacent established residential land. However, there will not be a sense of stark delineation or separation – there will be public streets and thoroughfares connecting seamlessly into the new precinct and the POS will be highly accessible from the established areas and within the precinct itself.
Support for proposed Open Space.	13	Noted.
Proposed building heights / densities are too high.	18	A key challenge for this PSP has been the balancing of approved objectives for residential densities on this prime infill site with the community's interest in a built form outcome that does not disrupt the prevailing character of Nedlands. The project team's analysis and understanding of that character is covered in the PSP report, particularly Part 2, sections 2.1.2, 2.1.5, 5.1, 5.2, and 5.4-5.6. For planning purposes, the PSP area is in the 'Central' sub-region of Perth and Peel. The Central Sub-regional Planning Framework ('Framework') is part of the Perth and Peel @3.5 Million suite of documents and is the current strategic plan for the Central sub-region.

		The Framework adopts the State Government's 47% infill target for Perth's dwelling demand to 2050 and states that *"Approximately 215,000 dwellings (56 per cent of the total amount of new infill dwellings) are expected to be delivered in the Central sub-region…",* with a target set for each local government. The City of Nedlands is set a target of 4,320 additional dwellings by 2050, taking the total number of dwellings in the municipal area to 12,390. Through their local planning strategies and schemes, local governments are responsible for deciding how their dwelling target will be delivered. The City of Nedlands has done this through its Local Planning Strategy, which was approved by the WAPC in 2017. The City's Strategy contains a map that identifies the subject lots as a 'Redevelopment / Development Area'. This is one of the four defined 'Targeted Infill' categories. The City's interest in preserving its leafy, low-density character is well-documented and is expressed in the Strategy, and infill is generally not being directed into the established suburbs via incremental 'backyard' subdivision. **Achievement of the infill target approved by the State Government therefore relies heavily on the 'Targeted Infill' areas, including this one.** The following 'Intentions' in the area of Population and Housing in the Strategy are relevant to the PSP area: • *"Strongly encourage development of a considerable number of additional dwelling units of a diverse nature within the targeted infill areas."* • *"Facilitate greater diversity, specifically higher-density multiple and grouped dwelling developments in targeted infill areas to provide a diverse range of dwelling types to accommodate changes in population trends."* • *"Develop controls to ensure key sites are not under-developed, thus ensuring existing residential character is protected long-term and development is focused in a few specified locations."* In addition, the specific strategies for the 'Monash' precinct include the following for the PSP area: *"Within the Smyth Road redevelopment/development area, comprehensively plan to allow the maximum potential redevelopment of the site…"*

		The Strategy is not prescriptive about a yield target for the subject lots, however, in the context of the above the City's and WAPC's expectations for yield and diversity are high. The PSP area is one of only 5 Redevelopment/ Development Areas in the whole City, the others being Lot 4 Underwood Avenue (which is environmentally constrained), the Montario Quarter site, Waratah Avenue in Dalkeith (which is small) and the former Swanbourne Hospital site in Mt Claremont (also small, and constrained). It is therefore inescapable that a high level of density is required on this site. The design analysis undertaken in the preparation of the PSP (covered in the PSP report, Part 2, in Sections 2.1.2, 5.5 and 5.6) demonstrates our understanding of the sensitivity of the PSP area's interfaces to the east and south in particular. To manage the impact of density on nearby established residential areas, this PSP is advocating for a transition of height from the north and west down to 2-3 storeys in the east and south. To enable low building heights of 2-3 storeys along the eastern and southern interfaces and up to 4 behind those transition areas and maintain potential for an acceptable density and yield for the PSP area as a whole, taller buildings are proposed to the north and west. In this regard: • The current overall height limit for the site in the City's Local Planning Scheme No. 3 is 6 storeys. • Along Smyth Road, the proposed R160 density coding enables 5 storeys and is proposed to be increased to 6 and 9 storeys to enable low heights to the south and east. • Along Monash Av, the proposed R-AC1 density coding enables 9 storeys and is proposed to be increased to 10 storeys at the Smyth intersection for the same reasons as above, reduced to 6 storeys for the Regis Nedlands site for consistency with the status quo, and reduced to 8 and 6 storeys at the Williams intersection to help manage the transition down toward established houses to the east. The above is a very responsible and respectful strategy that ensures that the expectations placed on the site by the approved Sub-regional Planning Framework and Local Planning Strategy do not result in problematic interfaces with established neighbouring areas.
Concerns with lack of on-site and street parking.	10	The project team is aware that increases in parking demand are a common and concerning by-product of some infill projects, particularly incremental 'backyard' infill. The project team is also aware that the PSP area is a busy area, being in close proximity to major attractors including Hollywood Primary School, child-

		care centres, Hollywood Hospital and the broader QEII Medical Centre. It is also not far from Stirling Highway and the Hampden Road commercial precinct. We respectfully wish to note that we don't believe there is any evidence that there is a 'lack' of parking shown within the PSP area. Although the PSP stage of the planning process doesn't lock in specific road design outcomes, it can set objectives, and there are clear intentions for as much parking as possible in this case. In particular: • The PSP plans, objectives and provisions (refer to PSP report, Part 1, sections 2 and 4.2.4) advocate for rear access for all development sites, which has numerous benefits including that it relieves public streets of crossovers and makes space available for (among other things, including trees) on-street embayed parking that can be used by visitors to local residents, local businesses or the POS. • The streetscape concept designs published in the PSP report (Part 2, section 5.4 and Appendix 5) include embayed parking on all proposed public streets, including the mews. • All residential development within the PSP area will be subject to the parking requirements of the Residential Design Codes, which are (relevantly) a minimum of 1 for a 3+ bedroom townhouse and a minimum of 1 for a 2+ bedroom apartment. These minimum requirements will be exceeded, as all townhouse designs being contemplated have 2 bays. There are also requirements for on-site visitor parking bays for apartment developments. • All non-residential development within the PSP area will be subject to the parking requirements of the City of Nedlands' Local Planning Policy No. 4.1: Parking, which specifies parking ratios for all land use classes defined in LPS 3. The PSP area will therefore be, in planning terms, self-sufficient for parking, with all development being subject to existing policy instruments and requirements and street parking to be provided up-front by the developer. Furthermore, it is intended that parking for all apartment and mixed-use sites will be contained in below-ground basements, which will ensure that the ground level can be maximised for landscaping and pedestrian-oriented spaces.
Support for redevelopment of an underutilised site.	30	Noted.

Concerns with construction management.	3	The project team understands that construction management, including with respect to working hours, traffic, noise, dust and other nuisances, is of keen interest to the community. The PSP cannot influence these activities, but the project team notes that at the development stage, Construction Management Plans submitted to, approved by and monitored by the City of Nedlands will be required and will address all activities that might have an off-site impact on the neighbouring residential and institutional areas.

Submission Number	Summary of Submission	Applicant Response
01	Concerns with traffic issues on Karella Street and Portland Street. Concerns with rat run traffic. Concerns with loss of over 55 dwellings.	• Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with proposed new road network and rat run traffic". • The submitter's concern about the loss of over-55 dwellings is noted, however, most of such facilities were removed from the site long before it was purchased by Hesperia and the City's Local Planning Strategy identifies the site for residential infill. The mix of green title homes and apartments proposed in the PSP will cater for downsizers looking to move out of large family homes in the area and into something smaller, so the development will still assist housing availability for over-55s.
02	I support the re-development of the area, however I do not and cannot support the structure plan in its current form. Lack of usable public open space - size of the POS provided does not appear to be close to sufficient to support the needs of the local community. R80 density around the periphery of the site may be appropriate. Townhouse typology would not provide an appropriate density outcome. Rear loaded townhouse typology does not provide sufficient on-site parking for the number of people who live in the area.	• Please refer to comments under "Inadequate provision of Open Space" and "Concerns with lack of on-site and street parking." • We agree that multiple dwellings (apartments) over the whole PSP area would deliver more dwelling yield, however, as outlined above under "Proposed building heights / densities are too high", the project team has sought to strike a balance between delivering density and respecting existing

	Multiple dwelling typology would provide for many more and more affordable dwellings. It may be appropriate to provide for a small café overlooking the park.	residential interfaces by proposing both green title homes and apartments. • We are seeking approval from the City of Nedlands for planning permissibility for a café via Amendment 15 to the City's Local Planning Scheme No. 3, which partners the PSP and is being progressed in parallel.
03	I object to the proposal in its current form. I am overall supportive of the proposed development of the site by Hesperia and infill development of the Hampden Hollywood area in general to meet the LPS3 infill targets. Precinct structure plan doesn't align with the Hampden Hollywood local precinct plan specifically in the visual amenity to existing tree lined streets, transition areas and buffer zones. The proposal fails to model the impact the development will have on pedestrian and child friendly amenity of the local roads. Concerns with overlooking. Requests a condition on the development of Lot 103 for successful rezoning of the site including adjoining sites and areas such that the effective rezoning is consistent and that the village plan allows for future connection to the Hampden Road precinct ie: R80 rezoning south of Hardy and Monash to Karella street. The existing roads Karella and William should also be classified as primary frontages.	• Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with proposed new road network and rat run traffic" and "Loss of Character / Nedlands leafy green feel" and "Proposed building heights / densities are too high". • At the development stage, when detailed streetscape and landscape drawings are prepared, numerous local policies and Australian Standards relating to pedestrian safety, including with a focus on children, will be applicable and will be implemented. The PSP report (Part 1, section 2) includes a commitment to Crime Prevention through Environmental Design (CPTED) principles at that stage. Hesperia has engaged with Hollywood Primary School and the Kidz Biz childcare centre and both are supportive of the project. • The Karella and Williams frontages will be primarily residential in nature and therefore are suited to the 'Residential' frontage type. This triggers frontage controls from the Residential Design Codes and ensures that the interface will be sympathetic to the residential nature of both these streets.
04	Concerns with onsite parking Is there any allowance for e-charging for cars using street parking? Some commercial facilities, i.e. a coffee shop/newsagent, should be included in the plan.	• Please refer to comments under "Concerns with lack of on-site and street parking." • The project team are investigating the provision for EV charging stations within the PSP area. This matter requires City of Nedlands approval, as the City will be responsible for the ongoing maintenance.

		• There may also be scope for a café or newsagent within the PSP area. This is subject to commercial considerations at the development stage, however, the PSP makes provision for such uses along (in particular) the 'Primary' frontages defined in Section 4.2.2 of Part 1 of the PSP. There is also permissibility for such uses in the Mixed Use zone and Additional Uses in the existing Residential zone proposed in Amendment 15 to the City's town planning scheme, which partners the PSP and is being progressed in parallel.
05	Concerns with increase to traffic. Karella Street and Williams Street should be open to two-way traffic. Concerns with Air B&B and noise.	• Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic." • Karella Street and Williams Road are external to the PSP area and under the care and control of the City of Nedlands. • Concerns about short-stay accommodation could be applicable to any residential area and if they eventuate within the PSP area, would need to be managed by the City of Nedlands in the normal manner.
06	Is a welcomed project. Housing in the area needs smaller parcels for residents to be able to downsize and remain in the area. Having green space for the higher density project is an innovative plan which lends to a much-relaxed living community. The proposed generous central parkland offers future residents a place to be in touch with nature.	Support noted, thank you.
07	The Plan is reasonably well considered. Concerns with traffic particularly Hardy Road to the East and Portland Ave to the South. Concerns with rat run traffic. Opportunity to enhance pedestrian engagement by ending the new Hardy Road extension at Williams Avenue and installing a filtering treatment. Concerns with street parking in surrounding streets.	• Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with proposed new road network and rat-run traffic" and "Concerns with lack of on-site and street parking." • A filtering treatment at Hardy / Williams could be considered when the detailed development plans for the road reserves are prepared in future, but this is not the project team's

		preference as it isolates the PSP area from the surrounding neighbourhood in a way that is contrary to the vision for the site.
08	Objection is to Portland Street being extended to Monash Avenue.	Portland Street is not being extended to Monash Avenue. There will be a pedestrian access linkage between Hardy and Monash, with the trafficable section of the Portland extension ending at Hardy.
09	Very supportive of this development. The existing vacant blocks really undermine the amenity of the area.	Support noted, thank you.
10	Fabulous plan and will bring much needed vibrancy to the area.	Support noted, thank you.
11	Concerns with density - 500 new dwellings are too many. Concerns with traffic.	Please refer to comments under "Proposed building heights / densities are too high" and "Concerns with increase in traffic – inability for existing road network to accommodate more traffic."
12	Concerns with traffic – particularly on Smyth Road	Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic."
13	Objection to the road layout and access/exit points. Suggest that Portland Street be made into a cul-de-sac.	Please refer to comments under "Concerns with proposed new road network and rat run traffic". Also, a potential cul-de-sac treatment for Portland Street (assumed to be the existing road) is a matter for the City of Nedlands.
14	Providing more residential housing for families	Support noted, thank you.
15	Concerns with traffic	Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with proposed new road network and rat-run traffic".

16	In principle, supportive of the development. Concern for traffic movement on Karella street. Object to deeming the internal park as community space when it is not accessible to the public or even visible to the community. Park will be invisible form Smyth and Karella Streets. Only 8% green space proposed. Reasonable and responsible low rise residential development could actually be an improvement. Block I is too high. The 'village green' should be sited on the roundabout corner. Rate of infill is too fast, type of infill is too dense. Development along all of Karella should be 2-3 level townhouses. Concerns with construction management. Consider collaboration with Western Power on existing plans to sinking powerlines. Reconfiguration of Karella Street as one-way, consistent with the western end.	• Support noted, thank you. • Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" in respect of Karella Street. • The central POS will be a public park landscaped at Hesperia's cost, then ceded to the Crown and vested in the City of Nedlands via a management order in the normal manner. It will be accessible to the public physically and visually via the two public road frontages and the 3x pedestrian linkages connecting to it. • Please refer to comments under "Inadequate provision of Open Space" in respect of the POS calculation. • Please refer to comments under "Proposed building heights / densities are too high" in respect of density and height. • Please refer to comments under "Concerns with construction management" in respect of construction management. • The PSP area will be supplied with underground power, internally. External to the site, the provision of underground power in place of the existing overhead lines is a matter for the City of Nedlands and Western Power. • A potential one-way treatment for Karella Street is a matter for the City of Nedlands, but would not be favoured by the project team as one-way streets necessitate motorists driving further to reach their destination
17	Development should be limited to 5 stories only so as not to impose over the Military Cemetery. Development along all of Karella should be 2-3 level townhouses. The existing native gums trees at Smyth / Karella could be kept to attract native birds. Concerns with traffic. Concerns with loss of sun.	• Hesperia has been in discussions with the Commonwealth War Graves Commission since before the PSP was submitted last October to keep them informed about the PSP's proposals along Smyth Road. The Commission was also sent a copy of the PSP by the City during the advertising period. The Commission has not raised concerns to date and Hesperia are continuing to engage with them. • The majority of development along Karella will comprise 2-3 storey green title homes. Near the Karella / Smyth

		intersection, development will be a minimum of 25m from the nearest house on Karella and will need to be designed in accordance with the Apartment Code which imposes requirements for setbacks, building heights and overshadowing, among other things. • The gum trees near the Karella / Smyth intersection are either in the road reserve or close to the lot boundary, and if they are in good health at the development stage they can be prioritised for retention. • Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic". • Apartment development in the PSP area will be subject to the Residential Design Codes, which imposes requirements for setbacks, building heights and overshadowing, among other things.
18	I welcome that there will be a mix of residential buildings with apartment blocks not higher than 10 storeys and that a public park will be incorporated. Concerns with traffic. Concerns with school capacity.	• Support noted, thank you. • Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with proposed new road network and rat-run traffic" in respect of traffic. • School capacity is a matter for the Department of Education to manage. As this site has been identified for a high-density residential outcome since the 2017 approval of the City's Local Planning Strategy, the project team anticipates that potential population growth has been factored into planning for this school catchment and others. • The project team advises that Hesperia consulted Hollywood Primary School during the pre-lodgement phase of the PSP process, and the School was provided with the PSP document to review by the City. The School has raised no objection to the PSP.

19	Looking forward to seeing this important site redeveloped and increasing infill.	Support noted, thank you.
20	Object to the proposal to extend Hardy Road through to Smyth Road. Concerns with traffic and increase in traffic noise.	Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with proposed new road network and rat-run traffic."
21	Pleased the aged care facilities are remaining. Pleased that Hardy Road will be extended through to Smyth Rd. In agreement with the higher buildings facing onto the war cemetery on Smyth Road rather than overlooking residential houses. Concerns with school capacity. Concerns with onsite parking – suggests underground parking.	• Support noted, thank you. • School capacity is a matter for the Department of Education to manage. As this site has been identified for a high-density residential outcome since the 2017 approval of the City's Local Planning Strategy, the project team anticipates that potential population growth has been factored into planning for this school catchment and others. • The project team advises that Hesperia consulted Hollywood Primary School during the pre-lodgement phase of the PSP process, and the School was provided with the PSP document to review by the City. The School has raised no objection to the PSP. • Please refer to comments under "Concerns with lack of on-site and street parking" in respect of parking.
22	Concerns with capacity of existing infrastructure and amenities (schools, hospitals) Concerns with loss of green leafy suburb and village atmosphere. There is supposed to be a tree register which should inform this development and others.	• School and hospital capacity is a matter for the State Government to manage at a strategic level. This site has been identified for a high-density residential outcome since the 2017 approval of the City's Local Planning Strategy and the project team anticipates that potential population growth has been factored into planning for schools and hospitals. • Please refer to comments under "Loss of Character / Nedlands leafy green feel." • The City's Register of Significant Public Trees is for trees on public land (relevantly, road reserves) and none are listed in the vicinity of the PSP area.

23	Concerns with street parking – plan should include more street parking	Please refer to comments under "Concerns with lack of on-site and street parking."
24	Opposed to the disparity in heights of the proposed development compared existing with regard to 6 and 9 storey height on SW corner Karella / Smyth and 3 storey height on Karella / Williams opposite low level residential. Concerns with loss of aged care (Centennial Close and Regis Weston). Concerns that street setbacks are not sufficient for tree planting. Support the retention of existing mature trees. Opposes the removal of height controls via the proposed Scheme amendment 15. Concerns with interface with Karrakatta Cemetery and the Perth War Cemetery. Consider reduced building heights along Smyth Road to maintain appropriate level of respect for the Perth War Cemetery and overshadowing and maintain consistency with the surround low level residential areas. Concerns with overlooking. Lack of POS provision. Opportune time to underground the high voltage power line near the roundabout intersection between Smyth Road and Karella Street. Traffic review should accommodate the existing road pavements without intersection upgrades. Bird breeding boxes are provided in Hollywood Bush Reserve.	• Please refer to comments under "Proposed building heights / densities are too high" and "Loss of Character / Nedlands leafy green feel" and "Proposed building heights / densities are too high" and "Inadequate provision of Open Space" and "Concerns with increase in traffic – inability for existing road network to accommodate more traffic." • The submitter's concern about the loss of aged care accommodation is noted, however, Centennial Close will continue to operate for as long as the existing 'lease for life' residents require. Beyond that, the supply of aged care is a metropolitan-wide, market-driven issue and for this site, the City's Local Planning Strategy identifies the site for residential infill. • The PSP area does not have a direct interface with Karrakatta Cemetery; there is separation from even the closest point in the form of Hollywood Reserve. In respect of the War Cemetery, Hesperia has been in discussions with the Commonwealth War Graves Commission since well before the PSP was submitted last October to keep them informed about the PSP's proposals along Smyth Road. The Commission was also sent a copy of the PSP by the City during the advertising period. The Commission has not raised concerns to date and Hesperia are continuing to engage with them. • The PSP area will be supplied with underground power, internally. External to the site, the provision of underground power in place of the existing overhead lines is a matter for the City of Nedlands and Western Power.

25	I am happy for foot traffic and bike traffic to increase. Concerns with vehicular traffic. Like to see the Hardy Rd/Williams Road intersection controlled with a stop sign. I would like there to be many traffic slowing measures for Hardy Rd.	Please refer to comments under "Concerns with proposed new road network and rat run traffic."
26	Inadequate POS for the estimated population of 1300 persons, will exacerbate the lack of POS in the Nedlands area. POS allocated by the developer should be 1.5 – 2.47 ha. The precinct has been previously used for aged care/elderly living. The Nedlands inventory of such facilities is inadequate and the aging population. Options must be available that give elderly people the ability to downsize or go into care in the area. PSP should be revised such that at least half the land area is retained for the purpose of aged care/elderly living. Concerns with traffic and parking. New road connections must only be to Smyth Road and Monash Avenue. The size, height and bulk of the structures shown in the PSP should be amended to complement the density and character of the local area using responsive built form controls along established interfaces. Concerns with onsite parking.	• Please refer to comments under "Inadequate provision of Open Space" and "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with lack of on-site and street parking" and "Concerns with proposed new road network and rat run traffic" and "Proposed building heights / densities are too high". • The mix of green title homes and apartments proposed in the PSP will cater for downsizers looking to move out of large family homes in the area and into something smaller, so the development will still assist housing availability for over-55s. Beyond that, the supply of aged care is a metropolitan-wide, market-driven issue and for this site, the City's Local Planning Strategy identifies the site for residential infill.
27	The R80 zoning of the housing lots is not sufficient. A lot size of 100m2 is far too small for anyone to build a property on. A high density, Strata type complex does not fit within the area. The apartments are out of character. There is a glut of apartments in Perth at the moment, and this will only add to that. If this development goes through it will change (for the worse) the feel of the surrounding area. It is also unlikely to sell. Larger blocks and only 1 apartment complex, which is limited to 4 storeys.	• Please refer to comments under "Proposed building heights / densities are too high." • There is no evidence for the statement that there is a 'glut' of apartments in Perth. Multiple sources of data on properties listed for sale, rental costs, apartment commencements, apartment completions and apartment values all point to an under-supplied housing market for all property types, including apartments. • The current subdivision concept being prepared in parallel with the PSP envisages a minimum lot size of 180sqm, which will be confirmed in due course.
28	We oppose the Nedlands Village Precinct Plan. The road systems were not designed to accommodate higher density living. Concerns with increase in traffic.	Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with lack of on-site and street parking" and "Concerns with

	Concerns with parking. Portland street be made into a cul de sac street so there is no direct connection to Karella street. The height of dwellings that is adjacent to Karella Street and Williams Road should not exceed nearby suburban houses. It should be limited to 2 storeys. This is due to concerns of overlooking, noise, density and aesthetics.	proposed new road network and rat run traffic" and "Proposed building heights / densities are too high" and "Concerns with construction management." Also, a potential cul-de-sac treatment for Portland Street (assumed to be the existing road) is a matter for the City of Nedlands.
29	Lack of consideration of increased traffic on the surrounding streets. The proposed Hollywood Avenue / Portland Street continuation should be made less of an appealing cut-through for drivers accessing the development from the Stirling Highway. Block off Portland Street at the Stirling Highway so that it becomes a cul-de-sac. Move the proposed Hollywood Avenue to the east or west so that it is no longer directly aligned with Portland Street and presents less of a direct route to the Stirling Highway Concerns with construction Management.	• Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with proposed new road network and rat run traffic" and "Concerns with construction management." • Any potential cul-de-sac treatment for Portland Street at Stirling Highway is a matter for the City of Nedlands.
30	No objection. Please include some social housing included similar to that on the old Hollywood High School site.	• Support noted, thank you. • The PSP doesn't lock in social or affordable housing targets, which are a broader State Government issue.
31	The lower-density interface on Karella is sensitive to the surrounding residential area, and the increased population will breathe life into this pocket of Nedlands.	Support noted, thank you.
32	I am so thrilled to see the structure plan include POS, grid streets in line with the surrounding area and decent size blocks for townhouses, whilst maintaining the Nedlands look and feel.	Support noted, thank you.
33	I Object to the Nedlands Reserve Precinct Structure Plan. Concerns with traffic. Concerns with school capacity. There should be a shopping centre.	• Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Proposed building heights / densities are too high" and "Concerns with location of Open Space – should be more accessible to the public".

	The plan seems to have all the development around the edges of the property, showing no regard for the character of the street scape in the area. The houses in Karelia street are going to loose all their northern light and winter sun. The buildings need to have a set back and public space around them, not the public space in the middle. 10 storey, 9 storey, 5 storey buildings are far too big for the site and should not be allowed. They will dwarf the surrounding area and War Memorial Opposite. Consider interface with war cemetery opposite. Height on the side closest to residential blocks should be limited to two stories while any multi story should be in the middle of the block and limited to 3 stories.	• School capacity is a matter for the Department of Education to manage. As this site has been identified for a high-density residential outcome since the 2017 approval of the City's Local Planning Strategy, the project team anticipates that potential population growth has been factored into planning for this school catchment and others. • The project team advises that Hesperia consulted Hollywood Primary School during the pre-lodgement phase of the PSP process, and the School was provided with the PSP document to review by the City. The School has raised no objection to the PSP. • There is permissibility for small-scale commercial uses in the PSP area depending on market influences at the development stage. However, there is no strategic planning that contemplates a larger-scale shopping centre and such a proposal would have numerous implications including in relation to vehicle traffic. The PSP area is within 800m of the new commercial developments planned for the Captain Stirling Hotel area and within 400m of the Hampden Road high street.
34	It's important that a mix of built outcomes should be applied, respecting the existing feel of the suburb by maintaining sensible height and density. The continuation of street network grid is also something I feel strongly about. Although it may encourage some short cut/rat run behaviour, this is far preferable to the single in-out micro-estates which have no connectivity with the rest of the suburb.	Support noted, thank you.
35	Plan is a very well considered placement of density that is highly sensitive to the surrounding land uses. Will go a long way to achieve density targets. The movement network looks to be appropriately considered with connection to the existing network well thought out providing safe passage for pedestrians and cars.	Support noted, thank you.

	Traffic modelling shows increased traffic generation from the development has no adverse impacts on the network	
36	I support the coordinated approach of medical with residential. The density will assist with offering a diverse mix of housing typologies within the existing low density suburb.	Support noted, thank you.
37	Very pleased to see this site targeted for a high quality development that appears sensitive to the local context.	Support noted, thank you.
38	I Support the 'Nedlands Village' precinct plan.	Support noted, thank you.
39	The land uses are sensitive to the existing community, with appropriate zoning to ensure height and density is delivered away from existing residential areas. Propose a high quality central park for the community.	Support noted, thank you.
40	High quality project. We require a greater variety/choice of housing in the western suburbs.	Support noted, thank you.
41	The height of the apartments facing to the west (overlooking the bushland reserve and war memorial) at 11 floors is too high. I believe that they should stay under 5 floors as they will overlook all of the houses to the south west.	Please refer to comments under “Proposed building heights / densities are too high.” Also, the height limit along Smyth Road is no more than 10 storeys, near the Monash Avenue intersection.
42	This will bring in a diverse group of young working adults as residents into the otherwise dormant area. Increase the possibility of other medical facilities which will be beneficial to the suburb.	Support noted, thank you.
43	It would benefit the local community if the residential blocks were zoned R60 rather than the proposed R80. The verges on the Nedlands Reserve side of Williams Rd and Karella Rd are in very poor condition with dead and stunted trees, uneven footpaths and overhead power lines dominating.	• Please refer to comments under “Proposed building heights / densities are too high” and “Inadequate provision of Open Space.” • The condition of street trees, footpaths and powerlines is a matter for the City of Nedlands and Western Power, however, redevelopment of the PSP area will present an

	The central park public space is less than 10% - the park would be quite small for the space provided.	opportunity for infrastructure renewal by increasing rates revenue and activation.
44	A very well considered mix of housing typologies along with employment and amenity. The proposed land uses are sensitive to the existing community and provide housing choice. The location of the height and density on the further extents of the site from existing residential area will minimise conflicts.	Support noted, thank you.
45	Mixed-use and medical uses are proposed along Monash Avenue adjacent to existing medical services.	Support noted, thank you.
46	I fully support the development of the Nedlands Reserve. The land has been vacant for a substantial amount of time and the influx of 500 homes in the area will be a welcome site in a time off housing shortages.	Support noted, thank you.
47	Definitely support the Nedlands reserve structure Plan. Will be better for the community.	Support noted, thank you.
48	Sensitive height and density away from current residential zones	Support noted, thank you.
49	I endorse this development initiative	Support noted, thank you.
50	Look forward to seeing greater density and vibrancy in the community	Support noted, thank you.
51	Central as a heart of the precinct, enhance the sense of place & community and represents quality amenity	Support noted, thank you.

52	Fantastic central park.	Support noted, thank you.
53	Land uses are sensitive to the existing community. Logical extension of existing street networks. A high-quality central park that acts as the heart of the future precinct.	Support noted, thank you.
54	The sustainability commitments are excellent.	Support noted, thank you.
55	Height limits seem sensitive, with a decent interface.	Support noted, thank you.
56	Additional medical and residential uses in this area seems appropriate and the density appears appropriate and sympathetic to the existing residential homes surrounding the area. The focus on providing additional parkland and green / landscaped areas is also a positive.	Support noted, thank you.
57	The project represents a positive use of otherwise under-utilised land.	Support noted, thank you.
58	Given the low density existing interface, careful delivery of height is essential for a new precinct to blend with this portion of Hollywood Ward. Given the 6 storey existing facility appears to be planned for retention, surrounding medical uses seem to be logical and reasonable. Concerns about traffic	• Support noted, thank you. • Please refer to the comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic."
59	Sensitive to the existing context with the larger, high density built form positioned away from established housing. Support for the central park.	Support noted, thank you.
60	Will be great for the area.	Support noted, thank you.

61	The park is a great inclusion. The introduction of different housing typologies in the plan is also a good move.	Support noted, thank you.
62	The new park will provide additional opportunities for sports and recreation. The housing is an attractive opportunity for students.	Support noted, thank you.
63	Great opportunity to develop.	Support noted, thank you.
64	Support for high-quality amenities, such as a central park, that will enhance the neighbourhood's liveability.	Support noted, thank you.
65	This plan looks really good and long overdue. It seems this proposal might take infill/higher density pressure of from older areas with character buildings.	Support noted, thank you.
66	Wonderful for the community and the city.	Support noted, thank you.
67	Residential areas south of Hardy Road ensures a seamless blend with the existing community and maintains harmony with lower density residential zones. Logical street networks. Mixed-use facilities, including medical services, enhances both accessibility and convenience. The central park promises to be a valuable community asset.	Support noted, thank you.
68	Providing a variety of housing choice is critical to the success of the area and community. The impact on the existing neighbouring streets looks to have been carefully considered and the plan provides appropriate transitions to the existing residential housing	Support noted, thank you.

69	Support.	Support noted, thank you.
70	A great example of diversity of housing product.	Support noted, thank you.
71	It will provide homes to families and individuals in a prime location in Perth, especially being in proximity to medical services.	Support noted, thank you.
72	The plan offers 'choice' plus amenity which is lacking in this area. The design has taken the neighbouring properties into consideration.	Support noted, thank you.
73	A well balanced and exciting redevelopment. The contemplated land uses throughout complement the existing community and commercial needs of the suburb.	Support noted, thank you.
74	Development brings much needed density to the council. It also give a progressive and updated community feel with much needed additional health infrastructure for WA's aging population.	Support noted, thank you.
75	This will provide valuable amenities in proximity to medical facilities, schools, and open spaces.	Support noted, thank you.
76	This seems like a great spot for a new development but with less impact on the existing community than some other sites.	Support noted, thank you.
77	Great project which will be excellent long term for the community	Support noted, thank you.
78	This site needs development to ensure a thriving community	Support noted, thank you.

79	The development blends naturally with the local neighbourhood. Will add value to the area. Will create housing for the local hospitals.	Support noted, thank you.
80	I think it would be a great development for Nedlands.	Support noted, thank you.
81	This development would open up the opportunity to purchase a home. Opportunity for ground level activation to the area in the terms of potential cafes, bars plus a great housing choice	Support noted, thank you.
82	It is great to see an initiative to boost housing supply in the area and the commitment to public open space.	Support noted, thank you.
83	This area needs more affordable housing options.	The mix of green title homes (with lots currently planned to start at 180sqm for affordability) and apartments proposed in the PSP will cater for downsizers looking to move out of large family homes in the area and into something smaller, and also first- and second-homebuyers who might have grown up locally and wish to stay, but can't yet afford a large family home. In this way, the PSP makes a significant, positive contribution to housing affordability in Nedlands.
84	Support provision of as much low cost aged care and retirement living accommodation as possible. This is a reasonably located position regarding community services.	The mix of green title homes and apartments proposed in the PSP will cater for downsizers looking to move out of large family homes in the area and into something smaller, so the development will still assist housing availability for over-55s. Beyond that, the supply of aged care is a metropolitan-wide, market-driven issue and for this site, the City's Local Planning Strategy identifies the site for residential infill.
85	We need further development and medium - high density.	Support noted, thank you. The PSP has sought to strike a balance between delivering density and respecting interfaces to established residential areas.
86	Concerns with Hardy Street becoming a rat run. Should be signposted 'local traffic only'.	• Please refer to "Concerns with proposed new road network and rat run traffic" and "Concerns with lack of on-site and

	Parking provision for the new residential development needs to be realistic for each dwelling. Area where there is already pressure on parking for local residents because of the school, kindergarten, aged care facility, three major hospitals etc. Maximise the tree planting to try to improve the look, liveability, and environmental impact of this development. Ensure that the developers are locked into the proposed park so that it can't be shrunk or removed from the plans in favour of more density/dollars.	street parking" and "Loss of Character / Nedlands leafy green feel." • The project team would have no objection to Hardy Road being signposted for local traffic only. • The provision of POS is not solely directed by this PSP; it is also subject to WAPC policies such as *Liveable Neighbourhoods* and DC Policy 2.3: Public Open Space. The combination of policy instruments enables implementation at the subdivision stage. • The existing site is vacant and unusable with only a small number of trees. The proposed development will see the provision of up to 200 trees from day one, plus extensive ground covers, shrubs and smaller plants.
87	Concerns with traffic. Would like to see Williams Road re-open to allow a proper flow of traffic. Consider signs restricting access to trades people into the residential areas.	• Please refer to "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with proposed new road network and rat run traffic." • Any potential reopening of Williams Road is a matter for the City of Nedlands, but in principle, the project team recognises that that one-way and disconnected streets necessitate motorists driving further to reach their destination than is necessary.
88	I support the Plan. Concerns with traffic. Suggest Williams Road be reopened at Karella Street. Suggest a roundabout be placed at Park Street and Smyth Road. Underground power must be installed in the area.	• Please refer to "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with proposed new road network and rat run traffic." • Any potential reopening of Williams Road is a matter for the City of Nedlands, but in principle, the project team recognises that that one-way and disconnected streets necessitate motorists driving further to reach their destination than is necessary. • Any potential roundabout at Park Street and Smyth Road is a matter for the City of Nedlands.

		• The PSP area will be supplied with underground power, internally. External to the site, the provision of underground power in place of the existing overhead lines is a matter for the City of Nedlands and Western Power.
89	The proposed zoning density is way too high. So not want any new re-zoned development near my house more than 4 stories high. The R-160 zone are 4-10 stories high which wouldn't be in keeping with the rest of the suburb. Loss of afternoon sun. The primary and high schools and roads and facilities do not have capacity for that many new residents. Would love lots of trees, parking, and more green space. Concerned that the complete re-zoning to residential and not aged care does not consider the need for more aged care	• Please refer to comments under "Proposed building heights / densities are too high" and "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Loss of Character / Nedlands leafy green feel." • School capacity is a matter for the Department of Education to manage. As this site has been identified for a high-density residential outcome since the 2017 approval of the City's Local Planning Strategy, the project team anticipates that potential population growth has been factored into planning for this school catchment and others. • The project team advises that Hesperia consulted Hollywood Primary School during the pre-lodgement phase of the PSP process, and the School was provided with the PSP document to review by the City. The School has raised no objection to the PSP. • The mix of green title homes and apartments proposed in the PSP will cater for downsizers looking to move out of large family homes in the area and into something smaller, so the development will still assist housing availability for over-55s. Beyond that, the supply of aged care is a metropolitan-wide, market-driven issue and for this site, the City's Local Planning Strategy identifies the site for residential infill.
90	Would like more mixed use and residential lots to be able to purchase in a growing community	The mix of green title homes and apartments proposed in the PSP will cater for downsizers looking to move out of large family homes in the area and into something smaller, so the development will still assist housing availability for over-55s. Beyond that, the supply of aged care is a metropolitan-wide, market-driven issue and for this site, the City's Local Planning Strategy identifies the site for residential infill.

91	I object to the proposal in its current form. Concerns with traffic. Ensure safe pedestrian walkways and access. Ensure playground is fenced. Ideally there would only be on lead dog walking areas in the vicinity. Support infill development of the Hampden Hollywood area in general to meet LPS3 infill targets.	• Please refer to "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with proposed new road network and rat run traffic". • The PSP stage of the planning process does not provide detail on specific safety measures for pedestrians and playground users but at the development stage, when detailed streetscape and landscape drawings are prepared, numerous local policies and Australian Standards relating to public safety will be applicable and will be implemented. • The location of on-lead dog walking areas is a matter for the City of Nedlands but the central POS is not intended to be fenced so it is likely that it would be an on-lead area. • Support noted, thank you.
92	Object to the Nedlands Reserve Precinct Structure Plan. Concerns with impact on hardy road - will be detrimental to the current residents, the children using it to walk to school and cyclists. Concerns with rat run traffic. Should not approve the proposed development unless deterrents for using it as a rat run are put in place.	Please refer to "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with proposed new road network and rat run traffic".
93	Block should be redeveloped for appropriate residential & commercial use. Support the proposed 2-3 storey residential built form along Karella and Williams. Support the diverse range of housing types being proposed. Concern with the proposed scale and bulk of the building along Smyth Road. A ten storey building would be unprecedented and dominating along this streetscape - we suggest a 6-8 storey limit. Concerns with rat run traffic. Concerns that parking requirements are not currently being met. Support the planting of local native species and a green link to Hollywood Reserve and cemetery and Kings Park. Include roof top design to accommodate solar panels on all medium density housing.	• Please refer to "Proposed building heights / densities are too high" and "Concerns with proposed new road network and rat run traffic" and "Concerns with lack of on-site and street parking." • Pedestrian and cyclist movements through the PSP area are being prioritised in the design of streetscapes, as evidenced by Part 2, section 5.4 and Appendix 5, and will be translated into the detailed streetscape and landscape drawings prepared at the development stage.

	Developers to ensure that all pedestrian and cyclist movements around and within the site are considered, encouraged, and adequately catered for.	
94	Concerns with pre-engagement by Hesperia. Too many apartments. Does not match current demand for townhouse typology. No balance between density and context. The proposed park fails on two fronts -location and size. The park is surrounded and overlooked by multi-storey development. The proposed park is out of sight of the surrounding community, and unconnected by a dedicated walkway or bicycle path. Park should be relocated to the external boundary. Absence of any significant species of flora or fauna. No firm commitment to retain existing trees.	• Please refer to comments under "Inadequate provision of Open Space" and "Concerns with location of Open Space – should be more accessible to the public." • Hesperia acquired the site on 29 June 2023 and has been inviting public comments on this project since September 2023, when a letterbox drop to local residents was conducted and a website with a comments portal launched. Hesperia has also attended the two community engagement sessions held during the advertising period in February 2024. • Observations about demand for various housing types are made in the PSP report (Part 2, section 2.2). There has been a decline in the number of people in Nedlands living in apartments over the past 20 years, which could be a product of demand but is more likely a product of supply, given the relative ease of gaining approvals and finance for green title homes relative to apartments in most places, including Nedlands. Hesperia has received strong support from people interested in purchasing the type of product being offered.
95	I object to the structure plan. The apartment block facing the Smyth Road / Karella Road roundabout is too high and inappropriate for that location. Concerns with traffic. Karella road between Smyth and Kinninmont should be made two-way. Speed bumps should be added to Smyth Road.	• Please refer to comments under "Proposed building heights / densities are too high" and "Concerns with increase in traffic – inability for existing road network to accommodate more traffic." • Any potential modifications to Karella west of Smyth are a matter for the City of Nedlands, as would be the addition of speed bumps along Smyth Road. The project team would object to speed bumps along Smyth Road as they are noisy and do not create sustained low speeds. Measures such as narrow carriageways and careful verge treatments are more effective.

96	The proposed structure plan provides both housing diversity as well as land use diversity which will result in a great urban outcome. A good set of guidelines around how the built form will be realised will be important to ensure the structure plan reaches its potential. These should include - good dwelling orientation and thermal performance - generous open space provisions - large tree canopy targets - cohesive architectural response.	Development within the PSP area will be subject to the Apartment Code and the Residential Design Codes, both of which address dwelling orientation, thermal performance, private open space, Deep Soil Areas and tree plantings – among other things. In addition, Hesperia is working with some of Perth's leading architects on a set of Design Guidelines for the site that will complement the Apartment Code and the Residential Design Codes and facilitate a cohesive architectural response.
97	Well designed plan that treats current residents and the local environment with respect.	Support noted, thank you.
98	Concerns with traffic - particularly access to Hollywood Primary School and both Hollywood Hospital and Sir Charles Gardiner Hospital. Concerns with construction management. The continuation of Hardy Road through the site has been proposed to ease the pressure on Monash Rd but Hardy Road does not continue all the way through to Winthrop Avenue. I'm also concerned about the proposed density for some of the sites. R80 has been proposed which is greater than the R60 currently allocated to many of the surrounding residential blocks. Concerns with onsite parking.	• Please refer to comments under "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with lack of on-site and street parking" and "Proposed building heights / densities are too high." • The project team wishes to clarify that the Hardy Road extension has not been proposed to ease the pressure on Monash Avenue; as discussed above, the intention is to properly integrate the precinct into the existing neighbourhood and provide a permeable and legible street network. Specific measures to discourage use of Hardy Road as an alternative to Monash Avenue are proposed and are outlined under "Concerns with proposed new road network and rat run traffic" above.
99	I object to the Nedlands Village' Precinct Structure Plan and the proposed rezoning. The land is currently zoned for aged care and should remain exclusively for aged care and any associated medical facilities. There is a shortage of aged care facilities across Perth and WA. The excessive bulk and scale of the proposed development is not in keeping with the adjacent residential areas.	• The submitter's concern about the loss of aged care space is noted, however, most of such facilities were removed from the site before it was purchased by Hesperia and the City's Local Planning Strategy identifies the site for residential infill. The mix of green title homes and apartments proposed in the PSP will cater for downsizers looking to move out of large family homes in the area and into something smaller, so the development will still assist housing availability for over-55s.

	The provision of 0.6ha of public open space is approx. 8% of the total gross site of 7.4ha; less than the required minimum of 10%	• For the other matters, please refer to comments under "Proposed building heights / densities are too high" and "Inadequate provision of Open Space".
100	Concerns with traffic - The proposal has not included traffic modelling on Portland Street. Concerns with rat run traffic. Do not support the inclusion of Hollywood Avenue through to Monash Avenue as a full road reserve. The proposal uses Shenton Park Train Station as a reason for allowing the level of density, but the Shenton Park train station is not within a walkable catchment. There are many buses from Hampden Road, but the train stations should not be considered. Good points: larger high rise on side away from existing residential, public open space, town houses.	• Please refer to "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Concerns with proposed new road network and rat run traffic". • The project team wishes to clarify that the Shenton Park railway station is mentioned in the PSP report (Part 2, sections 2.1.2, 2.1.3 and 5.4) as being a relevant and positive factor for the PSP area, however, the rationale for the proposed density is primarily related to the City's Local Planning Strategy as detailed in "Proposed building heights / densities are too high" above.
101	Cap at 5 stories. No change to Williams Rd / Karella Rd intersection.	• Please refer to "Proposed building heights / densities are too high." • The intersection treatment at Williams and Karella is matter for the City of Nedlands.
102	Concerns with traffic. Concerns with proposed public open space -is small in comparison to the scale of the development. Open space should be move to the permitter of the development to be more accessible to the public. Concerns with heights proposed. – out of character with Nedlands. Speed limits should be reduced.	• Please refer to "Concerns with increase in traffic – inability for existing road network to accommodate more traffic" and "Inadequate provision of Open Space" and "Concerns with location of Open Space – should be more accessible to the public" and "Proposed building heights / densities are too high". • Local speed limits are a matter for the City of Nedlands.

SCHEDULE OF EXTERNAL AGENCY SUBMISSIONS

Number	Submitter	Summary of Submission	Local Government Response	Local Government Recommendation
01	ATCO	No response provided.	N/A	No change.
02	City of Perth	The Nedlands Village Precinct Structure Plan adjoins the boundary of the UWA-QEII Precinct Plan, which is being prepared by the City of Perth in partnership with the City of Nedlands and the Department of Planning, Lands and Heritage. The Nedlands Village Precinct Structure Plan provides the opportunity to assist in delivering housing, complementary uses and an appropriate built form interface with the UWA-QEII precinct. It is therefore important that both the City of Nedlands and the Department of Planning, Lands and Heritage consider the impacts on the area and the required coordinated planning in the assessment of this precinct structure plan. To ensure a coordinated approach to growth of this area, the City recommends the Nedlands Village Precinct Structure Plan consider the cumulative impact on traffic and parking management. While the UWA-QEII Precinct Plan has not been finalised, a draft Economic Development Strategy {DPLH, 2023/24), Traffic Impact Assessment and Parking Management Plan {COP 2022/23) have been prepared and previously made available to the City of Nedlands. The City looks forward to the continued joint working with the City of Nedlands on the UWA-QEII Precinct Plan. This will ensure an aligned approach to the planning and development of this area.	Noted.	No change.
03	City of Subiaco	No Comment.	Noted.	No change.

04	Department of Biodiversity Conservation and Attractions	No Comment.	Noted.	No change.
05	Department of Education	The proposed Precinct Structure Plan is located adjacent to Hollywood Primary School and therefore careful consideration in line with the Western Australian Planning Commission's Operational Policy 2.4 – Planning for School Sites (OP 2.4) is to be taken into account. It is important to ensure that no adverse impacts would result from the proposal on the school's amenity including traffic congestion during peak periods, compromised parking and access to the school, and the safety of its occupants. The Department has reviewed the information in support of the proposal and notes that despite providing increased population growth within the Hollywood Primary School's local intake area, majority of the proposed apartments will cater for retirement and assisted living housing for elderly people, which has minimal impact on student enrolments. Concerning the 8 to 10 storey development heights for Stage 2 and 4 of the PSP, the Department supports the terraced approach through increased setbacks of higher density development away from Monash Avenue. As schools are a sensitive land use, this approach is imperative to reduce the impact of higher density development over the school, such as overshadowing and visual privacy concerns. Similarly, the Department will continue to observe and monitor traffic on Monash Avenue for congestion and access given it is anticipated increased traffic will result from PSP development. Given the above, the Department has no objections for the proposal but will continue to closely monitor the student enrolment demand and if required, engage with the City to forward plan for the educational needs of the locality in line with OP 2.4. The Department	Non objection noted. Individual development applications will be referred to the Department of Education if affected.	No change.

		will also assess future development applications on the site on their merit, factoring in traffic, access, and safety considerations as discussed above. For future development applications across the PSP, the Department will recommend that a Construction Management Plan (CMP) will be required to address noise, odour, and dust emissions mitigation. The CMP is to include how car parking, delivery vehicles and traffic impacts associated with construction for development will be managed so as not to jeopardise the safety of the school community, particularly during peak school drop off/pick up times.		
06	Department of Fire and Emergency Services	I refer to your email dated 15 January 2024 regarding the submission of a Bushfire Management Plan (BMP) (Version B), prepared by Emerge Associates dated 9 October 2023, for the above Structure Plan. This advice relates only to State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7) and the Guidelines for Planning in Bushfire Prone Areas (Guidelines). It is the responsibility of the proponent to ensure the proposal complies with all other relevant planning policies and building regulations where necessary. This advice does not exempt the applicant/proponent from obtaining necessary approvals that may apply to the proposal including planning, building, health or any other approvals required by a relevant authority under other written law. 1. BAL Contour Map The proposed development layout should be overlaid on the BAL Contour Map to clearly show the impact of BAL ratings on proposed development. 2. BAL Rating		Modifications to the BMP is required prior to approval.

		Table 5 in the BMP should provide the resulting BAL rating for each plot of classified vegetation which is relevant to the proposal. Table 5 has a copy of the separation distances required to achieve all BAL ratings as found in Table 2.5 of AS3959 but has not recorded what the actual resulting BAL rating is for the development. 3. Location and Siting and Design A1.1 and A2.1 – not demonstrated Precinct J is impacted by BAL40/FZ. The Nedlands Village Masterplan shows high density development right to the lot boundary on the corner of Smyth Road and Monash Avenue. Given the density of the proposed development (up to ten storeys) it is unclear if the proposal can achieve the required setbacks to achieve BAL-29. The street setback for R-AC1 is 0-2 metres. The development plan / masterplan overlay has not been overlaid on the BAL Contour Map. The development overlay used on the BAL Contour Map is relating to the zoning of each precinct but does not show the concept layout of proposed buildings as presented in the PSP Report. 4. Vehicular Access The BMP has demonstrated that compliance to this element can be achieved at the structure plan layer. 5. Water The BMP has demonstrated that compliance to this element can be achieved at the structure plan layer.		
07	Department of Health	No response provided.	N/A	No change.

08	Department of Planning Lands and Heritage			
09	Department of Water and Environmental Regulation	No Comment.	Noted.	No change.
10	Main Roads WA (MRWA)	The development impact upon the road network is unknow due to uncertainties regarding Transport Impact Assessment (TIA). It is uncertain how many trips are being generated by this development and if road upgrades are required. Please provide an updated Transport Impact Assessment (TIA) in accordance with Transport Impact Assessment Guidelines (August 2016) and updated electronic SIDRA Intersection files (.sip) in Version 9 addressing the comments in below: 1. Provide additional information confirming the source of the trip generation rate for the 'residential' and 'commercial' use and number of dwellings proposed. If a survey has been used, please provide a complete copy of the survey information for consideration. <u>Justification for request</u> Unclear if the survey information is suitable for this use. Dwelling yield and commercial gross floor area (GFA) is missing from trip generation calculations. 2. The medical centre trip generation rates are low and based on a carparking rates used in previous development applications for medical land uses in the surrounding area. Main Roads recommended evidence be provided supporting the adopted trip generation rate. If survey data has been used this should be presented as part of this application. <u>Justification for request</u>	An amended TIA was provided by the applicant on 4 April 2024. This is generally to the satisfaction of the City. The revised TIA should be reviewed by MRWA	It is recommended that the revised TIA dated 4 April be referred to Main Roads WA and be included as part of any final PSP approval.

		Survey information is required to demonstrate that the adopted trip generation rate is representative of the proposal. Trips to medical centres should focus on what is generated by the development. 3. Further justification for the adopted background growth is required. <u>Justification for request</u> TIA on page 22 states that for the full build out scenario the "base year background traffic has been uplifted by 10%..." and "…no redistribution of background traffic resulting from the development was completed". It is noted development is proposed in the vicinity. 4. Provide a trip distribution diagram for the full build for AM and PM development traffic scenario and provide justification for the adopted trip distribution. <u>Justification for request</u> For clarity a diagram with development traffic only is required to be included within the TIA to understand the impact upon the wider network (such as the Stirling Highway/Smyth Road intersection). Figure 37 and 38 Traffic volumes and distribution within the TIA identify full build AM and PM scenario with both background and development traffic.		
11	Metropolitan Cemeteries Board	No response provided.	N/A	No change.
12	Public Transport Authority	No response provided.	N/A	No change.
13	Water Corporation	No response provided.	N/A	No change.
14	Western Power	No response provided.	N/A	No change.

Transport Impact Assessment

MONASH AVENUE, NEDLANDS

PROJECT	Hesperia Nedlands – Transport Impact Assessment
FILE NAME	81113-842-FLYT-REP-0002 Rev3

Revision	Description	Originator	Review	Date
0	Draft	AJS	CAS/Project	21/08/23
1	Reviewed	AJS	CAS/Project	28/09/23
2	Issued	AJS	CAS/Project/CoN	18/10/23
3	Final	CAS	CXS	29/03/24

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1. INTRODUCTION

1.1 Development Introduction

This Transport Impact Assessment (TIA) has been prepared by Flyt in support of the proposed Precinct Structure Plan at 62 Monash Avenue in Nedlands. This mixed use development proposes to increase the intensification of the land and includes a mix of dwelling types which integrate into the surrounding area. The creation of a Precinct Structure Plan ensures a high level of design focus will be applied to manage the mixed-use components, higher levels of density and character.

The location of the proposed development is shown in Figure 1.

Figure 1 Location of the subject site (source: Metromap)

This version of the assessment takes in to consideration the feedback and comments received from the City of Nedlands (CoN) in March 2024. This version also uses the updated Landscape Masterplan for the project and sets out the internal transport network including enhanced pedestrian connectivity.

1.2 Transport Impact Assessment

This TIA has been prepared in accordance with the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 2 – Planning schemes, structure plans and activity centre plans). The Guidelines promote a three level assessment process, where the required level of assessment is dependent on the likely level of impact, as follows (and as shown in Figure 2):

- Low impact – less than 10 peak hour trips, no assessment required.
- Moderate impact – between 10 and 100 peak hour trips, Transport Impact Statement required.
- High impact – more than 100 peak hour trips, full Transport Impact Assessment required.

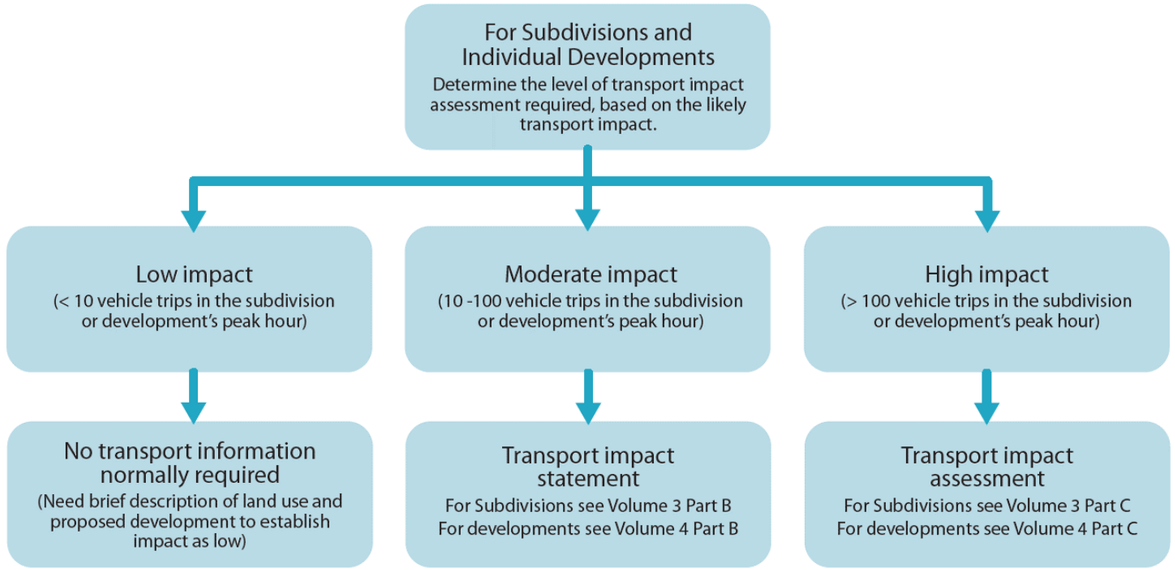


Figure 2 Level of transport impact assessment required (source: WAPC Transport Impact Assessment Guidelines, 2016)

As set out in section 5, the traffic attributable to the proposed development has been determined to have a high impact with more than 100 vehicle trips generated by the proposed structure plan area during the development's peak hour, therefore the required level of assessment is a TIA.

1.3 Report Structure

The report is structured as required by the WA Planning Commission's (WAPC) Transport Impact Assessment Guidelines (Volume 4 – Individual Developments), with the following items addressed:

- Development proposals and site context (Section 2)
- Vehicle access and parking (Section 3)
- Provision for service vehicles (Section 4)
- Traffic volumes and vehicle types (Section 5)

- Pedestrian access and amenity (Section 6)
- Bicycle access and amenity (Section 7)
- Public transport access (Section 8)
- Summary (Section 9).

2. PROPOSED DEVELOPMENT AND SITE CONTEXT

2.1 Development Site Context

The subject site is located between Karella Street, Smyth Road, Monash Avenue and Williams Road in Nedlands and is situated opposite Hollywood Private Hospital and Hollywood Primary School. The site is in the CoN and as indicated by the South West Aboriginal Land and Sea Council website, the site sits within the Whadjuk Region.

The site is zoned Residential, with land zoned Special Use on the west and northern sides. Land to the east and south is also zoned Residential with density codes ranging between R10 – RAC3 (Figure 3). Opposite the subject site to the north is Hollywood Primary School, an early learning centre and Hollywood Private Hospital, and to the west is the Karrakatta Cemetery complex.

Figure 3 Local Planning Scheme No. 3 (source: City of Nedlands)

The subject site is within close proximity of a range of services and education facilities such as the QEII Medical Centre which includes a large number of medical services including the Perth Children's Hospital, Sir Charles Gairdner Hospital, Ronald McDonald charities, North Metropolitan Health Services, research institutes and clinics. Kings Park is located 1.1km to the east and the University of Western Australia is 1.5kms to the south.

Bus stops with access to the high frequency buses, 950 and the 999/998 are located within 600m - 1.1km distance from the subject site.

Figure 4 Aerial imagery of subject site (source: Metromap)

2.2 Development Site Current Usage

The northern part of the site is currently being used by Regis to provide aged care services with the southern portion of the site vacant. Trips associated with the current uses will be assessed as part of the traffic assessment in section 5.

2.3 Proposed Development

The proposed development includes the following facilities which have all been considered within this TIA:

- 78 townhouse lots
- Approximately 450-500 apartments across three sites (subject to detailed design and individual assessments)
- A medical centre of approximately 15,900m^2 GFA which would be a consulting rooms model, rather than a hospital type facility
- Prioritising vehicle access from the external existing street network with vehicle access proposed from internal streets aside from existing development crossover locations on Monash Avenue and Williams Road
- Four new streets, two new laneways and associated intersections
- Pedestrian linkages from Karella Street through to site to Monash Avenue to allow for continuous pedestrian accessibility and improve access to Hollywood Primary School from the south, supporting active mobility trips
- Centralised open space and park area
- Retention of existing building at 118 Monash Avenue.

The proposed development plan is shown in Figure 5 and landscape master plan in Figure 6 – other site details are referred to throughout this TIA where required. The split of apartments or units on the larger residential sites would not be determined until development application stage to support each site.

For the purposes of this assessment, it should be noted that the upper end of the forecast multiple dwelling units (500) was used as the basis for calculating traffic generation and understanding potential impacts. The actual development on each of the multiple dwelling residential sites would be subject to more detailed planning and individual development application assessments for consideration by the CoN and other statutory planning authorities.

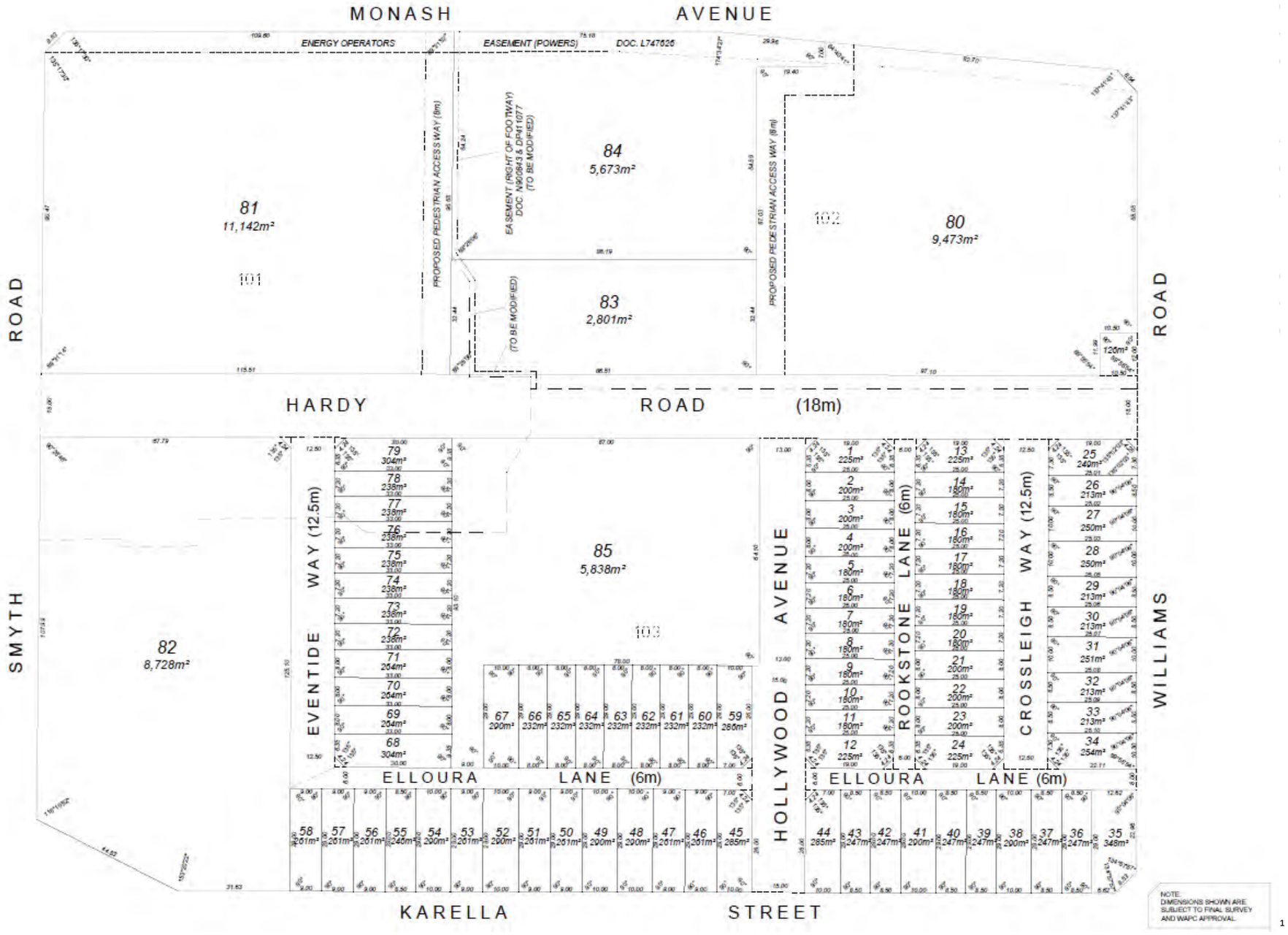


Figure 5 Proposed Subdivision Master Plan (source: Hesperia)

[1] Note – superseded plan, with Lot 53 being a Pedestrian Access Way as per Figure 6

LEGEND

- SITE BOUNDARY
- 01 EXISTING TREES TO BE RETAINED WHERE POSSIBLE
- 02 PROPOSED NEW INFILL STREET TREE PLANTING TO EXISTING ROAD VERGE WHERE PRACTICABLE, TO BE COORDINATED WITH CITY OF NEDLANDS AND WESTERN POWER
- 03 EXISTING EUCALYPTUS CITRIODORA TO BE RETAINED IF POSSIBLE
- 04 HARDY ROAD WITH ROAD DEVIATION & ENTRY MEDIANS FOR TRAFFIC CALMING. LARGE TREE PLANTING AT 10M CTS IN PLANTED VERGE WITH 2M WIDE FOOTPATH TO BOTH SIDES & SINGLE FLUSH PARALLEL PARKING BAYS. REFER TO STREETSCAPE SECTIONS
- 05 VILLAGE PARK, REFER TO DETAILED PLAN M1.102
- 06 ROAD AND PARKING BAYS RAISED TO BE FLUSH WITH VERGE LEVELS TO HARDY ROAD & HOLLYWOOD AVE ADJACENT TO VILLAGE PARK
- 07 EVENTIDE & CROSSLEIGH WAY WITH UNIT PAVED FLUSH ROAD & FOOTPATH. TREE PLANTING IN PLANTED TREE WELLS AT LOT BOUNDARIES WITH 1.2M FOOTPATHS TO BOTH SIDES, REFER TO STREETSCAPE SECTIONS
- 08 FUTURE PUBLIC ACCESS WAY CONNECTION TO MONASH AVE, TO BE DEVELOPED WITH ADJACENT LOT
- 09 HOLLYWOOD AVE WITH LARGE TREE PLANTING AT 10M CTS IN PLANTED VERGE. 2M WIDE FOOTPATH ON THE EAST SIDE WITH SINGLE FLUSH PARALLEL PARKING BAYS. WEST VERGE TO BE FULLY PLANTED EXCEPT AT INTERFACE WITH POS, REFER TO STREETSCAPE SECTIONS
- 10 ELLOURA & ROOKSTONE LANE WITH UNIT PAVED ROAD WAY.
- 11 PROPOSED CROSSOVER TO ACCESS LOT (LOCATION TBC)

Figure 6 Proposed Subdivision Landscape Master Plan (source: Plan E)

3. VEHICLE ACCESS AND PARKING

3.1 Existing Road Network

The road hierarchy surrounding the subject site is shown in Figure 7 and posted speed limits are shown in Figure 8.

Figure 7 Road hierarchy surrounding the site (source: Main Roads WA)

Figure 8 Speed zoning surrounding the site (source: Main Roads WA)

In relation to the classifications of Monash Avenue and Smyth Road, the Main Roads classifications are:

Distributor B: Distributor B roads have a high degree of connectivity and typically connect to Primary Regional and other Distributor roads. While they often have reduced capacity, they usually have high traffic volumes travelling between industrial, commercial and residential areas. Indicative traffic volumes are more than 6,000 vehicles per day (vpd) with capacity for heavy vehicles.

Local Distributor: Local Distributor roads have a medium degree of connectivity and support the movement of traffic within local areas and connect access roads to higher order Distributors. Within built up areas, indicative traffic volumes are no higher than 6,000 vpd. Heavy vehicles are permitted but preferably only to service properties.

All other streets adjacent to the site are Access Roads, lower order carriageways that typically sit within a 20m reserve and include at least footpath infrastructure on one side of the reserve.

3.2 Monash Avenue

Monash Avenue is a Distributor B road with a default speed limit of 50km/h. Between 7.30am – 9.00am and 2.30pm – 4.00pm on school days, the speed limit reduces to 40km/h to facilitate safe access for children to and from Hollywood Primary School. A cross section of the existing carriageway is shown in Figure 9.

The carriageway is approximately 13m wide within a 20m road reserve and includes dedicated space for on-street embayed parking on both sides adjacent to the subject site. Parking is limited to a maximum of two hours Monday to Saturday 8.00am - 6.00pm. There is a zebra crossing 30m west of the intersection with Williams Road and a horizontal deflection device 35m from the intersection with Smyth Road.

Monash Avenue provides an integral link to the hospital precinct as well as providing an east – west connection to Winthrop Avenue.

Bus route 25 travels along Monash Avenue and provides connections between Claremont Station and Shenton Park Station via QEII Medical Centre and Hollywood Private Hospital.

Trafficmap data for Monash Avenue (east of Smyth Road) recorded an average of 6,396 vehicles per week day in 2019/2020. 85th percentile speeds are shown to be below 2-10kms below the posted speed limit across most of the day as a result of the narrow carriageway, high turnover of on-street parking, the bus route, and high volumes of pedestrians. There is a consistent flow of vehicles across the day with peaks in the AM commuting time, lunch time, school pick up and the PM commuting time in the evening (see Figure 10).

Monash Avenue extends through to Thomas Street and the QEII Hospital complex to the east.

Figure 9 Monash Avenue – view to east past subject site (source: Google Street View)

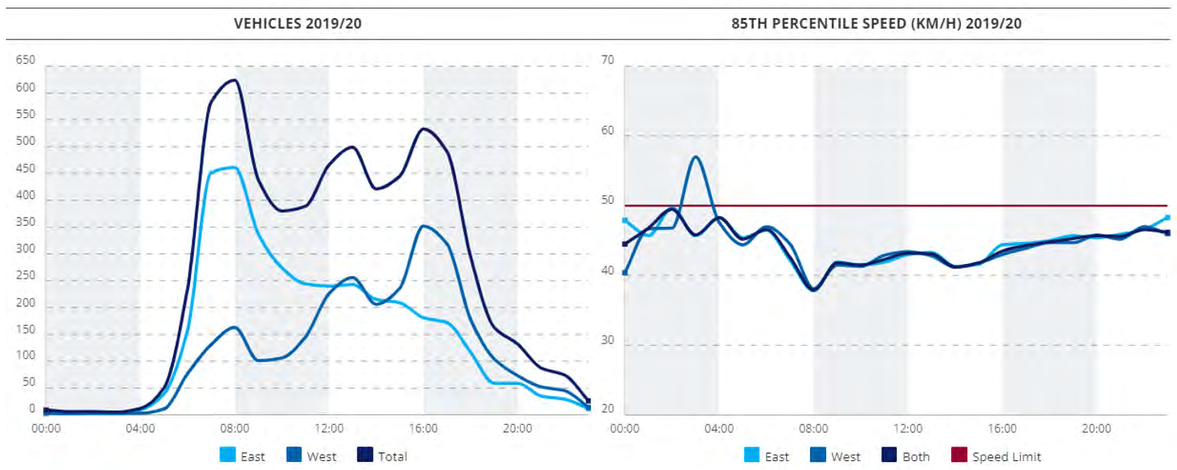


Figure 10 Trafficmap data volumes and 85th percentile speed (source: Main Roads WA)

3.3 Smyth Road

North of the site, Smyth Road is a Distributor B road and continues this designation onwards from Monash Avenue to Aberdare Road, another District Distributor. Adjacent to the site, Smyth Road is a Local Distributor road and runs from Stirling Highway to the south and Aberdare Road to the north with a default speed limit of 50km/h.

Adjacent to the site, the carriageway is approximately 7.25m wide within a 20m road reserve without any designated space for on-street parking. Between 7.30am – 9.00am and 2.30pm – 4.00pm on school days, safe access to Hollywood Primary School is prioritised via a reduced 40km/h speed zone and a crossing guard. There are footpaths on both sides of the street, with the path on the eastern side measuring 2m and 1.5m on the western side.

The existing configuration of Smyth Road near the site is shown in Figure 11.

Figure 11 Smyth Road view to north past subject site (source: Flyt)

Weekday Trafficmap data from Smyth Road (south of Monash Avenue) recorded an average of 9,103 vehicles per day in 2019/2020. These volumes exceed the capacity limits set by Main Roads WA for a Local Distributor road. 85th percentile speeds are generally above the posted speed limit of 50km/h with the exception of the school zone speed reduction times when vehicle speeds can reduce to 44km/h (still 4km higher than the speed limit). Information from Trafficmap is shown in Figure 12.

The data shows that speeding is a common behaviour along Smyth Road and options for traffic calming should be pursued.

The AM commuting time at 8.00am has the highest volume of vehicles however clear spikes are also evident at lunch time, school pick up and the PM commuting time in the evening.

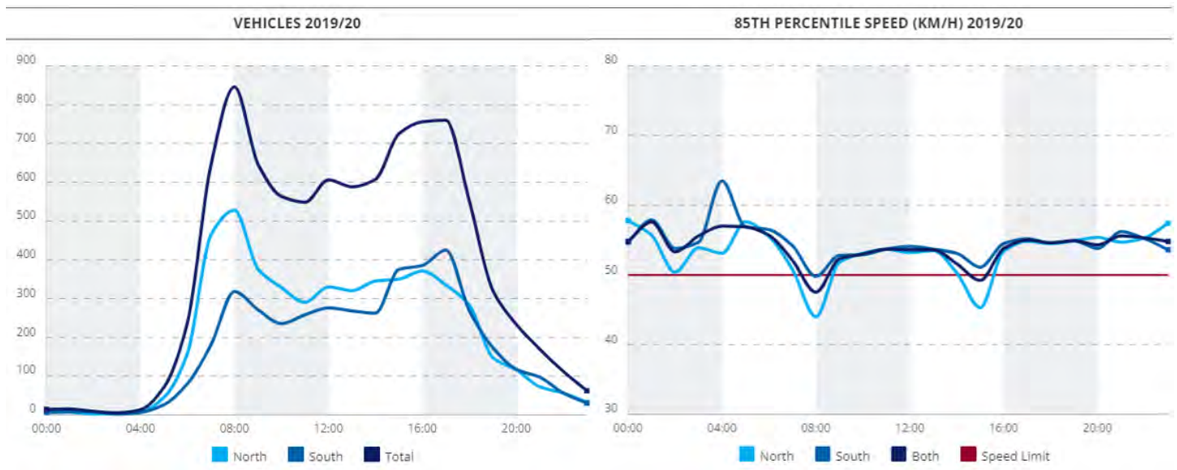


Figure 12 Trafficmap data volumes and 85th percentile speed (source: Main Roads WA)

3.4 Williams Road and Karella Street

Williams Road and Karella Street are local Access Roads and function as one continuous carriageway where Williams Road runs north-south and Karella Street runs east-west. Both streets have a default speed limit of 50km/h with No Stopping yellow line markings evident along both sides of the carriageway.

The carriageway is approximately 6m wide within a 20m road reserve with on-street parking not permitted. There are footpaths on both sides of the street, with the path surrounding the subject site measuring 2.5m and 1.5m on the opposite side. The street cross section of Williams Road adjacent to the site is shown in Figure 13 and Karella Street is shown in Figure 14.

Figure 13 Williams Road view to south past subject site (source: Flyt)

Figure 14 Karella Street view to west past subject site (source: Flyt)

3.5 Intersection Configurations

The surrounding network intersections are described in the following sections to provide context to existing configurations and potential access arrangements for the proposed development.

3.5.1 Monash Avenue and Smyth Road

This three-way intersection is managed by a roundabout with all turning movements permitted. At the intersection, Monash Avenue and Smyth Road both have one lane travelling in each direction which are separated by a hard median with a pedestrian cut-through. An aerial image of this intersection is shown in Figure 15. This roundabout was converted from a stop sign T-Intersection in June 2019.

Figure 15 Monash Avenue and Smyth Road intersection (source: Metromap)

3.5.2 Karella Street and Smyth Road

This four-way intersection is managed by a roundabout with all turning movements permitted, with the exception of the western arm of Karella Street which allows inbound movements only. At the intersection, Karella Street and Smyth Road both have one lane travelling in each direction which are separated by a hard median with a pedestrian cut-through. An aerial image of this intersection is shown in Figure 16.

During a site visit conducted on August 1, 2023, a total of 24 people riding a bike and 13 people were recorded using this intersection between 8.00am and 9.00am.

Figure 16 Karella Street and Smyth Road intersection (source: Metromap)

3.5.3 Williams Road and Monash Avenue

This three way intersection is priority controlled with priority of movement given to Monash Avenue. All turning movements are permitted and both streets have one lane in each direction. There is a median on Williams Road which separates in and out-bound traffic. An aerial image of this intersection is shown in Figure 17.

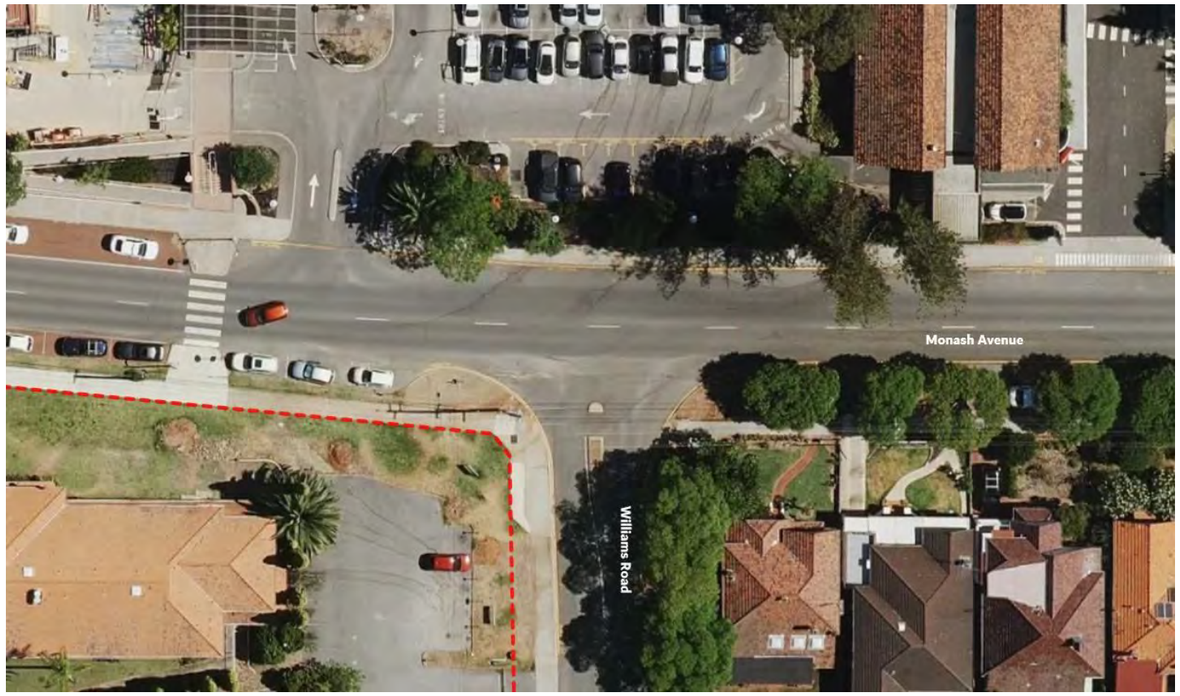


Figure 17 Monash Avenue and Williams Road intersection (source: Metromap)

3.6 Existing On-Site Access and Parking

The subject site currently has three crossovers located on Monash Avenue, two along Smyth Road, six (mainly redundant ones) on Karella Street and four on Williams Road (two of which are also largely redundant). These are shown in Figure 18.

The site currently accommodates a range of accommodation, residential dwellings and aged care related therapy centres along with associated parking facilities, with many of these located in basement parking areas and in carports for individual dwellings. Offices for aged care provider, Regis, are located on Monash Avenue.

The existing aged care facility on the corner of Monash Avenue and Williams Road has approximately 80 car parking bays associated with it, not including short term or drop off bays associated with the porte cochere operations. This site has access via Williams Road at two locations between Hardy Road and Monash Avenue.

Figure 18 Existing crossovers (source: Metromap)

3.7 Proposed Vehicle Access

The development of the site proposes to reduce the overall number vehicle access points from 14 crossovers to three intersections, removing many redundant crossovers most of which were associated with historical land uses along Karella Street. The development sites at the corner of Monash Avenue and Williams Road could retain the existing crossovers that are already in situ and provide access for traffic associated with site operations.

The development proposes to create two streets through the site which would largely reflect the existing pattern of development in Nedlands. Internal streets and a laneway would all intersect the two main streets (Hollywood Avenue and Hardy Road). In addition to the main streets, both Eventide Way and Crossleigh Way will run north-south and Elloura Lane will run east-west providing rear access to development lots.

The location of these new streets and intersections is shown in Figure 19.

Pedestrian access ways would extend from Monash Avenue through to Karella Street via two corridors, creating safe and direct access to Hollywood Primary School and Monash Avenue for existing residential streets to the south of the proposed development. This will assist in the promotion of active mobility to and from the school and reduce pedestrian travel time.

Figure 19 Proposed site layout (source: Hesperia)

Table 1 Proposed intersection analysis

Intersection	Proposed Intersection Description	Notes / Issues
1	All turning movements permitted, managed by Give Way sign	Intersection located at existing street tree and electrical pole. Within 20m of the bus stop which may require relocation and rebuilding to cater for DDA compliance. Sightlines comply with MRWA requirements. Potential configuration of intersection as a left-in, left out movement only to address any potential future safety related issues.
2	All turning movements permitted. Located opposite Portland St and creates a four way intersection. Managed by Give Way sign on Hollywood Avenue and Portland Street.	Intersection located at existing street tree. Sightlines comply with MRWA requirements. Provides southern access and egress point from proposed development.
3	All turning movements permitted. Managed by Give Way sign on Hardy Road legs.	Located opposite Hardy St and creates a four way intersection. Would need give way controls. Sightlines comply with MRWA requirements. Allows for access to Williams Road and Hardy Road.

To inform planning on the site and the configuration, a review of the existing intersection controls in the immediate area was undertaken, as shown in Figure 20. This showed that intersection controls are generally give way or stop sign controlled, with the controlled leg varying depending on the locational factors.

This same approach has been applied to designing the precinct network, with a grid network designed to allow for ease of accessibility for pedestrians and internally generated traffic.

Figure 20 Existing intersection controls on immediate network

3.8 Internal Streets

The detailed planning and design of the internal street configurations relating to cross sections, landscaping, drainage, parking layouts and pedestrian crossing points will all be progressed within the following stages of design development. The details in this TIA provide the framework for future design development and to provide the CoN with an understanding of the form of street configurations which would inform the subdivision process. The cross sections and street alignments are also addressed within the landscape plan for the proposed development. The street network is comprised of:

- Hollywood Avenue – north-south internal access street between Hardy Road and Karella Street, footpath on eastern side of reserve area
- Hardy Road – extension of existing east-west alignment to connect Smyth Road and Williams Road, footpaths on both side of reserve
- Eventide Way – internal access street connecting Hardy Road with Elloura Lane and provides access for sites fronting Smyth Road and the internal park area, footpaths on both side of reserve
- Crossleigh Way – internal access street connecting Elloura Lane with Hardy Road and providing vehicle access for frontage lots and those with frontage to Williams Road, footpaths on both side of reserve
- Elloura and Rookstone Lane – internal laneway providing vehicle access for lots fronting Karella Street and the park area / Hollywood Avenue.

3.8.1 Hollywood Avenue

Hollywood Avenue will run north-south from Hardy Road and have a number of different configurations in a 15m or 13m reserve. It will be a two-way carriageway with 6m pavement width. The street cross section will incorporate embayed parking, a footpath on t he eastern side of the carriageway and landscaping features extending through the open space area central to the site.

There will be no through access on Hollywood Avenue from Monash Avenue to Hardy Road, with a pedestrians and cyclists only access way being included within the precinct plan. Cross section locations for Hollywood Avenue are shown in Figure 21 with site specific cross sections shown in Figure 22, Figure 23 and Figure 24. This includes space for shade trees and a 2m wide footpath that will extend through to Karella Street and allow for through pedestrian access from areas to the south through to Monash Avenue.

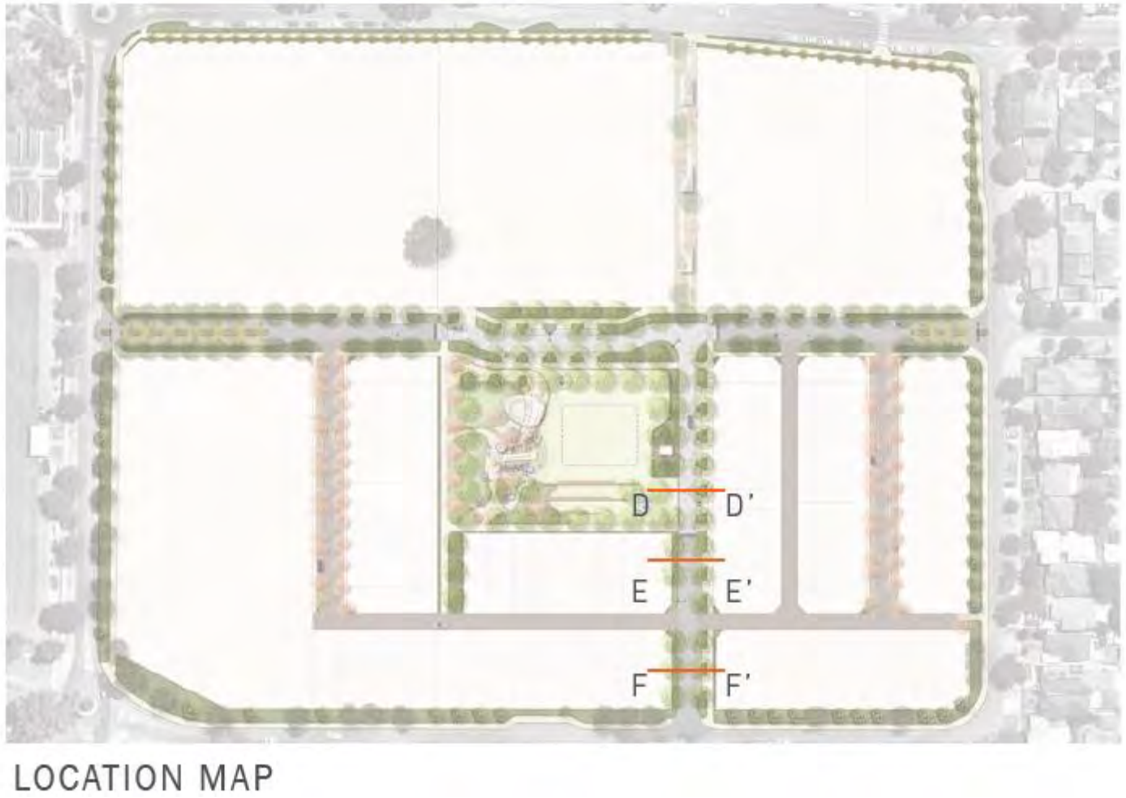


Figure 21 Location of street cross sections on Hollywood Avenue

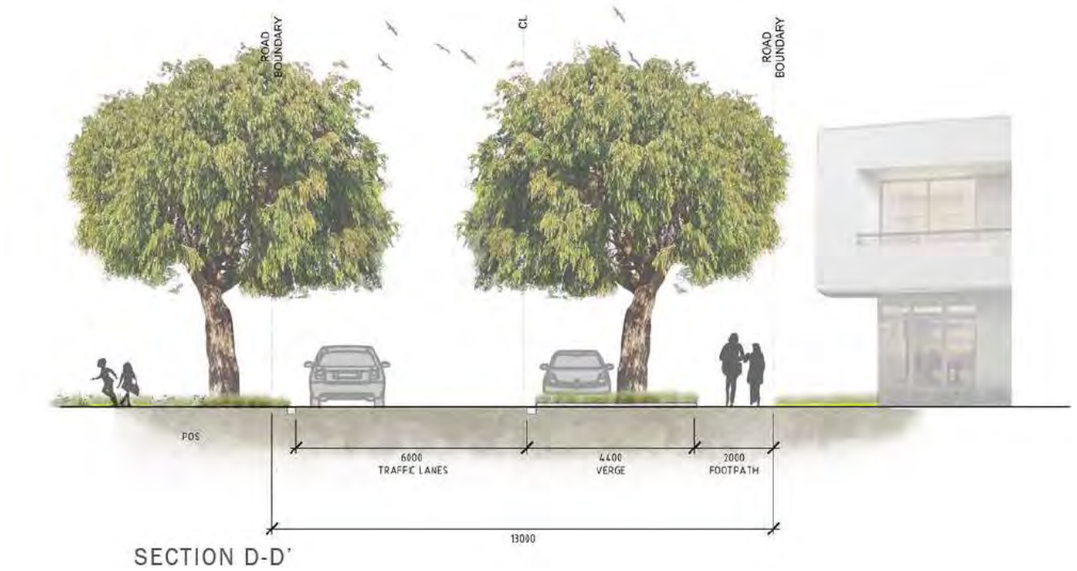


Figure 22 Northern cross section Hollywood Avenue (source: Plan E)

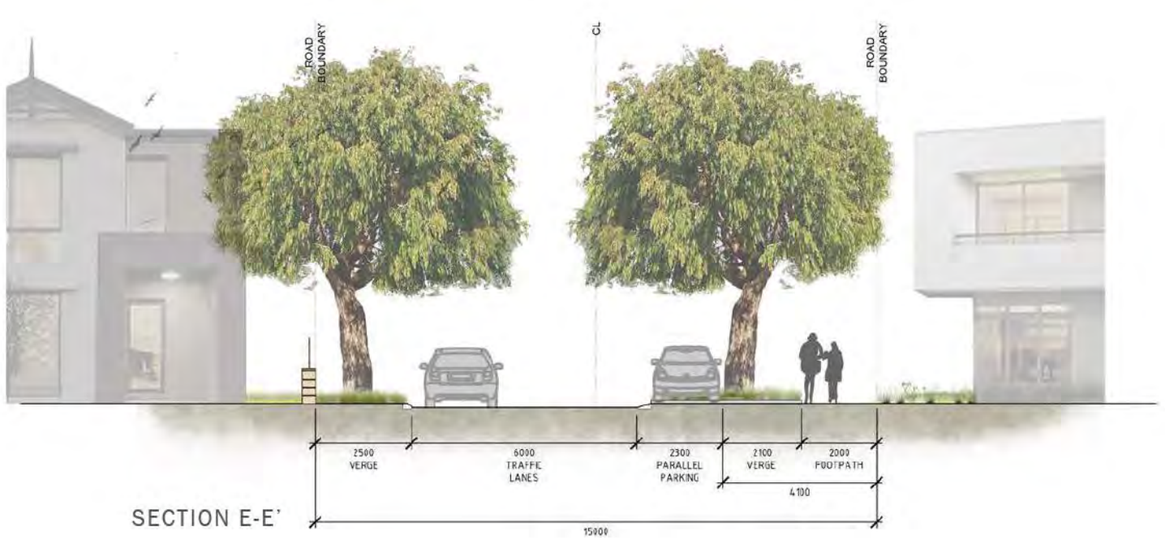


Figure 23 Central cross section - Hollywood Avenue (source: Plan E)

[2] Note – superseded plan, with Lot 53 being a Pedestrian Access Way as per Figure 6

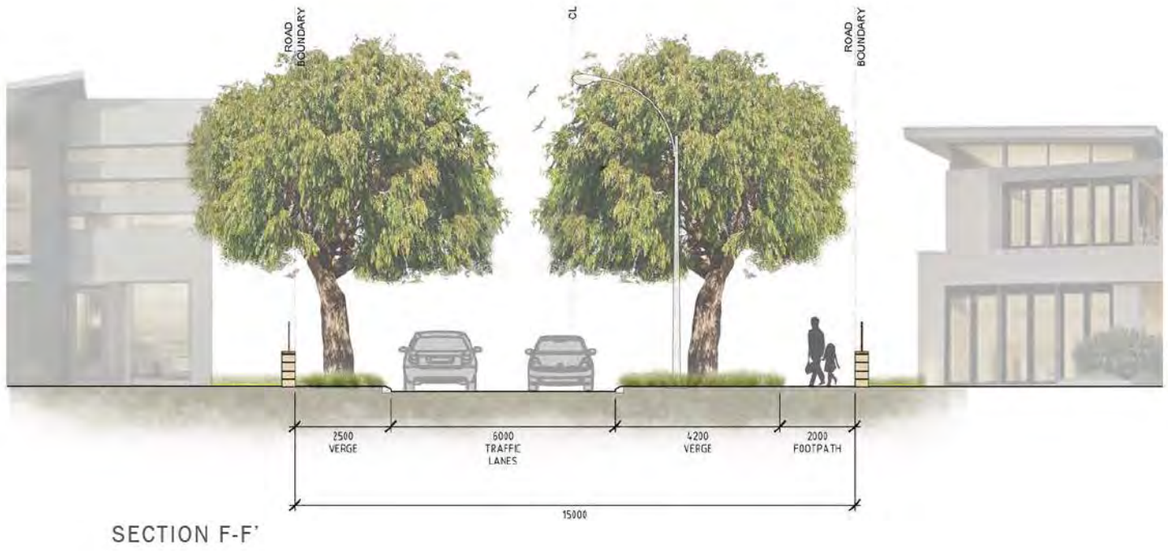


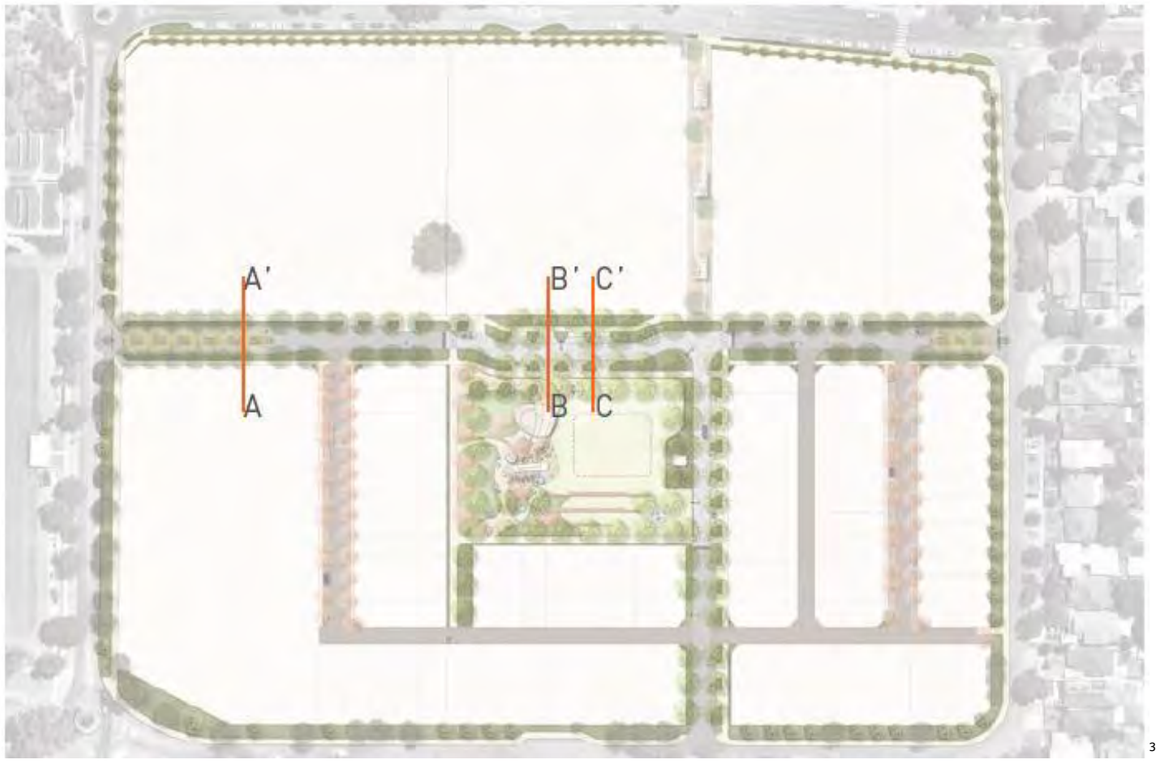
Figure 24 Southern cross section - Hollywood Avenue (source: Plan E)

3.8.2 Hardy Road

Hardy Road will run east-west through the site along the alignment of the existing Hardy Road reserve to provide a connection from Williams Road to Smyth Road. Through the site the carriageway will sit in an 18m reserve with on-street parking included alongside a footpath and landscaping features on both sides of the reserve. It will be a two-way carriageway with 6m pavement width. Location of street cross sections for Hardy Road are shown in Figure 25.

The indicative cross section of Hardy Road between Eventide Way and Smyth Road is shown in Figure 26. This section includes a median section for vegetation and drainage features. Footpaths are provided on both sides of the street reserve adjacent to development sites to allow for greater safety of pedestrian movements. No on-street parking is provided for in this section of Hardy Road.

The central sections of Hardy Road adjacent to the park area are shown in Figure 27 and Figure 28. This section of Hardy Road shows the configuration of footpaths, landscaping features and embayed parking which will serve both the park area and adjoining residential development sites.



[3]

Figure 25 Cross section locations (source: Plan E)

[3] Note – superseded plan, with Lot 53 being a Pedestrian Access Way as per Figure 6

Figure 26 Cross section – western end of Hardy Road (source: Plan E)

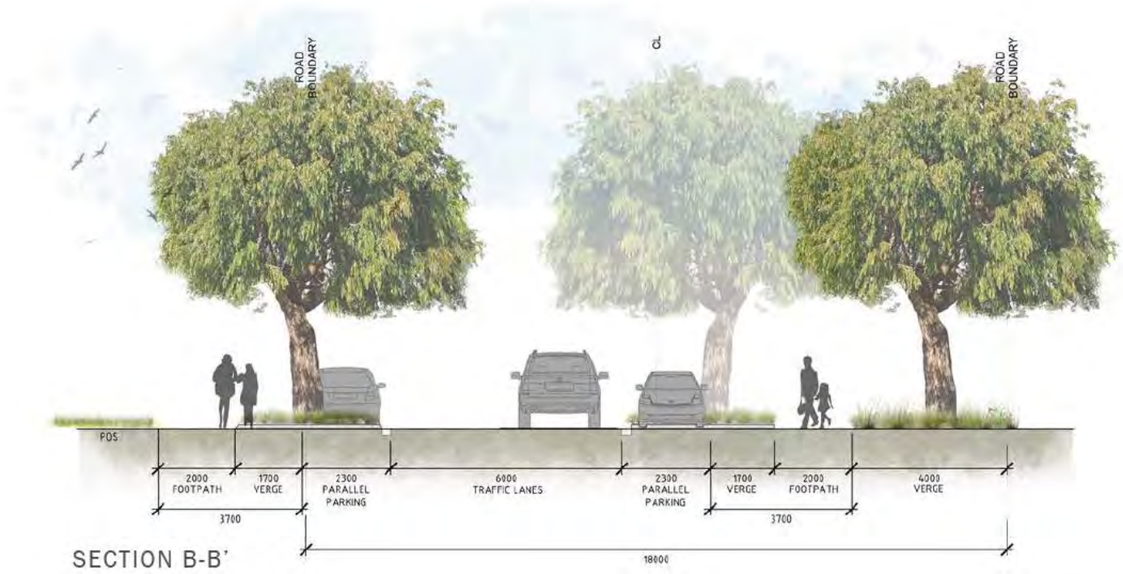


Figure 27 Cross section – central area of Hardy Road (source: Plan E)

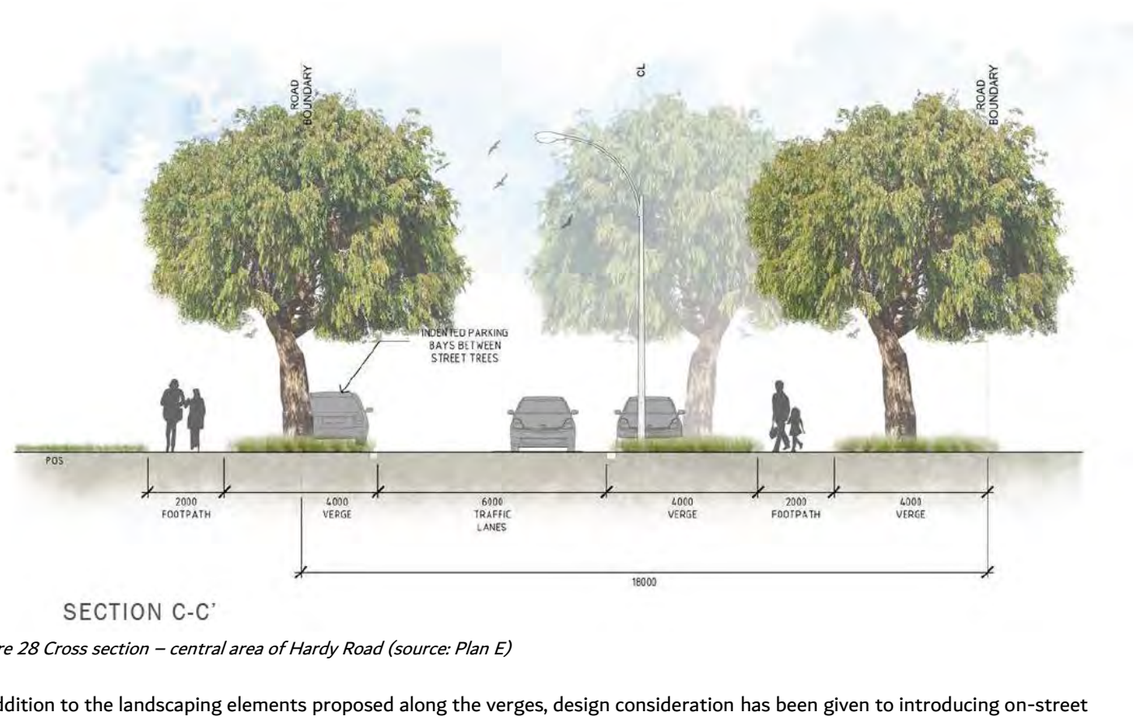


Figure 28 Cross section – central area of Hardy Road (source: Plan E)

In addition to the landscaping elements proposed along the verges, design consideration has been given to introducing on-street calming and landscaping elements to ensure that a slower speed environment is delivered. The forms of treatments considered reflect some of the appropriate design treatments considered within the DoT "Planning and Designing for Active Transport in Western Australia" guideline which include:

- Realignment of Hardy Road carriageway in a form of chicane treatment adjacent to parking bays and driveway access to reduce speed
- Vertical deflection measures to reduce speeds at the entrance to the park area and on-street bays
- Raised pedestrian treatments along desire lines for pedestrians on through routes from Karella Street to Monash Avenue.

The ultimate configuration of the alignment of Hardy Road through the central section of the carriageway adjacent to the park area would be determined during the detailed design stage of the project in conjunction with the CoN, but design preference is to retain features that actively reduce vehicle speed and support safer pedestrian movements.

The eastern end of Hardy Road adjacent to the intersection of Williams Road will continue to provide for footpaths on both sides of the carriageway. A 6m carriageway would be central within the reserve and then would splay at the intersection of Williams Road to include a 2m wide island with a pedestrian refuge to provide for north-south pedestrian movements on Williams Road. The cross section for Hardy Road between Rookstone Land and Crossleigh Way is shown in Figure 29.

Figure 29 Cross section - eastern end of Hardy Road (source: Plan E)

3.8.3 Eventide Way

Eventide Way will be a lower order access street which will provide access to development sites fronting Smyth Road and townhouses overlooking the area of central open space. The reserve is proposed to be 12.5m wide which would include on-street parking on the western side of the carriageway and footpaths on both sides of the carriageway. It would connect to Elloura Lane and will be a two-way carriageway with 5.5m pavement width.

The proposed cross section for Eventide Way is shown in Figure 30. The eastern side of the carriageway will allow for the access crossovers into the individual lots fronting open space.

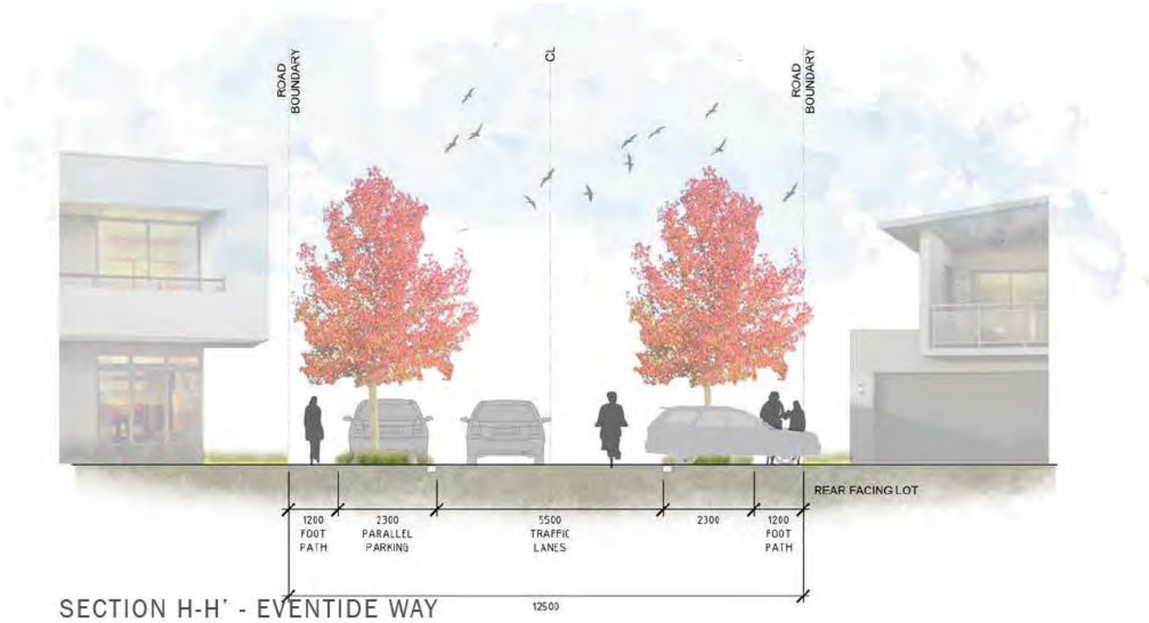


Figure 30 Cross section Eventide Way (source: Plan E)

3.8.4 Crossleigh Way

As with Eventide Way, Crossleigh Way will sit in a 12.5m wide reserve with access to development sites on the Williams Road frontage. It would connect Hardy Road to Elloura Lane and will be a two-way carriageway with 5.5m pavement width. On-street parking would be provided on the western side given that the frontage lots would have rear access via Rookstone Lane. 1.2m wide footpaths would be provided on either side of the carriageway.

The cross section proposed for Crossleigh Way is shown in Figure 31.

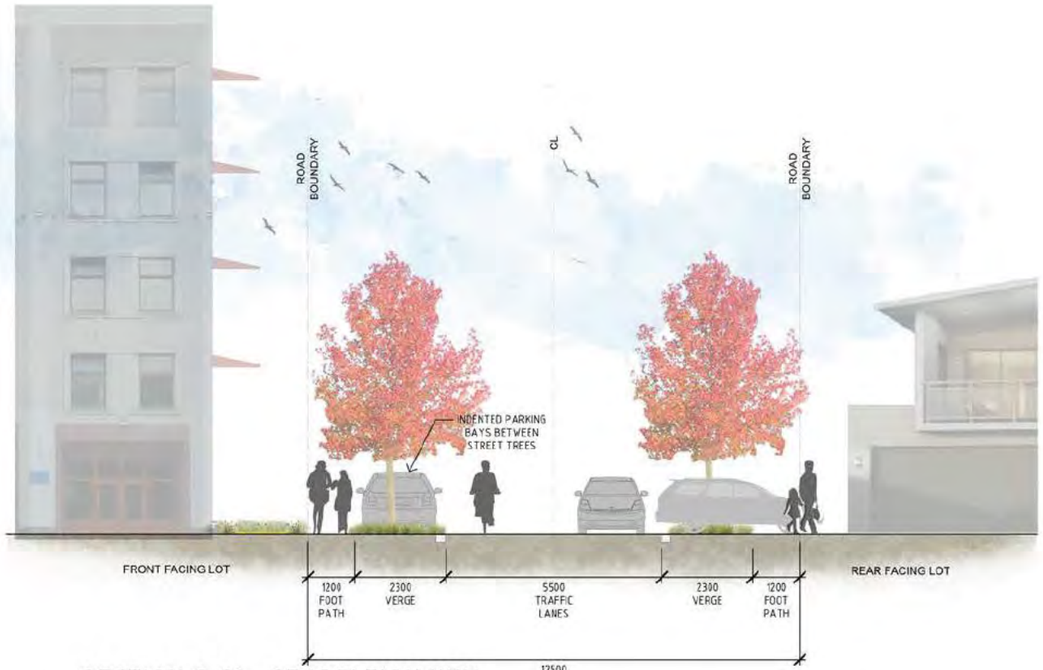


Figure 31 Cross section Crossleigh Way (source: Plan E)

3.8.5 Elloura Lane

Elloura Lane is proposed to have a carriageway width of 5.5m. These specifications align with Liveable Neighbourhoods guidelines for rear loaded lots along laneways and have a maximum target speed of 15km/h and are proposed to carry a maximum of 300 vpd.

The laneway will connect through from Eventide Way to Crossleigh Road and intersect with both Hollywood Avenue and Rookstone Lane. 2m truncations have been applied to intersections and internal setbacks within lots for turning movements and landscape features have been incorporated.

The cross section for Elloura Lane is shown in Figure 32.

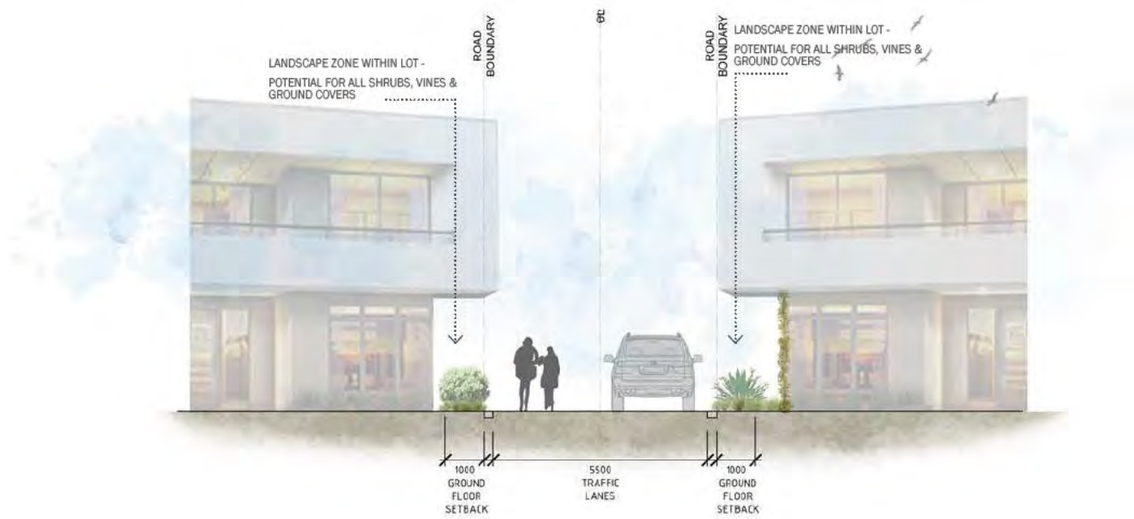
Figure 32 Cross section Elloura Lane (source: Plan E)

3.8.6 Rookstone Lane

Similar to Elloura Lane, Rookstone Lane is proposed to have a carriageway width of 5.5m and only provide access to individual townhouse sites. These specifications align with Liveable Neighbourhoods guidelines for rear loaded lots along laneways and have a maximum target speed of 15km/h and are proposed to carry a maximum of 300 vpd.

The laneway will connect through from Hardy Road to Elloura Lane. 2m truncations have been applied to intersections at either end and internal setbacks within lots for turning movements and landscape features have been incorporated.

The cross section for Rookstone Lane is shown in Figure 33.



SECTION K-K' - ROOKSTONE LANE

Figure 33 Cross section Rookstone Lane (source: Plan E)

3.9 Intersections

The proposed approach to the configuration of intersections within the development is shown in Figure 34. These controls were utilised in the network assessment completed in section 5.

All intersections for the internal network would be marked and sign posted Give-Way intersections, or unmarked priority turn give way intersections at the laneways.

Figure 34 Proposed intersection controls summary

3.10 Proposed On-Street Parking

Options for on-street parking will be provided within the development area, with final design configurations being progressed through more detailed stages of the development. Street reserves have been configured to allow for on-street parking to be provided on most carriageways which will provide for short term visitation.

Given the location of the development, it would be expected that all on-street parking within internal streets would be time restricted at a minimum. Allocation of spaces per user group (ACROD, service, short term, motorcycle) would be based on City of Nedlands requirements.

There would also be the potential for up additional bays being created on Monash Avenue to cater for existing land uses that front Monash Avenue. The overall volume of on-street parking which eventuates would be subject to a range of factors, including site access requirements, design standards and landscaping, but could yield 32 on-street parking bays. Indicative locations for on-street bays within the internal street network are shown in Figure 35, with embayments evident in the landscape design plan set out in Figure 6.

Figure 35 Potential locations for on-street managed parking bays

An example of the form of on-street bays being considered is shown in Figure 36, which has embayments on both sides of Hardy Road through the area adjacent to open space and the design also accommodates bays and landscape features providing shade trees. The alignment of Hardy Road is also designed to accommodate slower moving traffic, rather than being a straight, fast corridor.

Figure 36 Example of potential on-street embayment parking layout (source: Plan E)

3.11 Required Parking

Parking rates for the residential development will align with the relevant state planning policies including SPP 7.3 "Residential Design Codes Volume 2 – Apartments" for Location B. Based on the potential yields proposed within the precinct, the level of on-site parking provided for residential land uses could range up to 900+ bays. Based on significant survey data within inner Perth, at full build these bays would likely be 65% - 75% occupied, resulting in an overnight off-street parking volume of between 590 – 680 vehicles.

The provision of residential parking is dependent upon the ultimate dwelling mix and operation of the commercial and medical centres and will be assessed during the later stages of planning. The volumes provided set out an indicative outcome based on existing guidelines and known occupancy rates within inner suburban developments.

Parking within the medical centre and the commercial development would be required inline with the rates outlined in the City of Nedlands Local Parking Policy 1.4: Parking. For the purposes of the assessment completed within section 5, a volume of 200 parking bays were allocated to site M and N based on the type of land use proposed for the site. That site would also be subject to a more detailed assessment at individual development application stage where specific transport related impacts would be assessed.

4. PROVISION FOR SERVICE VEHICLES

4.1 Service Movements

Waste collection will be conducted by the City of Nedlands. The existing and proposed road network will need to accommodate the swept path movements of a large 11-12.5m waste collection vehicle. Where required in the precinct, truncations have been included to allow for movement of service vehicles along rear lane ways, in particular Elloura and Rookstone Lanes.

The swept path movements of larger vehicles may not be lane correct at tight corner radii. Tight corner radii are acceptable at low volume intersections with no lane markings and are in fact recommended to maintain slow vehicle speeds for a safer walking environment.

Details relating to onsite servicing, waste and deliveries for the apartment sites would be resolved during the subsequent stages of planning and development application processes. All servicing would be proposed to be completed on lower order streets within the development rather than Monash Avenue (aside from existing crossovers for the site at the intersection of Williams Road and Monash Avenue) and Smyth Road. Townhouses fronting both Williams Road and Karella Street would be serviced from the rear of the properties.

For the medical and commercial lots, servicing would be accessed via crossovers provided via Monash Avenue and from Williams Road at or near the existing locations. This would represent a continuity of existing service arrangements.

5. TRAFFIC VOLUMES AND VEHICLE TYPES

5.1 Assessment Introduction

In order to inform the proposed development layout and treatment of the surrounding street network, analysis of the traffic impacts have been undertaken. This level of analysis covers the detailed information required to understand traffic implications for the site. Assessment completed comprised of the following:

- Completion of site traffic data collection for the network, including turning movements during peak periods and gap data
- Review of information from Main Roads TrafficMap, including all count, heavy vehicle and speed data for use
- Development of 2023 Base Year site and network models using Main Roads WA parameters for the AM and PM peak hour in SIDRA Intersection 9.1
- Development of Opening Year site and network models using Main Roads WA parameters for the AM and PM peak hour in SIDRA Intersection 9.1
- Development of a Full Build site and network model which nominally uses a 10 year horizon to reflect the WAPC reporting requirements (rather than actual timing or delivery of development on site which may be delivered prior to or after a ten year horizon)
- Assessment of historical traffic trends to understand network characteristics.

All SIDRA outputs are included within Appendix A.

5.2 Modelling Timeframes and Network

Network modelling has been undertaken in SIDRA Intersection 9.1 Plus version 9.1.1.200 for the following periods:

- AM 2023 Base Peak Hour (determined by Traffic Map data assessment for all weekdays along Smyth Road and Monash Avenue)
- PM 2023 Base Peak Hour (determined by Traffic Map data assessment for all weekdays along Smyth Road and Monash Avenue)
- AM Peak Hour (2026) Development Opening (determined by Traffic Map data assessment for all weekdays along Smyth Road and Monash Avenue)
- PM Peak Hour (2026) Development Opening (determined by Traffic Map data assessment for all weekdays along Smyth Road and Monash Avenue)
- AM Peak Hour (nominally 2036) Development Full Build (determined by Traffic Map data assessment for all weekdays along Smyth Road and Monash Avenue)
- PM Peak Hour (nominally 2036) Development Full Build (determined by Traffic Map data assessment for all weekdays along Smyth Road and Monash Avenue).

The layout of the base network modelled is shown in Figure 37 and the opening year / forecast year network is shown in Figure 38. All networks focus on the main routes and intersections along Monash and Smyth given the very low levels of traffic associated with other side streets. Given the level of traffic associated with the development, discussed in section 5.3, side streets such as Hardy Road at its intersection of Williams Road would not display any capacity or volume issues when taking into consideration mid-block capacity. Site observations in 2023 confirmed the low levels of background traffic on both Hardy Road and Williams Road, which are reflected in the base network model outcomes set out in .

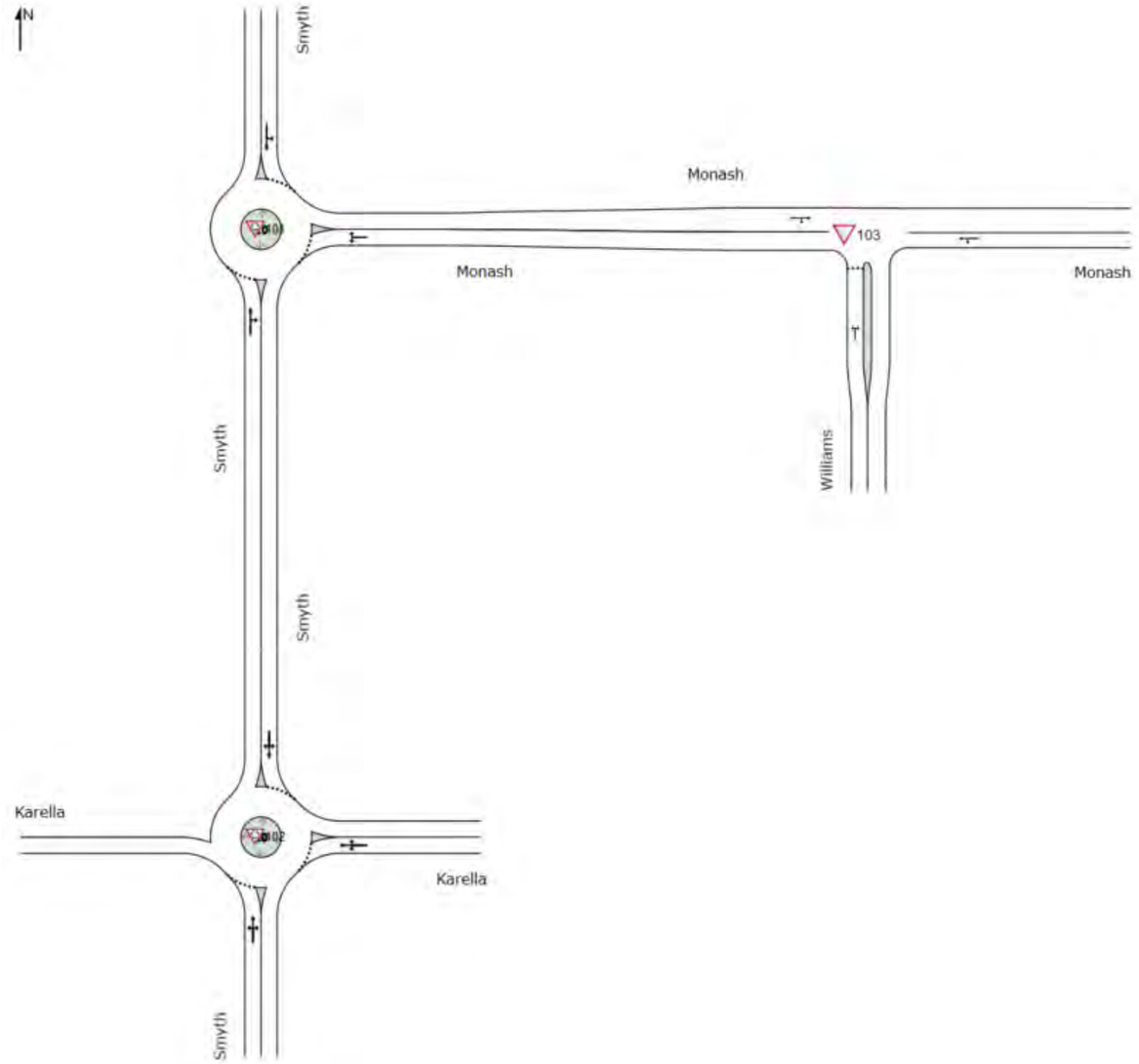


Figure 37 SIDRA Network – 2023 Base Models

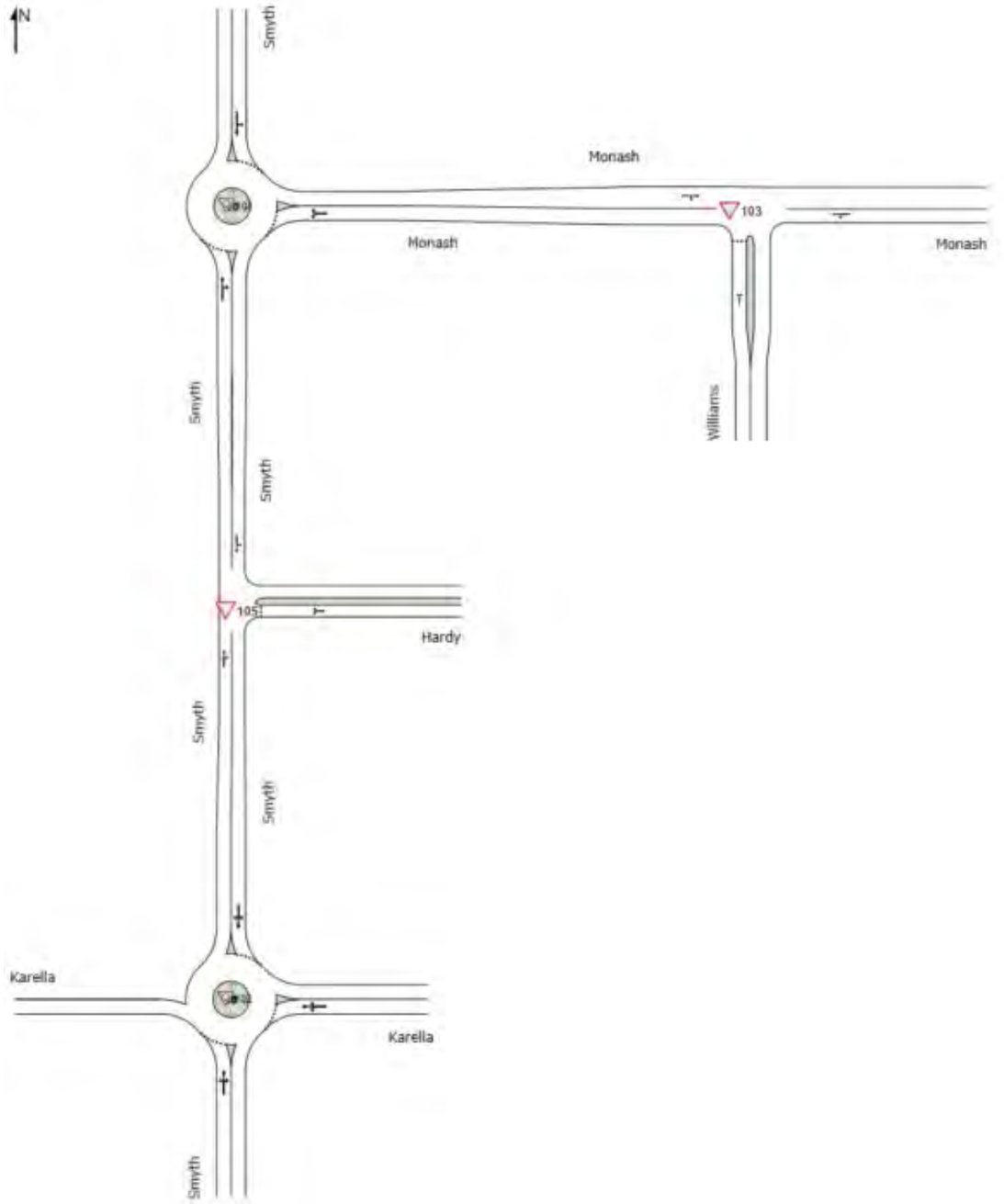


Figure 38 Forecast year network layout

The opening year and forecast year models include the new intersections along Monash Avenue and Smyth Road at Hollywood Street and Hardy Road. Both of those intersections were initially tested as Give-Way controlled T-Intersections so as to inform and alterations required within the site plan. All measurements for the modelling exercise were extracted from aerial imagery in Metromap.

Traffic volumes were taken from survey data collected during August 2023 and then balanced using the data taken from Main Roads WA Traffic Map data for Monash Avenue and Smyth Road. In all instances, volumes that were higher were used for this exercise and then other volumes smoothed out to reflect a more conservative approach. (for instance, if the 2023 observations had a high recorded volume on approach to an intersection than shown in Main Roads Traffic Map data, the 2023 data prevailed).

For the wider area impacts and distribution of the network, a high level review of the broader volumes on the distributor road networks was undertaken. This review focused on the general uplift expected on sections of the network attributed to the proposed development during the peak hours recorded. Information was taken from the Main Roads WA TrafficMap, including survey data at key intersections from 2019-2022. For Aberdare Road, volumes on approach either side of Smyth Road were extracted for the highest average peak volumes and a 50% turning distribution was applied at Smyth Road for outbound demands.

The outcomes of the distribution for the main routes of Aberdare Rd and Monash Avenue are shown in Table 2. These percentages reflect the proportion of full build forecast volumes on existing traffic volumes taken from between 2019 and 2022. None of the levels reach a threshold of beyond 10% and therefore do not require further assessment. In addition, all intersections on these roads are a significant distance away from the site and allowance would be given for further redistribution, as well as background growth which would further dilute these proportions. This would also be the case for southbound traffic from the site, which would potentially redistribute along Carrington Road or Park Road / Gordon Road rather than to Stirling Highway where the substantial volume of traffic turns left during peak periods.

Table 2 Wider area distribution impacts of forecast traffic generation

	AM IN	AM OUT	PM IN	PM OUT
Aberdare Rd W	2.8%	8.4%	8.2%	5.4%
Aberdare Rd E	6.1%	5.1%	7.2%	5.8%
Monash Rd	3.3%	2.2%	6.7%	1.5%

5.3 Trip Generation

Residential traffic generation rates for the higher density residential units were extracted from a survey database for properties within the City of Vincent and Town of Claremont for similar types of residential development. These rates are based on empirical survey data and reflect up-to-date levels of vehicle generation per unit. WAPC rates in relation to trip volume are not representative in this instance and updated survey outcomes from Main Roads WA are similar.

For the medium density or townhouse developments, rates taken explicitly from the Main Roads WA Supplement to the Transport Impact Assessment Guidelines (Document No: D23#392383 May 2023) were utilised. Medium density housing is defined as:

"(a) Medium Density - A medium density residential flat building is a building containing at least 2 but less than 20 dwellings. This includes villas, town houses, flats, semi-detached houses, terrace or row houses and other medium density developments. This does not include aged or disabled persons' housing".

For the medical centre, peak hour trip rates were initially sourced from Main Roads WA Supplement to the Traffic Impact Assessment Guidelines, which stipulate trip rates for a medical centre. Main Roads WA outline that these rates are based on medical centre complex sites which had higher rates than a typical urgent care site. Weekday rates for the AM peak are 17 per 100m^2 floor area and 13.4 per 100m^2 floor area in the PM peak. These rates are based on the survey of one location in Cannington for a site that is around 400m^2 in area.

Again, these were considered inappropriate given the type and scale of development. Trip generation rates for the site for the purpose of this assessment were then based on development application information taken from the St Johns Hospital site in Subiaco and the application for the decked parking structure at Hollywood Hospital. Those applications focused on a rate per parking bay which governs the capacity available and thus is a direct driver of traffic generation.

The form of development proposed for the site would be a consulting rooms model which typically sees increased volumes associated with the medical practitioners after the morning peak period. Some of that traffic would also use adjoining on-street bays, however the volume and typology of development will not replicate higher order in-patient treatment, but would be specialised practitioners and specialists.

For the commercial development located within precinct B2, trip rates have been sourced from the WAPC rates for commercial land uses, which recommends two trips per 100m^2 GFA. This commercial development has been assessed as a supporting café (retail food). The trip rates associated with these uses are relatively high for footprint area within WAPC guidance. These would however be inappropriate in this location as the majority of the visitors would be walk – up and associated with the residential or medical land uses within the precinct and surrounding area. The level of trips for that use, therefore, would be minimal.

In terms of the existing land uses, discounts were then applied to the calculations to reflect the fact that the land uses on site at present generate traffic and that traffic will no longer be there at full build. Traffic generation rates for aged care housing (for the Hollywood Retirement Home) were taken from the NSW RTA Guide to Traffic Generating Developments Housing for aged and disabled persons which sets out a ratio of 0.2 vehicle trips per unit in the peak hours.

Rates applied to the existing facility on the corner of Monash Avenue and Williams Road are the same applied to the proposed medical facility to reflect like for like in terms of traffic generation.

Rates used are shown in Table 3 with peak hour volumes for full build out shown in Table 4, with application to existing land uses taken from existing rates in Table 5.

Table 3 Trip generation rates

Unit	AM Peak Hour Trip Rate			PM Peak Hour Trip Rate		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Dwellings (Unit)	0.11	0.23	0.34	0.24	0.16	0.4
Dwellings (T/H)	0.1	0.4	0.5	0.35	0.15	0.5
Medical centre (Bay – 200)	0.29	0.04	0.33	0.07	0.21	0.28
Commercial	6.4	1.6	8	1.6	6.4	8

Table 4 Trip generation – forecast for full build

Unit	AM Peak Hour Trip Rate			PM Peak Hour Trip Rate		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Dwellings (Unit)	53	116	168	120	80	200
Dwellings (T/H)	8	32	40	28	12	40
Medical centre (Bay – 200)	58	9	67	14	42	56
Commercial	1	2	3	2	1	3
Totals	**119**	**158**	**277**	**164**	**135**	**298**

Table 5 Trip generation – existing uses estimated generation

Unit	AM Peak Hour Trip Rate			PM Peak Hour Trip Rate		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Dwellings (84 units for Aged Persons)	19	3	22	5	14	19
Medical centre (Bay – 66)	8	8	16	8	8	16
Totals	**27**	**11**	**38**	**13**	**22**	**35**

The full traffic generation used in the assessment, minus existing traffic generation which would be removed, is shown in Table 6.

Table 6 Trip generation – total forecast for full build discounting existing land uses

	AM Peak Hour Trip Rate			PM Peak Hour Trip Rate		
	IN	**OUT**	**TOTAL**	**IN**	**OUT**	**TOTAL**
Proposed Forecast	119	162	282	164	135	298
Existing Generation	27	11	38	13	22	35
Total Generation Used	**92**	**147**	**238**	**151**	**113**	**263**

The total forecast traffic generation for the site at full build out based on this assessment is 238 vehicle trips in the AM peak and 263 vehicle trips in the PM peak.

Again, it should be noted that the volume of multiple dwelling units used for this assessment is 500, whereas the actual volume of units on the site may not reach this level. Each major development site would be subject to assessment through the relevant planning process, including assessment of transport impacts.

5.4 Assessment

The base year (2023) AM and PM peak hour traffic volumes for the network adjacent to the site are shown in Figure 39 and Figure 40. The volumes formed the basis for the modelling exercise and reflect an average weekday for the respective peak hours based on site observations completed in August 2023 and data extracted from Main Roads WA Traffic Map.

These volumes reflect all existing traffic movements in the area, including the land uses currently on the subject site, adjacent hospitals and school. This includes the volumes of traffic experienced along Williams Road and Hardy Road, where traffic using that intersection would be accounted for at the intersections of Monash Avenue and also Karella Road with Smyth Road.

Given the low volumes on all approaches, no further assessment of the Hardy Road and Williams Road intersection was undertaken.

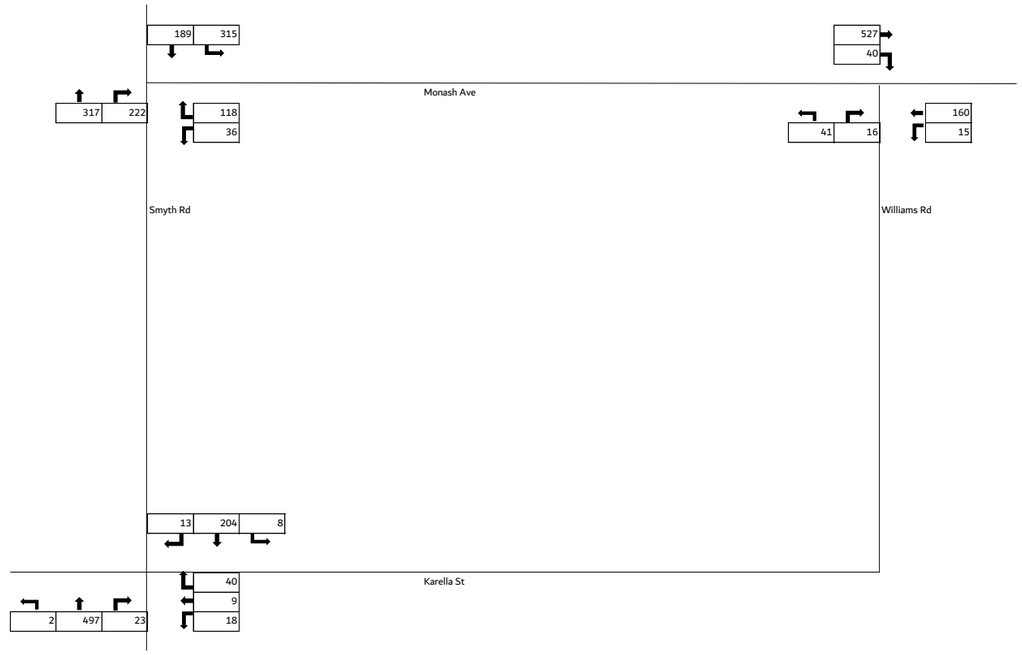


Figure 39 Traffic volumes - 2023 Base AM

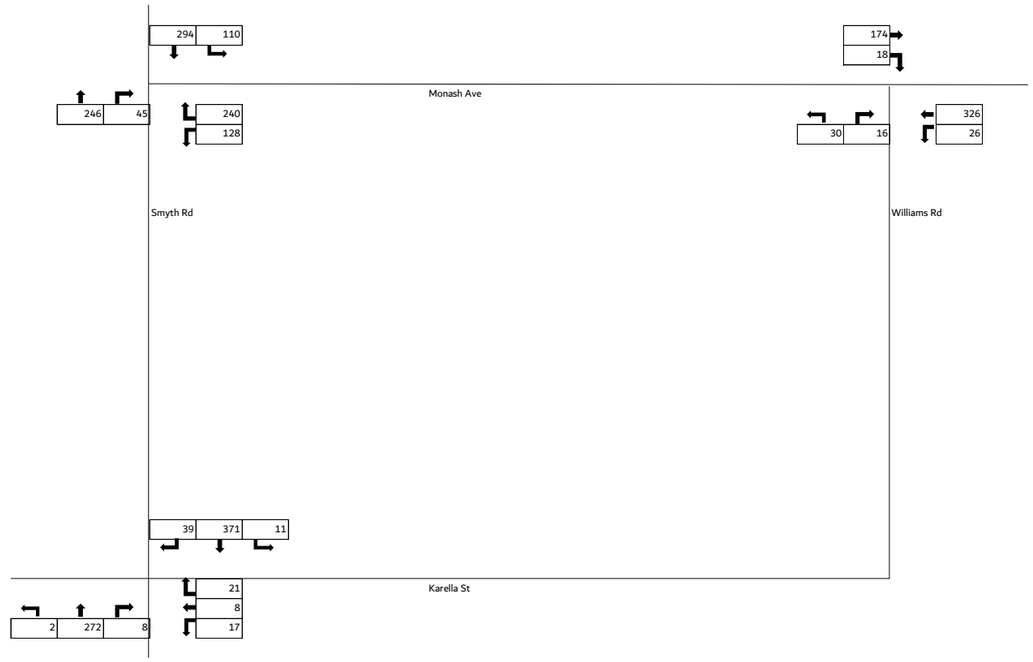


Figure 40 Traffic volumes - 2023 Base PM

The "opening year" forecast traffic volumes are shown in Figure 41 and Figure 42. These volumes reflect a scenario three years after the base network which includes an overall uplift of 3% on all turning movements within the network – 1% for each year.

The actual level of traffic expected would be relatively static given the nature of development in the area and the form of network. Examination of historical traffic volumes also indicates that the actual level of increase would be relatively low.

No development based traffic has been attributed to the network as the assumption has been made that no generation would be present but the network would be developed for subdivision to progress. Building commencement would be likely, however trips have not been allocated to any construction activities.

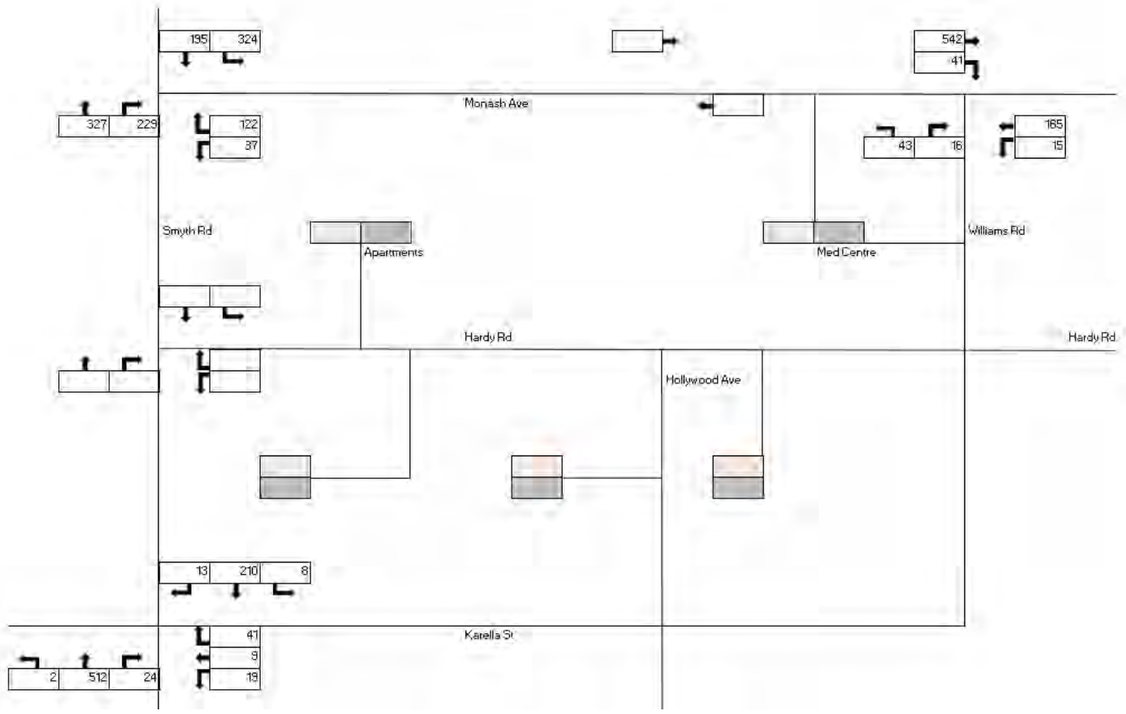


Figure 41 Traffic volumes - 2023 Opening AM

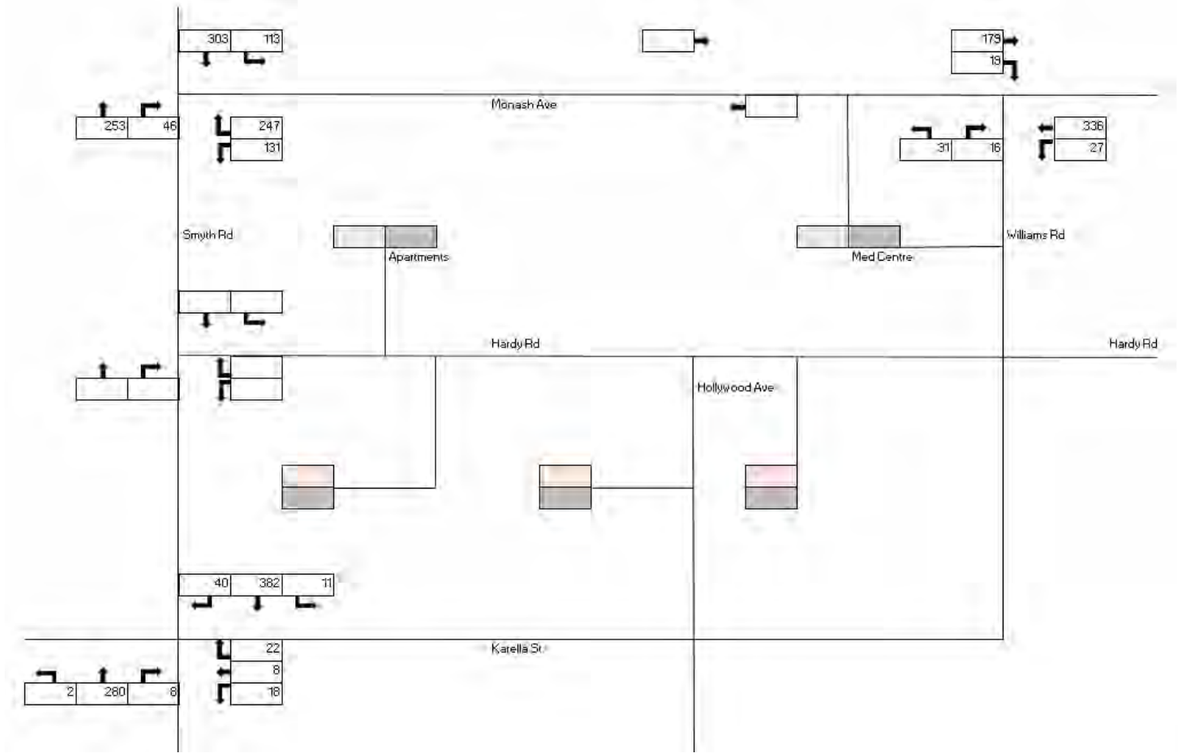


Figure 42 Traffic volumes - 2023 Opening PM

For the full build out scenario, all of the trips associated with the development during the peak hours has been attributed – those volumes are set out in Table 6. In addition, base year background traffic has been increased by 10%, as provided by the CoN, to reflect other alterations to the network and development trip loading within the area.

The distribution of trips to exit locations on the network is also shown. This distribution was based on the existing movement of traffic through the network and desire lines through to the sub-regional and regional road network using travel time to external destinations. Reference was also made to the assessment completed for Hollywood Hospital.

Traffic attributed to the development was allocated to the nearest intersection based on direction of travel. Those volumes were then added on to the background traffic – no redistribution of background traffic resulting from the development was completed.

The values for the surrounding intersections are included and synthesised where required to reflect the existing low levels of turning volumes on the lower order streets. Additional traffic volumes were included for through movements to and from Hardy Road to Smyth Road to reflect a new route. In both peak periods, the intersection of Hardy Road and Williams Road has volumes set out that are low in both peak periods and therefore would not require assessment. No other attractors or generators using this route were evident to include in the forecast year scenarios.

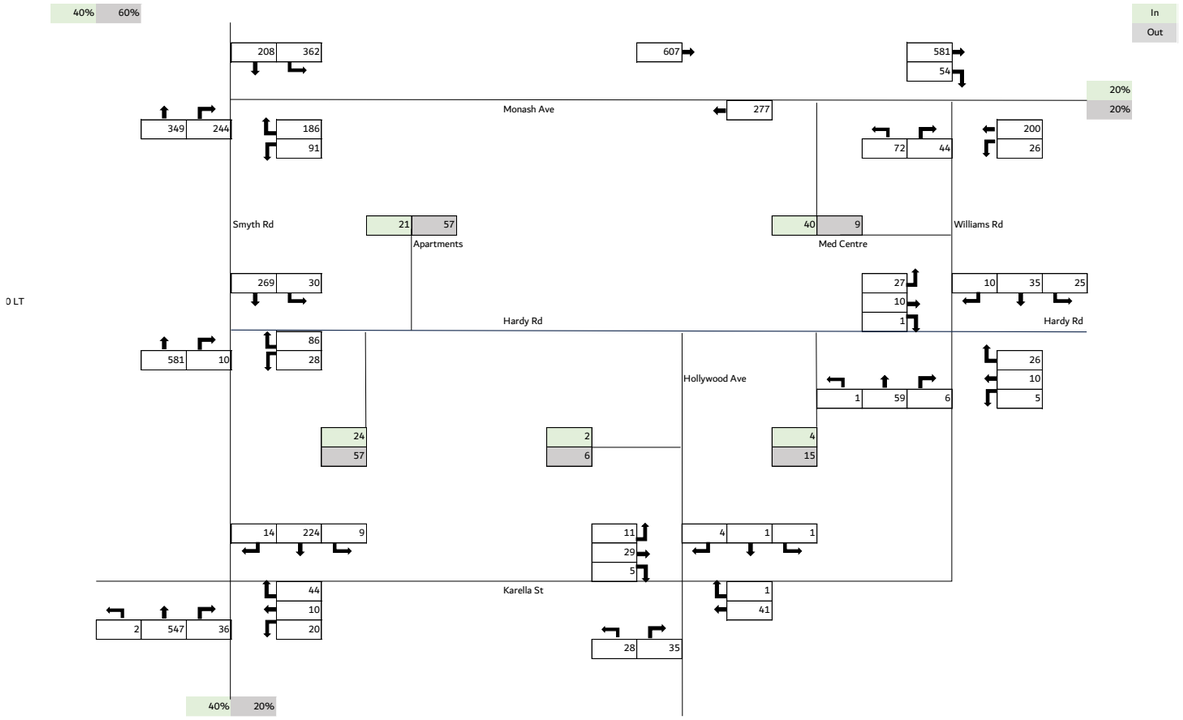


Figure 43 Traffic volumes and distribution - full build AM

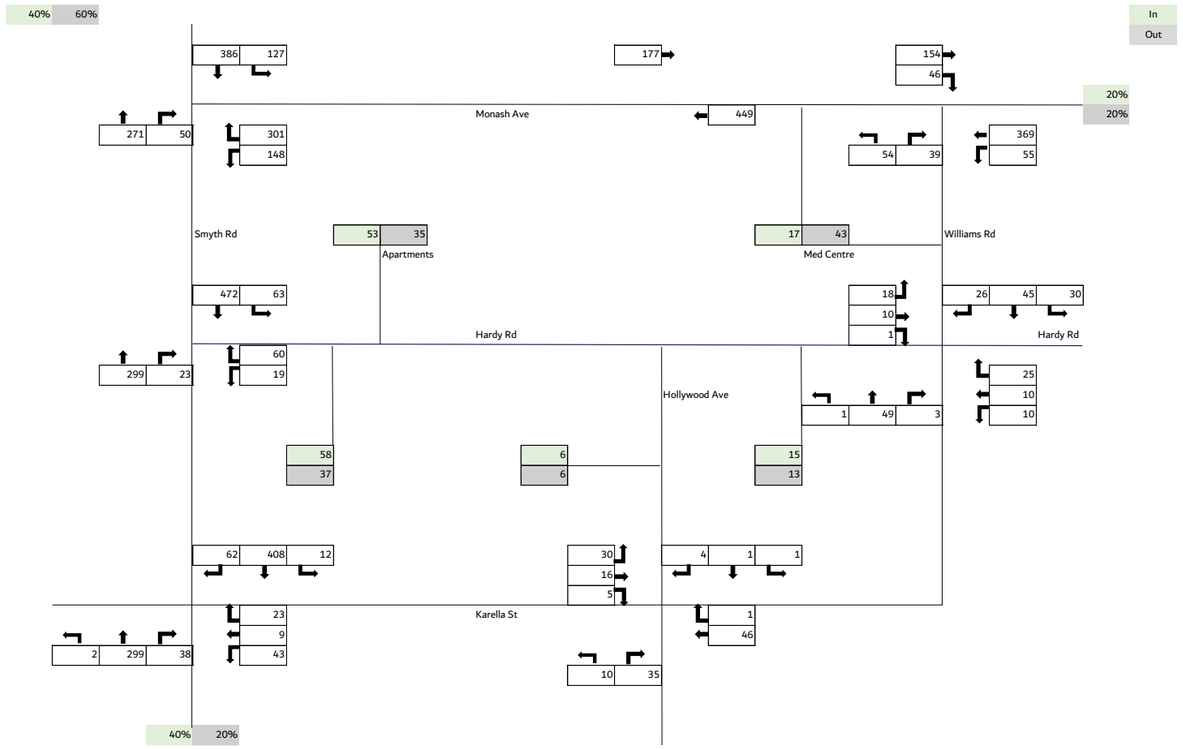


Figure 44 Traffic volumes and distribution - full build PM

5.5 Model Outcomes – Base Year

The base year AM and PM peak hours were modelled as a network (for 2023). The full results of the modelling are contained within Appendix A. The headline Level of Service (LOS) outputs for lanes are shown in Figure 45. These results reflect the observed operation of the network during both peak periods. The network caters for a high volume of traffic but the flows are largely unobstructed and the network does not break down.

During the AM peak, the interaction of school based trips with the commuting flows is generally aided by the presence of both manned crossing guard and a zebra crossing located to the west of the intersection of Monash Avenue and Williams Road. The main flows along Smyth Street are generally uninterrupted, with only minor issues observed with vehicles turning into and out of a day care centre and the school.

There were no issues observed with traffic flowing from the intersection of Monash Avenue and Williams Road, with significant gaps occurring in flows to aide turning movements. The Base Year 2023 model operates well and provides a basis from which forecast year operation can be compared.

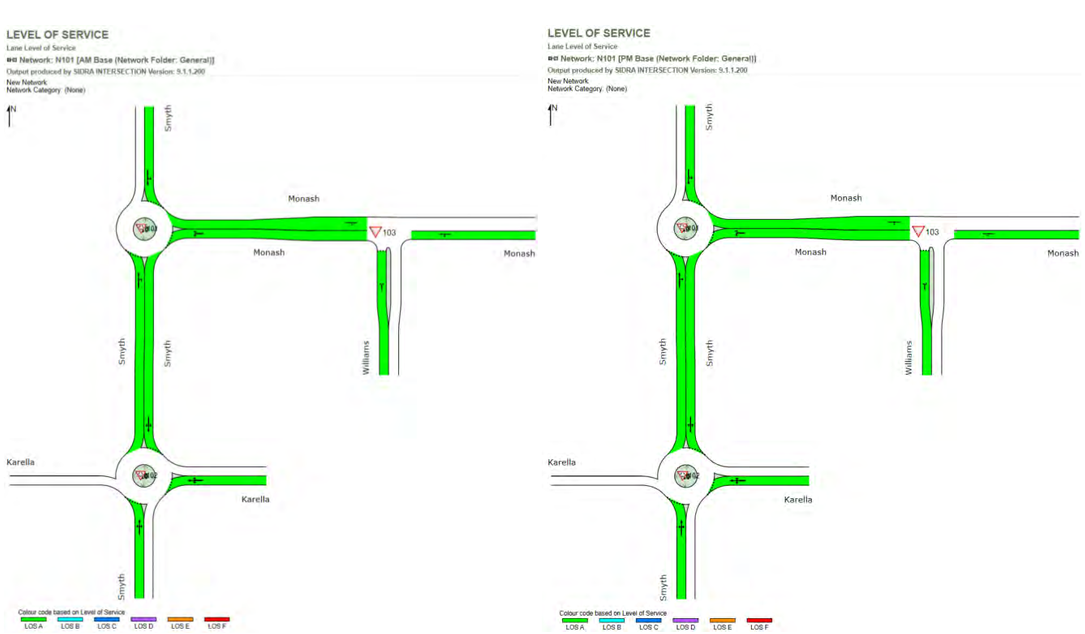


Figure 45 Level of Service - base year AM and PM models

5.6 Model Outcomes – Opening Year

The opening year scenario (nominally 2026) was modelled in a network and included the opening of the two internal roads proposed within the development being Hardy Road and Hollywood Streets. Given that there would be no trip generating development within the opening year scenario, nominal volumes were included within the intersection models to allow for the intersections to be processed. Traffic that is already associated with the Regis Site forms part of the network already and would already be taken into account.

As shown in Figure 46, the network as a whole continues to perform at acceptable LOS. Full outputs from the models are included in Appendix A.

These model results indicate that the network is continuing to perform at similar levels to the base year network and within acceptable traffic engineering parameters.

Figure 46 Level of Service – opening year AM and PM models

5.7 Model Outcomes – Full Build

The full build models (nominally 2036 but dependent on rate of delivering development outcomes which would be subject to further development application processes) include all traffic generation for the development sites (as set out in

Table 4) and an uplift in background traffic by 10% at all approaches, as agreed with and provided by the City of Nedlands through their mesoscopic model outputs. Full outputs from the models are included in Appendix A, with the headline LOS plots for lanes shown in Figure 47. Also provided are Movement Summary tables for:

- Monash Avenue and Smyth Road AM (Table 7) and PM (Table 11)
- Karella Street and Smyth Road AM (Table 8) and PM (Table 12)
- Monash Avenue and Williams Road AM (Table 9) and PM (Table 13).

None of the key traffic engineering performance indicators in these outputs, tested as a network model, show any underlying elements which would result in significant congestion or requirement for additional capacity – at intersections or mid-block. These outputs, which include the impact of the full development, show the network is busier, but operating within satisfactory limits. As is the case now, the network will see localised heavy flows and movements at certain times (commuting and school drop off / pick up)

but the overall metrics are satisfactory without requiring any design interventions. General management of wider area operation of major intersections on the distributor road network would be managed through Main Roads WA.

Figure 47 Level of Service – full build AM and PM models

Table 7 Movement summary - Monash Avenue and Smyth Road AM peak full build

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	458	2.0	458	2.0	0.625	5.5	LOS A	2.4	16.7	0.66	0.57	0.66	37.8
3	R2	All MCs	257	2.0	257	2.0	0.625	8.7	LOS A	2.4	16.7	0.66	0.57	0.66	27.1
Approach			715	2.0	715	2.0	0.625	6.7	LOS A	2.4	16.7	0.66	0.57	0.66	35.6
East: Monash															
4	L2	All MCs	96	2.0	96	2.0	0.281	2.7	LOS A	0.7	5.2	0.50	0.51	0.50	26.8
6	R2	All MCs	196	2.0	196	2.0	0.281	5.0	LOS A	0.7	5.2	0.50	0.51	0.50	32.5
Approach			292	2.0	292	2.0	0.281	4.2	LOS A	0.7	5.2	0.50	0.51	0.50	31.1
North: Smyth															
7	L2	All MCs	381	2.0	381	2.0	0.576	5.9	LOS A	2.0	14.2	0.69	0.59	0.70	37.2
8	T1	All MCs	219	2.0	219	2.0	0.576	5.9	LOS A	2.0	14.2	0.69	0.59	0.70	37.2
Approach			600	2.0	600	2.0	0.576	5.9	LOS A	2.0	14.2	0.69	0.59	0.70	37.2
All Vehicles			1606	2.0	1606	2.0	0.625	5.9	LOS A	2.4	16.7	0.64	0.57	0.64	34.6

Table 8 Movement summary – Karella Street and Smyth Road AM peak full build

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
1	L2	All MCs	5	0.0	5	0.0	0.452	4.1	LOS A	1.4	10.1	0.31	0.42	0.31	42.8
2	T1	All MCs	576	2.0	576	2.0	0.452	4.1	LOS A	1.4	10.1	0.31	0.42	0.31	40.6
3	R2	All MCs	38	0.0	38	0.0	0.452	7.3	LOS A	1.4	10.1	0.31	0.42	0.31	41.9
Approach			619	1.9	619	1.9	0.452	4.3	LOS A	1.4	10.1	0.31	0.42	0.31	40.8
East: Karella															
4	L2	All MCs	21	0.0	21	0.0	0.076	5.1	LOS A	0.2	1.1	0.43	0.60	0.43	40.7
5	T1	All MCs	11	0.0	11	0.0	0.076	5.1	LOS A	0.2	1.1	0.43	0.60	0.43	40.4
6	R2	All MCs	46	0.0	46	0.0	0.076	8.3	LOS A	0.2	1.1	0.43	0.60	0.43	35.1
Approach			78	0.0	78	0.0	0.076	7.0	LOS A	0.2	1.1	0.43	0.60	0.43	38.2
North: Smyth															
7	L2	All MCs	20	0.0	20	0.0	0.213	3.8	LOS A	0.5	3.6	0.17	0.41	0.17	40.2
8	T1	All MCs	265	2.0	265	2.0	0.213	3.8	LOS A	0.5	3.6	0.17	0.41	0.17	42.3
9	R2	All MCs	15	0.0	15	0.0	0.213	7.0	LOS A	0.5	3.6	0.17	0.41	0.17	40.5
Approach			300	1.8	300	1.8	0.213	4.0	LOS A	0.5	3.6	0.17	0.41	0.17	42.1
All Vehicles			997	1.7	997	1.7	0.452	4.4	LOS A	1.4	10.1	0.28	0.43	0.28	41.1

Table 9 Movement summary - Monash Avenue and Williams Road AM peak full build

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Williams															
1	L2	All MCs	76	0.0	76	0.0	0.154	4.1	LOS A	0.2	1.6	0.46	0.57	0.46	25.0
3	R2	All MCs	46	0.0	46	0.0	0.154	9.8	LOS A	0.2	1.6	0.46	0.57	0.46	34.3
Approach			122	0.0	122	0.0	0.154	6.3	LOS A	0.2	1.6	0.46	0.57	0.46	31.0
East: Monash															
4	L2	All MCs	27	0.0	27	0.0	0.121	3.4	LOS A	0.0	0.0	0.00	0.05	0.00	38.7
5	T1	All MCs	211	2.0	211	2.0	0.121	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	39.5
Approach			238	1.8	238	1.8	0.121	0.4	NA	0.0	0.0	0.00	0.05	0.00	39.4
West: Monash															
11	T1	All MCs	612	2.0	612	2.0	0.332	0.0	LOS A	0.2	1.5	0.09	0.09	0.09	39.6
12	R2	All MCs	57	0.0	57	0.0	0.332	6.0	LOS A	0.2	1.5	0.09	0.09	0.09	38.2
Approach			668	1.8	668	1.8	0.332	0.5	NA	0.2	1.5	0.09	0.09	0.09	39.5
All Vehicles			1028	1.6	1028	1.6	0.332	1.2	NA	0.2	1.6	0.11	0.14	0.11	38.9

Table 10 Movement summary - Smyth Road and Hardy Road (new) - AM full build

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	612	3.0	612	3.0	0.325	0.0	LOS A	0.0	0.3	0.02	0.02	0.02	49.1
3	R2	All MCs	11	0.0	11	0.0	0.325	6.6	LOS A	0.0	0.3	0.02	0.02	0.02	40.8
Approach			622	2.9	622	2.9	0.325	0.1	NA	0.0	0.3	0.02	0.02	0.02	48.5
East: Hardy															
4	L2	All MCs	29	0.0	29	0.0	0.221	4.5	LOS A	0.3	2.2	0.61	0.78	0.63	32.3
6	R2	All MCs	91	0.0	91	0.0	0.221	10.3	LOS B	0.3	2.2	0.61	0.78	0.63	32.3
Approach			120	0.0	120	0.0	0.221	8.9	LOS A	0.3	2.2	0.61	0.78	0.63	32.3
North: Smyth															
7	L2	All MCs	32	0.0	32	0.0	0.163	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	47.0
8	T1	All MCs	283	3.0	283	3.0	0.163	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	47.2
Approach			315	2.7	315	2.7	0.163	0.5	NA	0.0	0.0	0.00	0.05	0.00	47.1
All Vehicles			1057	2.5	1057	2.5	0.325	1.2	NA	0.3	2.2	0.08	0.11	0.08	42.4

Table 11 Movement summary - Monash Avenue and Smyth Road PM peak full build

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	322	2.0	322	2.0	0.399	6.0	LOS A	1.1	8.0	0.64	0.59	0.64	38.1
3	R2	All MCs	53	2.0	53	2.0	0.399	9.2	LOS A	1.1	8.0	0.64	0.59	0.64	27.6
Approach			375	2.0	375	2.0	0.399	6.4	LOS A	1.1	8.0	0.64	0.59	0.64	37.4
East: Monash															
4	L2	All MCs	156	2.0	156	2.0	0.524	6.6	LOS A	1.6	11.7	0.72	0.71	0.78	31.0
6	R2	All MCs	317	2.0	317	2.0	0.524	9.5	LOS A	1.6	11.7	0.72	0.71	0.78	35.8
Approach			473	2.0	473	2.0	0.524	8.5	LOS A	1.6	11.7	0.72	0.71	0.78	34.6
North: Smyth															
7	L2	All MCs	134	2.0	134	2.0	0.387	4.0	LOS A	1.2	8.8	0.27	0.41	0.27	39.9
8	T1	All MCs	406	2.0	406	2.0	0.387	3.9	LOS A	1.2	8.8	0.27	0.41	0.27	39.9
Approach			540	2.0	540	2.0	0.387	3.9	LOS A	1.2	8.8	0.27	0.41	0.27	39.9
All Vehicles			1387	2.0	1387	2.0	0.524	6.2	LOS A	1.6	11.7	0.52	0.56	0.54	36.7

Table 12 Movement summary – Karella Street and Smyth Road PM peak full build

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
1	L2	All MCs	2	0.0	2	0.0	0.282	4.2	LOS A	0.7	4.9	0.30	0.45	0.30	42.7
2	T1	All MCs	315	2.0	315	2.0	0.282	4.2	LOS A	0.7	4.9	0.30	0.45	0.30	40.6
3	R2	All MCs	40	0.0	40	0.0	0.282	7.4	LOS A	0.7	4.9	0.30	0.45	0.30	41.9
Approach			357	1.8	357	1.8	0.282	4.6	LOS A	0.7	4.9	0.30	0.45	0.30	40.8
East: Karella															
4	L2	All MCs	45	0.0	45	0.0	0.092	6.4	LOS A	0.2	1.4	0.57	0.65	0.57	40.4
5	T1	All MCs	9	0.0	9	0.0	0.092	6.4	LOS A	0.2	1.4	0.57	0.65	0.57	40.0
6	R2	All MCs	24	0.0	24	0.0	0.092	9.7	LOS A	0.2	1.4	0.57	0.65	0.57	34.4
Approach			79	0.0	79	0.0	0.092	7.4	LOS A	0.2	1.4	0.57	0.65	0.57	39.2
North: Smyth															
7	L2	All MCs	13	0.0	13	0.0	0.351	3.8	LOS A	1.0	7.0	0.20	0.43	0.20	39.7
8	T1	All MCs	429	2.0	429	2.0	0.351	3.8	LOS A	1.0	7.0	0.20	0.43	0.20	41.9
9	R2	All MCs	65	0.0	65	0.0	0.351	7.1	LOS A	1.0	7.0	0.20	0.43	0.20	40.1
Approach			507	1.7	507	1.7	0.351	4.3	LOS A	1.0	7.0	0.20	0.43	0.20	41.7
All Vehicles			943	1.6	943	1.6	0.351	4.6	LOS A	1.0	7.0	0.27	0.45	0.27	41.1

Table 13 Movement summary - Monash Avenue and Williams Road PM peak full build

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Williams															
1	L2	All MCs	57	0.0	57	0.0	0.110	4.9	LOS A	0.2	1.1	0.47	0.63	0.47	26.0
3	R2	All MCs	41	0.0	41	0.0	0.110	6.6	LOS A	0.2	1.1	0.47	0.63	0.47	34.7
Approach			98	0.0	98	0.0	0.110	5.6	LOS A	0.2	1.1	0.47	0.63	0.47	32.1
East: Monash															
4	L2	All MCs	58	0.0	58	0.0	0.228	3.5	LOS A	0.0	0.0	0.00	0.06	0.00	38.6
5	T1	All MCs	388	2.0	388	2.0	0.228	0.1	LOS A	0.0	0.0	0.00	0.06	0.00	39.4
Approach			446	1.7	446	1.7	0.228	0.5	NA	0.0	0.0	0.00	0.06	0.00	39.3
West: Monash															
11	T1	All MCs	162	2.0	162	2.0	0.120	0.0	LOS A	0.2	1.2	0.28	0.29	0.28	38.8
12	R2	All MCs	48	0.0	48	0.0	0.120	7.7	LOS A	0.2	1.2	0.28	0.29	0.28	37.0
Approach			211	1.5	211	1.5	0.120	1.8	NA	0.2	1.2	0.28	0.29	0.28	38.5
All Vehicles			755	1.5	755	1.5	0.228	1.5	NA	0.2	1.2	0.14	0.20	0.14	38.3

Table 14 Movement summary - Smyth Road and Hardy Road (new) – PM peak full build

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	315	5.0	315	5.0	0.190	0.0	LOS A	0.1	0.8	0.11	0.13	0.11	45.8
3	R2	All MCs	24	0.0	24	0.0	0.190	11.9	LOS B	0.1	0.8	0.11	0.13	0.11	40.2
Approach			339	4.6	339	4.6	0.190	0.8	NA	0.1	0.8	0.11	0.13	0.11	44.4
East: Hardy															
4	L2	All MCs	20	0.0	20	0.0	0.147	5.5	LOS A	0.2	1.4	0.60	0.79	0.60	32.7
6	R2	All MCs	63	0.0	63	0.0	0.147	9.1	LOS A	0.2	1.4	0.60	0.79	0.60	32.7
Approach			83	0.0	83	0.0	0.147	8.3	LOS A	0.2	1.4	0.60	0.79	0.60	32.7
North: Smyth															
7	L2	All MCs	66	0.0	66	0.0	0.296	4.6	LOS A	0.0	0.0	0.00	0.06	0.00	46.8
8	T1	All MCs	497	5.0	497	5.0	0.296	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	46.6
Approach			563	4.4	563	4.4	0.296	0.6	NA	0.0	0.0	0.00	0.06	0.00	46.7
All Vehicles			985	4.1	985	4.1	0.296	1.3	NA	0.2	1.4	0.09	0.15	0.09	42.5

5.8 Model Outcomes

The modelling approach has examined base year, opening year and full build scenarios which reflects the impact of development traffic on top of an additional 10% background traffic compared to the base year, as agreed with the City of Nedlands. These scenarios do not show any sign of significant deterioration in traffic engineering metrics. The network will continue to be busy and the additional trips associated with the proposed development will see additional traffic on the network resulting in a reduction in some traffic engineering metrics performance levels.

That traffic, although resulting in busier conditions across average weekday peak times, will not result in any issues that would require any additional capacity or reconfiguration of intersections at existing or proposed locations. The internal intersections, given the level of traffic that would be generated from the proposed yields, would not result in any form of congestion or measurable delays during peak periods.

5.9 Intersection Configuration

The configuration of two intersections, specifically the intersection of Hardy Road and Smyth Road and Monash Avenue and Williams Road were tested against Main Roads WA warrants for turning movements. This form of assessment considers elements associated with the longer term potential for road safety implications as opposed to pure traffic engineering implications or other cost based metrics.

All full build scenarios were examined to understand the potential classification of each intersection and the need for any interventions. The assessments are set out in Table 15. These assessments indicate that, based on cost metrics associated with intersection safety implications, that both sites require dedicated turning pockets based on traffic volumes – even though the traffic engineering and modelling outcomes indicate that their performance is satisfactory.

These metrics can often be subject to very minor alterations and impacts associated with right turn movements. The suggested outcomes of the warrants were not applied to either intersection during the design stage due to:

- For the intersection of Smyth Street, any alteration to the carriageway would involve removal of street trees in the area and total redesign of the kerb line(s). There are also three existing crossovers on the street section between Karella and Monash. Based on the warrants calculations for the full build, it would take as few as 8 vehicles to turn right to trigger consideration of this sort of treatment – something that could feasibly be the case for the existing land uses. In this instance, given the low volumes being considered, the potential for alternative routes given the grid network and other elements of the street and landscape design, turning lanes were not included in the design. Given the configuration of the Smyth Road alignment, and safety concerns, a left in, left out configuration could be implemented at this site to remove conflicting movements. This would not impact unduly on the ability for vehicles to access lots within the development via the other intersections which allow for full turning movements.
- The intersection of Monash Avenue and Williams Road functions within modelled traffic engineering parameters even in the full build out and additional tests based on a number of growth factors. The area is busy, but capable of handling the volume of vehicles tested. The Monash Avenue and Williams Road intersection, in particular, functions well because of the fact that there is 11m of carriageway at the intersection and 6.25m of eastbound lane width that easily allows for through vehicles to pass any stationary vehicles that are turning right (as shown in Figure 48 and the swept paths in Figure 49). The warrant

calculation is a simplistic representation of the potential requirements based on volumes, not on spatial configuration of the intersection. Given there is more than enough space for design vehicles to pass on the underside of a right hand turning design vehicle from Monash Avenue to Williams Rd, no further treatment was considered at the intersection.

Table 15 MRWA warrants assessment

	AM Peak	PM Peak
Smyth and Hardy Right Turn	AUR	AUR
Smyth and Hardy Left Turn	BAL	AUL
Monash and Williams Right Turn	AUR	AUR
Monash and Williams Left Turn	BAL	AUL

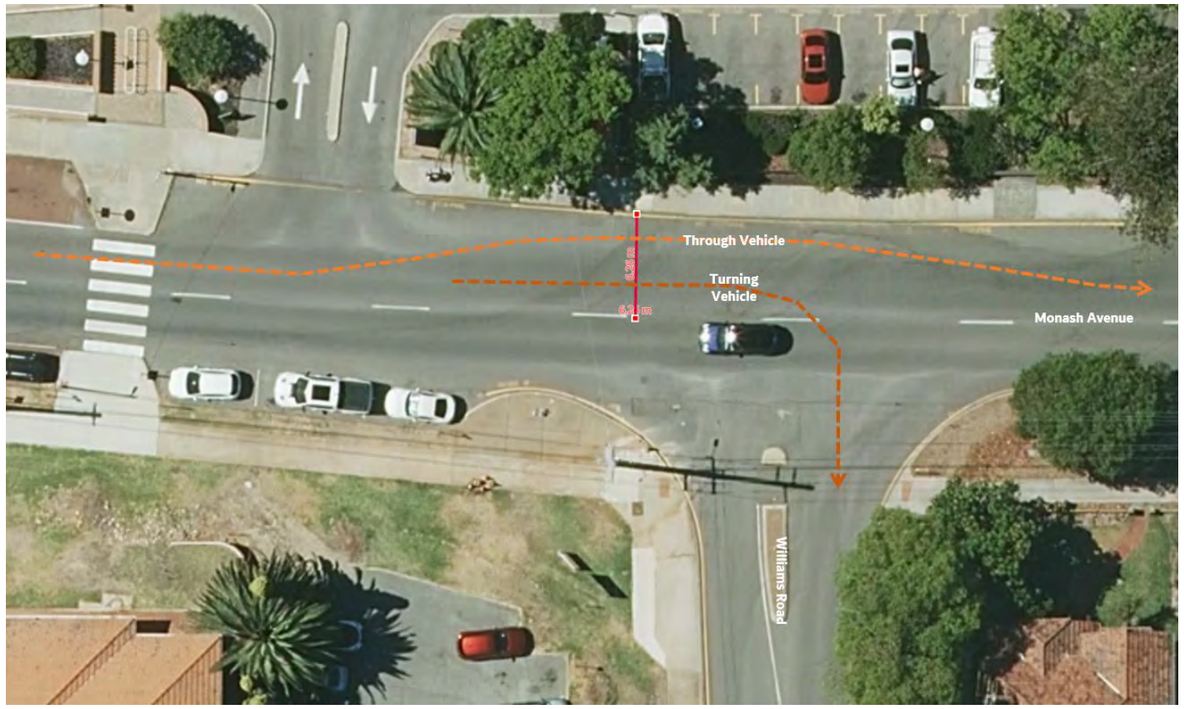


Figure 48 Intersection of Monash Avenue and Williams Road - turning movements

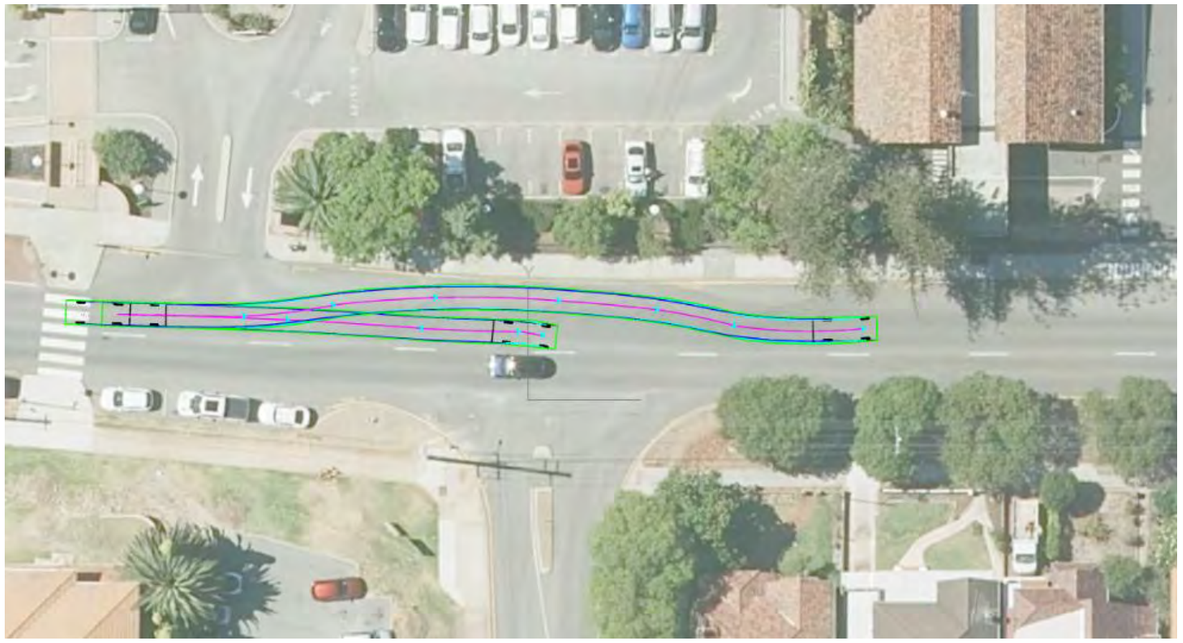


Figure 49 Swept path of B99 vehicles at intersection of Monash Avenue and Smyth Rd (source: autoturnonline)

6. PEDESTRIAN ACCESS AND AMENITY

6.1 Existing Pedestrian Network

The area has a high level of pedestrian connectivity with paths on both sides of most roads, which predominantly travel along the main desire lines except at roundabout intersections. Surrounding the site, the paths are generally wide and in relatively good condition with few obstructions. Driveways regularly intersect the footpath allowing vehicles to have priority of movement and this would need to be updated to provide a continuous treatment for pedestrians.

There is some shade provided by established trees which it typical given the age of the suburb, and which will improve over time given the recent street tree planting along the edge of the subject site. The above ground power cables limit the extent of the shade. All effort should be made to retain all existing trees providing shade canopy.

On Monash Avenue, there is a zebra crossing which provides a safe crossing opportunity to the hospital's main entrance as well as a median cut through outside of the primary school which is managed by a crossing guard during school arrival and pick up times.

Monash Avenue is a Distributor Road catering for a range of trips, vehicle movements and modes of travel. During the site visit conducted at 11.00am on Tuesday April 4, 2023, the footpaths were busy with people walking to and from the hospital, people walking to access their vehicle, cyclists using the footpath to avoid the carriageway, people in wheelchairs, staff taking breaks, as well as elderly residents going for a walk and waiting for a taxi. The footpaths would become more congested during school drop off and pick up times. There is currently not enough space for the full range of user groups users to comfortably use the footpath at the same time.

The Monash Avenue carriageway was observed to have a constant flow of traffic being a combination of through movements to Winthrop Avenue, bus route 25, on-street parking turnover, and drivers accessing the hospitals in the area. While traffic was generally slow as a result of the turnover of on-street parking, some drivers were observed speeding and generally exhibiting unsafe behaviour, which could be considered typical for Perth streets.

Monash Avenue has capacity to carry a high volume of vehicles, however the land uses either side demand a slower speed and safe environment.

The road surface and drainage has recently been upgraded along Smyth Road, and provides a high quality road base which reduces the noise of vehicles along here. There is a median and 1.8m wide pedestrian cut-through (staffed by a crossing guard at school times) which allows for safer pedestrian crossings.

Figure 50 Monash Avenue (source: Flyt)

Figure 51 Monash Avenue (source: Flyt)

Figure 52 Monash Avenue (source: Flyt)

Figure 53 Pedestrian median cut-through on Smyth Road (Source: Flyt)

The 15 minute walking catchment is shown in Figure 54, where walking is shown to be an efficient mode of transport with a 360° catchment as a result of the grid layout of the street network, and the paths through Karrakatta Cemetery. Destinations within this catchment include Hollywood Primary School, Hollywood Subiaco Bowls Club, Karrakatta Cemetery, Dot Bennett Park, QE11 Medical Centre, Kings Park, Itsara Thai Restaurant, Bodyscape Yoga, UWA Library and Early Learning Centre, and the various businesses, cafes, restaurants and shops along Hampden Road.

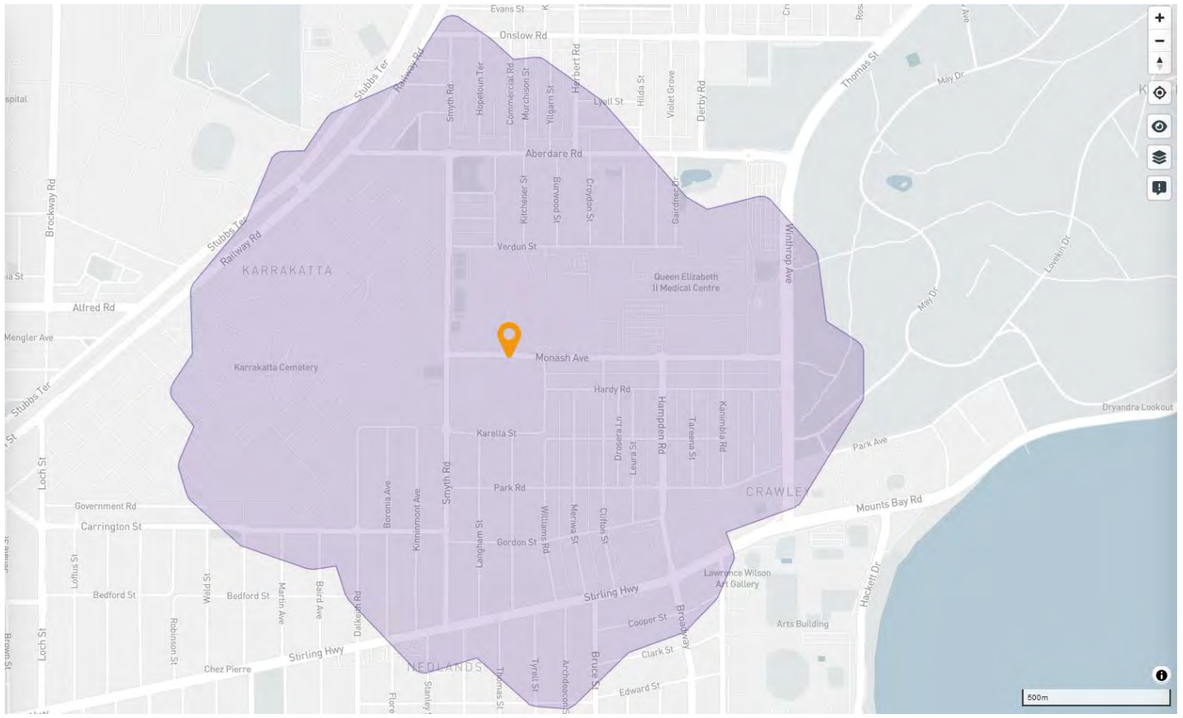


Figure 54 15 minute walking catchment (source: Planwisely)

The Department of Planning, Lands and Heritage's (DPLH) Urban Tree Canopy Dashboard provides an interactive snapshot of the extent of tree canopy coverage across the Perth and Peel regions. The urban tree canopy is an essential part of creating healthy, liveable neighbourhoods, where more dense and mature tree canopies can support active travel along walking and cycling paths.

In 2018, the street blocks in the suburb of Nedlands had 20% canopy cover from trees over 3m tall, resulting in 80% of the street block area without any canopy cover (as shown in Figure 55). The Perth Metropolitan area has an average of 12% canopy cover from trees over 3m tall in street blocks.

Figure 55 shows that the subject site has 0-5% tree canopy as a result of the site being cleared recently. Retaining street trees and planting additional green landscaping throughout the site would reduce the heat throughout summer and create a more inviting and pleasant pedestrian environment which is a critical element in encouraging people to walk and cycle.

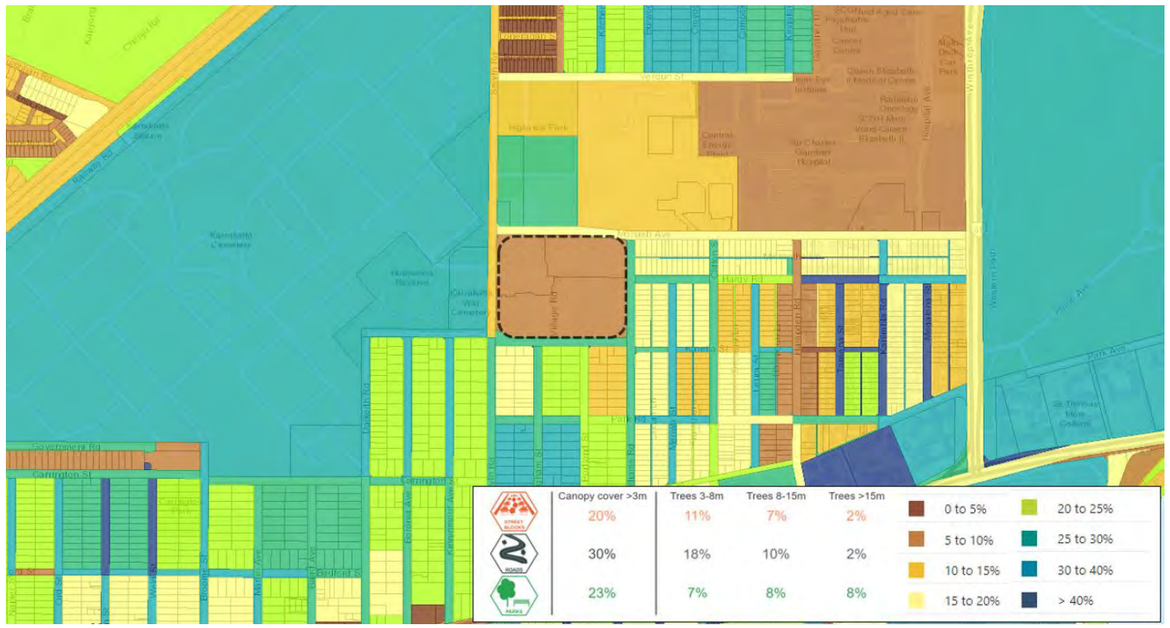


Figure 55 Urban tree canopy (source: Department of Planning, Lands and Heritage)

Figure 56 Internal pedestrian connections

6.2 Proposed Pedestrian Network

The majority of vehicle access is proposed from access streets within the subject site, removing direct vehicle access from the surrounding street network which means that the pathways and pedestrian connections around the perimeter of the site will be mostly uninterrupted, providing continuous and safe walkways.

Within the subject site, Hardy Road will have footpaths on both sides of the road reserve, as will Eventide Way and Crossleigh Way. Footpaths on Hardy Road will provide continuous and direct east-west access through the site and connect with existing paths on Smyth Road and Williams Road. Paths on Eventide Way and Crossleigh Way will allow for internal pedestrian movements from those units that are rear loaded.

Hollywood Avenue will have a footpath on the eastern side of the reserve to allow for a pedestrian connection through the site running north south from Monash Avenue to Karella Street. This will allow for improved access for residents to the south that need to access Hollywood Primary School and land uses on Monash Avenue. It will also support greater active mobility trips to the school through connections that have no vehicle traffic. This route will also provide access to the open space area within the precinct.

In addition to the north-south connection via Hollywood Avenue, a Pedestrian Accessway will align with the western edge of the open space area that will see a continuous pedestrian corridor open up between Karella Street and Monash Avenue. This landscaped corridor will further enhance pedestrian movements into, from and through the site.

The internal network, including indicative path connections through the open space area, is shown in Figure 56.

The creation of filtered permeability north-south through the site will allow pedestrian and cyclist access into the area to be separated from vehicle access points. This will provide a safe corridor through to Hollywood Primary School from the development area and the surrounding neighbourhood to the south and east.

The surrounding community will also benefit as a result of the site becoming more permeable allowing residents to the south of the site to walk directly to Monash Avenue and the primary school, and from the east towards Karrakatta Cemetery.

Detailed pedestrian access to each development will be assessed during the later stages of planning, with more details on landscaping planning provided as part of the overall suite of documents submitted in support of the development.

7. BICYCLE ACCESS AND AMENITY

7.1 Existing Bicycle Network

The Fremantle Line Principal Shared Path is located a cycling distance of 1.1km north east from the subject site which provides a very high quality cycling route with connections to Perth City and onwards, as well as more local destinations including Subiaco, Claremont, Cottesloe, and North Fremantle.

While there are no dedicated cycle lanes or paths along Monash Avenue, there are excellent cycling options throughout Kings Park providing route options away from Winthrop Avenue.

Given the proximity of the subject site to Perth City, Subiaco and other destinations and employment centres, cycling should be encouraged and supported as a viable mode option.

During a site visit at the intersection of Karella Street and Smyth Road, 24 people were recorded riding a bike with a relatively even split between commuting, recreational and trips to school. This intersection and east-west route appears to be a popular route for people riding a bike.

Figure 57 Existing cycling network (source: Department of Transport)

A heatmap of bicycle activity in the vicinity of the subject site is shown in Figure 58. This is produced by cyclists tracking their trips using the commercial product Strava with the 15 minute cycling catchment shown in Figure 59. The heatmap data shows that those bicycle riders using the Strava software to track their rides, has the highest levels of cycling along the Fremantle Line Principal Shred Path (PSP). Other frequently used cycle routes include Aberdare Road, Smyth Road, Stirling Highway, Thomas Road and various paths through Kings Park.

Figure 58 Strava heatmap for cycling activity (source: Strava.com)

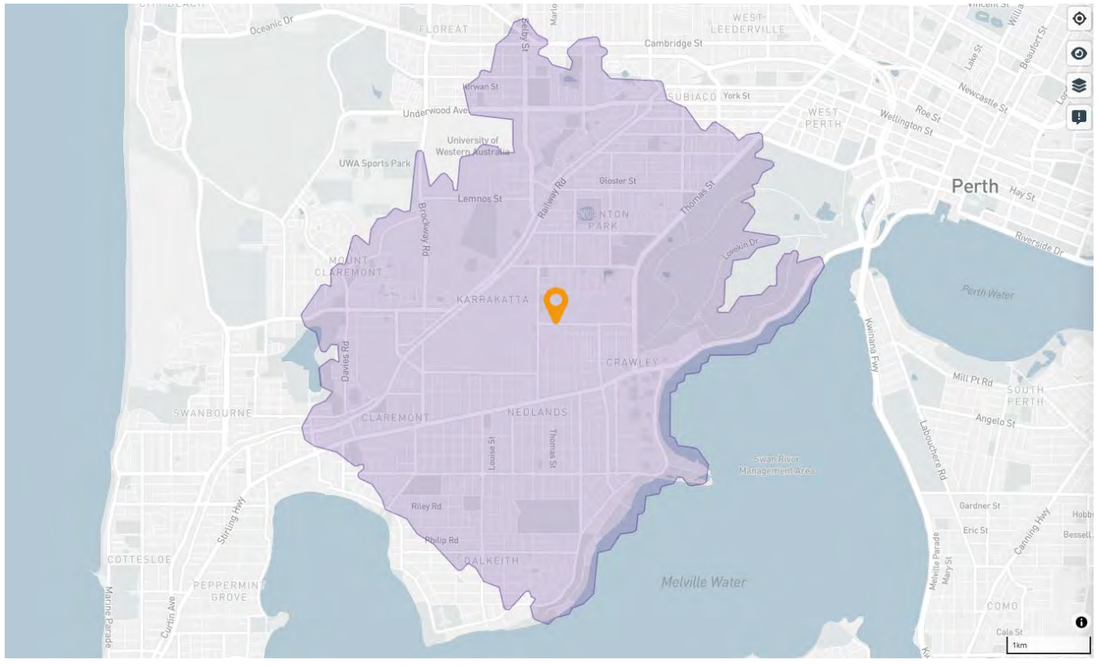


Figure 59 15 minute cycling catchment (source: Planwisely)

7.2 Proposed Cycling Network

Cycle lanes are currently being installed along Aberdare Road to the north as part of the Long Term Cycle Network (LTCN) which is shown in Figure 60. Smyth Road is considered to be a Local Route, with connections from the subject site further south to existing links shown in Figure 57. There are no other known or proposed cycling infrastructure upgrades at the time of this report.

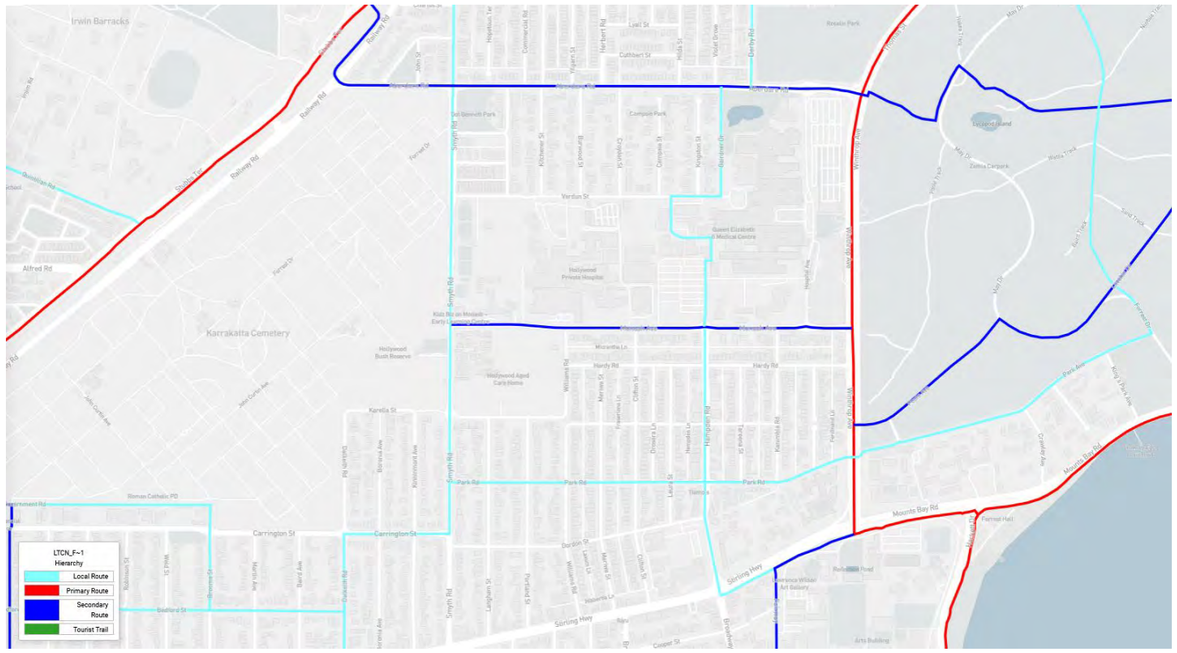


Figure 60 Long Term Cycle Network (source: Planwisely)

7.3 Development Proposals Bicycle Network and Facilities

Cycling trips are expected to be generated by residents commuting to work, as well as recreational trips on weekends. The inclusion of high quality paths through the site, or for vehicle speeds to be 30km/h or under which safely allows people to ride on the road mixed with vehicles, will create a safe cycling environment within the subject site.

There is an opportunity for Hardy Road Street to become a viable east-west cycling option for local trips and the inclusion of a filtering treatment on Hollywood Avenue will provide for a legible north-south connection from the development and surrounding neighbourhood through to Hollywood Primary School.

7.4 Required Bike Parking

The provision of bike parking will be provided in line with the requirements of SPP 7.3 “Residential Design Codes Volume 2 – Apartments” which requires 0.5 bicycle parking bays per dwelling. It is highly recommended that residential bike parking be provided at a minimum rate of one space per dwelling, acknowledging the reality that most people own at least one bike and this site is within an inner city context.

Bike parking within the medical centre and commercial development would be assessed on an individual basis, noting that the City of Nedlands does not require bike parking and end of trip facilities within their parking policy or scheme. Provision of adequate end of trip facilities should be a priority within the development to support the suppression of trips, even if the City of Nedlands does not consider that a planning priority.

Austroads Guidelines for Bicycle Parking Facilities outlines a generic rate of 0.15 spaces per staff member for long stay and 0.1 spaces per patient at maximum patient capacity. For a commercial development such as an office, 0.45 spaces per 100m^2 GFA are required for staff and 0.05 spaces per 100m^2 GFA for visitors.

8. PUBLIC TRANSPORT ACCESS

8.1 Existing Services

The subject site is located within a 1-12 minute walk to frequent and regular public transport services. Proximity of the site to excellent public transport services is shown in Figure 61.

Figure 61 Public transport access (source: Metromap)

Bus route 25 runs along Monash Avenue and Smyth Road and provides connections to Claremont Station and Shenton Park Station via Hollywood Hospital and QE11 Medical Centre. This bus route runs between Shenton Park Station and Hollywood Private Hospital every 20 minutes from 5.29am to 6.14pm. Services to Claremont Station are less frequent.

High frequency bus routes, 950 and 998/999, operate from the QE11 Medical Centre. The 950 bus route provides regular and direct connections to Morley via Elizabeth Quay Bus Station and Beaufort Street. The 998/999 provide connections across Perth including the University of Western Australia (UWA), Stirling, Dianella, Bayswater, Curtin University, Fiona Stanley Hospital, Murdoch University, Fremantle and Cottesloe. The high frequency bus routes run every 10-15 minutes.

Bus routes 96 and 97 operate from QE11 Medical Centre and provide connections to Leederville Station, Subiaco Station and down to UWA. Services run every 15-20 minutes. Bus route 103 runs between Elizabeth Quay Bus Station and Claremont Station via QE11 Medical Centre with infrequent services every 45-60 minutes.

The Purple CAT bus runs between UWA and Elizabeth Quay Bus Station via QE11 Medical Centre with services every 10 minutes during peak times. Shenton Park Station is located a walking/cycling distance of 1.8km with services running every 6 minutes during peak times providing direct connections to Fremantle and Perth.

The extent of weekday public transport accessibility is set out in Figure 62, with a twenty minute trip on bus or train extending from Mosman Park in the south, Wembley Downs to the north, Central Perth to the east and parts of Dalkeith to the south.

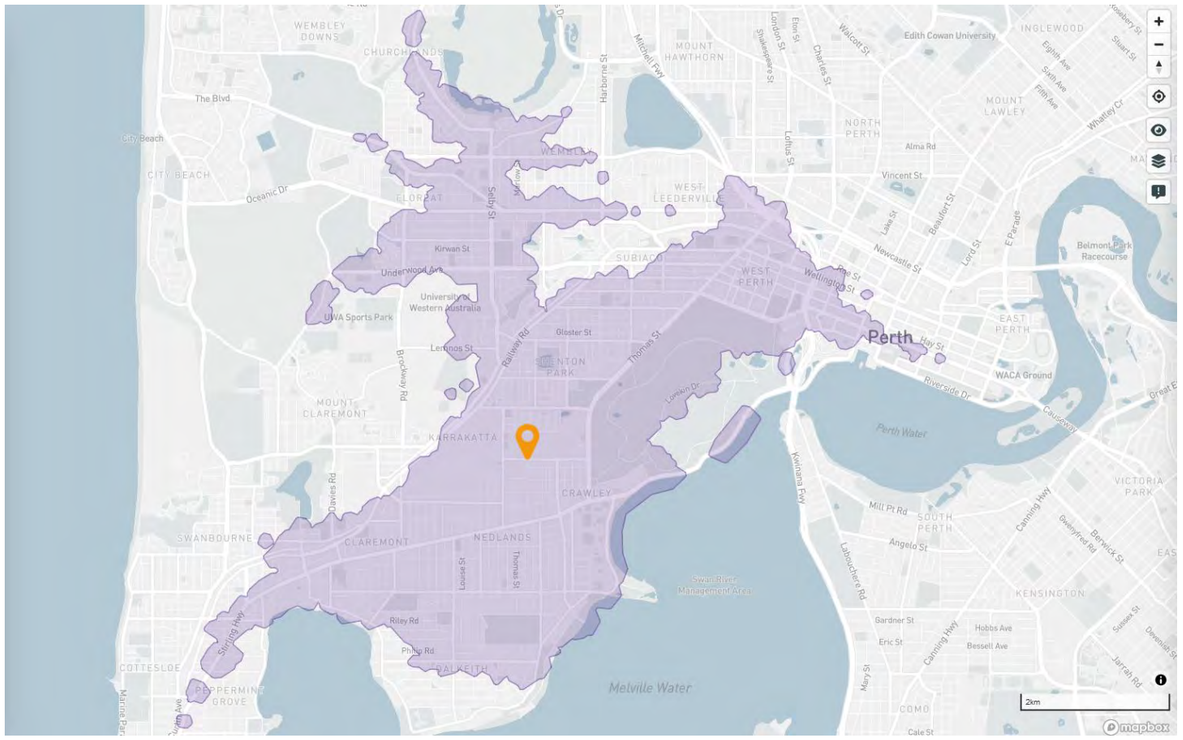


Figure 62 20 minute weekday morning public transport catchment (source: Planwisely)

9. SITE SPECIFIC ISSUES

9.1 Road Safety

Within the immediate area surrounding the subject site, there were a total of 20 reported incidents in the last five years since November 2017, where nine were recorded at intersections and 11 in a mid-block location. Of those nine at an intersection, five were recorded at the intersection of Monash Avenue and Smyth Road with three occurring prior to the roundabout being installed. Three crashes occurred at the roundabout intersection of Smyth Road and Karella Street (with two involving a bicycle) and one at Williams Road and Monash Avenue.

For mid-block incidents, four involved entering or leaving a driveway and four involved parking with most occurring on Monash Avenue. Removal of crossovers being proposed would assist in reducing this risk in the future, with movements confined to intersections rather than site crossovers.

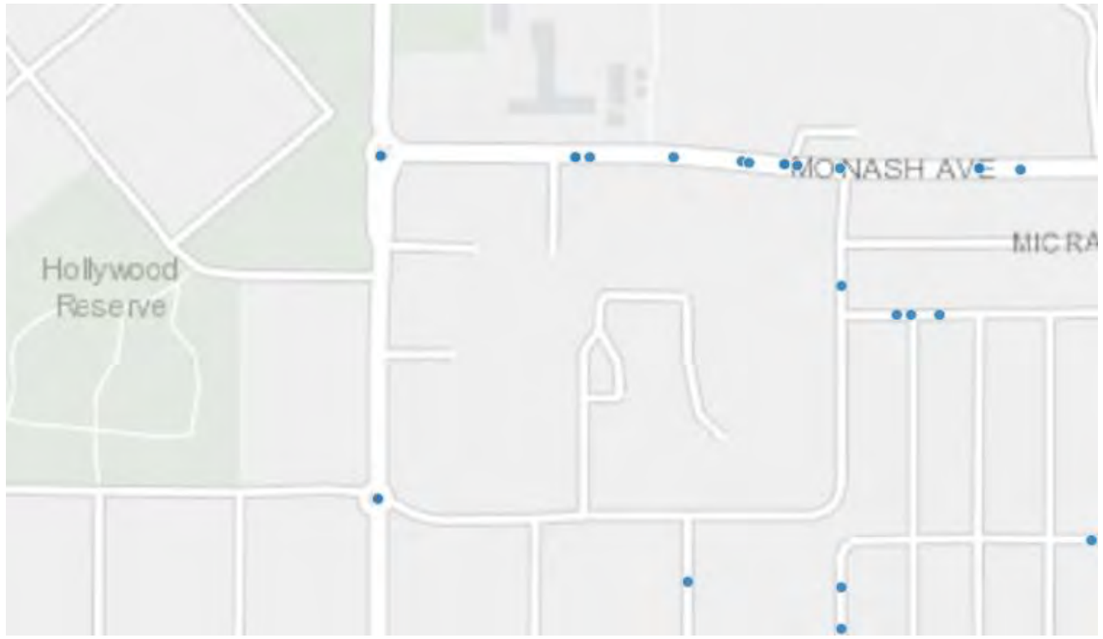


Figure 63 Crash Information (source: Main Roads WA)

In respect to Blackspot locations, there are a number of intersections in proximity to the site that qualify. It should be noted that the intersection of Monash Avenue and Smyth Road was converted into a roundabout in 2019. The crash analysis for each intersection is shown in Figure 64 and Figure 65.

It would be expected, given the potential increase in traffic associated with the proposed development, that risk profiles relating to traffic incidents may increase, however removal of direct crossovers to Monash Avenue and an internal network designed to accommodate slower speeds would reduce this risk. The use of intersections along Smyth Street and Monash Avenue to control movements would also limit mid-block risk issues.

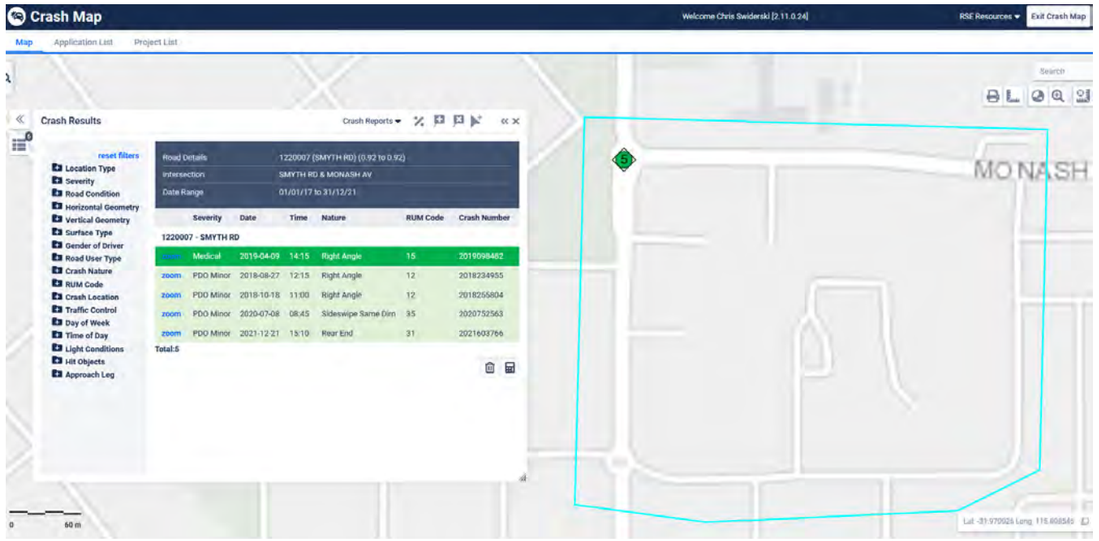


Figure 64 Crash reporting - intersection of Monash Ave and Smyth Rd (source: Main Roads WA)

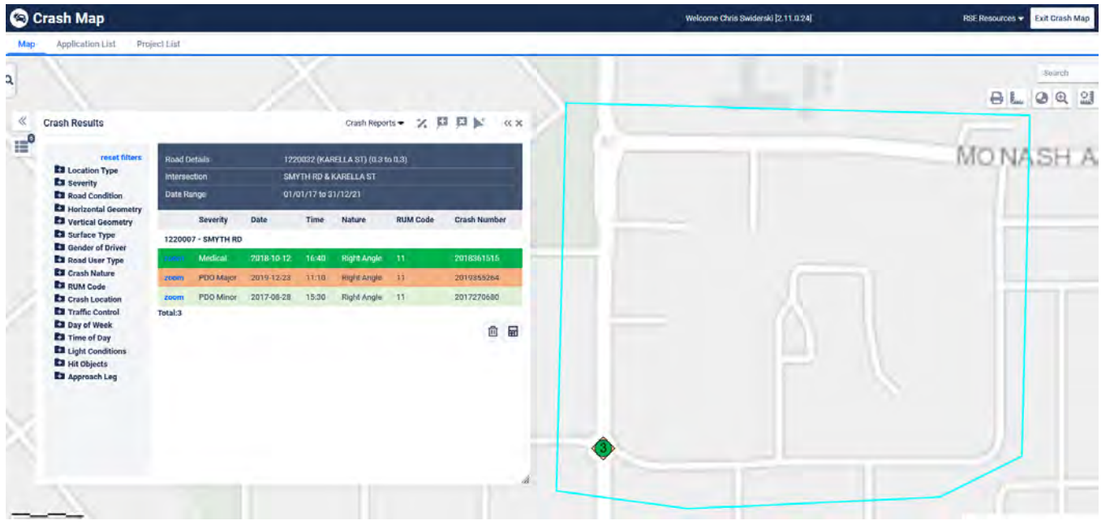


Figure 65 Crash reporting - intersection of Karella Street and Smyth Rd (source: Main Roads WA)

10. SUMMARY

10.1 Introduction

This Transport Impact Assessment (TIA) has been prepared by Flyt in support of the proposed Precinct Structure Plan at 62 Monash Avenue in Nedlands. This mixed use development proposes to increase the intensification of the land and includes a mix of dwelling types which integrate into the surrounding area. The creation of a Precinct Structure Plan ensures a high level of design focus will be applied to manage the mixed-use components, higher levels of density and character.

The subject site is located between Karella Street, Smyth Road, Monash Avenue and Williams Road in Nedlands and is situated opposite Hollywood Private Hospital and Hollywood Primary School. The site is in the City of Nedlands and as indicated by the South West Aboriginal Land and Sea Council website, the site sits within the Whadjuk Region.

This version of the assessment takes in to consideration the feedback and comments received from the City of Nedlands (CoN) in March 2024. This version also uses the updated Landscape Masterplan for the project and sets out the internal transport network including enhanced pedestrian connectivity.

10.2 Site Context and Proposed Development

The site is zoned Residential, with land zoned Special Use on the west and northern sides. Land to the east and south is also zoned Residential with density codes ranging between R10 – RAC3 (Figure 3). Opposite the subject site to the north is Hollywood Primary School, an early learning centre and Hollywood Private Hospital, and to the west is the Karrakatta Cemetery.

The subject site is within close proximity of a range of services and education facilities such as the QE11 Medical Centre which includes a large number of medical services including the Perth Children's Hospital, Sir Charles Gairdner Hospital, Ronald McDonald charities, North Metropolitan Health Services, research institutes and clinics. Kings Park is located 1.1km to the east and the University of Western Australia is 1.5kms to the south.

The proposed development includes the following facilities which have all been considered within this TIA:

- 78 townhouse lots
- Approximately 450-500 apartments across three sites (subject to detailed design and individual assessments)
- A medical centre of approximately 15,900m^2 GFA which would be a consulting rooms model, rather than a hospital type facility
- Prioritising vehicle access from the external existing street network with vehicle access proposed from internal streets aside from existing development crossover locations on Monash Avenue and Williams Road
- Four new streets, two new laneways and associated intersections
- Pedestrian linkages from Karella Street through to site to Monash Avenue to allow for continuous pedestrian accessibility and improve access to Hollywood Primary School from the south, supporting active mobility trips
- Centralised open space and park area
- Retention of existing building at 118 Monash Avenue.

10.3 Proposed Vehicle Access

The development of the site proposes to reduce the overall number of crossovers from 14 to three controlled intersections, removing many redundant crossovers most of which were associated with historical land uses along Karella Street.

The detailed planning and design of the internal street configurations relating to cross sections, landscaping, drainage, parking layouts and pedestrian crossing points will all be progressed within the following stages of design development. The details in this TIA provide the framework for future design development and to provide the CoN with an understanding of the form of street configurations which would inform the subdivision process. The cross sections and street alignments are also addressed within the landscape plan for the proposed development. The street network is comprised of:

- Hollywood Avenue – north-south internal access street between Hardy Road and Karella Street, footpath on eastern side of reserve area
- Hardy Road – extension of existing east-west alignment to connect Smyth Road and Williams Road, footpaths on both side of reserve
- Eventide Way – internal access street connecting Hardy Road with Elloura Lane and provides access for sites fronting Smyth Road and the internal park area, footpaths on both side of reserve
- Crossleigh Way – internal access street connecting Elloura Lane with Hardy Road and providing vehicle access for frontage lots and those with frontage to Williams Road, footpaths on both side of reserve
- Elloura and Rookstone Lane – internal laneway providing vehicle access for lots fronting Karella Street and the park area / Hollywood Avenue.

10.4 Proposed On-site Parking

Options for on-street parking will be provided within the development area, with final design configurations being progressed through more detailed stages of the development. Street reserves have been configured to allow for on-street parking to be provided on most carriageways which will provide for short term visitation.

Given the location of the development, it would be expected that all on-street parking within internal streets would be time restricted at a minimum. Allocation of spaces per user group (ACROD, service, short term, motorcycle) would be based on City of Nedlands requirements.

There would also be the potential for up additional bays being created on Monash Avenue to cater for existing land uses that front Monash Avenue. The overall volume of on-street parking which eventuates would be subject to a range of factors, including site access requirements, design standards and landscaping, but could yield 32 on-street parking bays.

10.5 Provision for Service Vehicles

Waste collection will be conducted by the City of Nedlands. The existing and proposed road network will need to accommodate the swept path movements of a large 11m waste collection vehicle.

Details relating to onsite servicing for apartment and commercial sites dealing with waste and deliveries would be resolved during the subsequent stages of planning.

10.6 Proposed Pedestrian and Bicycle Network/Facilities

The majority of vehicle access is proposed from access streets within the subject site, removing direct vehicle access from the surrounding street network which means that the pathways and pedestrian connections around the perimeter of the site will be mostly uninterrupted, providing continuous and safe walkways.

Within the subject site, Hardy Road will have footpaths on both sides of the road reserve, as will Eventide Way and Crossleigh Way. Footpaths on Hardy Road will provide continuous and direct east-west access through the site and connect with existing paths on Smyth Road and Williams Road. Paths on Eventide Way and Crossleigh Way will allow for internal pedestrian movements from those units that are rear loaded.

Hollywood Avenue will have a footpath on the eastern side of the reserve to allow for a pedestrian connection through the site running north south from Monash Avenue to Karella Street.

In addition to the north-south connection via Hollywood Avenue, a Pedestrian Accessway will align with the western edge of the open space area that will see a continuous pedestrian corridor open up between Karella Street and Monash Avenue. This landscaped corridor will further enhance pedestrian movements into, from and through the site.

10.7 Traffic Assessment

Given large areas of the existing site is mostly vacant, any form of permitted development on those areas would result in the generation of additional traffic on the network that is not there at present. Therefore, any impact on the performance of adjoining intersections and roads would primarily be due to traffic associated with this proposed development. Development that is already on site has traffic generated by its use, and these volumes were discounted from the full build scenario assessment.

An assessment of the network and the traffic generated by the development was undertaken using SIDRA. This assessment looked at base year conditions (2023), an opening year scenario (three years - 2026) and a full build scenario (nominally ten years for 2036 but timing would be dependent on development outcomes).

The ten year scenario also included a forecast growth in background traffic of 10% as provided by the City of Nedlands. All three scenarios, for both AM and PM peak hours, showed that the existing and future networks operate well within accepted traffic engineering parameters for model outputs. It is acknowledged that the proposed development will increase traffic volumes on the network in the immediate area throughout the course of a typical weekday, but the performance of the network is satisfactory.

Assessment of intersections also indicated consideration of alternative traffic engineering treatments, however localised factors on Monash Avenue and Smyth Road, and the potential for alternative approaches to managing turning movements, resulted in the form of both those corridors being maintained as is.

Wider area distribution of the forecast full build traffic volumes were also undertaken, with forecast traffic levels not broaching thresholds where further assessment is required. It should also be noted that each major development site will be required to have more detailed traffic assessment completed for each site, whereby evolving traffic patterns can be taken into account.

This assessment shows that the network is capable of catering for traffic volumes generated by the development within peak hours and no specific alteration to network capacity or intersections are proposed.

10.8 Public Transport

The subject site is located within a 1-12 minute walk to frequent and regular public transport services including:

- Bus route 25 which provides connections to Claremont Station and Shenton Park Station via Hollywood Hospital and QE11 Medical Centre
- High frequency bus routes, 950 and 998/999 which provide regular and direct connections to Morley via Elizabeth Quay Bus Station and Beaufort Street
- Bus routes 96 and 97 which provide connections to Leederville Station, Subiaco Station and UWA
- Bus route 103 runs between Elizabeth Quay Bus Station and Claremont Station via QE11 Medical Centre
- The Purple CAT bus runs between UWA and Elizabeth Quay Bus Station via QE11 Medical Centre with services every 10 minutes during peak times
- Shenton Park Station is located a walking/cycling distance of 1.8km with services running every 6 minutes during peak times providing direct connections to Fremantle and Perth.

The site has excellent public transport accessibility, with a wide catchment area covering large parts of the inner western suburbs and Central Perth.

APPENDIX A

SIDRA Outputs

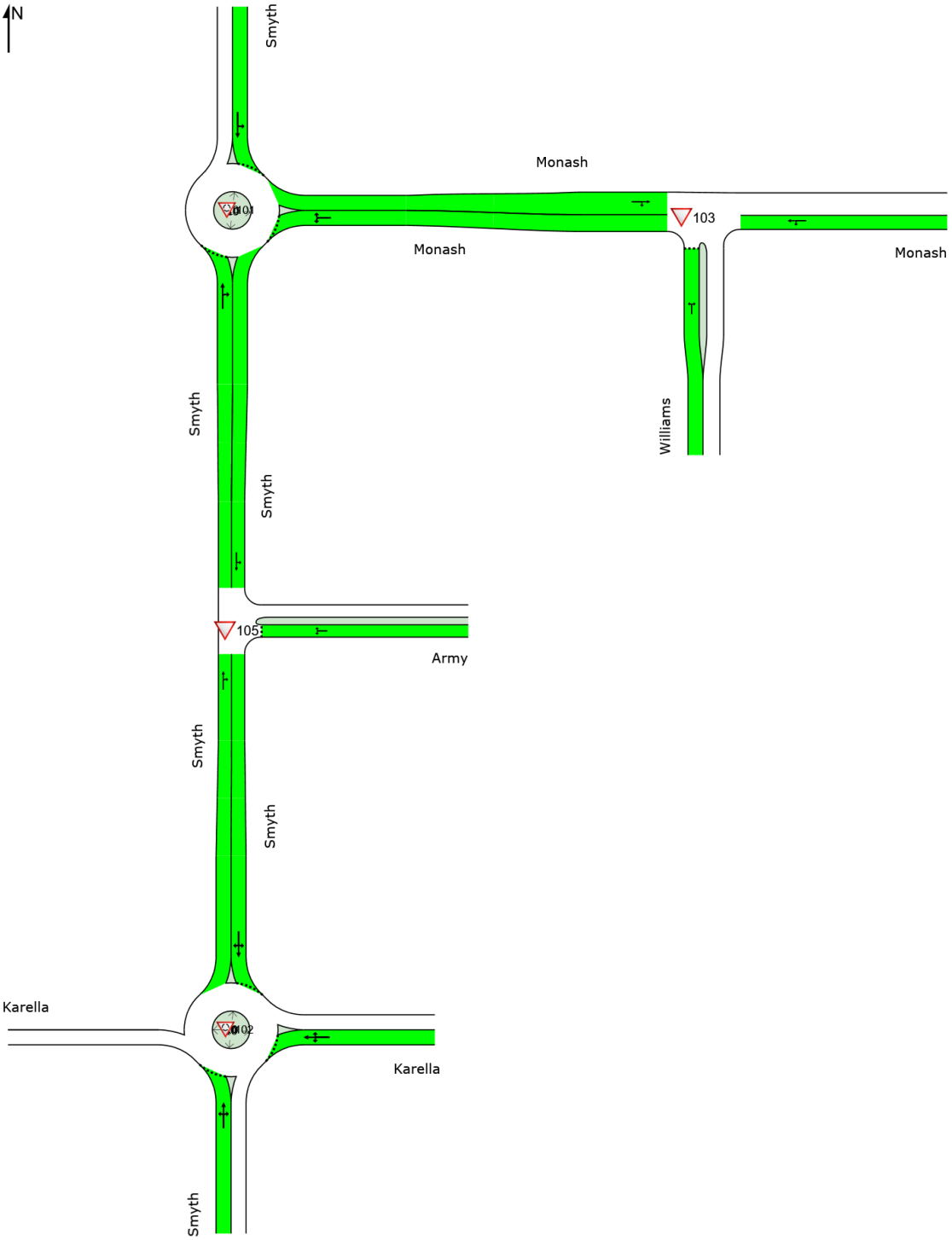
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [AM Open (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

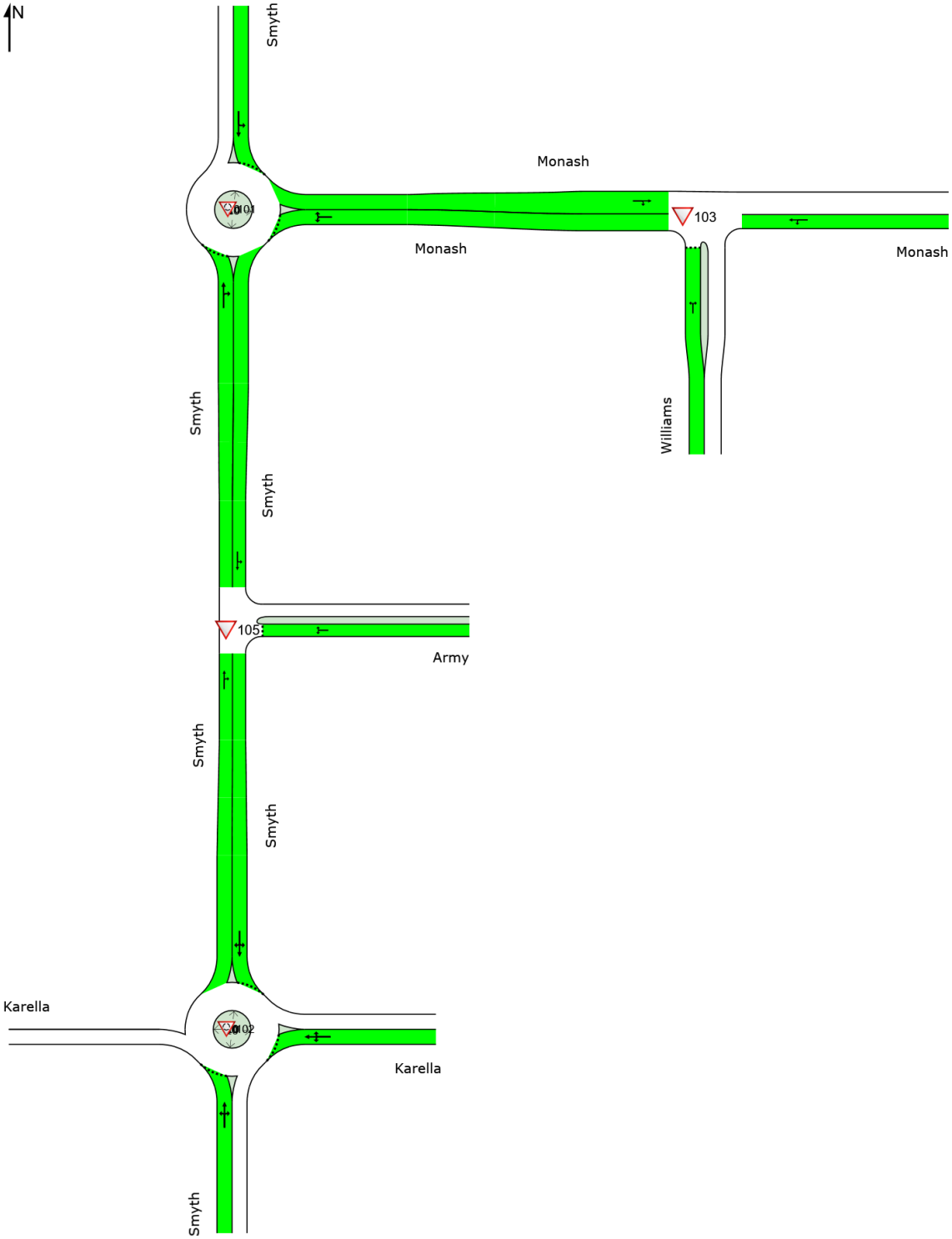
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio per lane

Network: N101 [AM Open (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Degree of Saturation

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

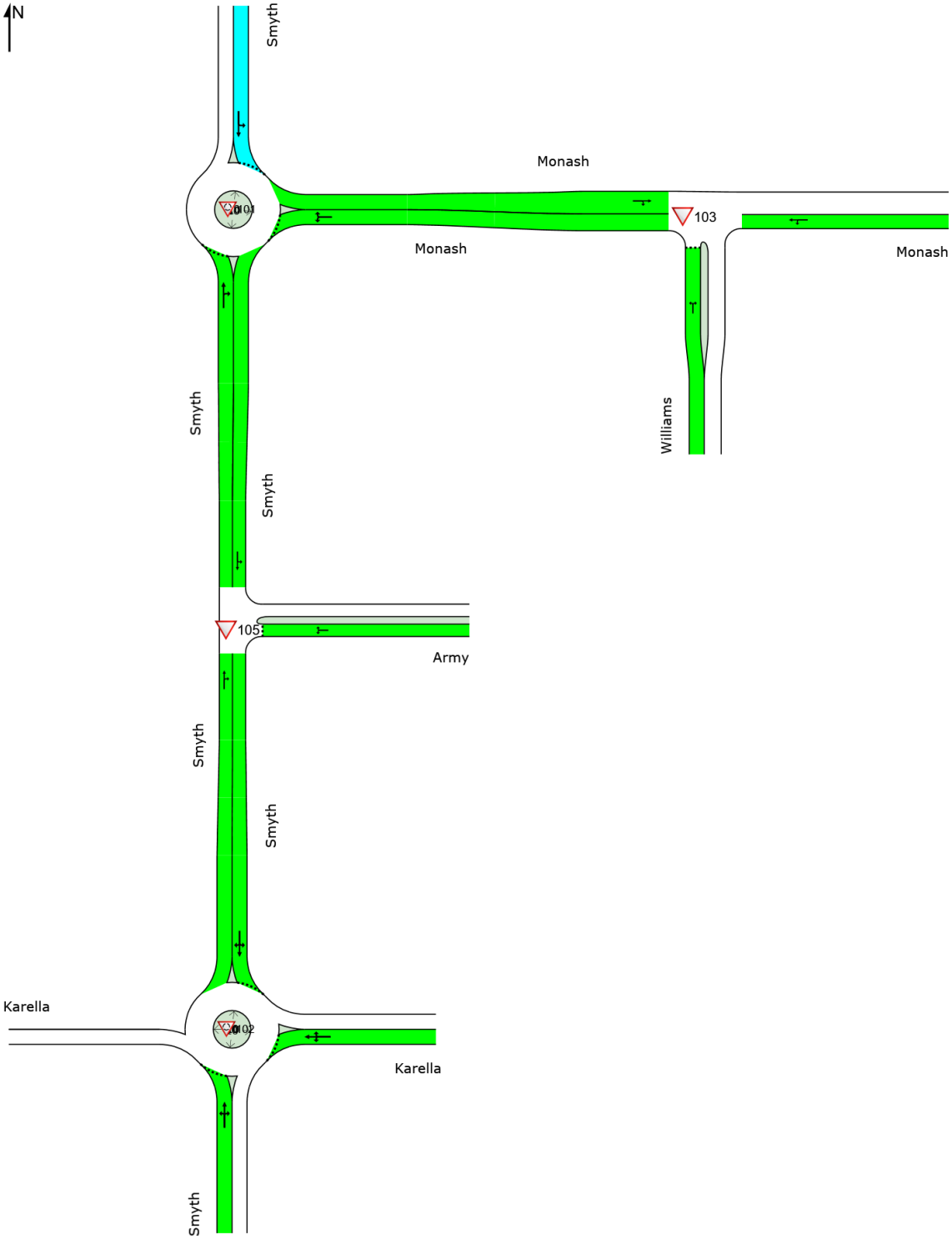
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [AM Open (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Network: N101 [AM Open (Network Folder: General)]

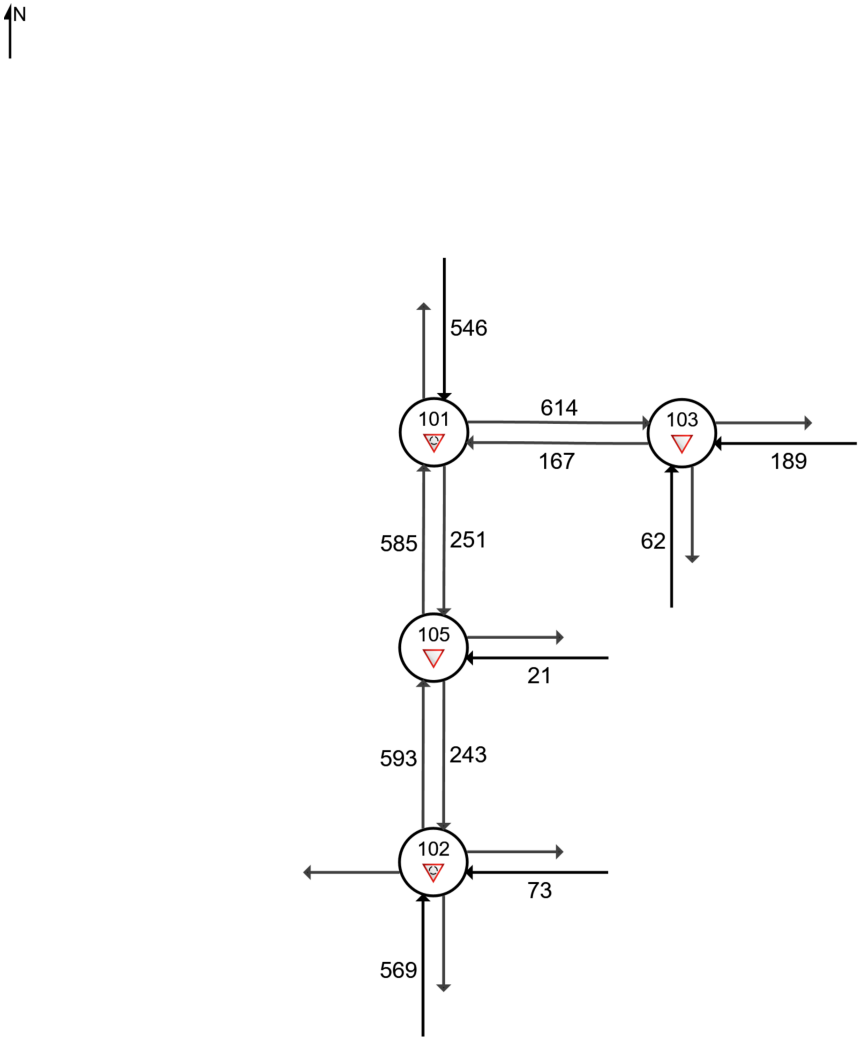
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

All Movement Classes



MOVEMENT SUMMARY

Site: 101 [Smyth and Monash AM Open (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Open (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	344	2.0	344	2.0	0.472	4.6	LOS A	1.5	10.7	0.45	0.52	0.45	38.6
3	R2	All MCs	241	2.0	241	2.0	0.472	7.9	LOS A	1.5	10.7	0.45	0.52	0.45	28.5
Approach			585	2.0	585	2.0	0.472	5.9	LOS A	1.5	10.7	0.45	0.52	0.45	36.2
East: Monash															
4	L2	All MCs	39	2.0	39	2.0	0.159	4.8	LOS A	0.4	2.6	0.43	0.60	0.43	37.7
6	R2	All MCs	128	2.0	128	2.0	0.159	8.1	LOS A	0.4	2.6	0.43	0.60	0.43	40.5
Approach			167	2.0	167	2.0	0.159	7.3	LOS A	0.4	2.6	0.43	0.60	0.43	40.0
North: Smyth															
7	L2	All MCs	341	2.0	341	2.0	0.510	5.6	LOS A	1.6	11.3	0.61	0.56	0.61	37.7
8	T1	All MCs	205	2.0	205	2.0	0.510	5.6	LOS A	1.6	11.3	0.61	0.56	0.61	37.7
Approach			546	2.0	546	2.0	0.510	5.6	LOS A	1.6	11.3	0.61	0.56	0.61	37.7
All Vehicles			1299	2.0	1299	2.0	0.510	6.0	LOS A	1.6	11.3	0.51	0.55	0.51	37.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Karella and Smyth AM Open (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Open (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
1	L2	All MCs	5	0.0	5	0.0	0.414	4.0	LOS A	1.2	8.8	0.29	0.42	0.29	42.9
2	T1	All MCs	539	2.0	539	2.0	0.414	4.0	LOS A	1.2	8.8	0.29	0.42	0.29	40.9
3	R2	All MCs	25	0.0	25	0.0	0.414	7.3	LOS A	1.2	8.8	0.29	0.42	0.29	42.1
Approach			569	1.9	569	1.9	0.414	4.2	LOS A	1.2	8.8	0.29	0.42	0.29	41.0
East: Karella															
4	L2	All MCs	20	0.0	20	0.0	0.068	4.8	LOS A	0.1	0.9	0.39	0.59	0.39	40.9
5	T1	All MCs	9	0.0	9	0.0	0.068	4.8	LOS A	0.1	0.9	0.39	0.59	0.39	40.6
6	R2	All MCs	43	0.0	43	0.0	0.068	8.1	LOS A	0.1	0.9	0.39	0.59	0.39	35.4
Approach			73	0.0	73	0.0	0.068	6.7	LOS A	0.1	0.9	0.39	0.59	0.39	38.4
North: Smyth															
7	L2	All MCs	8	0.0	8	0.0	0.169	3.7	LOS A	0.4	2.7	0.12	0.41	0.12	40.4
8	T1	All MCs	221	2.0	221	2.0	0.169	3.7	LOS A	0.4	2.7	0.12	0.41	0.12	42.6
9	R2	All MCs	14	0.0	14	0.0	0.169	7.0	LOS A	0.4	2.7	0.12	0.41	0.12	40.7
Approach			243	1.8	243	1.8	0.169	3.9	LOS A	0.4	2.7	0.12	0.41	0.12	42.4
All Vehicles			885	1.7	885	1.7	0.414	4.3	LOS A	1.2	8.8	0.25	0.43	0.25	41.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 103 [Monash and Williams AM Open (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Open (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Williams															
1	L2	All MCs	45	0.0	45	0.0	0.063	5.1	LOS A	0.1	0.6	0.35	0.55	0.35	28.6
3	R2	All MCs	17	0.0	17	0.0	0.063	9.3	LOS A	0.1	0.6	0.35	0.55	0.35	40.6
Approach			62	0.0	62	0.0	0.063	6.2	LOS A	0.1	0.6	0.35	0.55	0.35	34.9
East: Monash															
4	L2	All MCs	16	0.0	16	0.0	0.096	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	47.0
5	T1	All MCs	174	2.0	174	2.0	0.096	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	49.3
Approach			189	1.8	189	1.8	0.096	0.4	NA	0.0	0.0	0.00	0.05	0.00	49.0
West: Monash															
11	T1	All MCs	571	2.0	571	2.0	0.301	0.0	LOS A	0.1	1.1	0.06	0.07	0.06	49.4
12	R2	All MCs	43	0.0	43	0.0	0.301	6.5	LOS A	0.1	1.1	0.06	0.07	0.06	46.2
Approach			614	1.9	614	1.9	0.301	0.5	NA	0.1	1.1	0.06	0.07	0.06	49.2
All Vehicles			865	1.7	865	1.7	0.301	0.9	NA	0.1	1.1	0.07	0.10	0.07	48.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 105 [Smyth and Army AM Open (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Open (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	582	3.0	582	3.0	0.309	0.0	LOS A	0.0	0.3	0.02	0.01	0.02	49.2
3	R2	All MCs	11	0.0	11	0.0	0.309	5.8	LOS A	0.0	0.3	0.02	0.01	0.02	40.8
Approach			593	2.9	593	2.9	0.309	0.1	NA	0.0	0.3	0.02	0.01	0.02	48.5
East: Army															
4	L2	All MCs	11	0.0	11	0.0	0.028	4.1	LOS A	0.0	0.3	0.46	0.56	0.46	34.2
6	R2	All MCs	11	0.0	11	0.0	0.028	8.4	LOS A	0.0	0.3	0.46	0.56	0.46	34.2
Approach			21	0.0	21	0.0	0.028	6.3	LOS A	0.0	0.3	0.46	0.56	0.46	34.2
North: Smyth															
7	L2	All MCs	11	0.0	11	0.0	0.130	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	47.3
8	T1	All MCs	240	3.0	240	3.0	0.130	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	48.8
Approach			251	2.9	251	2.9	0.130	0.2	NA	0.0	0.0	0.00	0.02	0.00	48.5
All Vehicles			864	2.9	864	2.9	0.309	0.3	NA	0.0	0.3	0.02	0.03	0.02	47.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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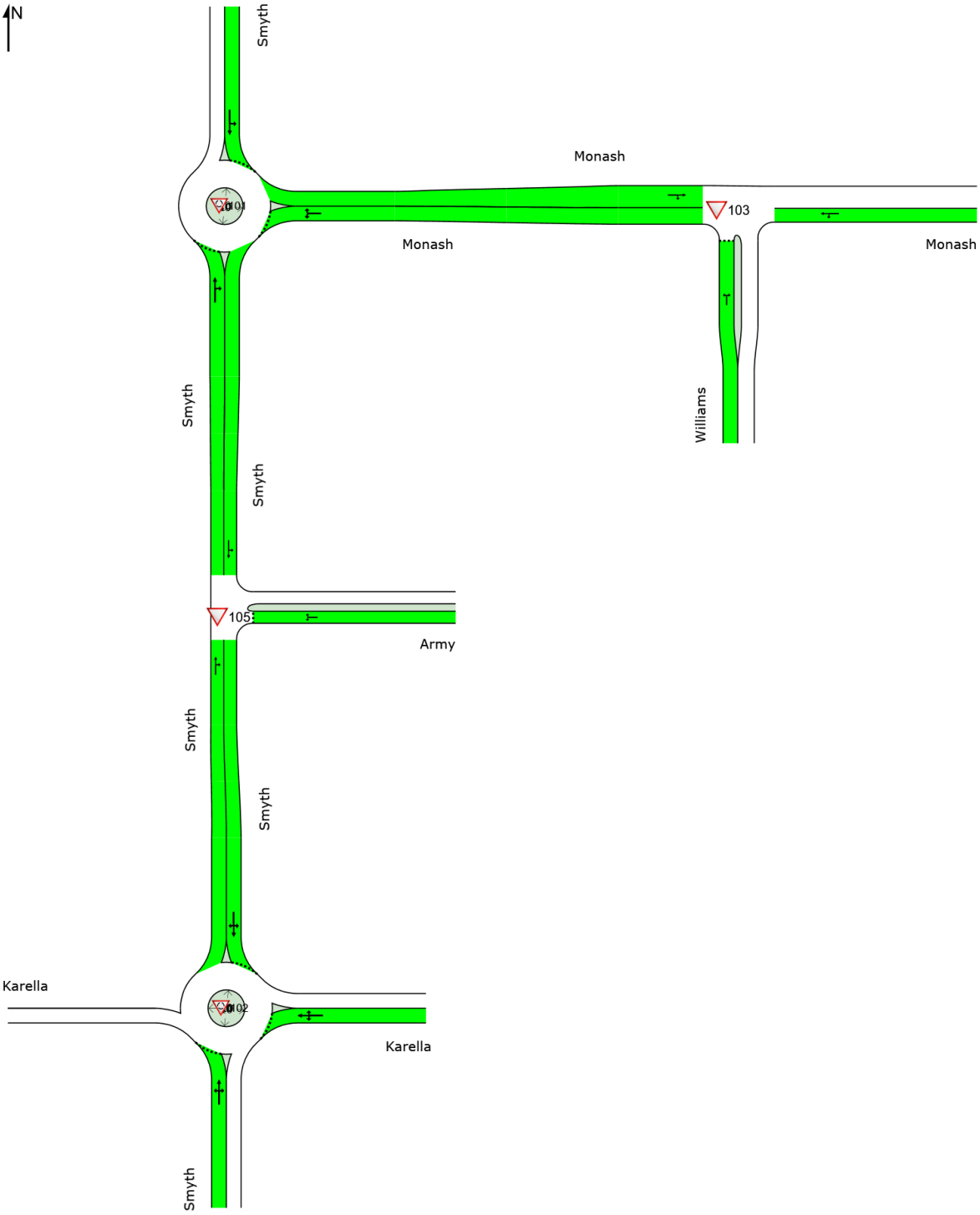
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [PM Open (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

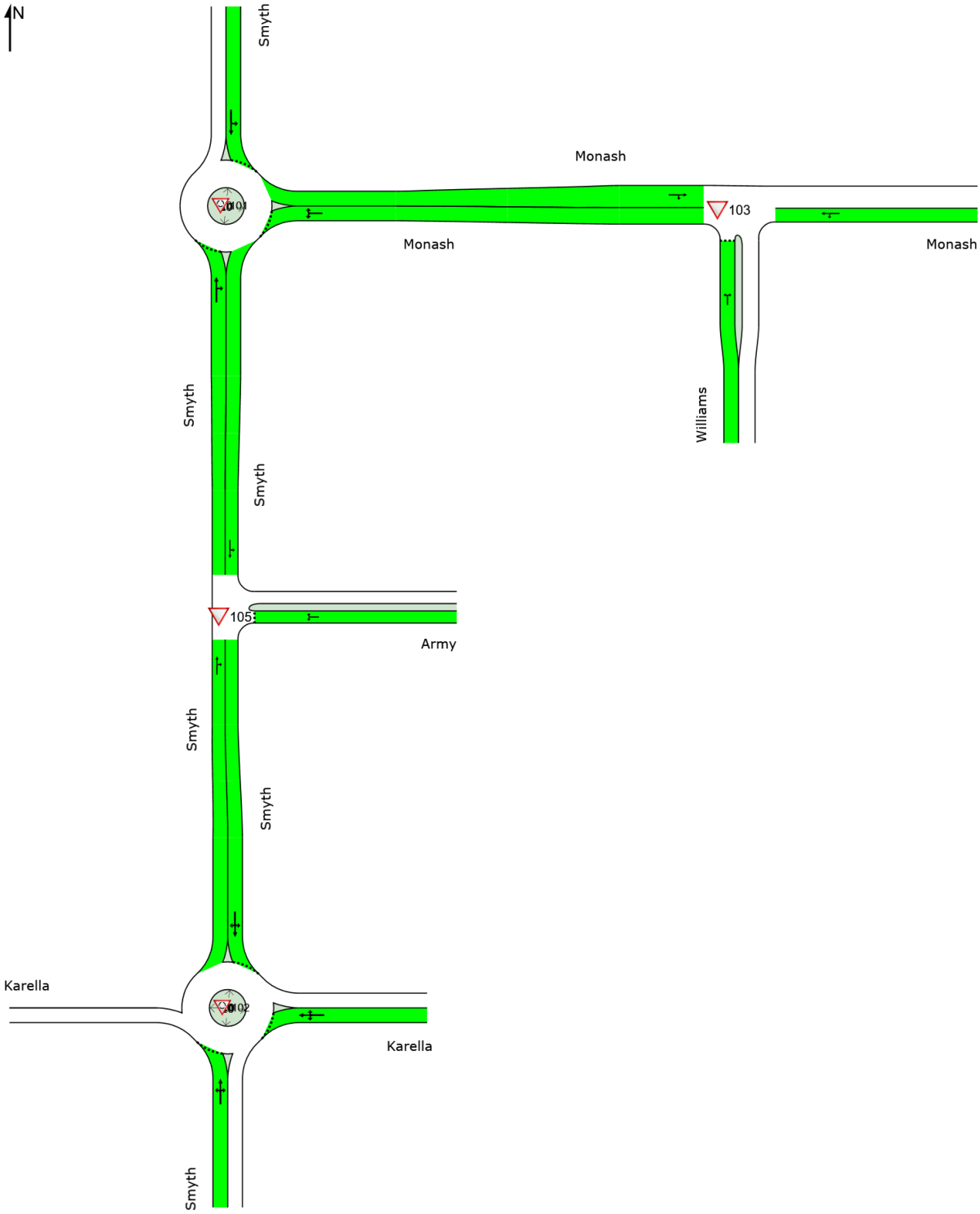
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio per lane

Network: N101 [PM Open (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



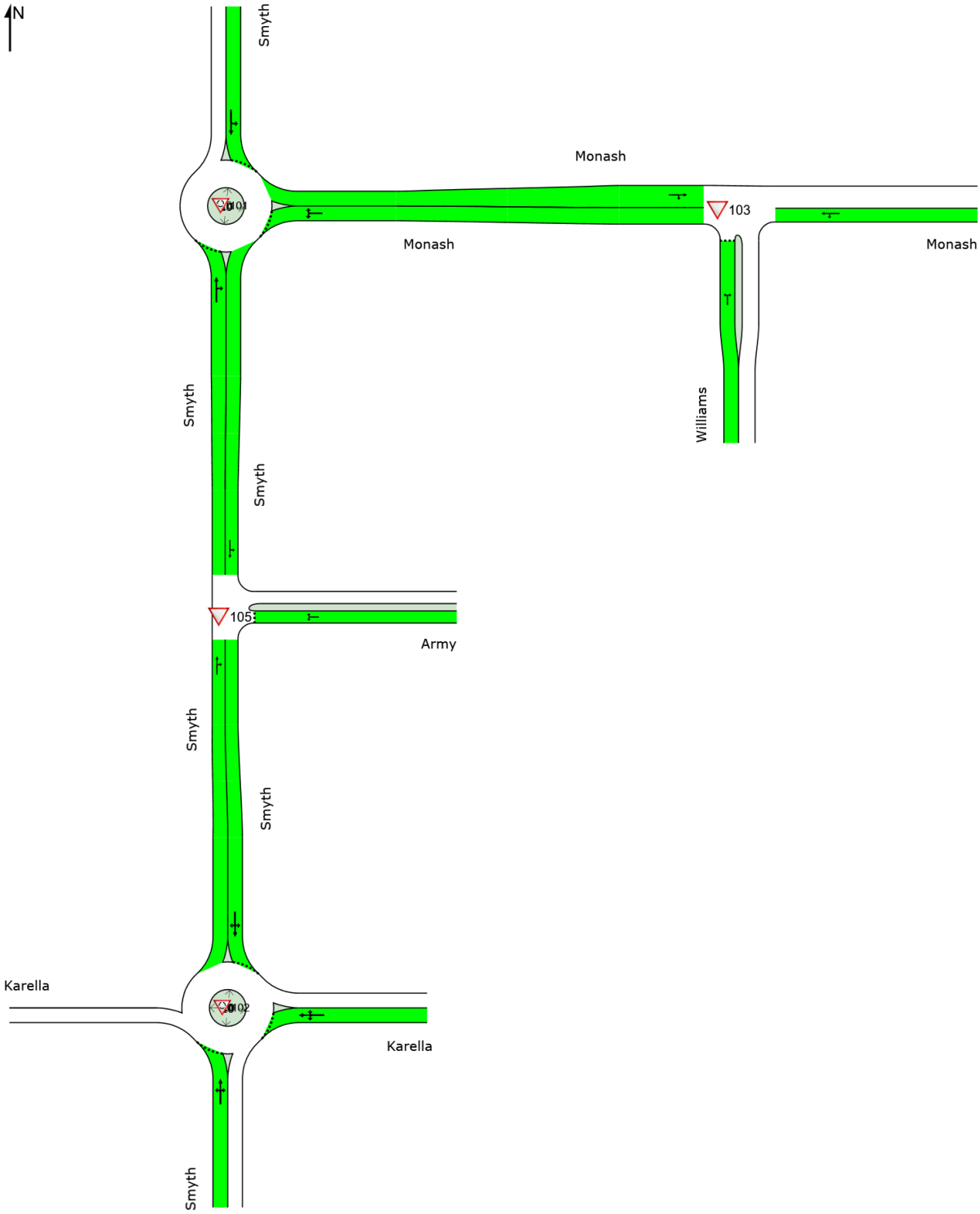
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [PM Open (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Network: N101 [PM Open (Network Folder: General)]

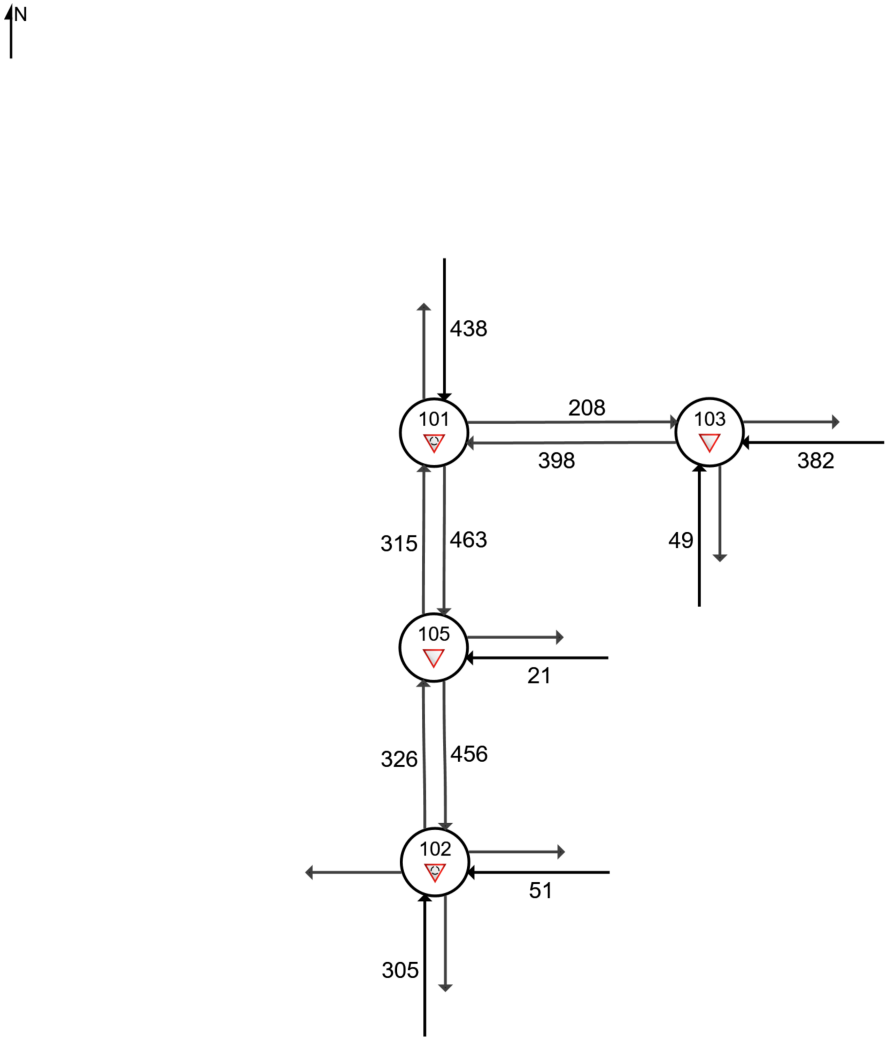
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

All Movement Classes



MOVEMENT SUMMARY

Site: 101 [Smyth and Monash PM Open (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Open (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	266	2.0	266	2.0	0.315	5.4	LOS A	0.8	5.8	0.54	0.55	0.54	38.7
3	R2	All MCs	48	2.0	48	2.0	0.315	8.6	LOS A	0.8	5.8	0.54	0.55	0.54	28.5
Approach			315	2.0	315	2.0	0.315	5.9	LOS A	0.8	5.8	0.54	0.55	0.54	37.9
East: Monash															
4	L2	All MCs	138	2.0	138	2.0	0.408	6.1	LOS A	1.1	7.6	0.60	0.65	0.60	37.0
6	R2	All MCs	260	2.0	260	2.0	0.408	9.3	LOS A	1.1	7.6	0.60	0.65	0.60	40.0
Approach			398	2.0	398	2.0	0.408	8.2	LOS A	1.1	7.6	0.60	0.65	0.60	39.3
North: Smyth															
7	L2	All MCs	119	2.0	119	2.0	0.314	3.9	LOS A	0.9	6.4	0.23	0.41	0.23	40.3
8	T1	All MCs	319	2.0	319	2.0	0.314	3.9	LOS A	0.9	6.4	0.23	0.41	0.23	40.3
Approach			438	2.0	438	2.0	0.314	3.9	LOS A	0.9	6.4	0.23	0.41	0.23	40.3
All Vehicles			1151	2.0	1151	2.0	0.408	5.9	LOS A	1.1	7.6	0.44	0.53	0.44	39.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Karella and Smyth PM Open (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Open (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
1	L2	All MCs	2	0.0	2	0.0	0.234	4.0	LOS A	0.5	3.9	0.25	0.42	0.25	43.1
2	T1	All MCs	295	2.0	295	2.0	0.234	4.0	LOS A	0.5	3.9	0.25	0.42	0.25	41.2
3	R2	All MCs	8	0.0	8	0.0	0.234	7.3	LOS A	0.5	3.9	0.25	0.42	0.25	42.3
Approach			305	1.9	305	1.9	0.234	4.1	LOS A	0.5	3.9	0.25	0.42	0.25	41.3
East: Karella															
4	L2	All MCs	19	0.0	19	0.0	0.056	6.0	LOS A	0.1	0.8	0.52	0.64	0.52	40.3
5	T1	All MCs	8	0.0	8	0.0	0.056	6.0	LOS A	0.1	0.8	0.52	0.64	0.52	40.0
6	R2	All MCs	23	0.0	23	0.0	0.056	9.2	LOS A	0.1	0.8	0.52	0.64	0.52	34.4
Approach			51	0.0	51	0.0	0.056	7.5	LOS A	0.1	0.8	0.52	0.64	0.52	38.5
North: Smyth															
7	L2	All MCs	12	0.0	12	0.0	0.284	3.6	LOS A	0.7	5.2	0.07	0.42	0.07	40.6
8	T1	All MCs	402	2.0	402	2.0	0.284	3.6	LOS A	0.7	5.2	0.07	0.42	0.07	42.7
9	R2	All MCs	42	0.0	42	0.0	0.284	6.9	LOS A	0.7	5.2	0.07	0.42	0.07	40.9
Approach			456	1.8	456	1.8	0.284	3.9	LOS A	0.7	5.2	0.07	0.42	0.07	42.5
All Vehicles			812	1.7	812	1.7	0.284	4.2	LOS A	0.7	5.2	0.16	0.43	0.16	41.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 103 [Monash and Williams PM Open (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Open (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Williams															
1	L2	All MCs	33	0.0	33	0.0	0.051	5.8	LOS A	0.1	0.5	0.42	0.61	0.42	28.5
3	R2	All MCs	17	0.0	17	0.0	0.051	7.2	LOS A	0.1	0.5	0.42	0.61	0.42	40.6
Approach			49	0.0	49	0.0	0.051	6.3	LOS A	0.1	0.5	0.42	0.61	0.42	35.8
East: Monash															
4	L2	All MCs	28	0.0	28	0.0	0.194	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	47.0
5	T1	All MCs	354	2.0	354	2.0	0.194	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.3
Approach			382	1.9	382	1.9	0.194	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.1
West: Monash															
11	T1	All MCs	188	2.0	188	2.0	0.106	0.0	LOS A	0.1	0.5	0.12	0.13	0.12	49.1
12	R2	All MCs	20	0.0	20	0.0	0.106	8.3	LOS A	0.1	0.5	0.12	0.13	0.12	45.7
Approach			208	1.8	208	1.8	0.106	0.8	NA	0.1	0.5	0.12	0.13	0.12	48.8
All Vehicles			640	1.7	640	1.7	0.194	1.0	NA	0.1	0.5	0.07	0.11	0.07	48.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 105 [Smyth and Army PM Open (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Open (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	316	3.0	316	3.0	0.173	0.0	LOS A	0.0	0.3	0.04	0.05	0.04	48.3
3	R2	All MCs	11	0.0	11	0.0	0.173	9.9	LOS A	0.0	0.3	0.04	0.05	0.04	40.7
Approach			326	2.9	326	2.9	0.173	0.3	NA	0.0	0.3	0.04	0.05	0.04	47.2
East: Army															
4	L2	All MCs	11	0.0	11	0.0	0.029	5.1	LOS A	0.0	0.3	0.51	0.63	0.51	34.2
6	R2	All MCs	11	0.0	11	0.0	0.029	7.7	LOS A	0.0	0.3	0.51	0.63	0.51	34.2
Approach			21	0.0	21	0.0	0.029	6.4	LOS A	0.0	0.3	0.51	0.63	0.51	34.2
North: Smyth															
7	L2	All MCs	11	0.0	11	0.0	0.240	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	47.4
8	T1	All MCs	453	3.0	453	3.0	0.240	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.2
Approach			463	2.9	463	2.9	0.240	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.1
All Vehicles			811	2.8	811	2.8	0.240	0.4	NA	0.0	0.3	0.03	0.04	0.03	46.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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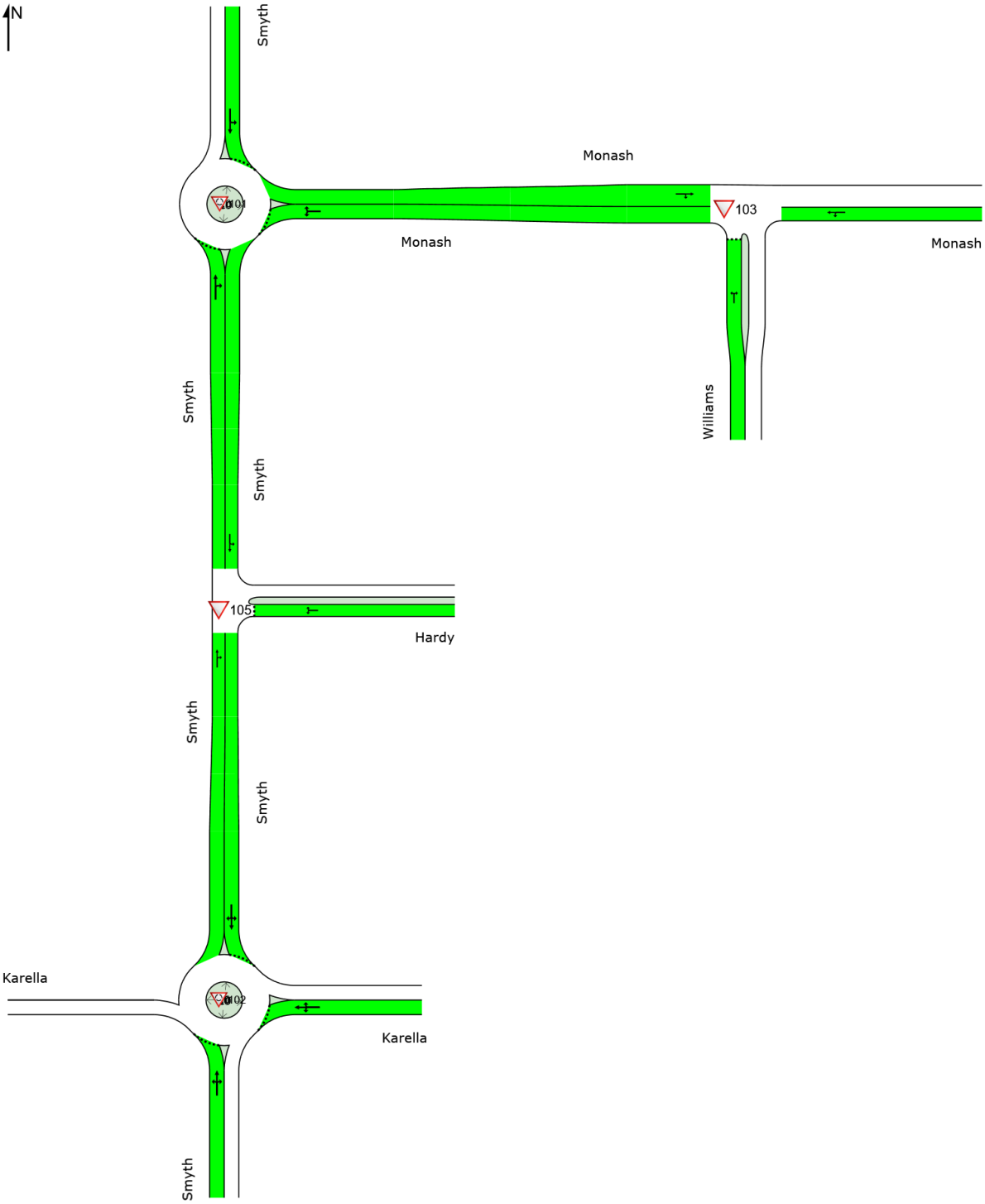
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [AM Full Build (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

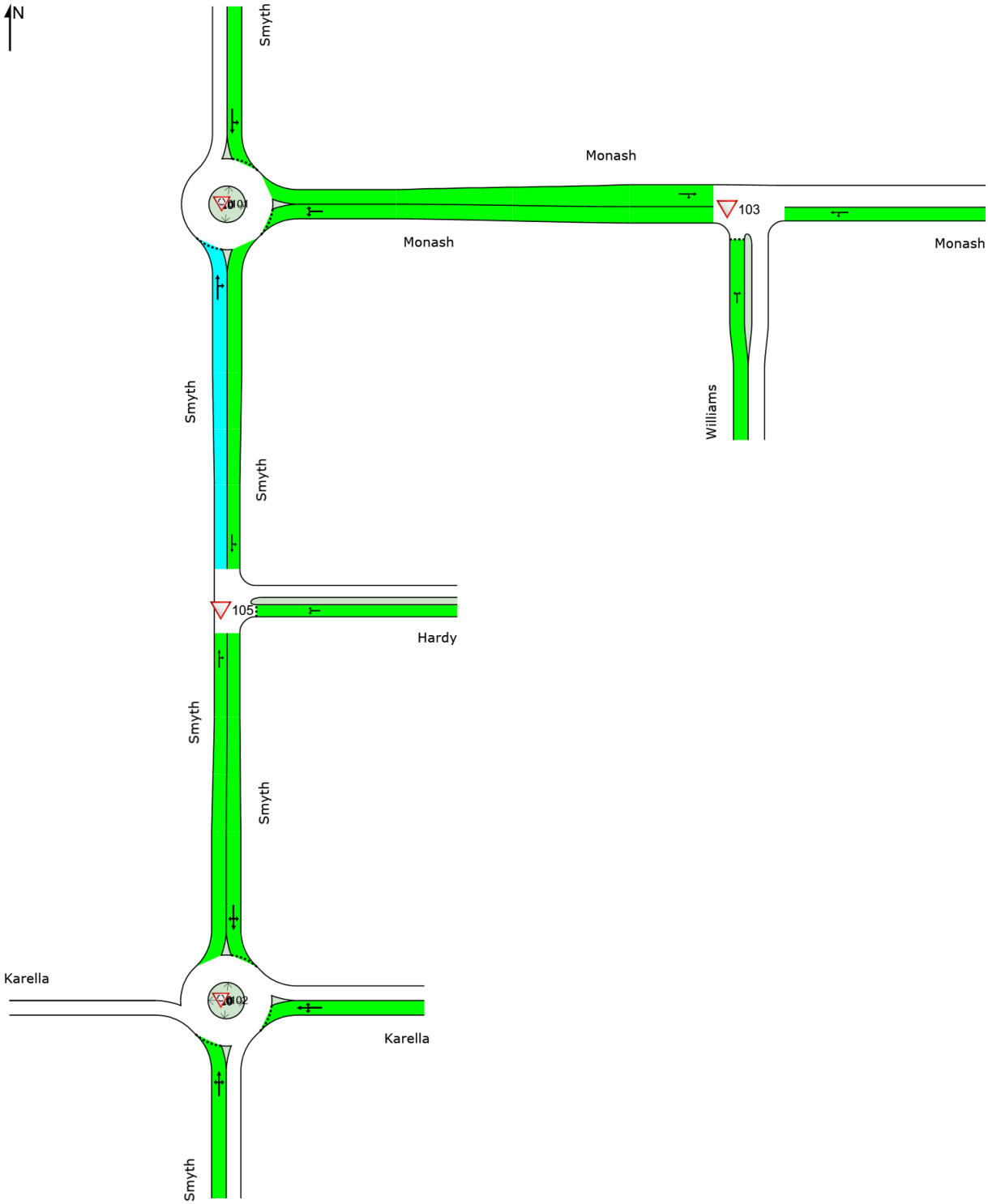
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio per lane

Network: N101 [AM Full Build (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Degree of Saturation

[< 0.6]	[0.6 – 0.7]	[0.7 – 0.8]	[0.8 – 0.9]	[0.9 – 1.0]	[> 1.0]

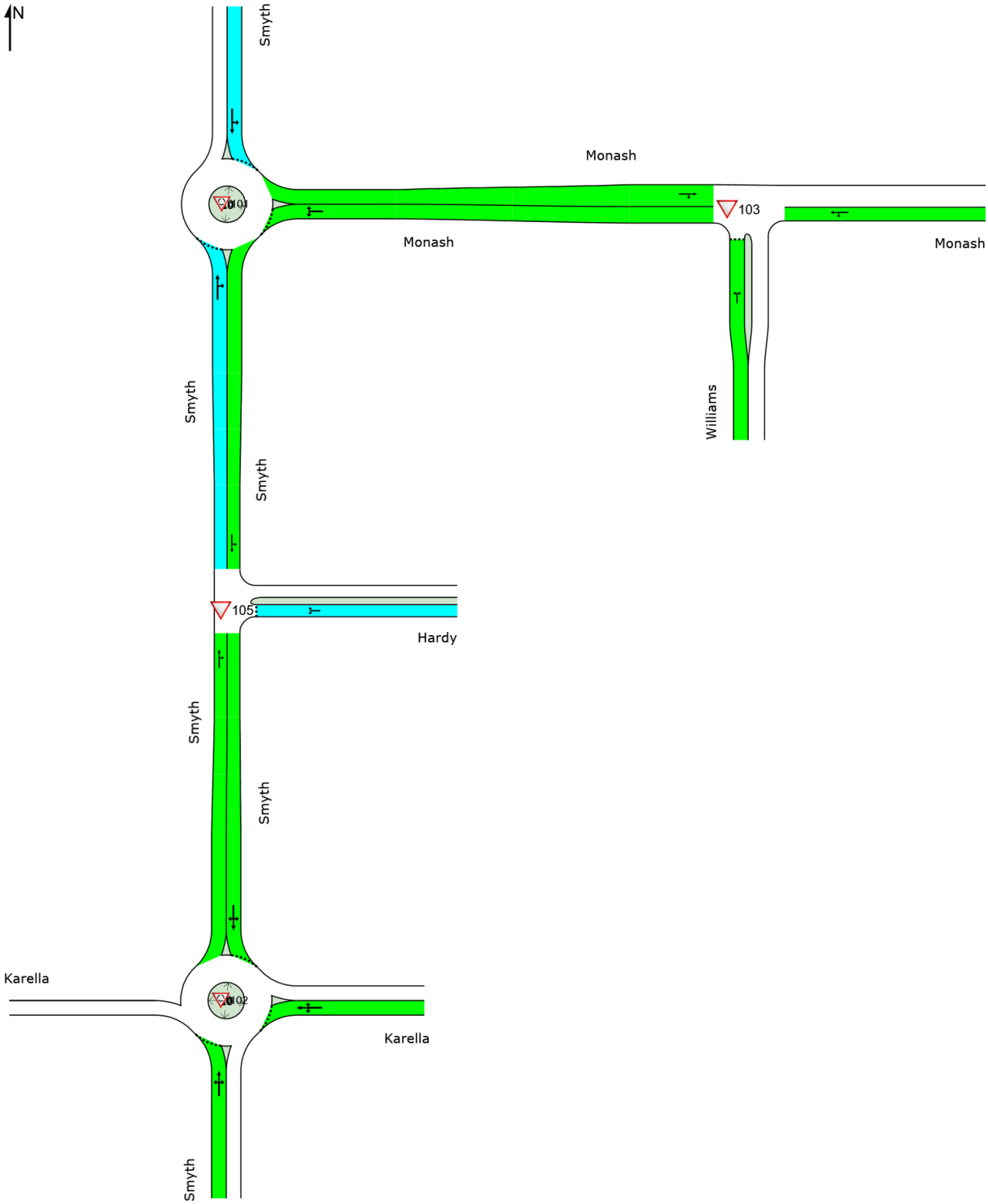
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [AM Full Build (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Network: N101 [AM Full Build (Network Folder: General)]

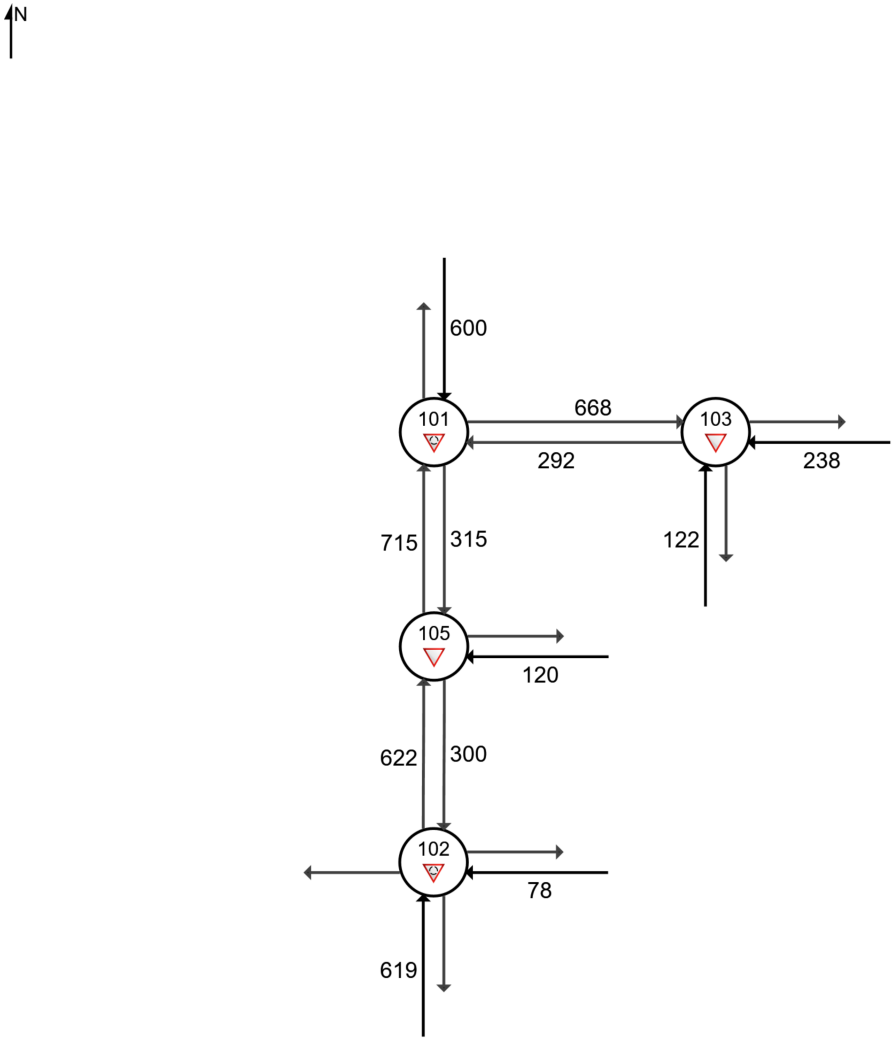
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

All Movement Classes



MOVEMENT SUMMARY

Site: 101 [Smyth and Monash AM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	458	2.0	458	2.0	0.625	5.5	LOS A	2.4	16.7	0.66	0.57	0.66	37.8
3	R2	All MCs	257	2.0	257	2.0	0.625	8.7	LOS A	2.4	16.7	0.66	0.57	0.66	27.1
Approach			715	2.0	715	2.0	0.625	6.7	LOS A	2.4	16.7	0.66	0.57	0.66	35.6
East: Monash															
4	L2	All MCs	96	2.0	96	2.0	0.281	2.7	LOS A	0.7	5.2	0.50	0.51	0.50	26.8
6	R2	All MCs	196	2.0	196	2.0	0.281	5.0	LOS A	0.7	5.2	0.50	0.51	0.50	32.5
Approach			292	2.0	292	2.0	0.281	4.2	LOS A	0.7	5.2	0.50	0.51	0.50	31.1
North: Smyth															
7	L2	All MCs	381	2.0	381	2.0	0.576	5.9	LOS A	2.0	14.2	0.69	0.59	0.70	37.2
8	T1	All MCs	219	2.0	219	2.0	0.576	5.9	LOS A	2.0	14.2	0.69	0.59	0.70	37.2
Approach			600	2.0	600	2.0	0.576	5.9	LOS A	2.0	14.2	0.69	0.59	0.70	37.2
All Vehicles			1606	2.0	1606	2.0	0.625	5.9	LOS A	2.4	16.7	0.64	0.57	0.64	34.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Karella and Smyth AM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
1	L2	All MCs	5	0.0	5	0.0	0.452	4.1	LOS A	1.4	10.1	0.31	0.42	0.31	42.8
2	T1	All MCs	576	2.0	576	2.0	0.452	4.1	LOS A	1.4	10.1	0.31	0.42	0.31	40.6
3	R2	All MCs	38	0.0	38	0.0	0.452	7.3	LOS A	1.4	10.1	0.31	0.42	0.31	41.9
Approach			619	1.9	619	1.9	0.452	4.3	LOS A	1.4	10.1	0.31	0.42	0.31	40.8
East: Karella															
4	L2	All MCs	21	0.0	21	0.0	0.076	5.1	LOS A	0.2	1.1	0.43	0.60	0.43	40.7
5	T1	All MCs	11	0.0	11	0.0	0.076	5.1	LOS A	0.2	1.1	0.43	0.60	0.43	40.4
6	R2	All MCs	46	0.0	46	0.0	0.076	8.3	LOS A	0.2	1.1	0.43	0.60	0.43	35.1
Approach			78	0.0	78	0.0	0.076	7.0	LOS A	0.2	1.1	0.43	0.60	0.43	38.2
North: Smyth															
7	L2	All MCs	20	0.0	20	0.0	0.213	3.8	LOS A	0.5	3.6	0.17	0.41	0.17	40.2
8	T1	All MCs	265	2.0	265	2.0	0.213	3.8	LOS A	0.5	3.6	0.17	0.41	0.17	42.3
9	R2	All MCs	15	0.0	15	0.0	0.213	7.0	LOS A	0.5	3.6	0.17	0.41	0.17	40.5
Approach			300	1.8	300	1.8	0.213	4.0	LOS A	0.5	3.6	0.17	0.41	0.17	42.1
All Vehicles			997	1.7	997	1.7	0.452	4.4	LOS A	1.4	10.1	0.28	0.43	0.28	41.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 103 [Monash and Williams AM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Williams															
1	L2	All MCs	76	0.0	76	0.0	0.154	4.1	LOS A	0.2	1.6	0.46	0.57	0.46	25.0
3	R2	All MCs	46	0.0	46	0.0	0.154	9.8	LOS A	0.2	1.6	0.46	0.57	0.46	34.3
Approach			122	0.0	122	0.0	0.154	6.3	LOS A	0.2	1.6	0.46	0.57	0.46	31.0
East: Monash															
4	L2	All MCs	27	0.0	27	0.0	0.121	3.4	LOS A	0.0	0.0	0.00	0.05	0.00	38.7
5	T1	All MCs	211	2.0	211	2.0	0.121	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	39.5
Approach			238	1.8	238	1.8	0.121	0.4	NA	0.0	0.0	0.00	0.05	0.00	39.4
West: Monash															
11	T1	All MCs	612	2.0	612	2.0	0.332	0.0	LOS A	0.2	1.5	0.09	0.09	0.09	39.6
12	R2	All MCs	57	0.0	57	0.0	0.332	6.0	LOS A	0.2	1.5	0.09	0.09	0.09	38.2
Approach			668	1.8	668	1.8	0.332	0.5	NA	0.2	1.5	0.09	0.09	0.09	39.5
All Vehicles			1028	1.6	1028	1.6	0.332	1.2	NA	0.2	1.6	0.11	0.14	0.11	38.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 105 [Smyth and Hardy AM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [AM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	612	3.0	612	3.0	0.325	0.0	LOS A	0.0	0.3	0.02	0.02	0.02	49.1
3	R2	All MCs	11	0.0	11	0.0	0.325	6.6	LOS A	0.0	0.3	0.02	0.02	0.02	40.8
Approach			622	2.9	622	2.9	0.325	0.1	NA	0.0	0.3	0.02	0.02	0.02	48.5
East: Hardy															
4	L2	All MCs	29	0.0	29	0.0	0.221	4.5	LOS A	0.3	2.2	0.61	0.78	0.63	32.3
6	R2	All MCs	91	0.0	91	0.0	0.221	10.3	LOS B	0.3	2.2	0.61	0.78	0.63	32.3
Approach			120	0.0	120	0.0	0.221	8.9	LOS A	0.3	2.2	0.61	0.78	0.63	32.3
North: Smyth															
7	L2	All MCs	32	0.0	32	0.0	0.163	4.6	LOS A	0.0	0.0	0.00	0.05	0.00	47.0
8	T1	All MCs	283	3.0	283	3.0	0.163	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	47.2
Approach			315	2.7	315	2.7	0.163	0.5	NA	0.0	0.0	0.00	0.05	0.00	47.1
All Vehicles			1057	2.5	1057	2.5	0.325	1.2	NA	0.3	2.2	0.08	0.11	0.08	42.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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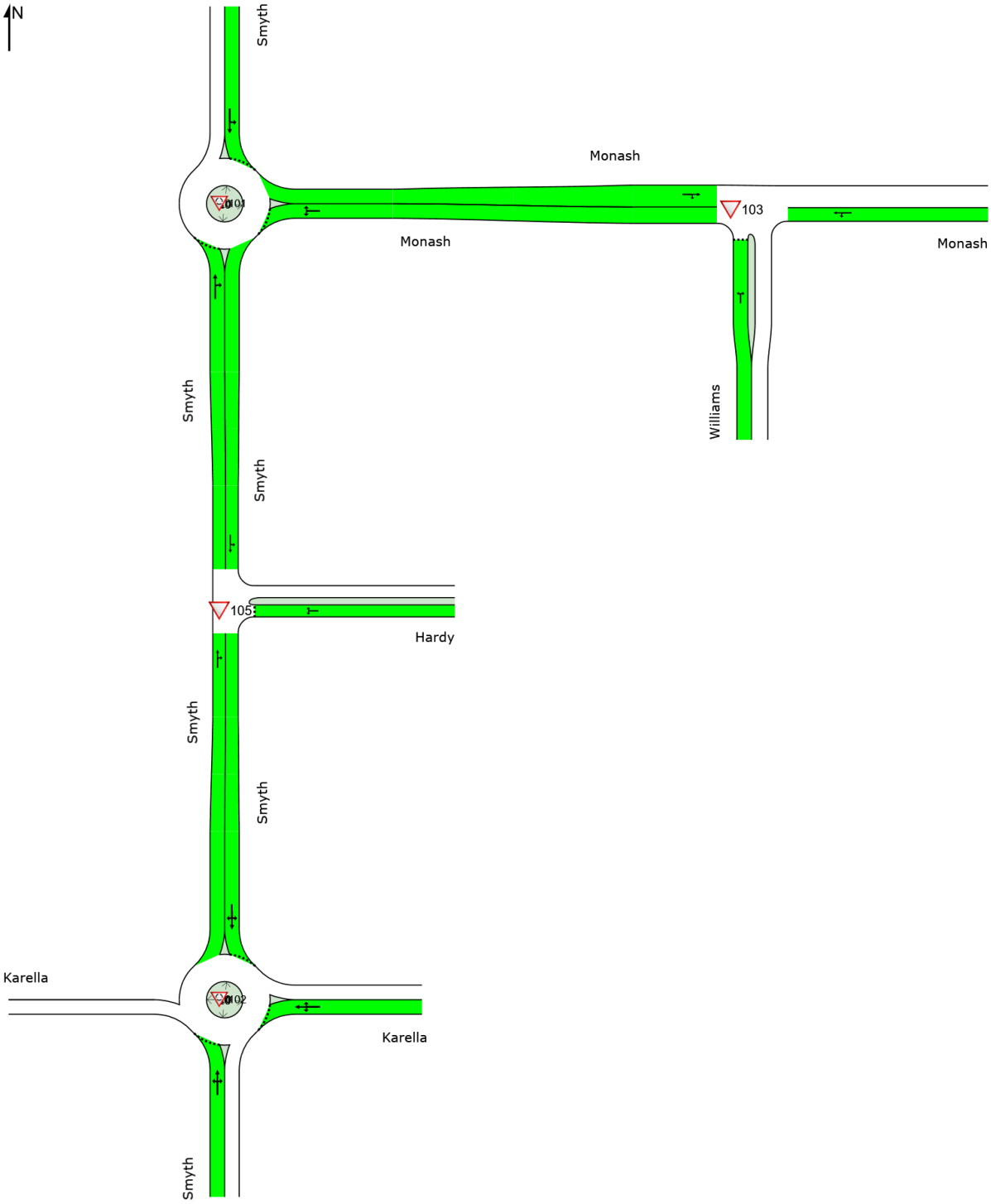
LEVEL OF SERVICE

Lane Level of Service

Network: N101 [PM Full Build (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

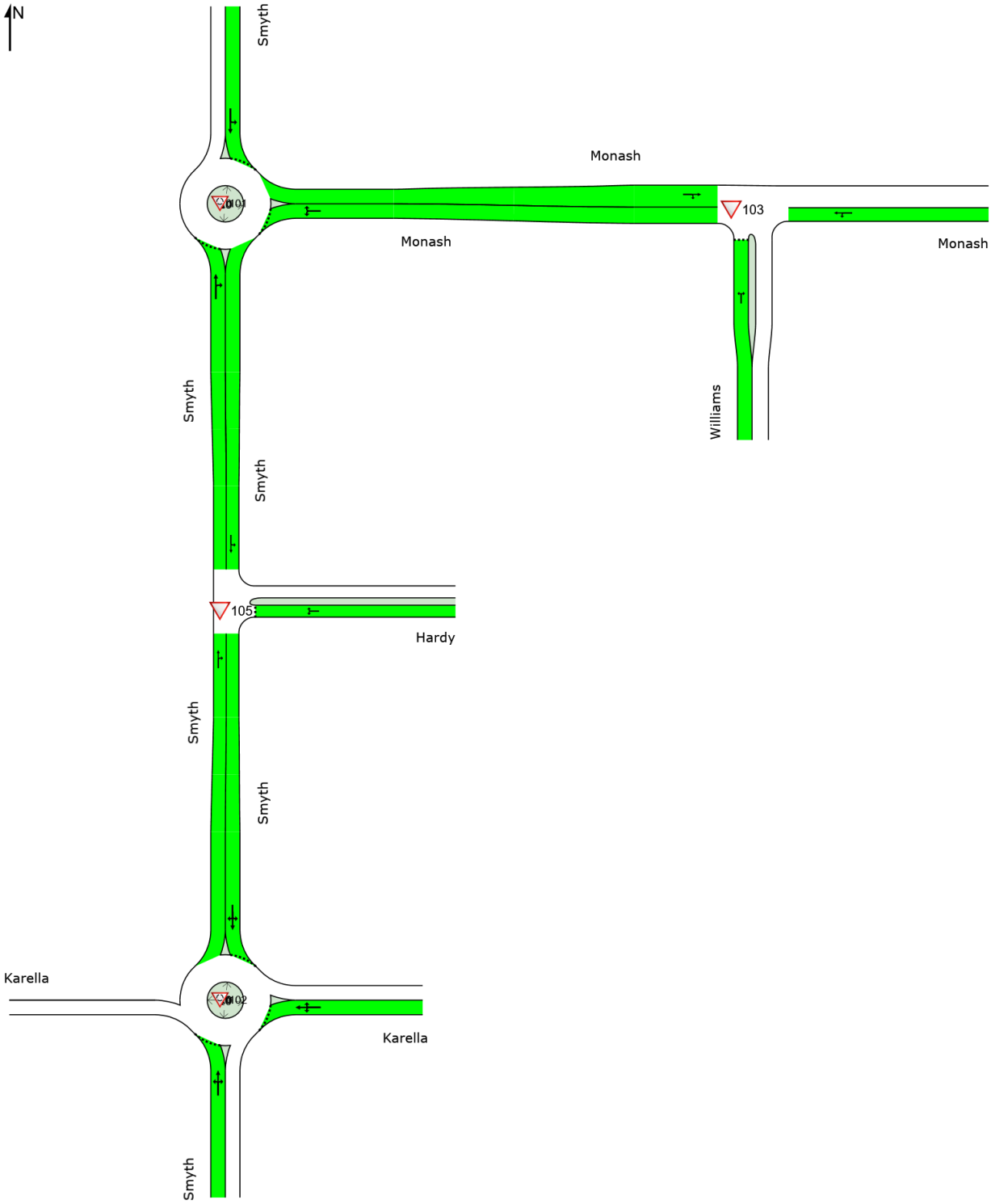
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio per lane

Network: N101 [PM Full Build (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



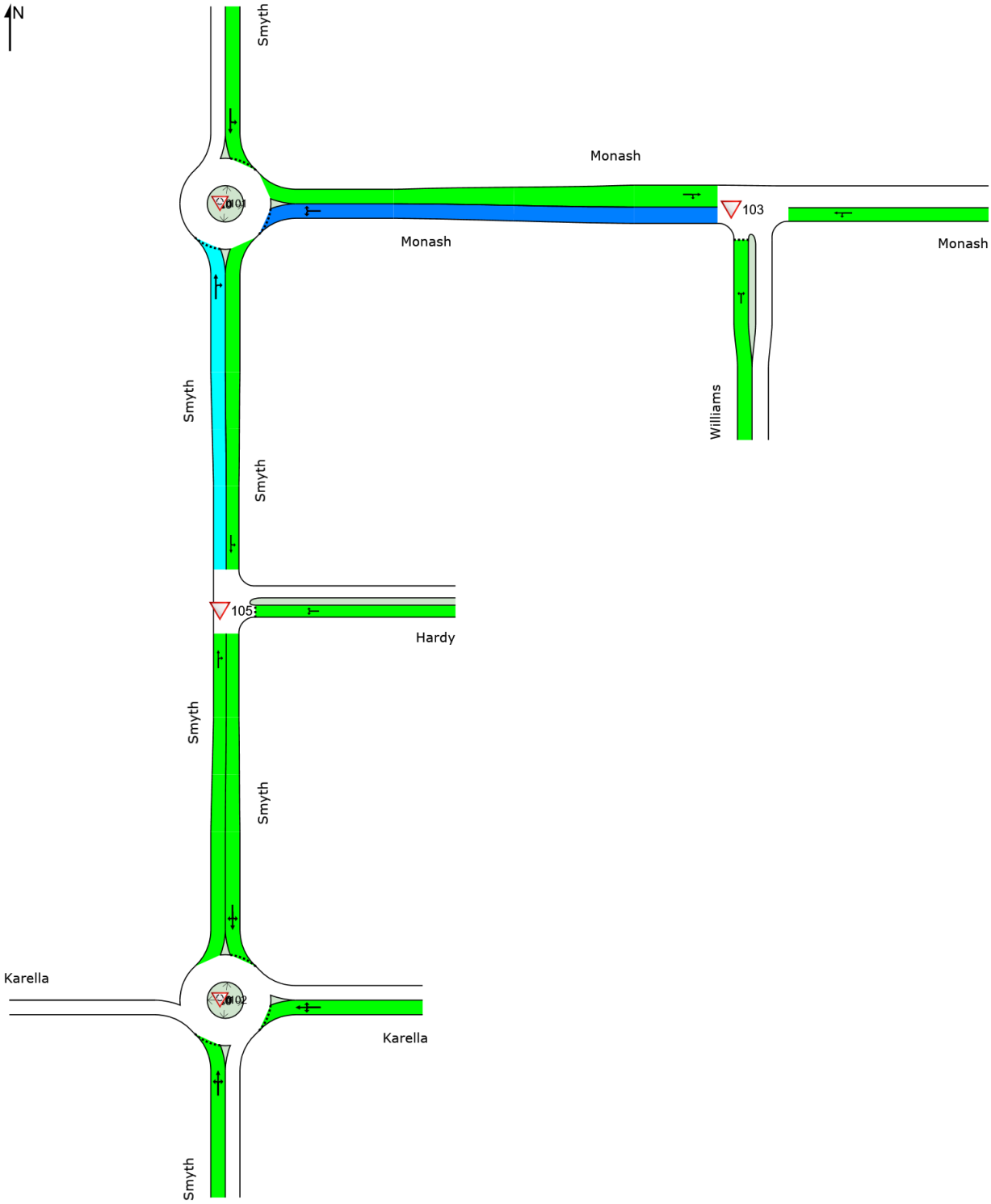
PROPORTION QUEUED

Proportion of vehicles queued per lane

Network: N101 [PM Full Build (Network Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)



MOVEMENT FLOWS FOR NETWORK (DEMAND)

Approach movement demand flow rates by movement class (veh/h)

Network: N101 [PM Full Build (Network Folder: General)]

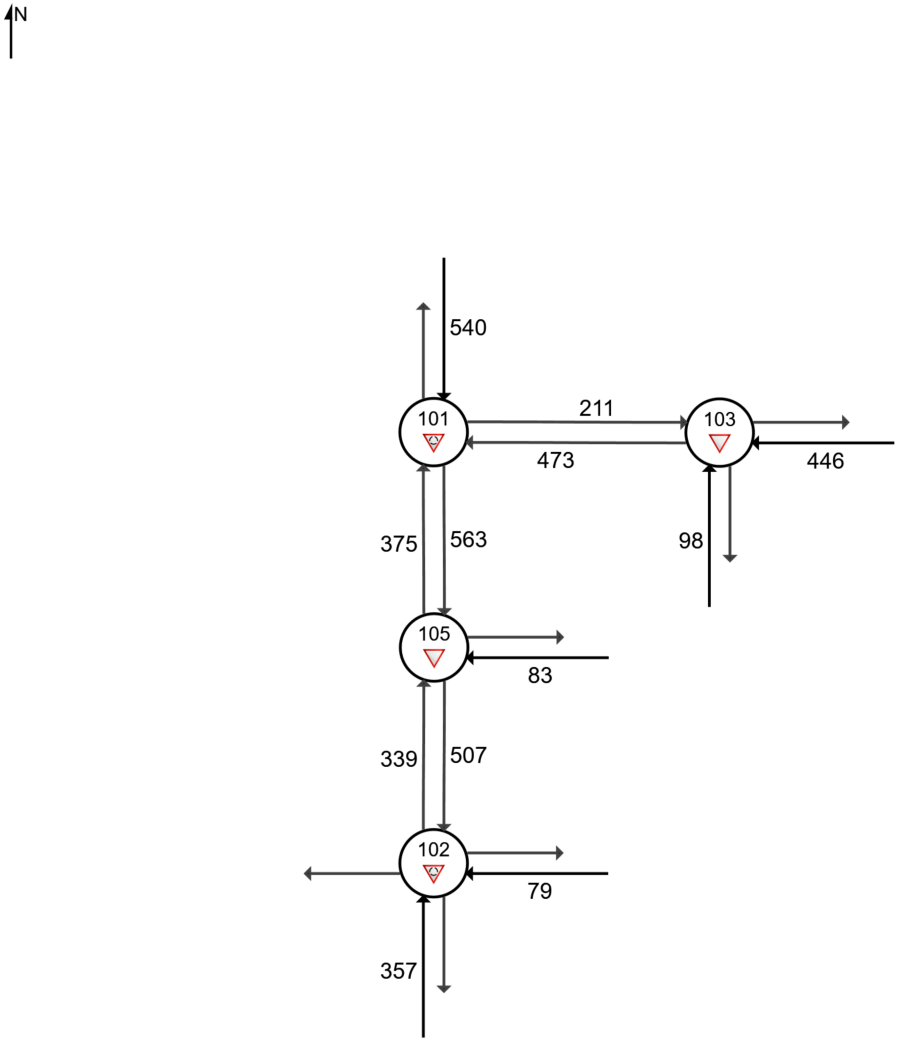
Output produced by SIDRA INTERSECTION Version: 9.1.1.200

New Network
Network Category: (None)

Use the button below to open or close all popup boxes. Click value labels to open selected ones.
Click and drag popup boxes to move to preferred positions.

Open All Popups

All Movement Classes



MOVEMENT SUMMARY

Site: 103 [Monash and Williams PM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Williams															
1	L2	All MCs	57	0.0	57	0.0	0.110	4.9	LOS A	0.2	1.1	0.47	0.63	0.47	26.0
3	R2	All MCs	41	0.0	41	0.0	0.110	6.6	LOS A	0.2	1.1	0.47	0.63	0.47	34.7
Approach			98	0.0	98	0.0	0.110	5.6	LOS A	0.2	1.1	0.47	0.63	0.47	32.1
East: Monash															
4	L2	All MCs	58	0.0	58	0.0	0.228	3.5	LOS A	0.0	0.0	0.00	0.06	0.00	38.6
5	T1	All MCs	388	2.0	388	2.0	0.228	0.1	LOS A	0.0	0.0	0.00	0.06	0.00	39.4
Approach			446	1.7	446	1.7	0.228	0.5	NA	0.0	0.0	0.00	0.06	0.00	39.3
West: Monash															
11	T1	All MCs	162	2.0	162	2.0	0.120	0.0	LOS A	0.2	1.2	0.28	0.29	0.28	38.8
12	R2	All MCs	48	0.0	48	0.0	0.120	7.7	LOS A	0.2	1.2	0.28	0.29	0.28	37.0
Approach			211	1.5	211	1.5	0.120	1.8	NA	0.2	1.2	0.28	0.29	0.28	38.5
All Vehicles			755	1.5	755	1.5	0.228	1.5	NA	0.2	1.2	0.14	0.20	0.14	38.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Smyth and Monash PM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	322	2.0	322	2.0	0.399	6.0	LOS A	1.1	8.0	0.64	0.59	0.64	38.1
3	R2	All MCs	53	2.0	53	2.0	0.399	9.2	LOS A	1.1	8.0	0.64	0.59	0.64	27.6
Approach			375	2.0	375	2.0	0.399	6.4	LOS A	1.1	8.0	0.64	0.59	0.64	37.4
East: Monash															
4	L2	All MCs	156	2.0	156	2.0	0.524	6.6	LOS A	1.6	11.7	0.72	0.71	0.78	31.0
6	R2	All MCs	317	2.0	317	2.0	0.524	9.5	LOS A	1.6	11.7	0.72	0.71	0.78	35.8
Approach			473	2.0	473	2.0	0.524	8.5	LOS A	1.6	11.7	0.72	0.71	0.78	34.6
North: Smyth															
7	L2	All MCs	134	2.0	134	2.0	0.387	4.0	LOS A	1.2	8.8	0.27	0.41	0.27	39.9
8	T1	All MCs	406	2.0	406	2.0	0.387	3.9	LOS A	1.2	8.8	0.27	0.41	0.27	39.9
Approach			540	2.0	540	2.0	0.387	3.9	LOS A	1.2	8.8	0.27	0.41	0.27	39.9
All Vehicles			1387	2.0	1387	2.0	0.524	6.2	LOS A	1.6	11.7	0.52	0.56	0.54	36.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Karella and Smyth PM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
1	L2	All MCs	2	0.0	2	0.0	0.282	4.2	LOS A	0.7	4.9	0.30	0.45	0.30	42.7
2	T1	All MCs	315	2.0	315	2.0	0.282	4.2	LOS A	0.7	4.9	0.30	0.45	0.30	40.6
3	R2	All MCs	40	0.0	40	0.0	0.282	7.4	LOS A	0.7	4.9	0.30	0.45	0.30	41.9
Approach			357	1.8	357	1.8	0.282	4.6	LOS A	0.7	4.9	0.30	0.45	0.30	40.8
East: Karella															
4	L2	All MCs	45	0.0	45	0.0	0.092	6.4	LOS A	0.2	1.4	0.57	0.65	0.57	40.4
5	T1	All MCs	9	0.0	9	0.0	0.092	6.4	LOS A	0.2	1.4	0.57	0.65	0.57	40.0
6	R2	All MCs	24	0.0	24	0.0	0.092	9.7	LOS A	0.2	1.4	0.57	0.65	0.57	34.4
Approach			79	0.0	79	0.0	0.092	7.4	LOS A	0.2	1.4	0.57	0.65	0.57	39.2
North: Smyth															
7	L2	All MCs	13	0.0	13	0.0	0.351	3.8	LOS A	1.0	7.0	0.20	0.43	0.20	39.7
8	T1	All MCs	429	2.0	429	2.0	0.351	3.8	LOS A	1.0	7.0	0.20	0.43	0.20	41.9
9	R2	All MCs	65	0.0	65	0.0	0.351	7.1	LOS A	1.0	7.0	0.20	0.43	0.20	40.1
Approach			507	1.7	507	1.7	0.351	4.3	LOS A	1.0	7.0	0.20	0.43	0.20	41.7
All Vehicles			943	1.6	943	1.6	0.351	4.6	LOS A	1.0	7.0	0.27	0.45	0.27	41.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 105 [Smyth and Hardy PM Full Build (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Network: N101 [PM Full Build (Network Folder: General)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Smyth															
2	T1	All MCs	315	5.0	315	5.0	0.190	0.0	LOS A	0.1	0.8	0.11	0.13	0.11	45.8
3	R2	All MCs	24	0.0	24	0.0	0.190	11.9	LOS B	0.1	0.8	0.11	0.13	0.11	40.2
Approach			339	4.6	339	4.6	0.190	0.8	NA	0.1	0.8	0.11	0.13	0.11	44.4
East: Hardy															
4	L2	All MCs	20	0.0	20	0.0	0.147	5.5	LOS A	0.2	1.4	0.60	0.79	0.60	32.7
6	R2	All MCs	63	0.0	63	0.0	0.147	9.1	LOS A	0.2	1.4	0.60	0.79	0.60	32.7
Approach			83	0.0	83	0.0	0.147	8.3	LOS A	0.2	1.4	0.60	0.79	0.60	32.7
North: Smyth															
7	L2	All MCs	66	0.0	66	0.0	0.296	4.6	LOS A	0.0	0.0	0.00	0.06	0.00	46.8
8	T1	All MCs	497	5.0	497	5.0	0.296	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	46.6
Approach			563	4.4	563	4.4	0.296	0.6	NA	0.0	0.0	0.00	0.06	0.00	46.7
All Vehicles			985	4.1	985	4.1	0.296	1.3	NA	0.2	1.4	0.09	0.15	0.09	42.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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SCHEDULE OF MODIFICATIONS

City of Nedlands Schedule of Recommended Modifications – Nedlands Village Precinct Structure Plan

The Structure Plan is to be recommended to be modified in accordance with the following Schedule of Modifications and the modified Structure Plan is to be resubmitted to the WAPC for consideration.

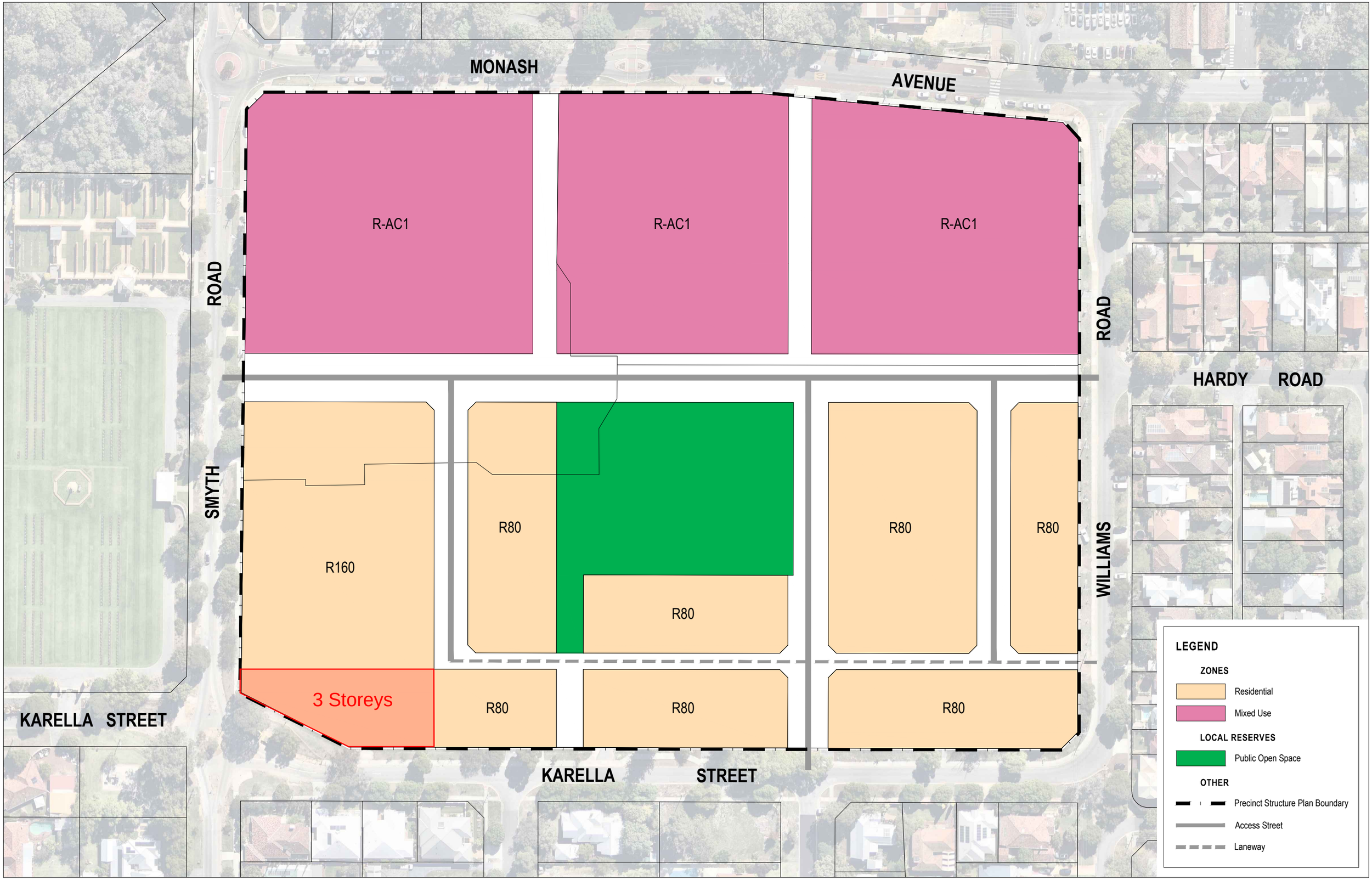
Mod #	Reference - Proposed provision(s)	City Modification - Modified provisions	Reason
Structure plan map			
1	Structure Plan Map A: Zones and Reserves	The Structure Plan Map A to be modified to show Hollywood Street, north of Hardy Road, being rezoned from 'Mixed Use – RAC1'. (Refer to modified zoning map)	To provide clarify that the public road is being replaced with a pedestrian accessway to be secured using an easement.
2	Structure Plan Map A: Zones and Reserves & Plan B: Built Form Controls	The Structure Plan Map Plan A and B to include two (2) 8m wide Public Access Way easements connecting Hardy Road extension through to Monash Avenue, located to the east and west of the Regis Nedlands building. (Refer to modified zoning map)	The western PAW was a recommendation from DRP 1 to provide better connectivity in line with Design Element 4 – Movement. The eastern PAW has been amended by Hesperia.
3	Structure Plan Map A: Zones and Reserves & Plan B: Built Form Controls	The Structure Plan Map A & B to be modified include an 8m wide Public Access Way, connecting Karella Street to Elloura Lane and is aligned with the western end of the proposed Public Open Space. (Refer to modified zoning map)	This is a recommendation from DRP 1 and the community. This is to provide better connectivity to the public open space for residents outside the estate.
4	Structure Plan B: Built Form Controls	The Structure Plan Map Part B to be modified to remove the number of storeys for all lots coded R160 and R-AC1 and to be replaced with the height (storeys) provisions in accordance with the Primary Controls Table of the R-Codes (Volume 2) 2024 (as amended). An additional height provision for the R160 coded lot is to be incorporated and read as follows: • A maximum of 6 storeys; or • A maximum of 3 storeys where it interfaces with the R20 lots fronting Karella Street and the proposed R80 residential lots, aligned with Elloura lane. (Refer to modified height map)	The height provisions proposed in the current Structure Plan exceed the height controls under the A2.2.1 of the Acceptable Outcomes and the Primary Controls Table of the R-Codes (Volume 2). The proposed increase in the number of storeys, corresponding with the proposed R-AC1 and R160, does not respond to the desired future scale and character of the street for that coding. Height should be determined on the individual merits of a development application, or, an appropriate density to correspond to those should be applied for (density changes within the structure plan would be subject to further advertising).

			The height provisions for the R160 coded lots have been proposed to provide for an appropriate transition from higher density residential to low density residential. The recommendations have been consistent amongst public submissions, DRP and City Officers. It further aligns with the ethos of the current Additional Use over the site which has similar provisions.
Part One			
5	Refer to text within the PSP which refers to "Nedlands Village"	Rename the Precinct Structure Plan and text from 'Nedlands Village' to 'Nedlands Reserve'	To reflect the new name of the precinct.
6	Executive Summary Table	Update the Executive Summary Table to reflect the recommended modifications as set out in Plan A: Zones & Reserves and Plan B: Built Form Controls.	For consistency and accuracy.
7	Section 4.1.2(d)	Amend the wording to reflect the addition of a secondary pedestrian access easement between Hardy Road and Monash Avenue.	For consistency and accuracy.
8	Section 4.1.3	Include the following wording: *"The Nedlands Regis site and the Commercial/Medical Centre site have not made a public open space contribution. Should these sites be developed with a residential component in the future, they are subject to a public open space contribution in accordance with Development Control Policy 2.3 (or applicable WAPC Policy) requirements. As a condition of subdivision, the applicant will be required to provide a cash-in-lieu payment for the provision of public open space, to the extent of any shortfall in the ceding of gross subdivisible area."*	To reflect that the Commercial/Medical Centre site (Mixed Use – RAC-1) has not contributed to the calculation of public space, based on the indicative plans. If there is a residential component in the future, it should be included as a public open space contribution.
9	Section 4.2.2(e)	Amend the wording to reflect the addition of a secondary pedestrian access easement between Hardy Road and Monash Avenue.	For consistency and accuracy.
10	Table 3: Built Form Controls (Maximum Overall Building Height)	Table 3: Built Form Controls 'Maximum Overall Building Height' 'Refer to Plan B: Built Form Controls' to be replaced with 'Refer to Plan B: Built Form Controls, R-Codes and Design Guidelines"	For consistency and accuracy.

11	Table 3: Built Form Controls (Plot Ratio)	Modify Table 3: Built Form Controls 'Plot Ratio' to replace 'Not applicable' with 'As per R-Codes'	Plot ratio is recommended to be aligned with the proposed density as per A2.5.1 of the Acceptable Outcomes and the Primary Controls Table of the R-Codes (Volume 2). Applying no plot ratio, with increased number of storeys will not be able to ensure that the overall bulk and scale of development is appropriate for the planned character of the area. Plot ratio should be determined on the individual merits of a development application, or an appropriate density to correspond to those should be applied for (subject to further advertising).
12	Section 4.2.3(g)	Replace the wording to: *"Enclosed, non-habitable structures visible from the POS, such as storage sheds, are only permitted if attached to the dwelling and constructed of the same materials as the dwelling. Unenclosed, non-habitable structures such as gazebos, patios and pergolas are exempt from this provision."*	Minor change to provide clarity in the intent of the wording.
13	Section 4.2.4(a)	Modify the wording to remove reference to *'podium parking'*	To provide clarity that podium parking is discouraged and to be consistent with section 4.2.4(b) provision (revised)
14	Section 4.2.4(d)	Remove reference to cash-in-lieu	The City does not have a cash-in-lieu strategy or Policy.
15	Section 4.2.4(c)	Remove section 4.2.6(ii) and be replaced with *"or as specified in the approved Design Guidelines"*	This is to address that the Design Guidelines will modify/add certain parts relating to landscaping within private property.
16	Add new Section 4.2.7: Design Guidelines	To include the following wording *"The Design Guidelines published in Appendix 1 of Part 1 of his Precinct Structure Plan are to be applied in the assessment of development proposals for the R80 residential lots"*	The Design Guidelines (yet to be received) have been tailed towards the single house products (R80). No Guidelines have been prepared for the other sites.
Part Two			

17	Refer to text within the PSP which refers to "Nedlands Village	Rename the Precinct Structure Plan and text from *"Nedlands Village"* to *"Nedlands Reserve"*	To reflect the new name of the precinct.
18	Figure 1: Nedlands Village Masterplan	Amend Figure 1 to reflect the updated Structure Plan Map Part A & B	Accuracy and consistency and ensuring that height limits exceeding the acceptable outcomes are assessed as a case-by-case basis.
19	All Figures (where applicable)	Update all Figures to reflect the updated Structure Plan Map Part A & B	Accuracy and consistency.
20	Figure 11: Landscape Masterplan (E)	Update the Landscape Masterplan to reflect the new changes to the road layout on the Hardy Road extension, inclusion of the proposed pedestrian access legs (3) and location of tree placements to these areas.	Accuracy and consistency.
21	Figure 22: Nedlands Village Masterplan	Amend Figure 22 to reflect the updated Structure Plan Map Part A & B	Accuracy and consistency and ensuring that height limits exceeding the acceptable outcomes are assessed as a case-by-case basis rather than a blanket allowance.
22	Blocks J, i, K & L, A, M N & U (page 76-84)	Update Blocks to be reflective of the changes in the Structure Plan Map Part B	Accuracy and consistency.
Technical Appendices			
23	Insert new Appendix 1: Design Guidelines	Insert new Appendix 1: Design Guidelines and re-number	To better align with the purpose of the PSP.
24	Appendix 2: Bushfire Management Plan	Update the Bushfire Management Plan, prepared by Emerge, dated October 2023(revision b) to address the DFES' concerns.	To address the outstanding concerns raised by DFES.
25	Appendix 6: Local Water Management Strategy	Update the Local Water Management Strategy prepared Pentium (revision 2) dated 26 October 2023 (Appendix B) Landscape Concepts to reflect the new changes to the road layout on the Hardy Road extension and location of trees.	Accuracy and consistency.
26	Appendix 6: Local Water Management Strategy	Update the Local Water Management Strategy to include detaining and infiltrating stormwater on site and to retain at 1% AEP storm events.	On-site stormwater retention to be tested and in accordance with the City of Nedlands Stormwater Policy.
27	Appendix 7: Transport Impact Assessment	Update the Transport Impact Assessment, prepared by Flyt, dated 18 October 2023 (Version 2) with a revised version (version 3) dated 29 March 2024 in addition to the following:	A revised Transport Impact Assessment has been prepared which had addressed traffic volumes and treatments. It is recommended to

		1. Increase the road reserve on Hardy Road from 18m to 20m. The additional area is to be used for the existing 2.6m wide verge; 2. Modify section 5.9 – Intersection Configuration to include left-in-left out configuration at the junction of Hardy Road extension and Smyth Road is to be implemented at this site to remove conflicting movements. This is to update any applicable Figures; 3. A crossover strategy being included as a Figure to demonstrate access to the R-AC1 and R160 sites. This is to be inserted under section 3.7 – Proposed Vehicle Access; and 4. Any amendments to address MRWA's submission.	provide a revised version to be fully to the City's satisfaction and address the following: 1. Increase the road reserve for Hardy Road. The 2.6m verge is not providing sufficient space for future service alignments and a potential for maintenance concerns with crews. The proposed 20m reserve is still below that for an Access Road – Avenue type as identified in Liveable Neighbourhoods. 2. Using the current proposed volumes on Smyth Road triggers a left-in-left out treatment at the junction of Smyth Road and Hardy Road, to remove conflicting movements, particularly in the peak periods. This method is to the satisfaction of the City; 3. A Crossover Strategy is recommended for the R-AC1 and R160 sites. This can also be covered by an LDP if necessary. This is to ensure that the vehicle crossovers do not conflict with the new trees within the landscaping plan. 4. Address concerns raised by MRWA in their submission.

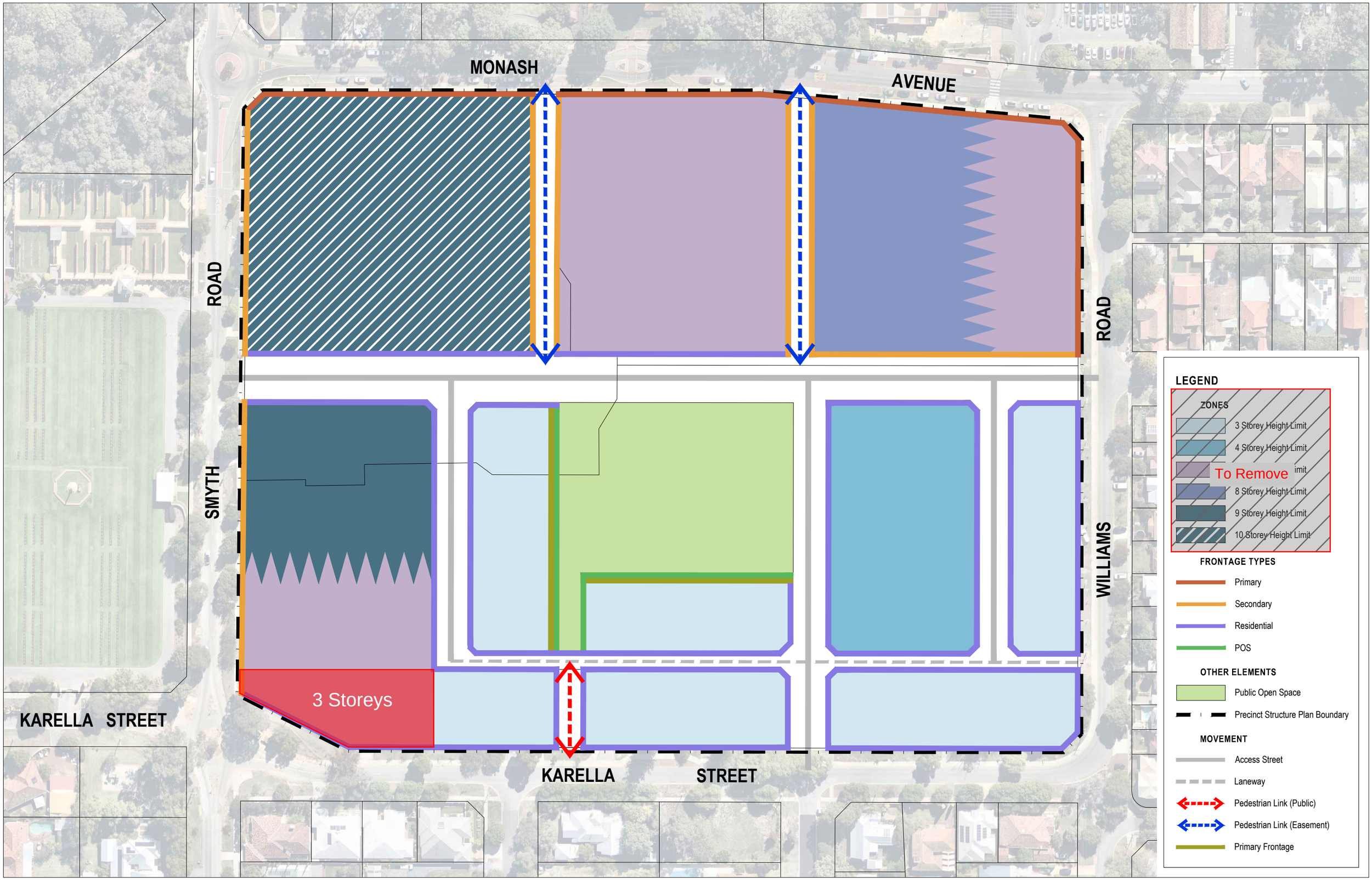


CLE Town Planning + Design

NEDLANDS RESERVE PRECINCT STRUCTURE PLAN

Plan A: Zones and Reserves

plan no: **3767-16B-01**
date: 17 April 2024
scale: 1:1,250 @A3



0 10 20 30 40 50 60 70 80 90 100m

CLE Town Planning + Design

NEDLANDS RESERVE PRECINCT STRUCTURE PLAN

Plan B: Built Form Controls

plan no: **3767-17D-01**
date: 17 April 2024
scale: 1:1,250 @A3

N

16.2 PD32.05.24 Consideration of Change of Use from 'Single House' to 'Display Home' and associated Signage at 53 Stanley Street, Nedlands

Meeting & Date	Council Meeting – 28 May 2024
Applicant	CF Town Planning and Development
Employee Disclosure under section 5.70 Local Government Act 1995	Nil.
Report Author	Nathan Blumenthal – A/Manager Urban Planning
Director	Roy Winslow – A/Director Planning and Development
Attachments	1. Zoning Map 2. Development Plans 3. Cover Letter 4. CONFIDENTIAL ATTACHMENT – Schedule of Submissions and Applicants Response

Purpose

The purpose of this report is for Council to consider a development application for a temporary change of use from a 'Residential - Single House' to 'Display Home' and an associated sign at 53 Stanley Street, Nedlands. The application is presented to Council as objections have been received during the advertising period.

Recommendation

That Council:

In accordance with Clause 68(2)(b) of the Deemed Provisions of the Planning and Development (Local Planning Schemes) Regulations 2015, approves the development application in accordance with the plans date stamped 17 November 2023 for a change of use from 'Residential – Single House' to 'Display Home' and associated signage at 53 Stanley Street, Nedlands (DA23-90352) subject to the following conditions:

1. **This approval is valid for 18 months commencing from the soonest of:**

    a. **The date of the completion of the construction works at 53 Stanley Street, Nedlands; or**
    b. **12 months of the date of this decision notice.**

After such time the signs are to be removed and the use will revert to a residential single house.

2. **This approval relates only to a temporary change of use from Residential – Single House' to 'Display Home' and one sign. It does not relate to any other development on this lot.**

3. **The operation of the Display Home is limited to the following:**

   a. **Monday to Friday – appointments only.**
   b. **Saturday and Sunday – 2:00pm to 4:00pm.**

4. **Signage associated with the land use shall be limited to the following:**

   a. **One (1) fixed sign with a maximum width of 0.72 metres by a maximum height of 0.7 metres and a maximum overall height of 2.04 metres with posts, to be displayed only for the life of this approval.**

   All signage is to be located wholly inside the property boundaries.

5. **A maximum of 6 visitors and 1 employee are permitted on site at any one time.**

6. **All staff shall park within the garage and visitors instructed to park on the property where available by the staff of the display home during opening hours.**

Voting Requirement

Simple Majority.

This report is of a quasi judicial nature as it is a matter that directly affects a person's rights and interests. The judicial character arises from the obligation to abide by the principles of natural justice. Examples of Quasi-Judicial authority include town planning applications and other decisions that may be appealable to the State Administrative Tribunal.

The decision must be made in a manner that is impartial, free from bias, and in accordance with the principles of natural justice. The decision must be made in having regard to the facts of the matter under consideration, and in accordance with the relevant laws and policies as they apply to that matter.
Discretionary considerations and judgments in the decision must be confined to those permitted to be considered under the laws and polices applicable to the matter and given such weight in making the decision as the relevant laws and polices permit them to be given.

Background

Land Details

Metropolitan Region Scheme Zone	Urban
Local Planning Scheme Zone	Residential
R-Code	R10
Land area	1,011m²
Land Use	Existing – Single House Proposed – Display Home
Use Class	Use not Listed – 'A' use

The subject site is located at 53 Stanley Street, Nedlands, directly opposite the former Loreto Primary School (Figure 1). The site is located on the western side of Stanley Street, Nedlands. On 18 January 2023, the City granted development approval for a two-storey, single house on the site. The house is currently under construction. The lot is regular in shape, with a 20m frontage and a total area of 1,011m².

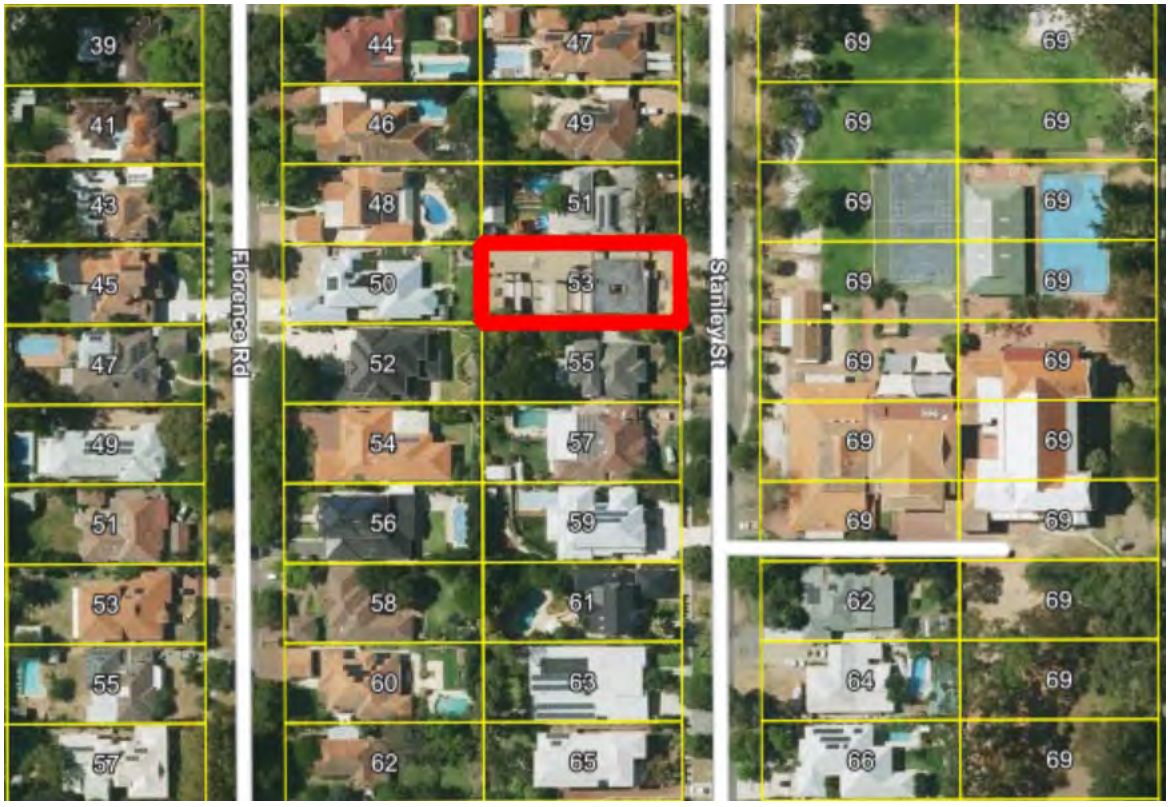


Figure 1: Aerial image of 53 Stanley Street, Nedlands

Application Details

The application seeks development approval for a temporary change of use from 'Single House' to 'Display Home' for a minimum period of three years, after which the site will revert back to a single house.

Details of the proposed Display Home have been outlined in the attached cover letter. These are as follows:

- Hours of operation:
  Monday to Friday – Appointments only.
  Saturday and Sunday – 2pm to 4pm.

- Employees on site
  One staff member at any given time and a second may attend on occasions.

- Visitors
  The estimated patronage is between two and six persons at any one time.

- Signage
  A ‘monolith’ type sign with a height of 3m and a width of 1.4m is proposed. The proposed sign is further discussed below.

Discussion

Local Planning Scheme No. 3

Schedule 2, Clause 67(2) (Consideration of application by Local Government) – identifies those matters that are required to be given due regard to the extent relevant to the application. Where relevant, these matters are discussed in the following sections. Overall, the development is considered to meet these objectives, and the impact on the local amenity will be minimal for the reasons discussed in the below section.

A Display Home is considered a ‘use not listed’ by the City of Nedlands Local Planning Scheme No.3 (the Scheme). As per clause 18 (4)(b), uses that are not specifically listed may be considered for approval having regard to the objectives of the zone. The proposal has been assessed against, and is considered consistent with, the below relevant objectives of the ‘Residential’ zone.

To provide for a range of non-residential uses, which are comparable with and complimentary to residential development.

- Display homes are complimentary to the Residential zone as they can typically be found in suburban areas and are used by real estate agencies and building companies to facilitate the sale or design of houses.

- The proposed display home will be temporary in nature. Although three years has been applied, City Officers recommend that an initial 18-month approval period be conditioned. This is in line with other Display Homes previously considered by Council. After the Display Home use lapses, the land use will default back to a single house. The proponent also has the ability to apply for an extension in the future.

To ensure development maintains compatibility with the desired streetscape in terms of bulk, scale, height, street alignment and setbacks.

- The proposed development is compatible with the character of the area as it pertains to a two-storey single house that will not physically alter the low-density residential streetscape appearance of the locality.

- The use will be limited in operational hours and number of visitors to eliminate any potential detrimental impact to neighbourhood amenity.

- Six parking bays are provided on site to accommodate visitors and staff.

Local Planning Policy – Parking

A Display Home use is a 'use not listed' within the Scheme. In accordance with Clause 4.2.1 of the Local Planning Policy-Parking, where a land use is not listed, the parking ratio will be determined having regard to similar and surrounding uses. The Display Home use can be considered similar to a home business use as staff and customers will be arriving and leaving the property during operational hours. Therefore, the parking requirements (as per Table 1 of LPP 4. 1) are informed by the number of staff and customers expected to visit the property at any given time.
The proposal identifies that the Display Home will comprise of one staff member and up to six visitors at any given time which requires a total of seven bays. This is a 'worst case' scenario that assumes that all visitors will come in separate vehicles. The site will be serviced by three bays in the garage and three bays in the property's driveway which will provide a total of six car parking bays on site. This indicates that there will be a one car parking bay policy shortfall.

Parking arrangements are considered acceptable for this site due to the following reasons.

- The site is serviced by a crossover from the site to Stanley Street which will be able to facilitate one extra parking bay.

- Visitation during the week will be by appointment only, which limits the number of people arriving and leaving throughout the opening hours.

- Most visitors are likely to be in groups arriving together in a single vehicle reducing the need for multiple parking bays.

- The use will mostly operate outside of peak hours and when on-street parking availability is at its highest. This includes seven bays directly opposite the site, in front of the former Loreto Primary School.

Local Planning Policy – Signage and Advertisements

The proposal includes the erection of a 'monolith' advertising sign within the front setback of the site for the purpose of advertising the display home. The sign is proposed to have a height of 3m and a maximum width of 1.4m, with the sign to be displayed for the entirety of the duration of the Display Home use. In accordance with Local Planning Policy – Signage and Advertisements, the sign is determined as a 'monolith' sign, which is not permitted within a 'Residential' zoned area. Therefore, the

sign is required to be assessed against the objectives of the policy identified in section 3.0.

The sign does not contain any flashing details which would adversely impact the amenity of the surrounding area and the display details are consistent with the temporary use for the site. The location is sited to not impact sight lines.

City Officers do however recommend that the sign should be reduced in size to a maximum height of 2.04m and width of 0.72m – this is reflected in a recommended condition and is commensurate to a standard door size. This size is slightly larger than other approved Display Home signage, however, the difference relates to the construction of the front fence.

Applying a smaller sign of the standard 1m would not be visible to visitors. This site is appropriate for a fixed sign given the proposed location of the sign is positioned behind the front fence and will be relatively small in comparison to the originally proposed 'monolith' sign.

Consultation

The development application was advertised in accordance with the Planning and Development (Local Planning Schemes) Regulations 2015 and the City's Local Planning Policy - Consultation of Planning Proposals. The application was advertised for a period of 28 days from 9 February 2024 to 8 March 2024. A sign was placed on site and letters inviting comment were sent to a total of 157 owners and occupiers within a 200m radius of the site. At the close of the advertising period, two objections were received.

The following is a summary of the concerns/comments raised and City Officers' response and action taken in relation to each issue. Comments relating to the housing crisis, compensation and tax dispensations cannot be considered by the planning framework.

1. Use of the land for Display Home is not in accordance with the City of Nedlands By-Laws and Local Planning Scheme No.3 with a density coding of R10.

   As per clause 18(4)(b) of LPS 3, a 'Use not listed' can be considered for approval through a development application. The development application will be determined having regard to the objectives of the Scheme, the objectives of any relevant local planning policy and the submissions received during advertising. In this case, the proposal satisfies all relevant local planning frameworks.

2. The period requested for a Display Home is not clear and should not be longer than 1 year.

   As per condition 1, the approval period shall be no longer than 18 months. This timeframe is aligned with previous Council and SAT decisions for other display homes.

3. A commercial operation is not permitted within the 'Residential' zone.

   LPS 3 allows for some non-residential uses within the 'Residential' zone provided the proposal is complimentary to the area and does not have a detrimental impact on amenity. The determination of all applications is assessed on individual merit. The nature of the operation is considered to meet the planning framework.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2023-33 vision and desired outcomes as follows:

Vision	**Sustainable and responsible for a bright future**
Pillar	**Place**
Outcome	6. Sustainable population growth with responsible urban planning.

Budget/Financial Implications

Nil

Legislative and Policy Implications

Council is requested to make a decision in accordance with clause 68(2) of the Deemed Provisions. Council may determine to approve the development without conditions (cl.68(2)(a)), approve with development with conditions (cl.68(2)(b)), or refuse the development (cl.68(2)(c)).

Decision Implications

If Council resolves to approve the proposal, the 'Display Home' use can proceed.

In the event of a refusal, the applicant will have a right of review to the State Administrative Tribunal. The Tribunal will have regard to the R-Codes as a State Planning Policy. Similarly, should an applicant be aggrieved by one or more conditions of approval, this can be reviewed by the Tribunal.

Conclusion

The application for a change of use from a 'Residential – Single House' to 'Display Home' has been presented for Council consideration due to objections being received. The proposal is considered to meet the objectives of the 'Residential' zone within the Local Planning Scheme No. 3 and the relevant local planning policies. The development is unlikely to have significant adverse impact on the locality's amenity.

The proposal is recommended for a temporary approval of 18 months and to reduce the size of the display signage.

Accordingly, it is recommended that the application be conditionally approved by Council.

Further Information

Nil

Labels
House Numbers
Road Names
LPS3 RCodes
Property Boundaries
LPS3 Zones
Private Community Purpose
Residential

City of Nedlands

The City of Nedlands accepts no responsibility for the accuracy of this image or the results of any actions taken when using this image

15/04/2024

1:1500

PRO WEST SURVEYING
Licensed and Engineering Surveying Consultants
T (08) 9440 3299 E: admin@prowestsurveying.com.au
F (08) 9440 3298 Web: www.prowestsurveying.com.au
PO Box 1463 Osborne Park DC 6916 DWG# 5758003

Feature & Contour Survey of: Lot 410, No. 53 Stanley Street, Nedlands

REVISION: A
SHEET: 1 OF 1

CLIENT: BASSO	PLAN: P 1747	LOT AREA: 1012m²	SURVEY DATE: 30/03/23
BUILDER: BROADWAY HOMES	C/T Vol: 1012 Fol: 569		MAP REFERENCE:
BUILDER JOB # D22201	HEIGHT DATUM: AHD		COASTAL ZONE: >1KM
AUTHORITY: CITY OF NEDLANDS	HEIGHT CORRECTION TO AHD: NO		SEWER INFORMATION: YES

City of Nedlands Received 17 November 2023

FEATURE SYMBOL LEGEND

POWER
CABLE DOME (P) · POWER POLE PP
CABLE BOX CB · CONSUMER POLE CP
POWERMARKER (P) · EXPOSED CABLES EC
LIGHT POLE LP · EARTH ROD ER

WATER
WATER METER / TAP M · FIRE HYDRANT (H)
TAP · STOP VALVE SV
FLUSHING POINT FP · RETIC VALVE RV
BORE · WATER MARKER (W)

SEWERAGE
SEWER M/H (SQUARE LID) · SEWER M/H (ROUND LID)
INSPECTION SHAFT IS · INSPECTION OPENING IO
HOUSE CONNECTION HC

TELSTRA
TELSTRA PIT · TELSTRA MANHOLE
TELSTRA MARKER (T)

DRAINAGE
DRAIN M/H (SQUARE LID) · DRAIN M/H (ROUND LID) (D)
SIDE ENTRY PIT · DRAINAGE GRATE
COMBINED ENTRY PIT

GAS
GAS METER GM · GAS VALVE GV
GASMARKER (G)

SURVEY MARKS
PEG FOUND PF · PEG GONE PG
DRILL HOLE DH · BENCH MARK
PEN MARK PM · NAIL & PLATE NPL
NAIL · NAIL

MISCELLANEOUS INFO.
STREET SIGN (S) · SPOT HEIGHT 10.16
UNKNOWN SERVICE MARKER (U) · BOLLARD B
OVERHEAD POWER LINE · SEWER LINE S
FENCE LINE · WINDOW / OPENING W

SERVICE DETAILS

WATER:	L
OVERHEAD POWER:	NS
U/G POWER:	L
TELSTRA:	L
GAS:	A, TBC
SEWER:	L

SERVICE NOTES
L: LOCATED NS: NO SERVICE
A: AVAILABLE BUT NOT LOCATED
TBC: LOCATION TO BE CONFIRMED

SEWER JUNCTION DETAILS

HOUSE CONNECTION IL:	24.16
UP DISTANCE:	1.10
DEPTH TO CONNECTION:	2.01

CLIENT NOTE
-FLOOR LEVELS ON PLAN CAN VARY 100mm EITHER WAY

PLUMBER NOTE
-ASSESS SOAKWELL SIZE & LOCATION

RAINWATER DISPERSAL

- [x] SOAKWELLS
- [ ] SILT PIT
- [x] BY BUILDER
- [ ] BY OWNER

Soak Well Type	No.	
SW 1200x1200	1	1.4 m3
SW 1500x1200	2	4.2 m3
Total Capacity		5.6 m3
Roof Area GF		154.0 m2
Paved Area		80.0 m2
Roof Area UF		190.0 m2
Total Area		**424.0 m2**
Capacity Required (Area x 0.0125)		**5.3 m3**
Extra Capacity Provided		**0.3 m3**

NOTE: ALL DOWNPIPES CONNECTED TO SOAKWELLS WITH PVC STORMWATER PIPE

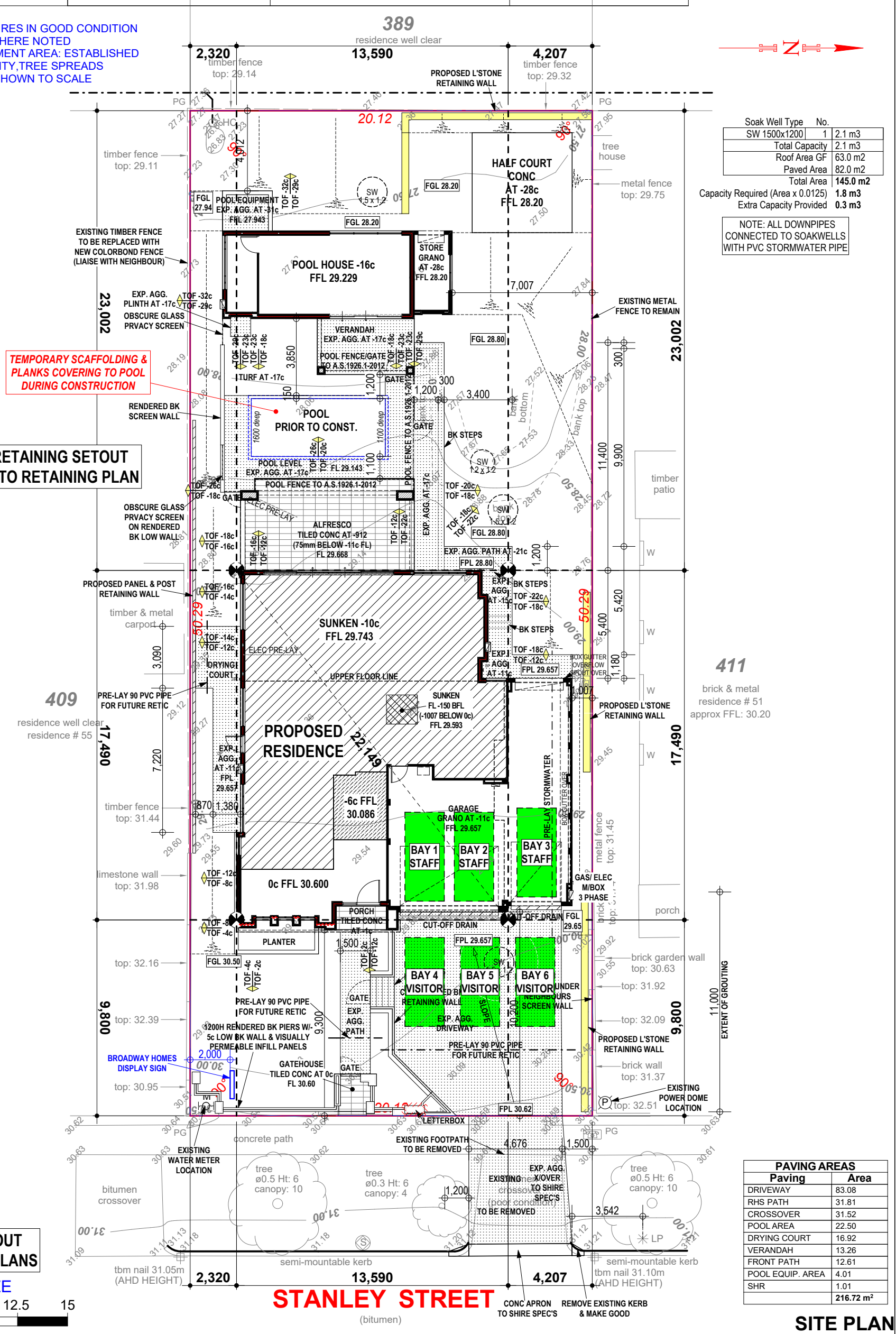
SETOUT PEGS BY LICENSED SURVEYOR

FOR SCREEN WALL SETOUT REFER TO SCREEN WALL PLANS

SCALE 1:200 AT A3 SIZE
0 5 7.5 10 12.5 15

NOTES
(1) ALL FEATURES IN GOOD CONDITION EXCEPT WHERE NOTED
(2) DEVELOPMENT AREA: ESTABLISHED
(3) FOR CLARITY,TREE SPREADS ARE NOT SHOWN TO SCALE

FOR RETAINING SETOUT REFER TO RETAINING PLAN



Soak Well Type	No.	
SW 1500x1200	1	2.1 m3
Total Capacity		2.1 m3
Roof Area GF		63.0 m2
Paved Area		82.0 m2
Total Area		**145.0 m2**
Capacity Required (Area x 0.0125)		**1.8 m3**
Extra Capacity Provided		**0.3 m3**

NOTE: ALL DOWNPIPES CONNECTED TO SOAKWELLS WITH PVC STORMWATER PIPE

PAVING AREAS	
Paving	**Area**
DRIVEWAY	83.08
RHS PATH	31.81
CROSSOVER	31.52
POOL AREA	22.50
DRYING COURT	16.92
VERANDAH	13.26
FRONT PATH	12.61
POOL EQUIP. AREA	4.01
SHR	1.01
	216.72 m²

SITE PLAN

IMPORTANT FEATURE SURVEY NOTES
1. The boundary information on this site plan is approximate only. The boundary has been positioned using a best-fit of available survey marks and fence lines. A repeg / bdy identification survey is recommended if an accurate position of features / improvements relative to the boundary is required.
2. The sewer junction on this plan has been plotted using information provided by the Water Corporation. A site inspection is required by the builder / developer in order to verify the position and depth of the sewer connection.
3. The lot dimensions shown on this feature survey plan have been taken from L.T.O survey plans. The final repegged dimensions may vary due to adjustments made during field survey.
4. All service information shown of this plan should be verified with the relevant authorities. 5. Pro West Surveying does not accept liability for any loss or damage caused by the use of this feature survey plan for any purpose.

BROADWAY HOMES
a 69 Challenge Blvd, Wangara WA 6065
t 08 6200 2070 f 08 6200 2099
e sales@broadwayhomes.com.au
www.broadwayhomes.com.au

CLIENT BASSO
PROPOSED RESIDENCE
LOT 410 (53) STANLEY STREET, NEDLANDS
HOUSE TYPE: CHAPLIN SPEC: BESPOKE

THESE ARE THE PLANS REFERRED TO IN THE BUILDING CONTRACT
DATE.....
OWNER.....
OWNER.....
BUILDER.....

DRAWN / AMENDMENTS
9)10/02/23 CONT AMDTS AGM 17)23/05/23 PST EXTRAS AGM
10)01/03/23 NOOK OPTION AGM18)16/06/23 PST EXTRAS AGM
11)22/03/23 PRESTART AGM 19)19/06/23 PST EXTRAS AGM
12)11/04/23 CONT AMDT AGM 20)10/07/23 CONST AMDT AGM
13)21/04/23 PST EXTRAS AGM 21)01/08/23 PST EXTRAS NR
14)01/05/23 ENGRS CHK AGM 22)04/08/23 SCHED AMDT AGM
15)05/05/23 SHIRE AMDT AGM 23)06/09/23 CONST AMDT AGM
16)18/05/23 PST EXTRAS AGM 24)03/10/23 SHIRE AMDT AGM

WORKING DRAWINGS
COPYRIGHT
This plan shall remain the sole property of the builder and must not be given, copied or resold without the permission of BROADWAY HOMES
Dimensions take preference over scaling & to be checked on site prior to commencing construction

JOB NO: D22201
SKETCH NO: Q22236
SCALE: 1:200
© 2022

City of Nedlands
Received
17 November 2023

1400mm

3050mm

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City of Nedlands
Received
17 November
2023

CF Town Planning & Development

4 October 2023

Chief Executive Officer
City of Nedlands
PO Box 9
NEDLANDS WA 6909

Dear Sir/Madam

APPLICATION FOR DEVELOPMENT APPROVAL
PROPOSED CHANGE OF USE FROM 'SINGLE DWELLING' TO 'DISPLAY HOME'
(USE NOT LISTED)
LOT 410 (No.53) STANLEY STREET, NEDLANDS
CITY OF SOUTH PERTH

We act on behalf of Broadway Homes as their consultant town planners and hereby lodge an Application for Development Approval with the City of Nedlands seeking the City's approval to change the current approved use of Lot 410 (No.53) Stanley Street, Nedlands from 'Single House' to 'Display Home' to highlight the products offered by the company to prospective clients.

Please find enclosed the following information to assist the City of Nedlands consideration and processing of the application:

- A completed and signed 'Application for Development Approval' form;
- A complete and signed 'Metropolitan Region Scheme Form 1;
- A copy of the ASIC statement providing details of the landowner;
- A copy of the Certificate of Title for the subject land; and
- A copy of the plans prepared in support of the application.

We request that the invoice for any development application fees payable to be addressed to 'Broadway Homes' and forward to 'Mr Peter Musuruca via email at pmusuruca@delstrat.com.au at the City's earliest convenience.

In assessing the application, it is requested that the City of Nedlands give due consideration to the following information prepared in support of the application:

PROPERTY DETAILS & BACKGROUND

Property Details

Lot 410 is located centrally within the Nedlands locality, approximately 580 metres south of Stirling Highway and adjacent to a primary school (see Figure 1 -Location Plan).

Planning & Development Consultants
Address: 3/1 Mulgul Road, Malaga WA 6090
Tel: 9249 2158 **Mb:** 0407384140 **Email:** carlof@people.net.au
CVF Nominees Pty Ltd ABN: 86 110 067 395

City of Nedlands
Received
17 November
2023

It is noted that Stanley Street provides a direct connection to Stirling Highway to allow for easy access for future customers to the display home. A review of the immediate area has identified a primary school adjacent to the subject land, with the general land use of the immediate area being single house.

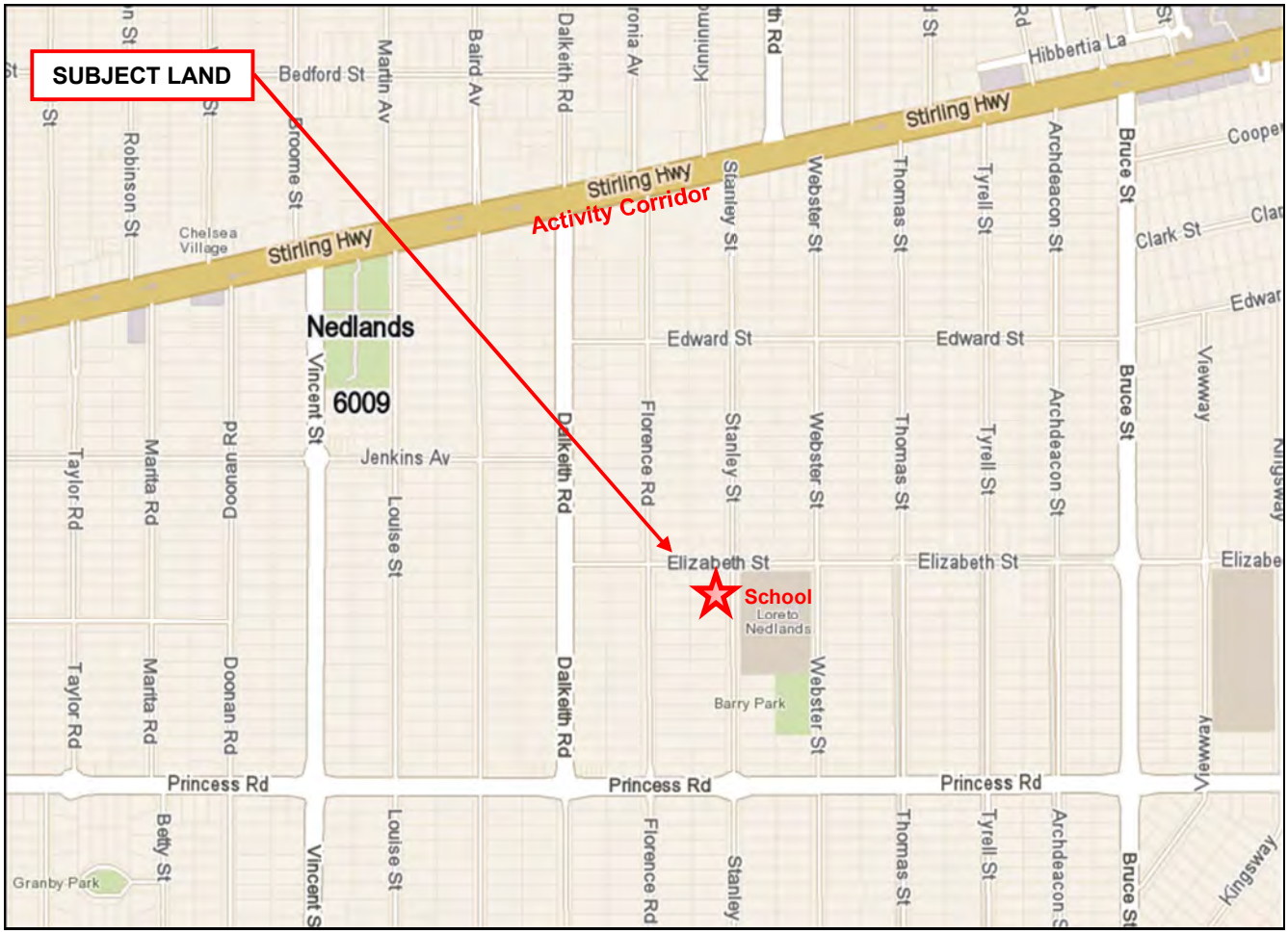

Figure 1 - Location Plan

Lot 410 is rectangular in shape, comprises an area of 1,012m^2 and contains a fall in natural ground levels (NGL) from 30.59 metres along the land's front boundary to 27.27 metres along the land's rear boundary, which equates to a fall in NGL down/across the site of 3.32 metres (see site plan).

The subject land has been approved for development of a 'Single House', which is currently under construction. Furthermore, Lot 410 does not comprise any vegetation, with the verge area abutting the subject land containing two (2) street trees that are being retained as part of the development approval issued by the City of Nedlands for the single house (see Figure 2 – Aerial Site Plan).

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17 November
2023

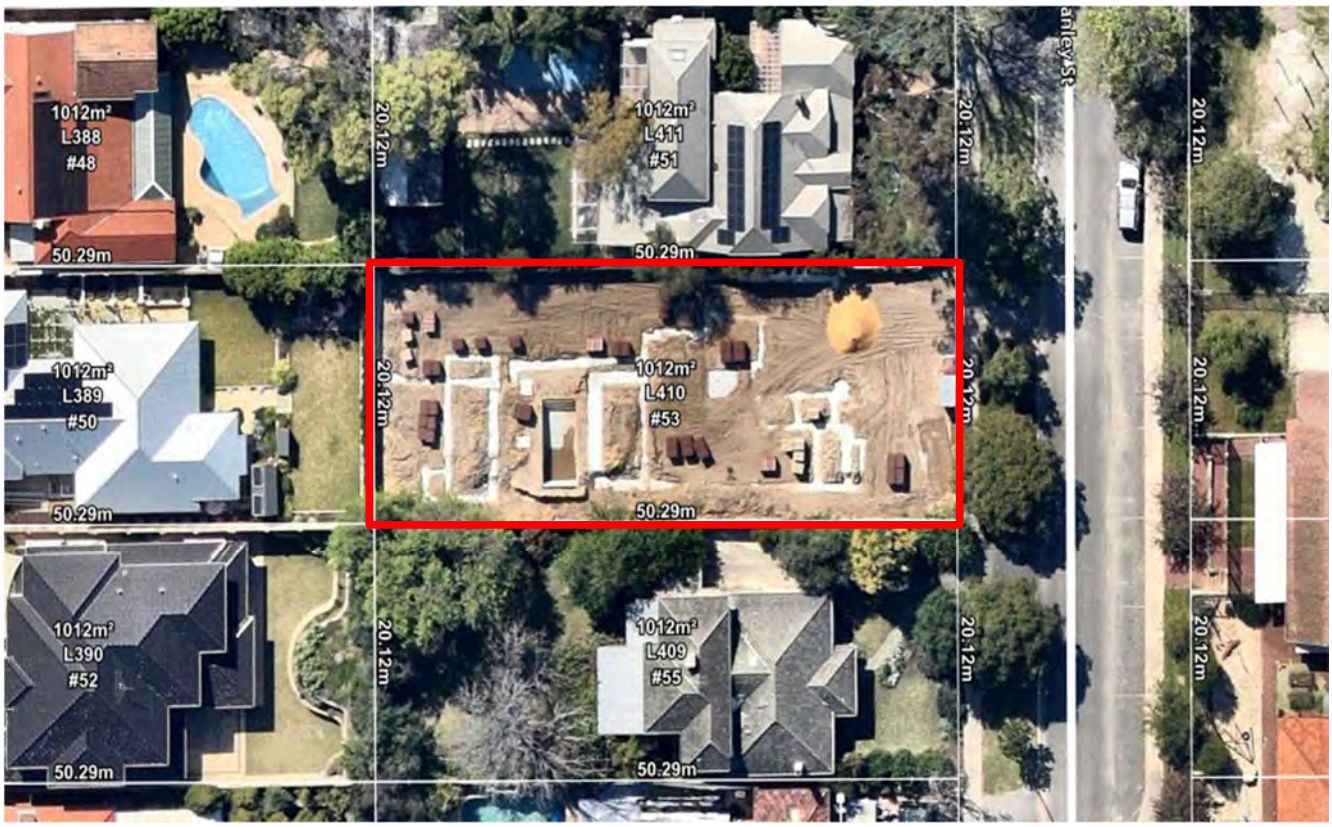

Figure 2 - Aerial Site Plan

Background

On 18 January 2023, the City of Nedlands granted development approval for the construction of a new single dwelling (i.e. two storey dwelling) on Lot 410, subject to the imposition of standard conditions (Ref: DA22-81808).

As outlined previously, the dwelling is currently under construction (see Figure 2).

ESSENTIAL SERVICES

Lot 410 is served by an extensive range of essential service infrastructure including power, water, reticulated sewerage, stormwater drainage, gas, NBN and telecommunications.

The subject land is also served by an efficient local and district road network with convenient access to Stirling Highway. Lot 410 also has access to a nearby public transport service that operates along Dalkeith Road and Stirling Highway (see Figure 3 – Public Transport Network). In addition, the local road network throughout the area provides a good pedestrian path network. The accessibility to the public transport network and pedestrian path network provides an alternative form of transportation for visitors to the display home.

In addition to the above, the Stanley Street road reserve contains a number of on-street car parking bays (along the eastern side of the road rfeserve0 to service the school.

City of Nedlands
Received
17 November
2023

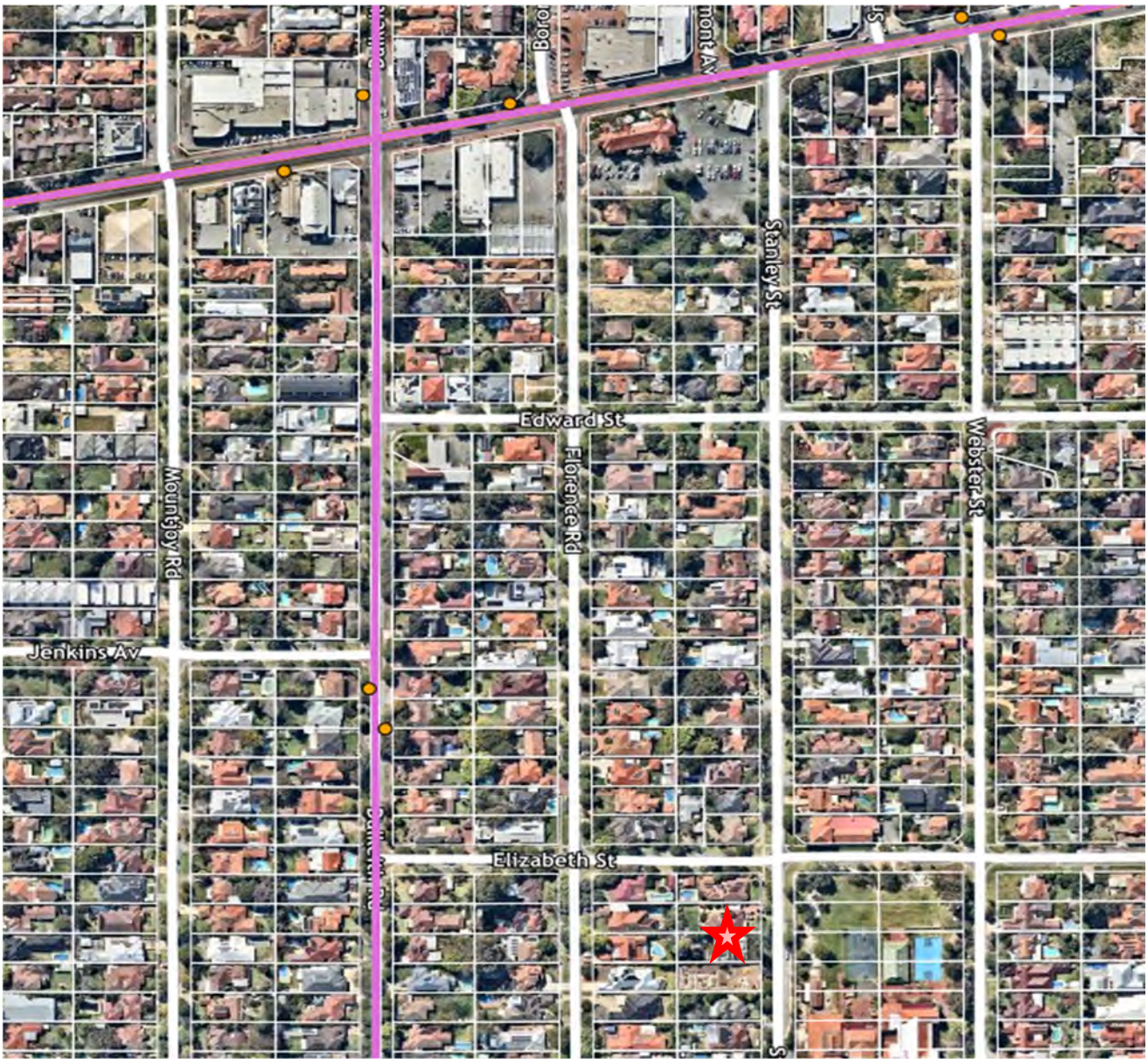

Figure 3 – Public transport network (marked in pink – MNG Mapping)

PROPOSAL

This application seeks the City of Nedlands development approval to change the current approval use of Lot 410 from 'Single House' to 'Display Home' to enable the dwelling to be used by Broadway Homes to showcase products and home designs to the prospective clients. The use of the land for display homes purposes will be temporary, with the land reverting back to a 'Single House' use on the conclusion of a two (2) or three (3) year period for the display.

Details of the operation of the display home are listed as follows:

i) The display home will be operated by Broadway Homes, which is a well-established and well known home builder. The display home will showcase the level of finishes and design that could be adopted by prospective customers throughout the Perth Metropolitan Area;

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ii) The hours of operation for the display home will be Saturday & Sunday 2pm to 4 pm, with appoints only between Monday to Friday;

iii) The land will be used for a display home purposes for a minimum period of three (3) years from commencement. On conclusion of the display home use by Broadway Homes, the use of the site/dwelling will revert back to a 'Single House' and any signage removed;

iv) The estimated patronage to the display home is between two (2) to six (6) persons at any one given time. This estimate is derived from other premium display home operated by Broadway Homes throughout the Perth Metropolitan Area;

v) The display home will comprise one (1) staff at anyone give time (i.e. sales consultant). A second sales consultant/assistant may also attend the site on occasions. The sale person/s will park their vehicle within the garage of the dwelling, as indicated on the plans prepared in support of this application. A parking area for clients will be accommodated within the front setback area of the dwelling (i.e. on the approved driveway of the dwelling); and

vi) The application also proposes the erection of an advertising sign in support of the display home (i.e. displaying the corporate logo of the builder) with a width of 1.4 metres and maximum height of 3.05 metres (i.e. 'monolith' type sign with an area of approximately 4.27m^2). The signage will be located within the front setback area and will not conflict with any visual sightlines associated with driveways on the adjoining land and/or adjoining properties (see Figures 4 & 6). The sign will be removed once the display home use ceases.

Figure 4 – The configuration of the proposed advertising sign.

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STATUTORY REQUIREMENTS

Metropolitan Region Scheme

The subject land is currently classified 'Urban' zone under the provisions of the Metropolitan Region Scheme (MRS). The following definition is provided as a guide to its stated purpose/s in the MRS:

*"**Urban Zone** - Areas in which a range of activities are undertaken, including residential, commercial recreational and light industry."*

The proposed temporary use of the single dwelling on the subject land for display home purposes is considered to be consistent with the defined intent of the land's current 'Urban' zoning classification under the MRS and could be supported by the City of Nedlands.

City of Nedlands Local Planning Scheme No.3

The subject land is classified 'Residential' zone under the City of Nedlands current operative Local Planning Scheme No.3 (LPS No.3) with a density coding of R10.

A review of the City of Nedlands Local Planning Scheme No.3 has identified that the land use "Display Home' is not listed within Table 3 of the Scheme ('Zoning Table').

In light of the above, Clause 18(4) of the City's LPS No.3 applies. The Clause state the following:

The local government may, in respect of a use that is not specifically referred to in the zoning table and that cannot reasonably be determined as falling within a use class referred to in the zoning table:

a) determine that the use is consistent with the objectives of a particular zone and is therefore a use that may be permitted in the zone subject to conditions imposed by the local government; or

b) determine that the use may be consistent with the objectives of a particular zone and give notice under clause 64 of the deemed provisions before considering an application for development approval for the use of the land; or

c) determine that the use is not consistent with the objectives of a particular zone and is therefore not permitted in the zone

Council's stated objectives for all land classified 'Residential' zone under LPS No.3 are:

a) To provide for a range of housing and a choice of residential densities to meet the needs of the community.

b) To facilitate and encourage high quality design, built form and streetscapes throughout residential areas.

c) To provide for a range of non-residential uses, which are compatible with and complementary to residential development.

d) To ensure development maintains compatibility with the desired streetscape in terms of bulk, scale, height, street alignment and setbacks.

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The proposed use of the single dwelling on the subject land for 'Display Home' purposes is consistent with the objectives of the land's current 'Residential' zoning classification in LPS No.3 for the following reasons:

- On completion of the display home use, the use of the site will revert back to a single dwelling and reflect the current approved use and the uses on the adjoining lots;
- The approved dwelling has been designed to a high quality and provides a significant improvement to the local streetscape;
- The proposed use allows for a non-residential uses to be temporarily established within the area that complimentary to the surrounding residential development; and
- The approved dwelling on the land reflects the existing established built form within the areas.

In light of the above, it is concluded that the use is consistent with the stated objectives of the 'Residential' zone and that the proposal could be considered and approved by the City of Nedlands subject to public advertising under Clause 64 of the deemed provisions.

State Administrative Tribunal Case between Webb& Brown-Neaves v City of Nedlands

The aforementioned case was heard by the Tribunal on November 2021 in regard to a refusal issued by the City of Nedlands for a similar application at Lot 835 (No.20) Curlew Road, Dalkeith. The City's refusal was based on the potential impact of increased traffic movements within the area and that the use had inadequate on-site parking.

The Tribunal delivered its decision on 7 February 2022 and included the following conclusions:

1. The proposed development involves a temporary change of use from 'Residential' (Single house) to 'Display Home', a use not listed under LPS 3.
2. The Tribunal consider that the proposed development meets the relevant objective of the 'Residential' zone in LPS No.3 because it is a small-scale non-residential activity and its amenity impacts on the locality (for a temporary period) is capable of being acceptably managed through relevant measures such as:
   i) Designated operating hours;
   ii) Restriction visiting;
   iii) Encourage visitation by appointment;
   iv) Limiting the signage.
3. The Tribunal conclude to set aside the City's decision of refusal of the display home and approve of the proposed development, subject to conditions because it is consistent with an orderly and proper planning outcome.

In light of the decision made by the Trubunal, it is concluded that the use of Lot 410 (No.53) Stanley Street, Nedlands for 'Display Home' purposes can be approved by the City.

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Car Parking

Whist the City of Nedlands does not comprise any development standards applicable to 'Display Home', specifically car parking, the following information is provided in support of the application to address any concerns regarding car parking for the small volume of customers that would attend the display home.

i) The proposed dwelling comprises six (6) on-site car parking bays, which can be used to accommodate the display home use on the land. It should be noted that the bays within the garage will accommodate the vehicles for the sale representatives. The three (3) car parking bays located on the approved driveway is sufficient to accommodate visitors to the display home.

ii) In light of the above, the car parking for Lot 410 reflects the decision made by the Trubunal in 2021 for No.20 Curlew Road, Dalkeith;

iii) In addition to the on-site car parking bays, the road carriageway comprises (adjacent the subject land) comprises marked on-street car parking bays that have been constructed to service the general public and the adjacent school (see Figure 5). This will assist with providing parking for customers during the weekend and will not clash with any pick-up/drop-off associated with the school which does not operate during the weekend period. As such, the on-street parking can accommodate any/unlikely increase in parking demand;

iv) The display home will predominantly operate during weekends, when traffic movements along Stanley Street are typically lower than during week days and will not coincide with the school (which does not operate during the weekend period);

v) In addition to the above point, the anticipated movements of customers for the display home (i.e. two to six people at anyone given time for two to three couples) is very low. As such, it contended that the proposed display home will not have an adverse impact on traffic movements along the local road network and/or result in any car parking issues;

vi) The display home will attract very low patronage numbers for a limited time period over the weekend. Given this, the parking demand will be low and will not adversely impact traffic safety within the immediate area;

vii) The subject land comprises access to public transport and a pedestrian footpath network that will provide for an alternative means of transportation for customers; and

viii) As outlined in the SAT case for No.2 Curlew Road, Dalkeith, it was established that similar display home uses expect a rates of visitors at a rate ranging from 0.9 to 1.25 per hour, which is low.

In light of the above and having due regard of the previous decision made by the Tribunal for a similar application, it is contended that the proposed on-sit car parking for the proposed use of the subject land is adequate.

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Figure 5 – Stanley Street contains on-street car parking bays on the adjacent side of the road carriageway to the subject land. These could be used on weekends (if required).

Local Planning Policy No.2.1: 'Signage and Advertisements'

As previously mentioned, this application proposes the erection of an advertising sign within the front setback of the building in support of the display home (i.e. contains the corporate logo and information). The sign will comprise a width of 1.4 metres and maximum height of 3.05 metres (i.e. 'monolith' type sign with an area of approximately 4.27m^2) (Figure 6).

The City's Local Planning Policy No.2.1 provides the requirements which apply to signs and provides guidance when determining development applications for signage. A review of the policy indicates that the proposed sign would be classified as a 'monolith sign'.

It is noted that the Policy states that 'monolith signs' are permitted on all zoned land except the 'Residential' zone. Given the residential zoning of the subject land, the matter would need to be considered under Clause 5.1 of the Policy which addresses variations.

Clause 5.1 states that any variations to this Policy shall be assessed against the objectives of this policy. The stated objections of the City's Local Planning Policy No.2.1 are as follows:

- *To ensure that Signage and Advertisements do not adversely impact on the amenity of the surrounding area or any heritage-protected place;*
- *To avoid proliferation of Signage and Advertisements that may contribute to visual clutter or are not relevant to the business at a site;*
- *To ensure Signage and Advertisements are generally located in non-residential areas;*

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- *To ensure that Signage and Advertisements do not detract from the level of safety for motorists, cyclists and pedestrians; and*
- *To ensure that Signage and Advertisements are proportionate to the scale of the site to which they relate.*

In assessing the proposed signage against the objectives of the City's Local Planning policy No.2.1, it is contended that the proposed sign is able to meet the requirements for a 'monolith sign' and address the objectives of the Policy for the following reasons:

i) Only one (1) sign is proposed and it is located within the property boundaries. As such, the proposal does not result in the proliferation or visual clutter of signage on the land;

ii) The sign is only temporary and will be removed once the display home use ceases;

iii) The maximum height and width is less than that allowed by the Policy for a 'monolith sign';

iv) Minimum setback of 2.0m from adjoining sites;

v) Minimum 1.5m clearance from where the driveway meets the crossover;

vi) Aligned at a right angle to street;

vii) The sign is discrete and is akin to a property advertising (i.e. real estate) sign. As such, the proposed sign on the subject land will not have an adverse impact on the amenity of the surrounding area. Furthermore, the subject land is not listed on any heritage list;

viii) The sign will not adversely impact traffic and pedestrian safety along the local road network, therefore it will not detract from the level of safety for motorists, cyclists and pedestrians; and

ix) The proposed sign is relatively small in proportion to the dwelling being constructed on the land.

In light of the above, there is scope for the City to consider and approve the proposed signage of the subject land to support the temporary use of the land for 'Display Home' purposes.

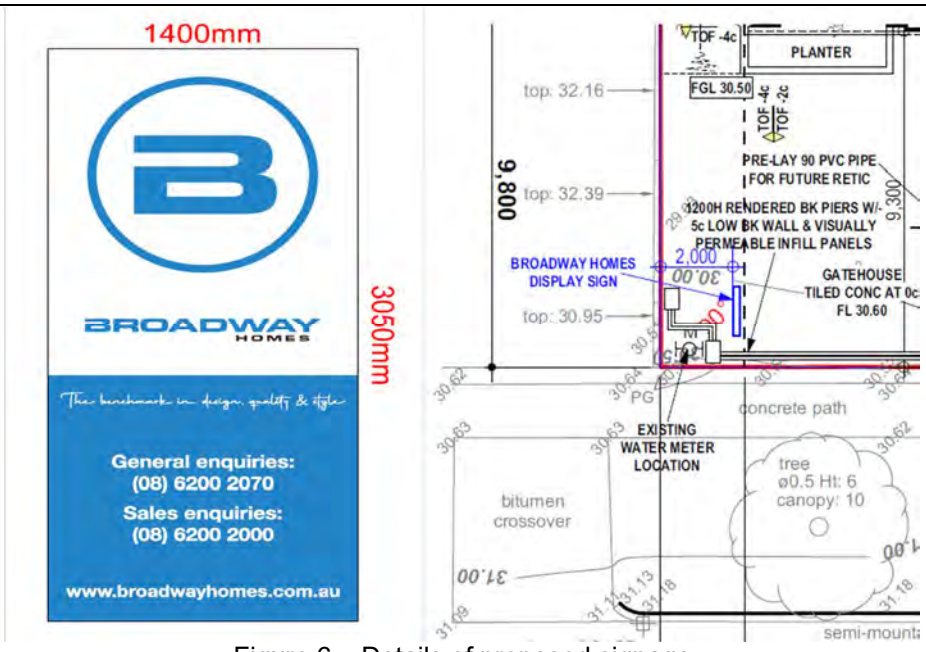

Figure 6 – Details of proposed signage

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BUSHFIRE PRONE AREAS (DFES)

The subject land has not been identified by the Department of Fire & Emergency Services (DFES) as being located within a designated 'bushfire prone area' (see Figure 7).

Figure 7 – DFES bushfire prone mapping

SUMMARY OF JUSTIFICATIONS

Having regard for all of the above, it is contended the proposed use of the new dwelling (under construction) on Lot 410 (No.53) Stanley Street, Nedlands for 'Display Home' purposes is suitable and capable of being approved by the City of Nedlands for the following reasons:

- The proposed display home use is consistent with the general objectives of the land's current 'Urban' zoning classification under the Metropolitan Region Scheme.
- Whilst the use ('Display Home") is not listed within the City of Nedlands Local Planning Scheme No.3, the City does have the discretion to consider and support the use following advertising for public comment, as the use is consistent with the stated objective of the 'Residential' zone prescribed within the City's LPS No.3.

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- The location of a display home on land classified 'Residential' zone is common within the City of Nedlands and throughout the Perth Metropolitan Area.
- The proposed display home use on the subject land will not compromise the existing character, amenity or compatibility of land uses in the immediate locality or give rise to any land use conflicts.
- The use is only temporary and will ultimately revert back to a single detached dwelling once the display home use ceases in three (3) years time.
- The subject land is located adjacent a primary school which offers on-street parking.
- The display home is a low intensity type use with limited operating hours. As such, it will not generate any impacts detrimental to the amenity of the district or to the health, welfare and safety of existing established uses on surrounding properties.
- The proposal display home on the subject land is consistent with the recent decision made by the Stata Administrative Tribunal for a similar application within the Dalkeith locality.

CONCLUSION

The proposed display home will assist with showcasing the products offered by Broadway Homes and will only be use for a short period of time, with the dwelling being reverted back to a single dwelling on conclusion of the display home period. Given the temporary nature of the display home and the low use of the site, it is considered that the proposal will not have an adverse impact on the existing character of the immediate locality and will not have an impact on the adjoining properties given the low volumes expected through the premises on the weekends.

In light of the above information and justifications, we respectfully request the City of Nedlands favorable consideration and approval of the development application to change the current approved use of Lot 410 (No.53) Stanley Street, Nedlands from 'Single House' to 'Display Home' (i.e. use not listed) at the City's earliest convenience.

Should you have any queries or require any additional information regarding any of the matters raised above please do not hesitate to contact me on 0407384140 or carlof@people.net.au.

Yours faithfully,

Carlo Famiano
Town Planner
CF Town Planning & Development

cc Broadway Homes

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16.3 PD33.05.24 Section 31 Reconsideration of Development Application – Additions and Alterations to Single House at 89 Watkins Road, Dalkeith

Meeting & Date	Council Meeting – 28 May 2024
Applicant	Design Management Group
Information Provided	All relevant information required has been provided.
Employee Disclosure under section 5.70 Local Government Act 1995	Nil.
Report Author	Nathan Blumenthal – A/Manager Urban Planning
Director/CEO	Roy Winslow – A/Director Planning and Development
Attachments	1. Zoning Map 2. Development Plans 3. CONFIDENTIAL ATTACHMENT - Submissions

Purpose

The purpose of this report is for Council to reconsider a development application for additions and alterations to a single house at 89 Watkins Road, Dalkeith.

At the 30 January 2024 Special Council Meeting (Refer item PD01.01.24), the application was refused by Council. The proponent appealed to the State Administrative Tribunal (SAT) and there followed a series of discussions with the neighbours and a formal mediation with the City around amended plans. Subsequent to Orders made by SAT and amended development plans submitted to the City, this application is presented to Council to reconsider the proposal under section 31 of the SAT Act 2004 and make a determination.

Recommendation

That Council, in accordance with Section 31(2)(c) of the State Administrative Tribunal Act 2004, set aside its refusal to grant development approval for additions and alterations to a single house at 89 Watkins Road, Dalkeith dated 30 January 2024 and substitutes the new decision as follows:

In accordance with Clause 68(2)(b) of the Deemed Provisions of the Planning and Development (Local Planning Schemes) Regulations 2015, approves the development application in accordance with the plans date stamped 24 April 2024 for additions and alterations to a single house at 89 Watkins Road, Dalkeith (DA22-81970), subject to the following conditions:

1. **This approval relates only to the development as indicated on the approved plans dated 24 April 2024. It does not relate to any other development on this**

lot and must substantially commence within 2 years from the date of the decision letter.

2. **All works indicated on the approved plans shall be wholly located within the lot boundaries of the subject site.**

3. **Prior to the issue of a demolition permit and a building permit, a Demolition or Construction Management Plan (as appropriate) shall be submitted and approved to the satisfaction of the City. The approved Demolition and Construction Management Plans shall be observed at all times throughout the construction and demolition processes to the satisfaction of the City.**
4.
5. **Prior to occupation, walls on or adjacent to lot boundaries are to be finished externally to the same standard as the rest of the development in:**

    a. **Face brick;**
    b. **Painted render;**
    c. **Painted brickwork; or**
    d. **Other clean finish as specified on the approved plans.**

And are to be thereafter maintained to the satisfaction of the City of Nedlands

6. **The street tree(s) within the verge in front of the lot are to be protected and maintained through the duration of the demolition and construction processes to the satisfaction of the City of Nedlands. Should the tree(s) die or be damaged, they are to be replaced with a specified species at the owner's expense and to the satisfaction of the City of Nedlands.**

7. **Prior to occupation, a deed of agreement or other suitable arrangements, are to be made for the payment of funds to the City of Nedlands for the implementation and maintenance of the landscaping within the Parks and Recreation reserve for a period of ten (10) years as shown on the approved landscape plans. The agreement shall be prepared by the City's solicitors, to the satisfaction of the City, and at the landowner/applicants cost.**

8. **All stormwater discharge from the development shall be contained and disposed of on-site unless otherwise approved by the City of Nedlands. Prior to the issue of a building permit the applicant is to submit stormwater drawings to demonstrate that stormwater infrastructure is be designed to accommodate the 1%AEP rainfall event fully on site without any overflow into the road reserve or adjacent properties.**

9. **All vegetated landscaping planted as screening of the neighbouring property to the north is to be planted prior to occupation and maintained at all times to the satisfaction of the City of Nedlands.**

DBCA Conditions

10. **Within twelve (12) months of the completion of the approved works, an amended landscape plan is to be implemented to the satisfaction of the City of Nedlands on the advice of the Department of Biodiversity, Conservation and Attractions.**

11. **The applicant shall take appropriate preventative measures to ensure that no construction material, sediment (including as a result of stormwater run-off), or rubbish enters the Parks and Recreation reserve or river as a result of the works.**

12. **Stormwater run-off from constructed impervious surfaces generated by small rainfall events (that is, the first 15 mm of rainfall) must be retained and/or detained and treated (if required) at-source as much as practical and will not be permitted to enter the river untreated.**

13. **No wastewater/backwash from the swimming pool is to be discharged onto the land, into the river or the local government drainage system.**

Voting Requirement

Simple Majority.

This report is of a quasi judicial nature as it is a matter that directly affects a person's rights and interests. The judicial character arises from the obligation to abide by the principles of natural justice. Examples of Quasi-Judicial authority include town planning applications and other decisions that may be appealable to the State Administrative Tribunal.

The decision must be made in a manner that is impartial, free from bias, and in accordance with the principles of natural justice. The decision must be made in having regard to the facts of the matter under consideration, and in accordance with the relevant laws and policies as they apply to that matter.

Discretionary considerations and judgments in the decision must be confined to those permitted to be considered under the laws and polices applicable to the matter and given such weight in making the decision as the relevant laws and polices permit them to be given.

Background

Land Details

Metropolitan Region Scheme Zone	Urban
Local Planning Scheme Zone	Residential
R-Code	R12.5
Land area	6409m^2
Land Use	Residential – Single House
Use Class	'P' – Permitted Use

The site is located at 89 Watkins Road, Dalkeith, on the corner of Victoria Avenue. The site is made up of six green title lots with a total area of 6,409m². This development application occurs over three of the lots closest to the river, lots 274 – 276. For the purposes of assessment, these three lots are considered the subject site.

The subject site is 3,397m² in area, with a frontage of 74m. The site abuts the Swan Canning Development Control Area and a Metropolitan Region Scheme (MRS) "Parks and Recreation" reserve on its western boundary. To the north, the site abuts the Local Government boundary with the Town of Claremont.

Figure 1: Aerial image of 89 Watkins Road, Dalkeith

Previous Decision

At the Ordinary Council Meeting on 30 January 2024, Council considered a proposal for additions and alterations to a single house at 89 Watkins Road, Dalkeith. Council resolved to refuse the application for the following reason:

1. The development is inconsistent with the design principles of clause 5.1.3 Lot boundary setback of the R-Codes as the rear lot boundary setbacks are insufficient to reduce impacts of building bulk on adjoining properties.

SAT Application

In February 2024, the applicant lodged an application with the SAT to review the decision. The proponents, the affected neighbours and City Officers all met and discussed the issues through SAT mediation. Subsequent to orders being set out by SAT and amended development plans being received by the City in April 2024, the application is presented to Council to reconsider the proposal and make a determination. Reconsideration is enabled by section 31 of the SAT Act (see legislative and policy implications section of this report).

Amended Plans

The application seeks development approval for additions and alterations to a single house at 89 Watkins Road, Dalkeith. The works include a new garage, *porte cochere* and parcel drop off building in the front setback area, and a new pavilion, pool, pool store and landscaping to the north-west of the site. The contested items of development were only those relating to the north-west of the site.

Pursuant to the order made by the SAT, amended plans were prepared which make the following changes from the plans that were considered by Council on 30 January 2024:

- Increased setback of the pool from the northern boundary from 3.2m to 4.3m.
- Increased setback of the pool deck from the northern boundary from 2.2m to 3.5m.
- Conversion of the non-trafficable planter adjacent to the northern boundary to a pebble garden.
- A reduction in the height of the pebble garden of 0.44m (6.88 AHD – 6.44 AHD).
- An alteration in the height of the northern boundary wall. The eastern portion of the wall is increasing in height by 0.3m and the western portion of the wall is decreasing in height by 0.4m.

Discussion

Assessment of Statutory Provisions

If a proposal does not satisfy the deemed to-comply provisions of the State Planning Code Residential Design Codes (R-Codes), Council is required to exercise a judgement of merit to determine the proposal against the design principles of the R-Codes. The R-Codes require the assessment to consider the relevant design principle only and to not apply the corresponding deemed-to-comply provisions. It is recommended that the application be

approved by Council as it is considered to satisfy the design principles of the R-Codes. Further, it is considered unlikely that the development will have a significant adverse impact on the local amenity and character of the locality.

Local Planning Scheme No. 3

Schedule 2, Clause 67(2) (Consideration of application by Local Government) – identifies those matters that are required to be given due regard to the extent relevant to the application. Where relevant, these matters are discussed in the following sections. Overall, the development is considered to meet these objectives, particularly in regard to height, scale, bulk and appearance, and the potential impact it will have on the amenity of the adjoining landowner and public open space.

State Planning Policy 7.3 - Residential Design Codes – Volume 1

The R-Codes apply to all single and grouped dwelling developments. An approval under the R-Codes can be obtained in one of two ways. This is by either meeting the deemed-to-comply provisions or via a design principle assessment pathway.

The proposed development is seeking a design principle assessment pathway for parts of this proposal relating to street setback, lot boundary setback and visual privacy. As required by the R-Codes, Council, in assessing the proposal against the design principles, should not apply the corresponding deemed-to-comply provisions.

Street Setback (Clause 5.1.2)

The development proposes a garage, carport (*porte cochere*) and outbuilding (parcel drop off) within the 9m street setback area. The design principles for lot boundary setbacks consider the impact of building bulk on adjoining properties and streetscape, providing adequate open space for dwellings and site planning features. The proposed street setback is considered to meet the design principles for the following reasons:

- The Watkins Road frontage contains an existing solid street fence along the entire length, which varies in height between 1.0m and 4.8m given the slope of the land. Where the garage is to be located with nil setback, this has been designed to match the height of the existing fence and thereby will not be visible from the street.
- The six lots of 89 Watkins Road occupy the entire street block between the foreshore reserve and Victoria Avenue. In this regard the proposed street setback will not impact on any directly adjoining properties.
- In relation to the carport, this is setback a minimum of 3.9m from Watkins Road which lessens the impact to the street. Whilst the carport is larger in size than a typical carport, it is considered appropriate in the context of the large landholding.
- In relation to open space, the proposal meets the deemed-to-comply open space provisions thereby maintaining adequate open space for residents, parking, landscaping, and utilities.

Eastern Lot Boundary Setback (Clause 5.1.3 and DBCA).

The development proposes to alter the existing limestone boundary wall on the western (riverfront) lot boundary. The existing wall is approximately 6.8m in height for a majority of its length, and 5.2m in height to the northern portion. This is proposed to be increased in height to 8.2m around the pool lounge area and to 5.7m to the pool planter area. A portion of the wall is also proposed to be decreased in height from 6.6m to 5.7m (see Figure 2). There are no provisions for deemed-to-comply boundary walls in the R12.5 code. This boundary wall is abutting the Swan Canning Development Control Area, and assessment of this wall is against State Planning Policy 2.10: Swan-Canning River System and Swan Canning Development Control Area policies. Officers from the DBCA have assessed the application against relevant policies and have advised that they have no objections to the proposal, subject to conditions being applied by the City in the event of approval.

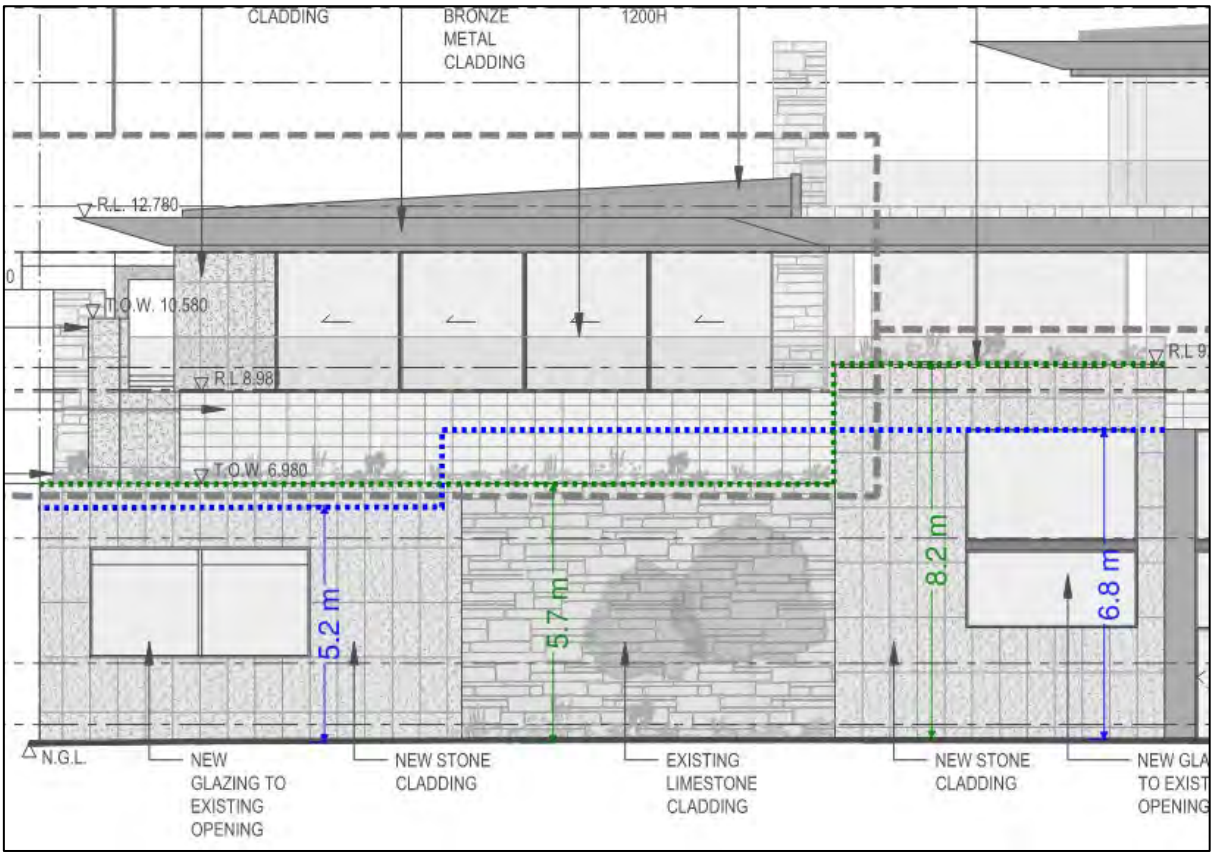

Figure 2: Diagram of existing western boundary wall height (blue) and proposed boundary wall height (green).

In addition to standard conditions, DBCA Officers have requested that the applicant implement landscaping within the adjoining 'Parks and Recreation' reserve to improve and soften the appearance of the development when viewed from the foreshore and the Swan River. It is acknowledged that the existing wall has a harsh interface with the reserve, and that this may be exacerbated by the proposed development. It is recommended that a condition be placed on any approval granted by Council for the applicant to provide funding for the planting of landscaping and its ongoing maintenance for a period of 10 years. Condition 7 has been recommended to this effect. In addition to the landscaping, the existing wall is proposed to be altered to introduce a variety of

materials and additional glazing to aid in breaking up the visual bulk of the wall as viewed from the river and foreshore reserve.

Rear Lot Boundary Setback (Clause 5.1.3)
The development proposes a pavilion and screen wall within the 6m rear setback area to the northern lot boundary. The northern boundary wall is proposed to be increased in height by 0.6m. The existing boundary wall on the eastern boundary is proposed to be increased in height by 0.4m. The design principles for lot boundary setbacks consider the impact of building bulk on adjoining properties, providing adequate sun and ventilation and minimising overlooking. The proposed northern lot boundary setback is considered to meet the design principles for the following reasons:

- In relation to the pavilion, the 2.4m setback measurement has been taken to the overhanging eaves. The solid portion of wall is set back a minimum of 4.9m from the lot boundary. The large eaves proposed are open beneath, thereby limiting the extent of building bulk imposed to the northern adjoining property and ensuring adequate natural ventilation is maintained. The pavilion addition meets the deemed-to-comply visual privacy setbacks and does not result in overlooking of the adjoining property.
- The setbacks of the pavilion and screen wall are commensurate with the side setbacks of the adjoining property, which is set back from the boundary between 1.5m to 2.4m. In this regard the proposed setbacks are consistent with the existing pattern of development and allow a substantial view of the river from the back deck.
- The increase in height to the existing boundary wall is to match the planter height on the eastern elevation. A portion of the wall is also proposed to be decreased in height by 0.3m. On balance the proposed alteration to the wall has minimal building bulk impact on the adjoining property. This portion of wall relates to a pebble garden ‘planter’ thereby not resulting in any visual privacy concerns.
- All overshadowing from the proposed additions will fall within the subject site at midday 21 June, thereby there is no loss of natural sun to the adjoining property.

Visual Privacy (Clause 5.4.1)

The development proposes a raised pool deck with a 5.1m visual privacy setback from the northern adjoining property. The design principles for visual privacy consider the impact of any direct overlooking into active habitable spaces and outdoor living area. The proposed pool deck is considered to meet the design principles for the following reasons:

- The area of overlooking falls upon a non-active undercroft area. It does not impact any major openings or active habitable spaces. The pool terrace has included a screen wall to minimise direct overlooking, and the remaining area of overlooking is oblique.
- The pool is a non-habitable area, so is not subject to the visual privacy provisions of the R-Codes. Notwithstanding this, overlooking from the pool is minimised as the depth of the pool towards northern lot boundary is approximately 1.8m. Resultingly, a view of the northern lot from the pool could only be facilitated by a person pulling themselves up on the pool ledge.

Minor Variations

The key elements of the development proposal which require Council consideration have been outlined in this report. The application also involves technical variations to street

walls and fences (Clause 5.2.4), sightlines (Clause 5.2.5), site works (Clause 5.3.7) and outbuildings (Clause 5.4.3). These are all technical variations with no adverse impact on the amenity of adjoining properties or surrounding area.

Consultation

No additional formal consultation has occurred since the Council decision on 30 January 2024. The City engaged directly with the adjoining northern landowner to seek comment on the amended development proposal.

The objection from the northern landowner was updated and maintained (confidential attachment). The following is a summary of the concerns/comments raised and the Administration's response and action taken in relation to each issue:

1. Objection to rear (north) setback in relation to bulk and scale, access to natural ventilation and impact to views.

The northern setback has been increased by 1.1m since the plans that were considered on 30 January 2024 to mitigate the impact of building bulk to the adjoining property. Consideration of the rear setback is outlined above.

In relation to the neighbour's request that the pool be shifted further back and away from the north and east boundaries, the proponent has provided an engineer's assessment that, due to the construction of the existing house, it is not possible to relocate the pool any further north or east. Doing so would require cutting into the structural supports, which would catastrophically undermine the existing house.

2. Objection to northern boundary wall and concerns with boundary alignment.

A condition of approval is recommended to ensure all works are wholly located within the lot boundaries of the subject site.

3. Objection to western setback in relation to bulk and scale and dominance over public realm.

The visual impact of the western elevation of the property has been the focus of assessment by the DBCA and has led to a series of plan changes over the life of the application. The current plans subject to Council consideration are the culmination of this liaison with the DBCA and have been supported by the Department, subject to conditions.

4. Visual privacy concerns from the pool

The R-Codes specifically exclude unenclosed swimming pools from the definition of 'habitable room/space', and therefore they are not subject to visual privacy controls. As outlined in the report above, the proposal does seek exercise of discretion in relation to visual privacy from the pool terrace. The pool terrace includes a visual privacy screen and restricts overlooking to a small portion of the adjoining lot that is not frequently occupied as it is an outdoor staircase.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2022-23 vision and desired outcomes as follows:

Vision **Sustainable and responsible for a bright future**

Pillar Place
Outcome 6. Sustainable population growth with responsible urban planning.

Budget/Financial Implications

Given that Council's previous decision was contrary to the Officer's recommendation, the City employed the services of an independent party, McLeods Barristers, to run the SAT mediation process. Costs incurred to date are estimated to be $7,000. In the event that this matter is considered at a formal hearing of the SAT, the City will require McLeods representation to continue, as well as requiring the services of a planning consultant experienced in SAT representation. Costs associated with a full hearing are anticipated at between $40,000-$60,000, depending on the complexity.

Should Council resolve to grant development approval, no further costs are anticipated.

Legislative and Policy Implications

The reconsideration is being conducted in accordance with section 31 of the SAT Act. This section allows for the SAT to invite a decision-maker to reconsider the initial decision. Upon being invited to reconsider the decision the decision-maker may:

- Affirm the decision
- Vary the decision or
- Set aside the decision and substitute a new decision.

Decision Implications

Council is acting as the decision-maker for the purposes of section 31 of the SAT Act. Should Council affirm the original decision, the matter will be subject to further directions. The applicant will then have the ability to request the SAT conduct a formal hearing and make a decision to either dismiss or uphold the application for review. In this event, the SAT will become the decision-maker and effectively either approve or refuse the development.

In the event Council resolves to grant development approval, the SAT matter will only continue in the event the applicant is aggrieved by the decision. Resolving to grant development approval will likely result in the withdrawal of the SAT review and the development can proceed after a building permit is granted.

Conclusion

The application for additions and alterations to a single house at 89 Watkins Road, Dalkeith has been presented to Council for reconsideration by section 31 of the State Administrative Tribunal Act 2004 (WA). With the updated development plans the proposal is considered to meet the key amenity related elements of R-Codes Volume 1 and as such is unlikely to have a significant adverse impact on the local amenity of the area. The proposal has been assessed and satisfies the design principles of the R-Codes and is consistent with the immediate locality and streetscape character.
Accordingly, it is recommended that the application be conditionally approved by Council.

Further Information

Nil.

City of Nedlands

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Zoning Map

7/11/2023

1:1000

PRIVATE RESIDENCE

89 WATKINS ROAD, DALKEITH WA
DA22-81970 UPDATED 24/04/24

A00.00	COVER PAGE
A01.01	FEATURE SURVEY
A01.02	SITE PLAN
A02.01	LOWER & UPPER BASEMENT FLOOR PLANS
A02.02	GROUND FLOOR PLAN & ROOF PLAN - AREA 2
A02.03	GROUND FLOOR PLAN & ROOF PLAN - AREA 3
A06.01	EAST & WEST ELEVATIONS
A06.02	NORTH ELEVATIONS
A06.03	SOUTH ELEVATIONS
A06.04	PERSPECTIVES
A07.01	SECTION A
A07.02	SECTION B
A07.03	SECTION C

APPENDIX

0234-LS-601	TPLA FORESHORE PLANTING LANDSCAPE PLAN
0234-LS-602	TPLA PLANTING SCHEDULE

City of Nedlands
Amended Plans
Received
24 April 2024

SCALE

PROJECT TITLE

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PROJECT # 20044

DRAWING # **A00.00**

LOT No: 276	LOT No: 275	LOT No: 274	LOT No: 273	LOT No: 272	LOT No: 271
AREA : 1004m² ☑	AREA : 1201m² ☑	AREA : 1192m² ☑	AREA : 1004m² ☑	AREA : 1004m² ☑	AREA : 1004m² ☑
C/T VOL: 1945/636	C/T VOL: 1945/635	C/T VOL: 1945/634	C/T VOL: 1987/682	C/T VOL: 1987/684	C/T VOL: 1987/683

TITLE DETAILS			
LOT NOs:	271 - 276	C/T VOL:	see plan
PLAN:	2784	FOL:	see plan

SURVEYOR SITE INSPECTION REPORT

ELECTRICITY:	UNDERGROUND	GAS:	YES
TELECOM:	YES	WATER:	YES
SEWERAGE:	YES (SEE THIS PLAN FOR DEPTHS TO JUNCTIONS)		
ROAD:	HOTMIX		
KERB:	SEMI MOUNTABLE / BARRIER		
FOOTPATH:	CONCRETE		
VEGETATION:	ESTABLISHED GARDENS, TREES & PALMS		
SOIL:	SAND & POSSIBLE LIMESTONE AT DEPTH		
VIEWS:	RIVER		
REPEG:	SEE PLAN	REPEG TYPE:	OLD SURVEY AREA

ONLY OBVIOUS VISIBLE SERVICES HAVE BEEN LOCATED. PRIOR TO ANY EXCAVATION, CONSTRUCTION OR DEMOLITION THE RELEVANT SERVICE AUTHORITIES MUST BE CONTACTED TO CONFIRM THE LOCATION OF ALL UNDERGROUND SERVICES.

LEGEND

N	NBN PIT		TREE	G	GAS
T	TELECOM PIT		PALM TREE	I	IRRIGATION
C	COMMUNICATION PIT		GRASS TREE	H	HYDRANT
E	ELECTRICITY		TREE STUMP	SV	STOP VALVE
	POWER DOME		BOLLARD		PRE-LAID WATER PIPE
	POWER POLE		STREET LAMP	W	WATER METER
	FENCE END		GRATED DRAIN		SEWERAGE MANHOLE
	COLUMN		SIDE ENTRY PIT		SEWERAGE MANHOLE
	PILLAR		DRAINAGE MANHOLE		SEWERAGE INSPECTION LID
tw	TOP OF WALL	tp	TOP OF PILLAR	tog	TOP OF GUTTER
trw	TOP OF RETAINING WALL	trf	TOP OF RETAINING FENCE	tof	TOP OF FOOTING

NOTES

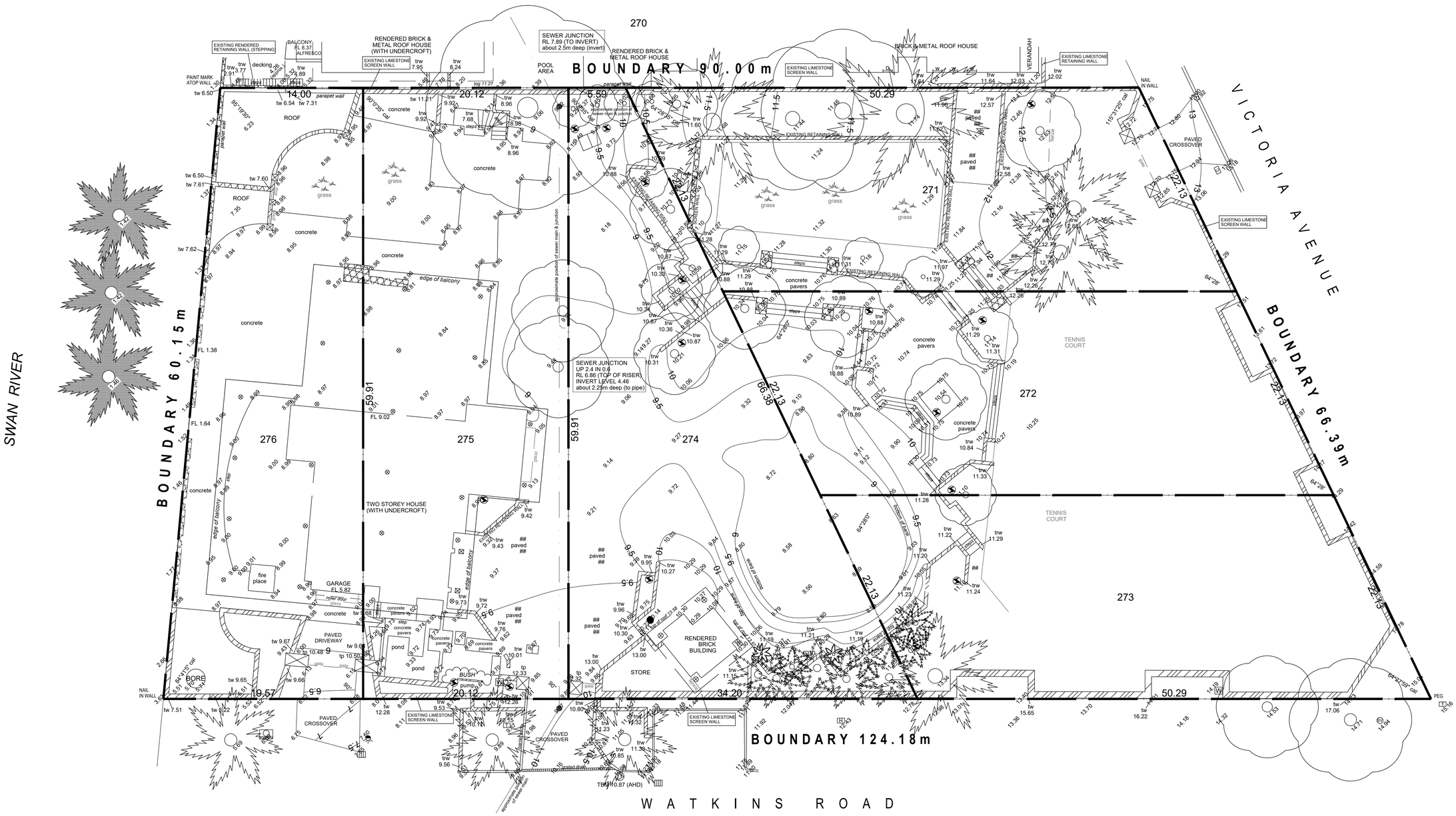
BLOCK LOCATED MORE THAN 1 KILOMETRE FROM THE OCEAN.
This lot may be subject to 100 YEAR FLOOD PLAIN.

ALL SEWER DETAILS PLOTTED FROM INFORMATION SUPPLIED BY WATER CORPORATION SPATIAL INFORMATION MANAGEMENT. REFER TO THE DISCLAIMER NOTE ON WATER CORP E-PLAN.

PLUMBING CONTRACTORS TO CONFIRM SEWER DEPTHS BEFORE PIPE LAYING.

CHECK TITLE FOR EASEMENTS, CAVEATS & COVENANTS.

POSITION OF FEATURES HAVE BEEN SURVEYED IN RELATION TO CADASTRE BOUNDARIES.
REPEG RECOMMENDED PRIOR TO CONSTRUCTION.



FEATURE SURVEY

SCALE 1:200

0 10m

SURVEY BY R. G. LESTER & ASSOCIATES

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PROJECT # 20044

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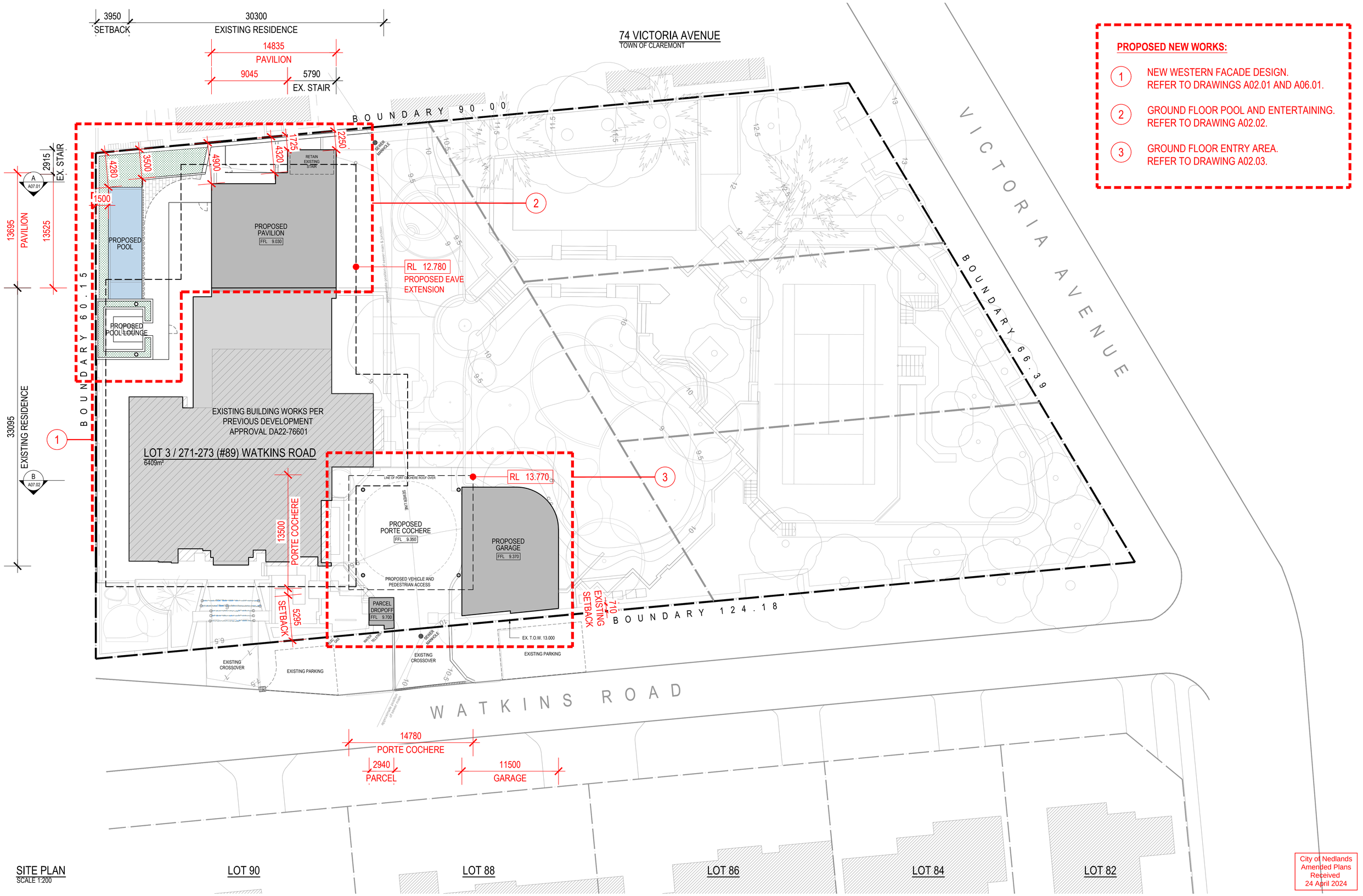

PROPOSED NEW WORKS:

1. NEW WESTERN FACADE DESIGN. REFER TO DRAWINGS A02.01 AND A06.01.
2. GROUND FLOOR POOL AND ENTERTAINING. REFER TO DRAWING A02.02.
3. GROUND FLOOR ENTRY AREA. REFER TO DRAWING A02.03.

SITE PLAN
SCALE 1:200

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PROJECT # 20044
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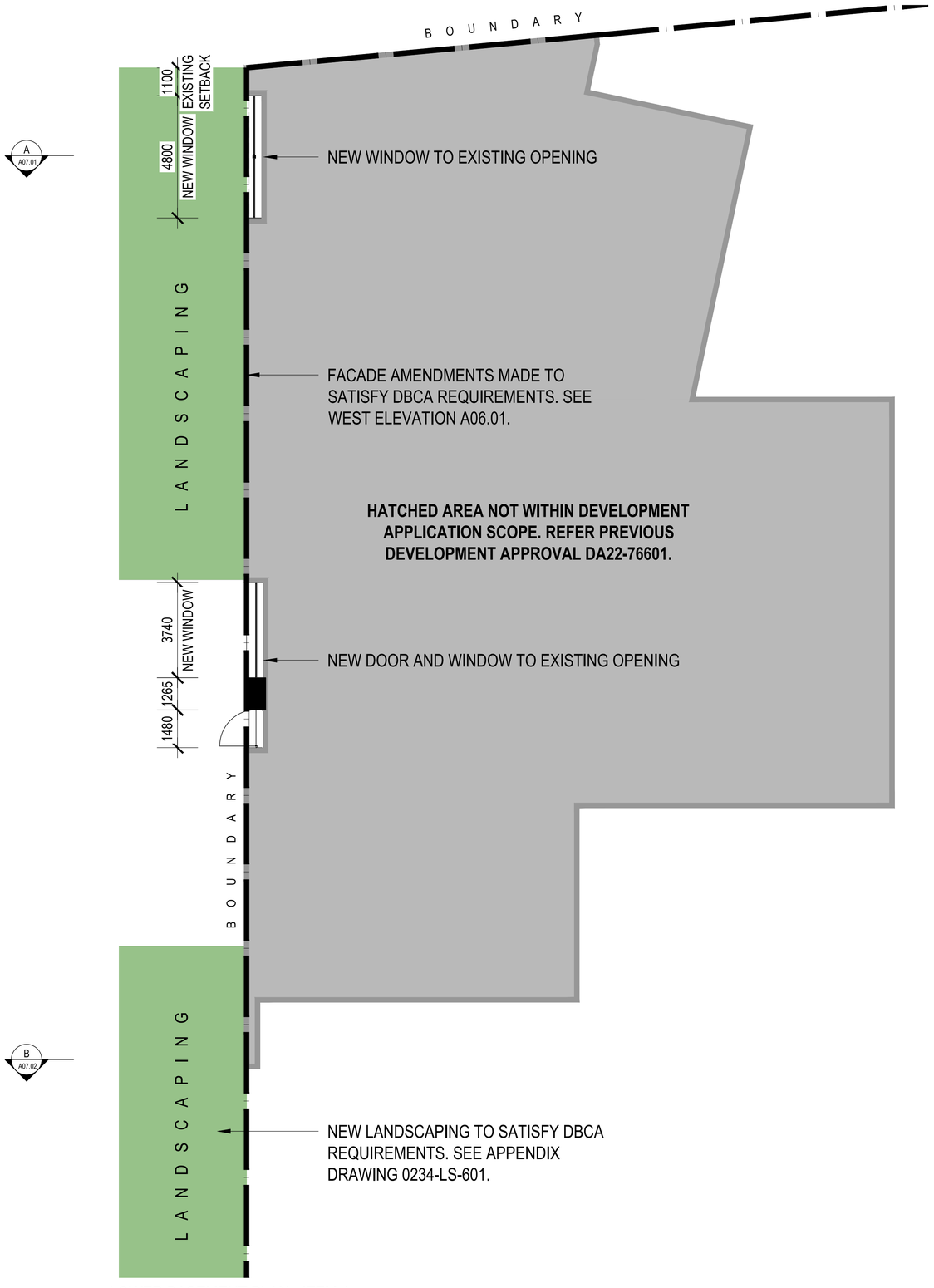

LOWER BASEMENT PLAN - ITEM 1
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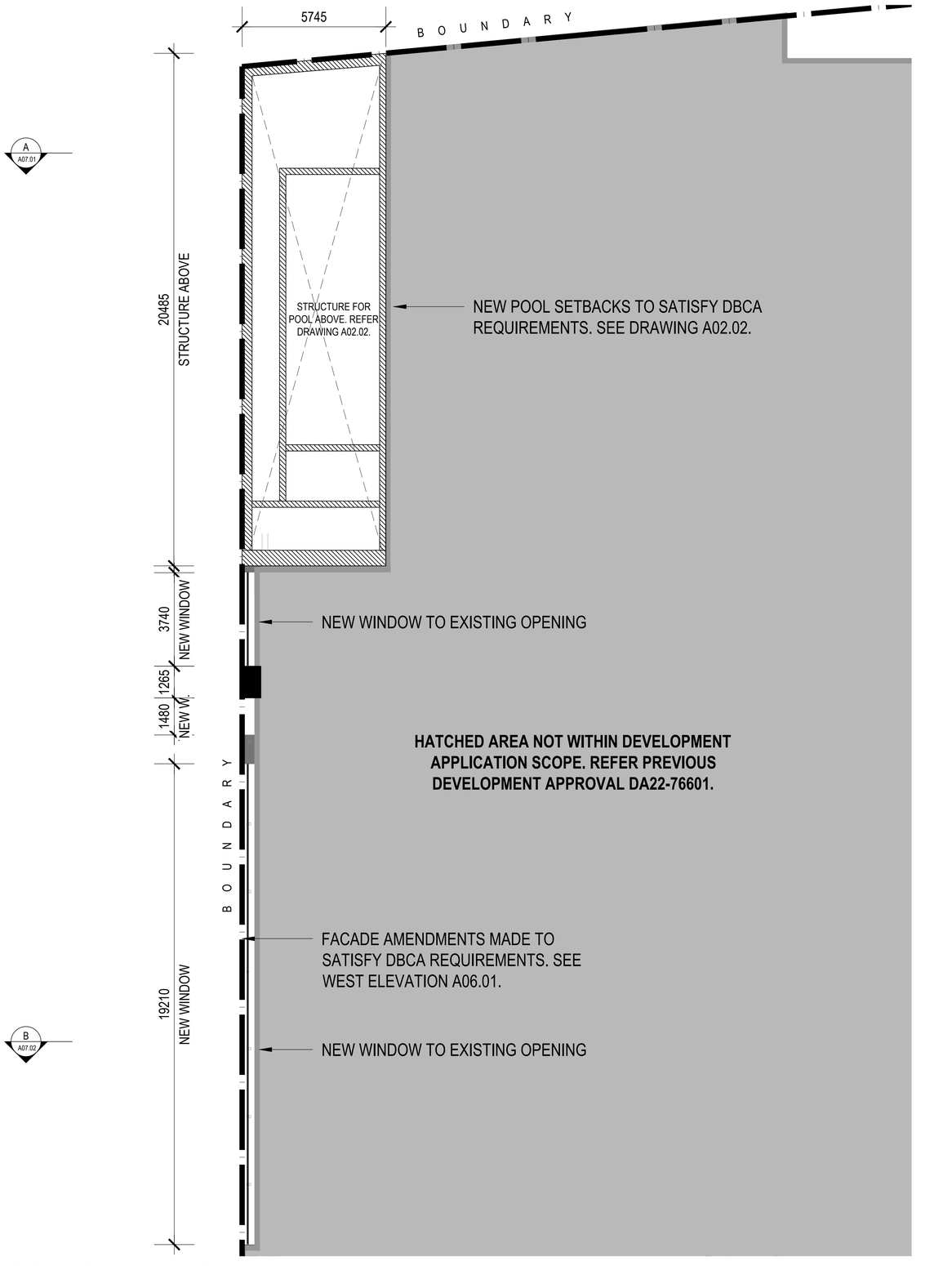

UPPER BASEMENT PLAN - ITEM 1
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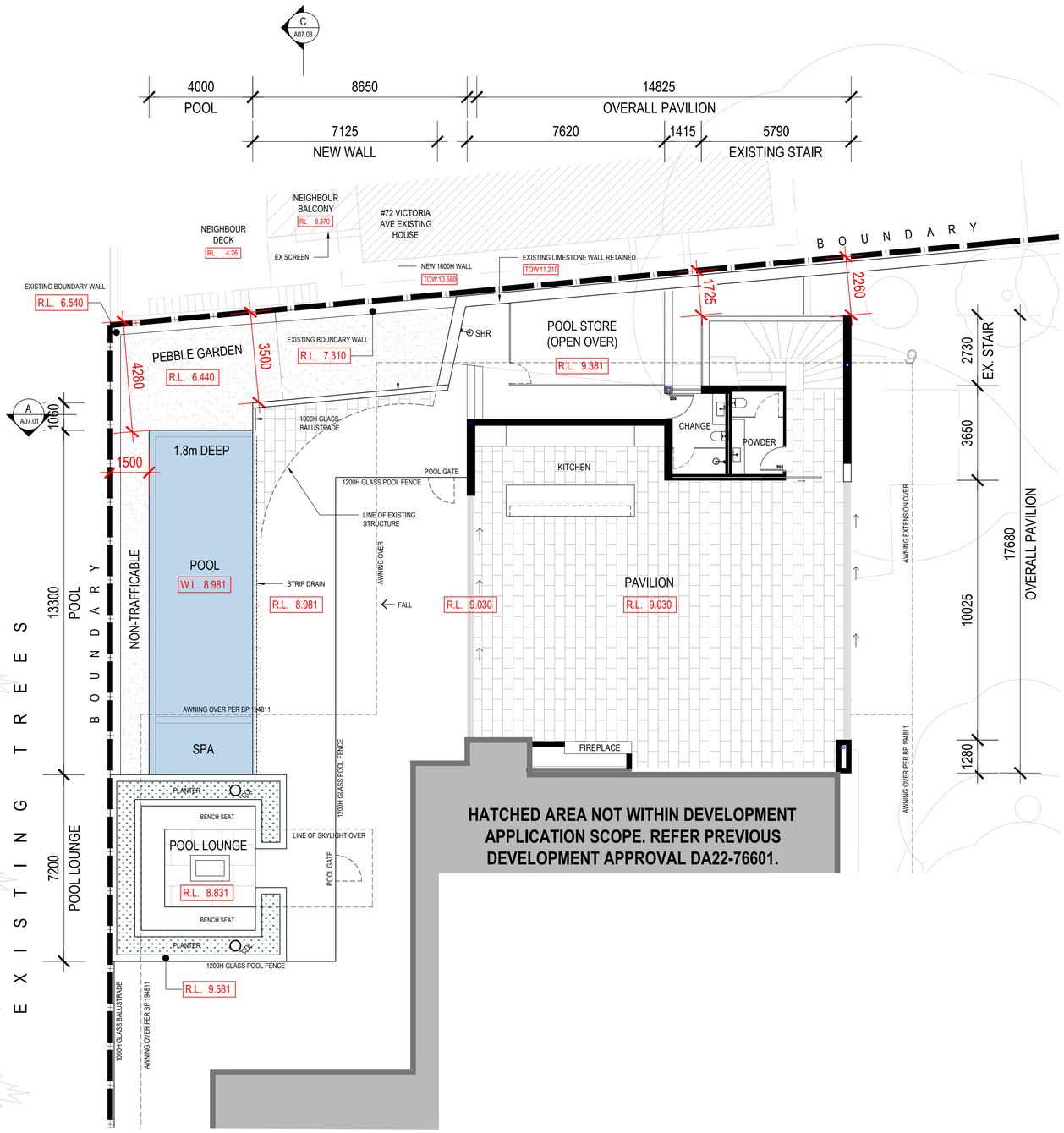

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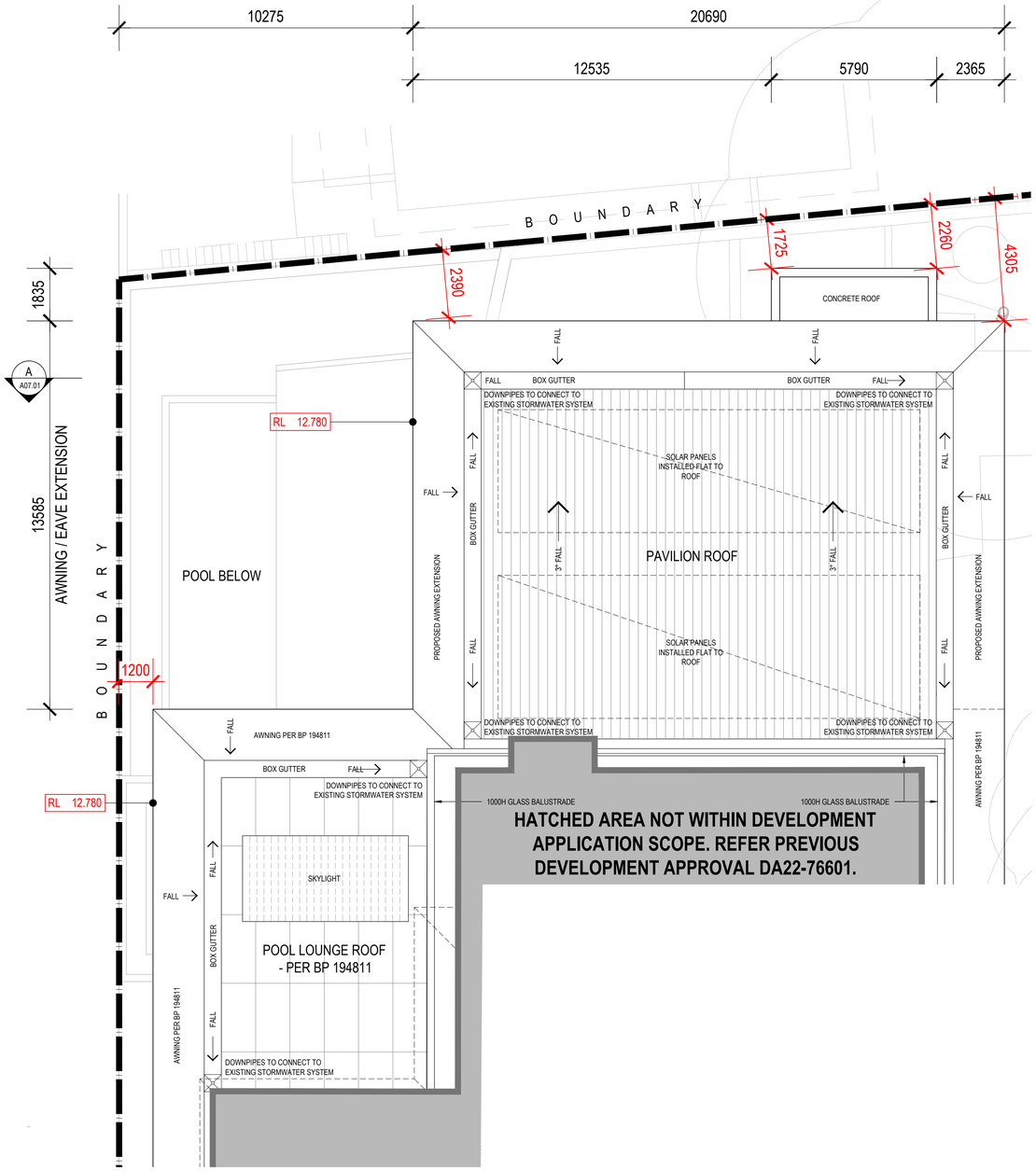

ROOF PLAN - ITEM 2
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PROJECT #
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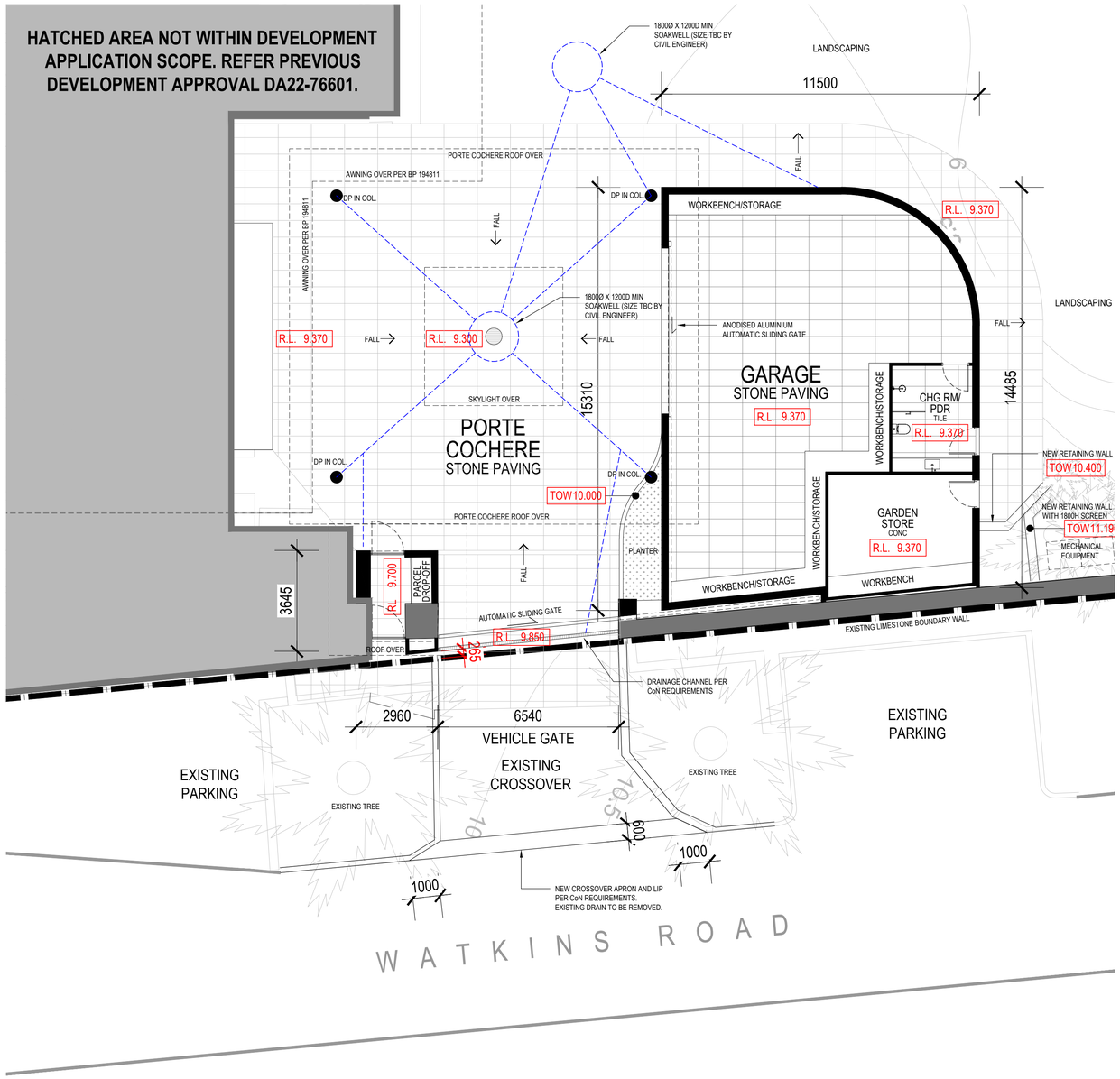

GROUND FLOOR PLAN - ITEM 3
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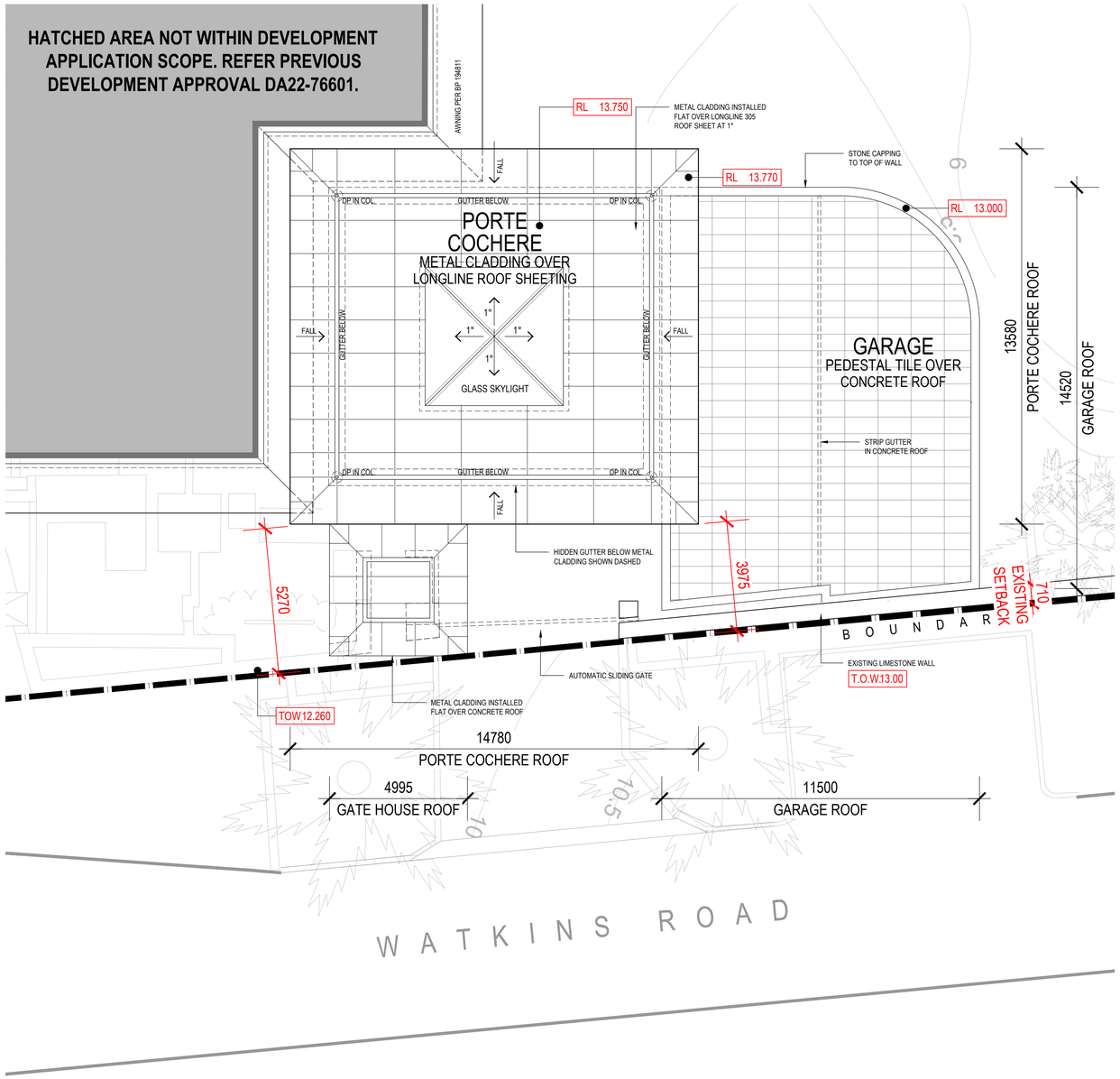

ROOF PLAN - ITEM 3
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PROJECT #
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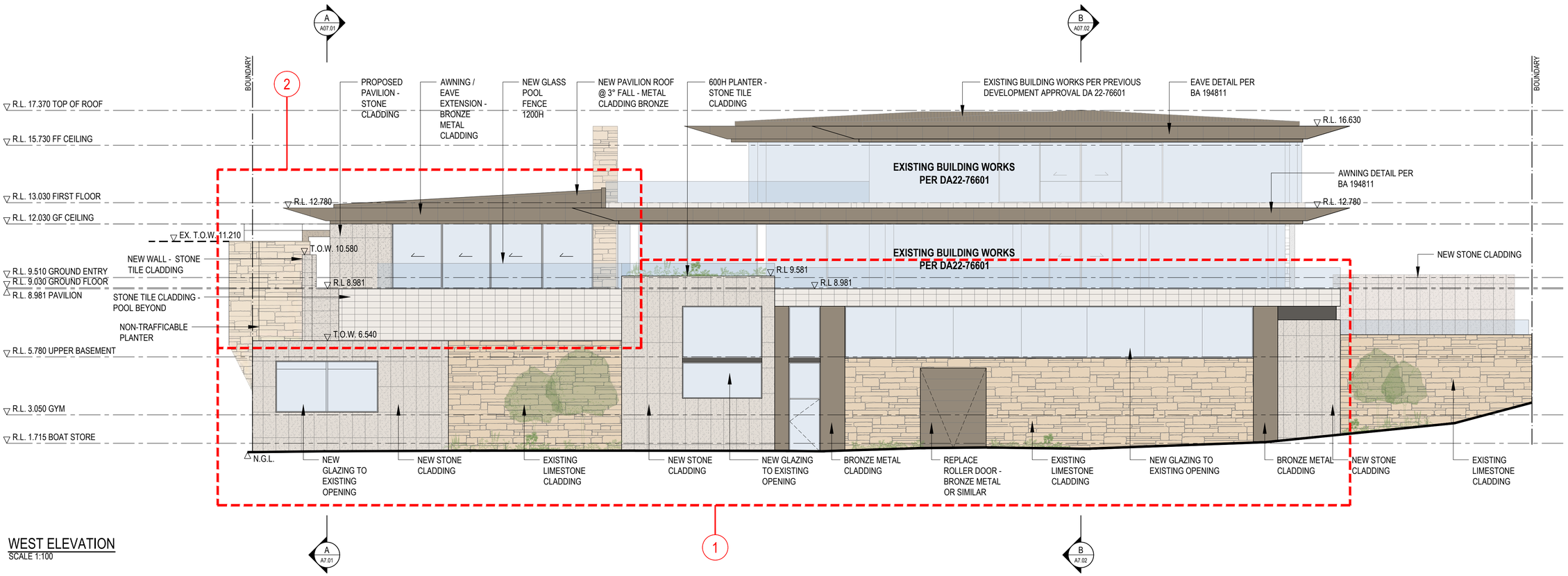

WEST ELEVATION
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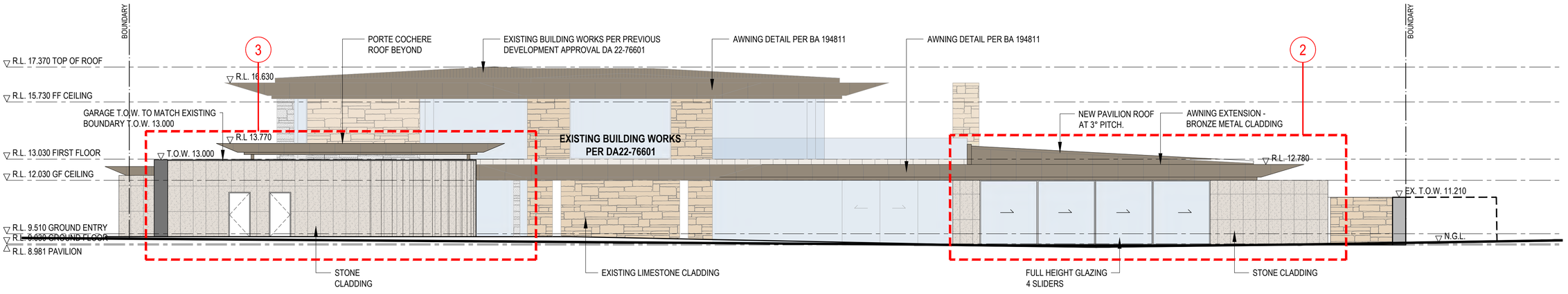

EAST ELEVATION
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SCALE
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PROJECT #
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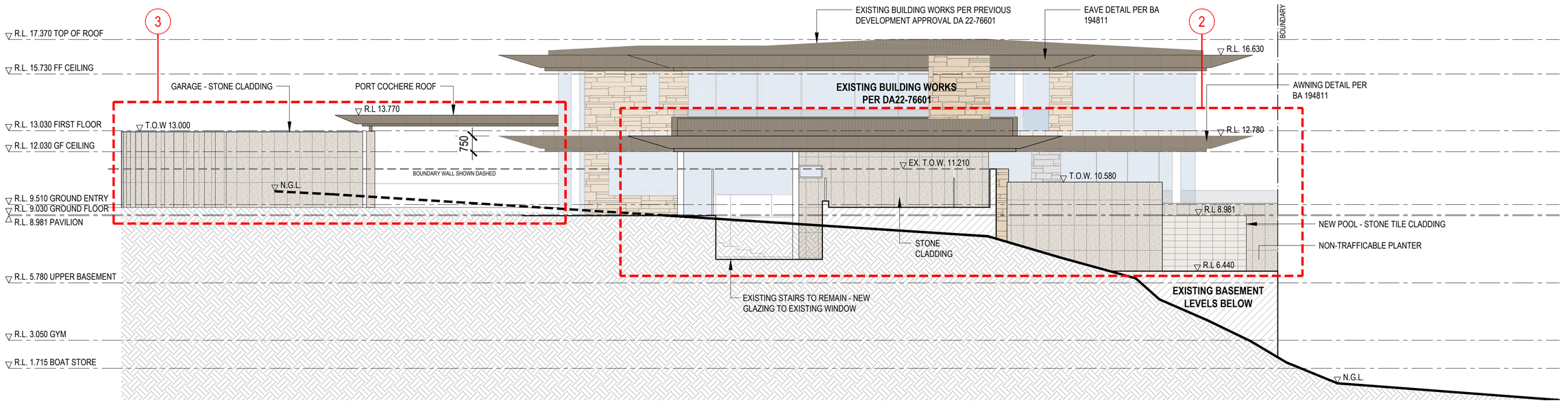

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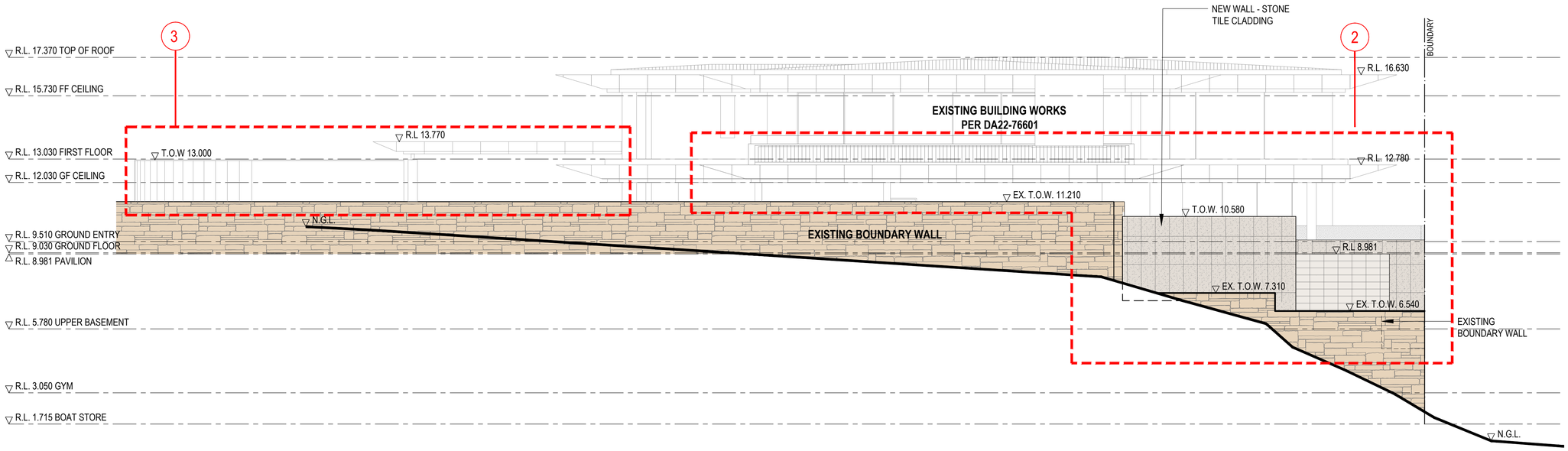

WATKINS ROAD ELEVATION
SCALE 1:100

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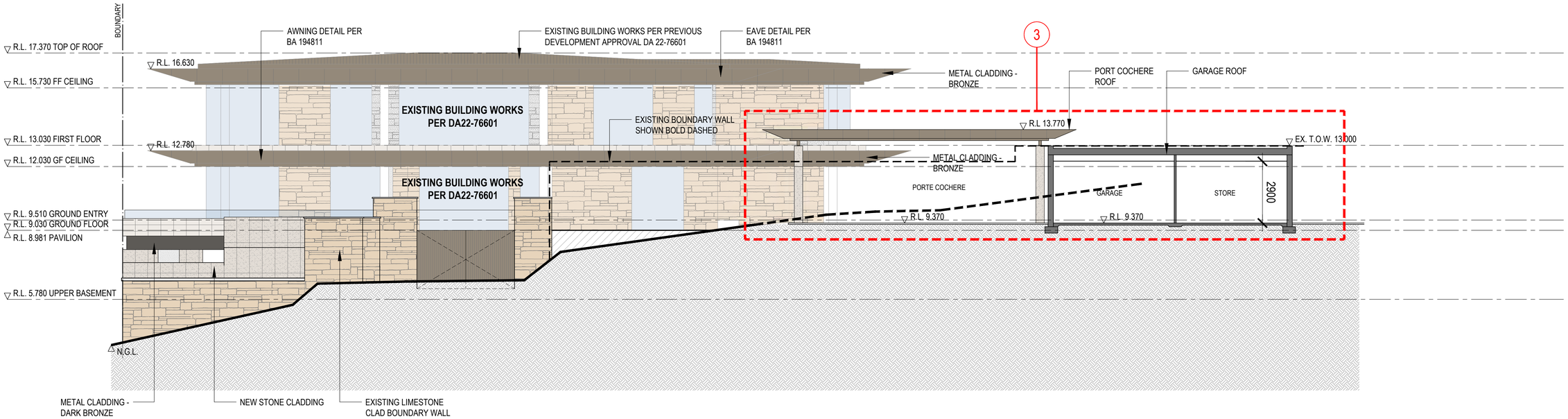

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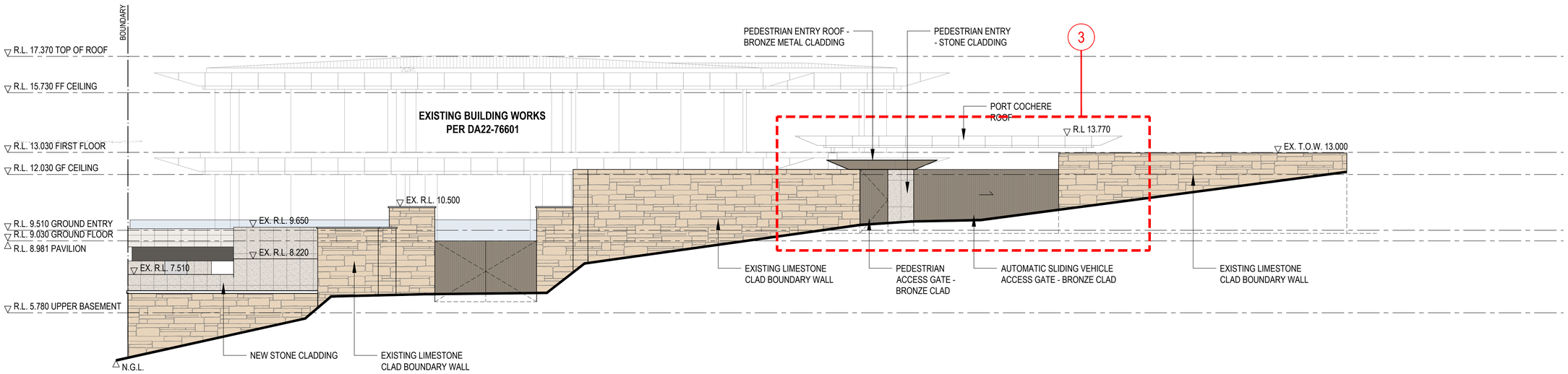

SOUTH BOUNDARY WALL ELEVATION
SCALE 1:100

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SCALE
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PERSPECTIVE 1
NTS

PERSPECTIVE 2
NTS

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NTS

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PROJECT #
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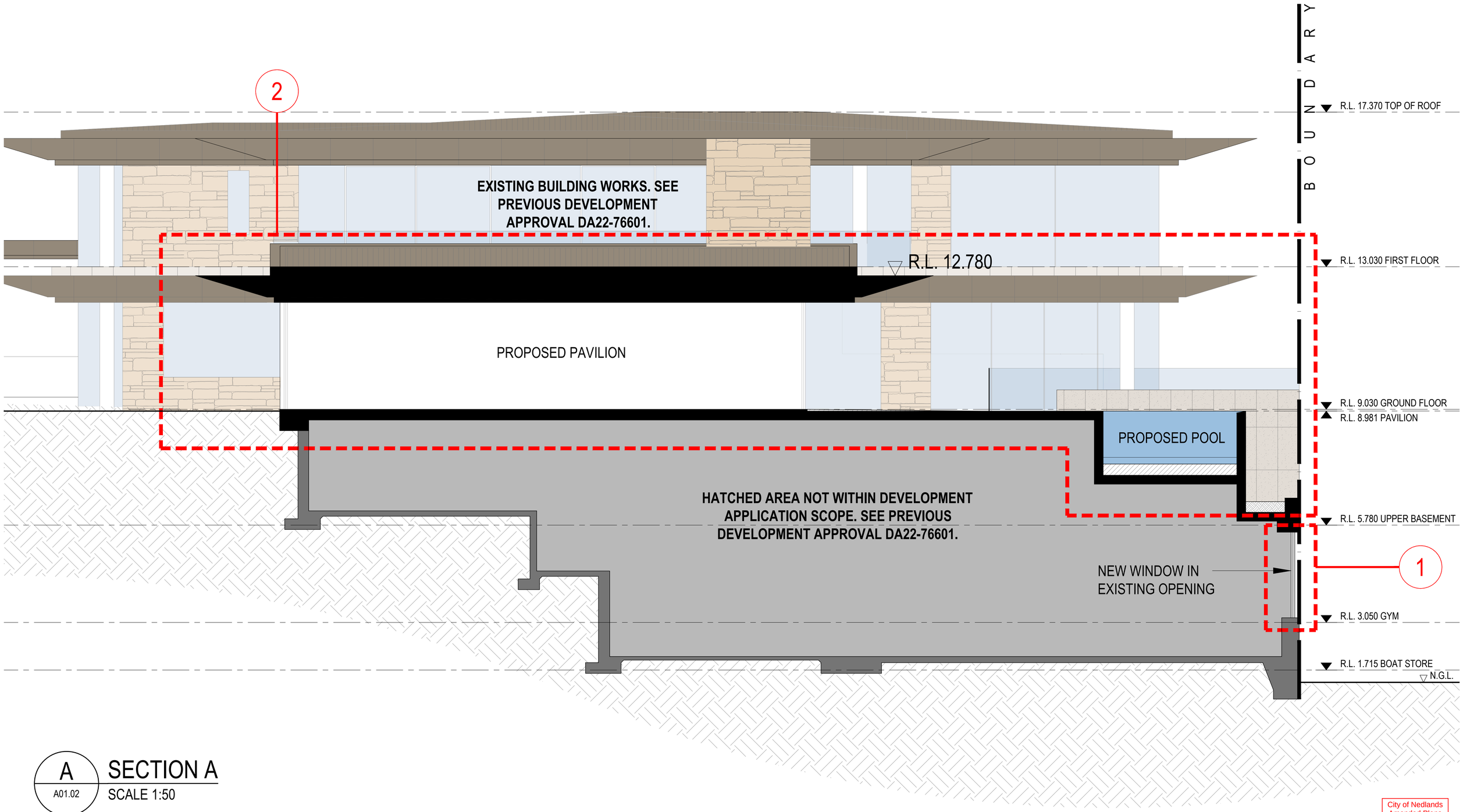

A
A01.02

SECTION A

SCALE 1:50

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PROJECT #
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DRAWING #
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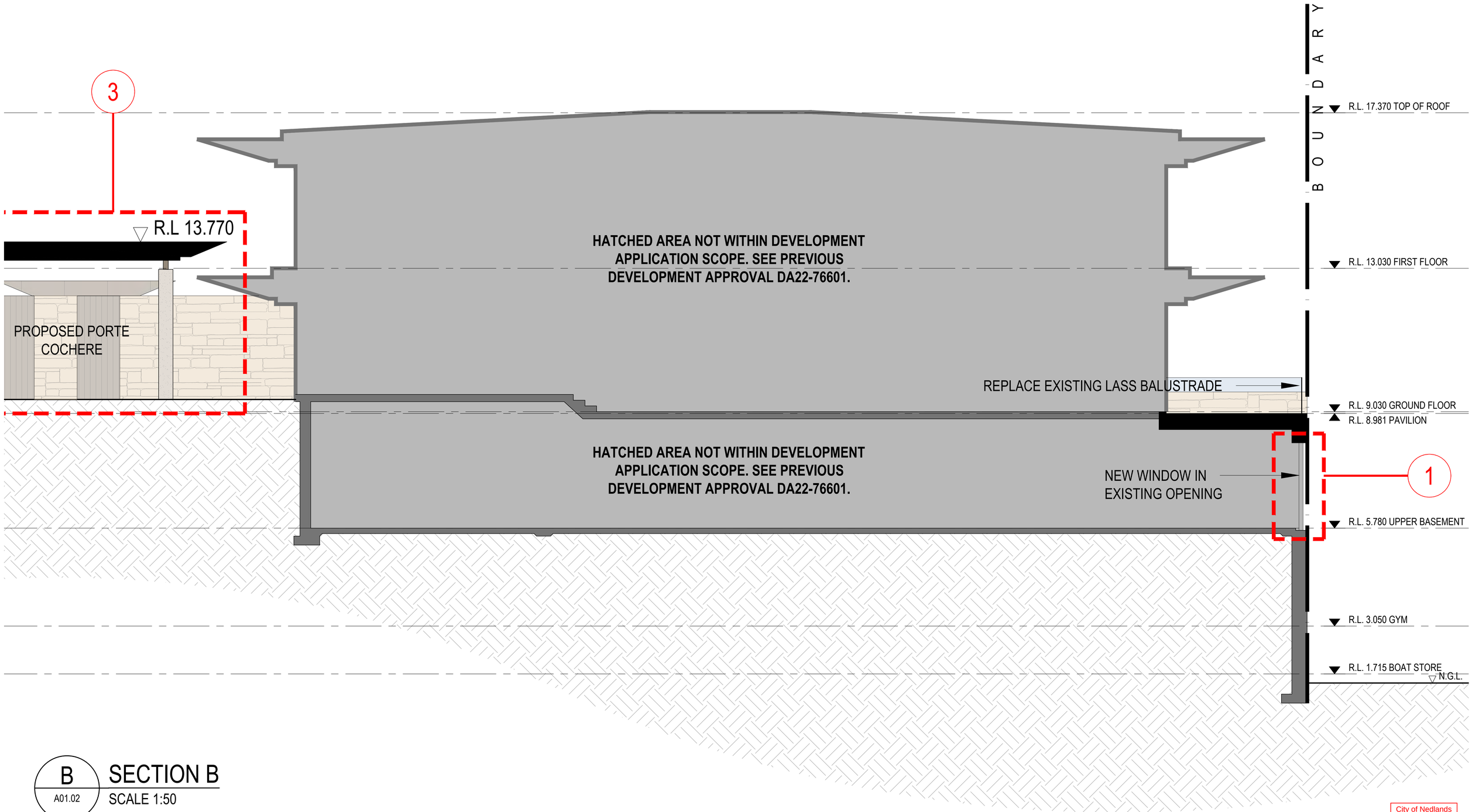

B
A01.02

SECTION B

SCALE 1:50

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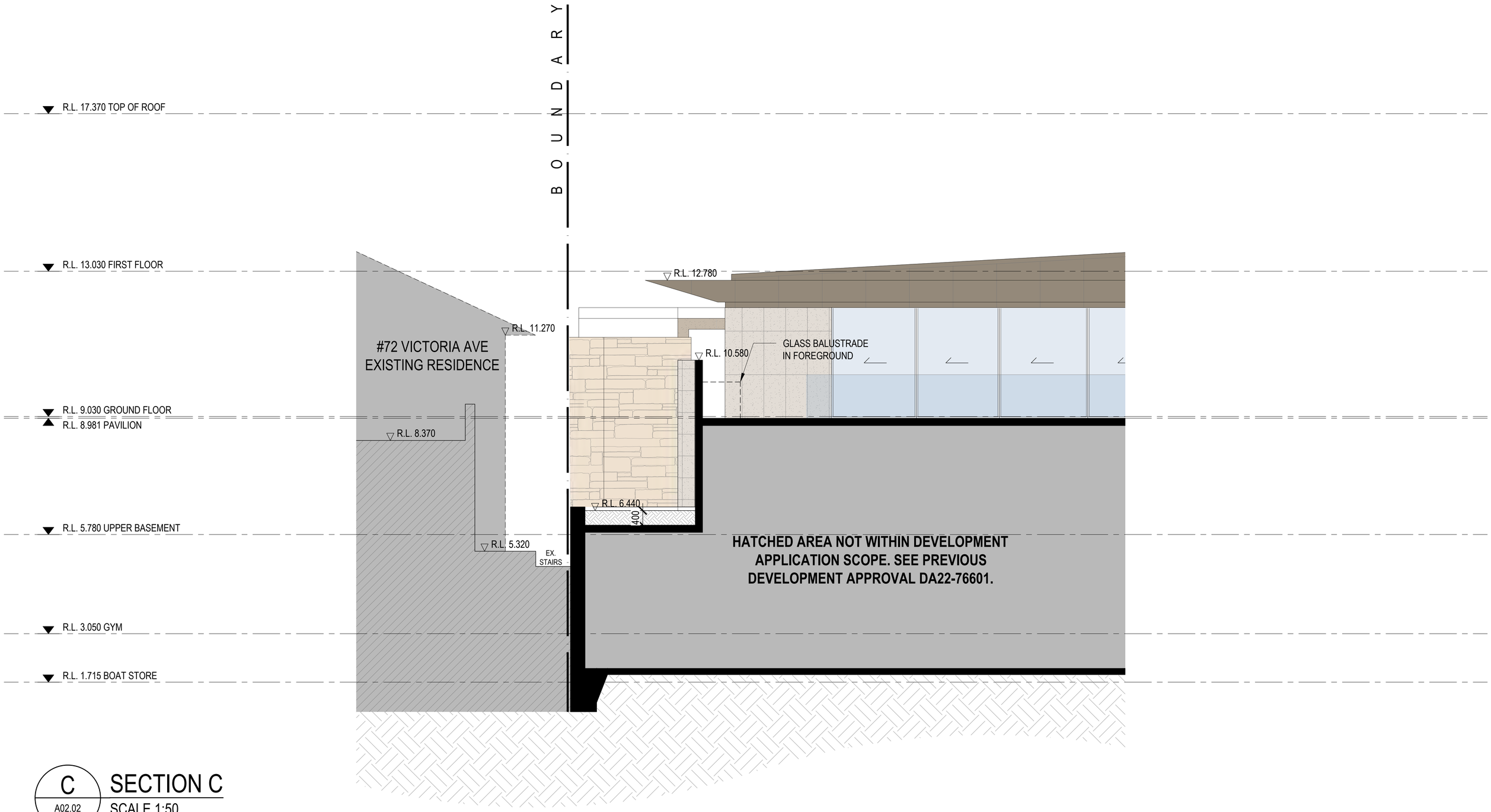

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SECTION C

SCALE 1:50

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tristanpeirce
LANDSCAPE | ARCHITECTURE

Drawing Name	Foreshore Planting
Drawing Number	0234-LS-601
Scale	1:200 @ A3
Project Address	89 WATKINS AVE, DALKEITH

NORTH

REVISION
B

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Plant List				
ID	**Qty**	**Common Name**	**Botanical Name**	**Scheduled Size**
Trees				
EM	3	Mottlecah	Eucalyptus macrocarpa	45Lt
Shrubs				
Afb	25	Flame Bush	Adenanthos cuneatus	140mm
Awb	41	Woolly bush	Adenanthos sericeus select	140mm
Can	15	Grey Cottonheads	Conostylis candicans	140mm
Lgl	50	Coast Sword Sedge	Lepidosperma gladiatum	140mm
Lsn	38	Silver Nugget	Leucaphyta brownii Dome	140mm
Poc	10	Native Iris	Patersonia occidentalis	140mm
Scr	69	Cushion Fan Flower	Scaevola crassifolia prostrate	140mm
Wf	56	Coastal Rosemary, coastal westring	Westringia fruticosa	140mm
Ground Covers				
Egp	11	Kalbarri Carpet	Eremophila glabra	140mm
Fn	15	Knobby club-rush	Ficinia nodosa	140mm
Ggg	17	Gin Gin Gem	Grevillea obtusifolia prostrate	140mm
Myp	24	Myoporum parvifolium Fine Leaf	Myoporum parvifolium	140mm
Climbers				
Hs	26	Snake Vine	Hibbertia scandens	140mm
Total	**400**			

City of Nedlands
Amended Plans
Received
24 April 2024

tristanpeirce
LANDSCAPE | ARCHITECTURE

Drawing Name	Planting Schedule
Drawing Number	0234-LS-602
Scale	1:200 @ A3
Project Address	89 WATKINS AVE, DALKEITH

NORTH

REVISION
B

16.4 PD34.05.24 Proposed naming of unnamed laneway north of Haldane Street, Mt Claremont

Meeting & Date	28 May 2024
Applicant	City of Nedlands
Employee Disclosure under section 5.70 Local Government Act 1995	The author, reviewers and authoriser of this report declare they have no financial or impartiality interest in this matter.
Report Author	Nathan Blumenthal – Acting Manager Urban Planning
Director	Roy Winslow – Acting Director Planning & Development

Purpose

The purpose of this report is for Council to consider endorsement of possible names for an unnamed laneway in Mt Claremont prior to community consultation.

Recommendation

That Council:

1. **Endorses the following names for the purpose of advertising for community input the naming the unnamed laneway north of Haldane Road and west of Rochdale Road, Mt Claremont:**
   a) **Boundary Lane**
   b) **Grevillia Lane**
   c) **Maleluca Lane**
   d) **Jacksonia Lane;**

2. **Refers the names to the adjoining landowners and wider community for a period of 30 days; and**

3. **Upon conclusion of the consultation period refers the two preferred names to the Geographical Names Committee for registration.**

Voting Requirement

Simple Majority.

Background

There is an unsealed laneway on the City's northern boundary with the Town of Cambridge in Mt Claremont which has remained unnamed. The lane is currently referred to as Nameless Lane. The laneway should be named to enable ease of locating it.

Discussion

The location of the laneway is illustrated in pink in Figure 1 below.

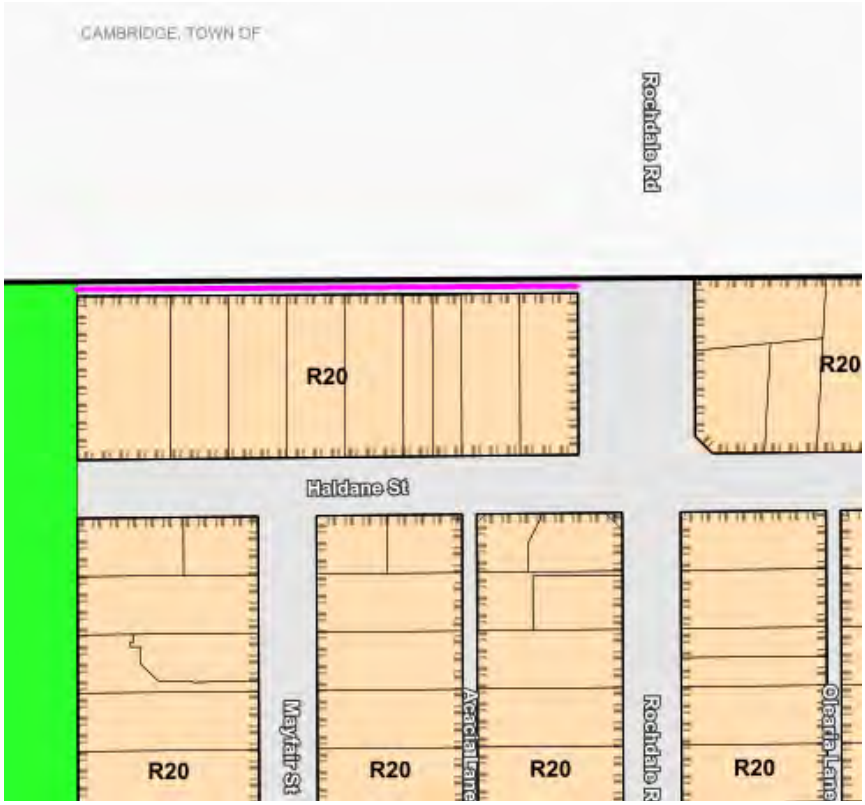

Figure 1: Location of the laneway

The Geographical Names Committee has confirmed the laneway remains unnamed and outlined the process which needs to be undertaken to have the laneway named.

As Council does not have a list of endorsed street names with which to select a name from, this report provides a number of possible names for Council to consider. Landgate suggests putting forward a preferred name, as well as a second option. It is recommended that Council endorse the name options below to present to adjoining landowners.

Consistent with Landgate policy, the names have been selected to avoid duplication of street names within the City or within 10km. The Naming Reserves, Parks, Roads, Public Facilities and Buildings Council Policy states that the naming of roads is guided by the Landgate publication 'Policies and Standards for Geographical Naming in

Western Australia' (Policies and Standards). The following names have been assessed against the criteria for naming roads in this document and Officers believe they are suitable for submission to Landgate. The Policies and Standards support the naming of laneways with the road type 'Lane'.

Boundary Lane

Through correspondence the City has received relating to this laneway, it has come to light that the laneway has been referred to as 'Boundary Lane' by residents in the vicinity.

Plant species

Laneways in Mt Claremont have been named after native plant species. For example, Acacia Lane, Olearia Lane and Clematis Lane. Officers have reviewed the Native Plant Inventory for the Mt Claremont Reserve and complied a list of three possible names.

- Grevillia Lane
- Jacksonia Lane
- Melaleuca Lane

Consultation

The Policies and Standards provide a framework for consultation with the community when proposing a road name. It is recommended the City consult with the immediate landowners and extended community. The following methods of consultation are recommended:

- A minimum 30-day consultation period
- Letters to notify owners and occupiers immediately adjacent to the laneway of proposed names and how to make a submission
- Notice in the local newspaper
- A notice on the City's Notice Board
- A notice on the City's Your Voice engagement portal
- Post on social media channels

The recommendation is for Council to endorse the four names and present to affected residents both within the City and those directly affected in the Town of Cambridge. Upon conclusion of the advertising period, the two preferred names will be referred to the Geographical Names Committee through a formal submission.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2023-33 vision and desired outcomes as follows:

Vision **Sustainable and responsible for a bright future**

Pillar **Place**
Outcome 8. A city that is easy to get around safely and sustainably.

Budget/Financial Implications

Expenses for this work relate to public advertising. No additional budget is required to complete this work.

Legislative and Policy Implications

The Geographic Names Committee is responsible for approving and registering place names in Western Australia. In selecting a name for the laneway, the City is guided by the Policies and Standards for Geographical Naming in Western Australia.

Decision Implications

If Council resolves to progress with the naming of the laneway, the endorsed names will be advertised in accordance with the process above. Upon conclusion of advertising the preferred names resulting from the consultation will be presented in the submission to Landgate.

If Council reserves not to progress with the recommendation the laneway will remain unnamed.

Conclusion

It is recommended that Council endorse naming of the laneway north of Haldane Street, Mt Claremont, including advertising to the community and referral to the Geographic Names Committee in accordance with City and Landgate policy.

Further Information

Nil.

16.5 PD35.05.24 Consent to Advertise Local Planning Policy 1.1 - Residential Development

Meeting & Date	Ordinary Council Meeting – 28 May 2024
Applicant	City of Nedlands
Employee Disclosure under section 5.70 Local Government Act 1995	Nil.
Report Author	Nathan Blumenthal – Acting Manager Urban Planning
Director	Roy Winslow – Acting Director Planning & Development
Attachments	1. Draft Local Planning Policy 1.1 – Residential Development 2. Change Notes 3. Current Adopted Local Planning Policy 1.1 – Residential Development

Purpose

The purpose of this report is for Council to consider adoption of the draft Local Planning Policy 1.1 Residential Development (the Policy), found at **Attachment 1**, for the purpose of advertising.

Recommendation

That Council adopts the draft Local Planning Policy 1.1: Residential Development (Attachment 1) for the purpose of advertising in accordance with Clause 4 of the Deemed Provisions of Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015.

Voting Requirement

Simple Majority.

Background

Local Planning Policy 1.1: Residential Development (the Policy) was reviewed and advertised in December 2022. However, various changes to the state planning framework over the course of 2023 and early 2024 have delayed the policy being presented back to Council and given Officers the opportunity to further enhance the Policy.

The gazettal of the Residential Design Codes Volume 1 on 10 April 2024 introduced a new set of provisions (Part C) to be used in the assessment of Single Houses R50 and above, Grouped Dwellings R30 and above and Multiple Dwellings R30 to R60.

The policy has been drafted to be compatible with Part C. In addition, a number of the provisions included in Part C have been viewed as innovative and an improvement on the previous Residential Design Codes Volume 1.

In Officers' experience, some medium density development in the City tends to be constructed with poor thermal performance and amenity, limited vegetation and excessive hardstand and roof cover.

The Policy seeks to implement some of the improvements in Part C to single dwellings coded R30 to R40 including private open space, size and layout of dwellings, solar access, ventilation, waste management and siteworks and retaining walls.

The policy review has resulted in amendments to a number of existing policy provisions as well as introducing new measures.

A summary of the amendments are as follows:

- Formatting and division of the policy into three major sections to make clear the application of each policy measure and to be consistent with the R-Codes Volume 1 and draft Local Planning Policy: Precincts;
- The addition of clause 6.2 with Deemed-to-Comply criteria and Design Principles for R30 to R40 Single Dwellings adopted from Part C;
- Additional Local Housing Objectives to ensure consistency in officer interpretation;
- Clarification regarding impervious surfaces, soft landscape and deep soil area;
- Removed definitions that are unused or covered by the R-Codes Volume 1 and included additional definitions;
- Additional figures relating to Clause 6.2 and policy measures not applicable in the St John's Wood Estate;

The amended Policy will apply to all development to which the R-Codes Volume 1 applies. Where there is any inconsistency with a Local Development Plan, Structure Plan, Precinct Plan or Local Planning Policy that applies to a specific site, precinct, area or density code, the provisions of that specific instrument shall prevail for the extent of the inconsistency. This ensures that the Residential Development Policy does not inhibit the planning of specialised areas such as infill areas, precinct areas, master planned estates or character areas.

In reviewing the Local Planning Policy, two resolutions from Council relating to the policy have been addressed in the review. The resolutions are as follows:

- On 23 November 2021, - "protection from overshadowing, of solar panels, windows to main living areas of adjoining dwellings and potential future solar panels."

- On 22 February 2022, - "Deemed-To-Comply Height Requirements as written in Table 3, Category B of Volume 1 of the R-Codes 2021, for Single and Grouped Dwellings."

The above resolutions have been considered and new Local Housing Objectives for the protection of outdoor living areas and solar collectors from overshadowing are proposed. However, adding or altering the Deemed-to-Comply criteria for this element would trigger the requirement for Western Australian Planning Commission (WAPC) approval. The City considers that it is unlikely that WAPC approval would be granted. Verbal communications with WAPC have indicated that support for these elements is unlikely.

Local Housing Objectives for the assessment of building heights are proposed to accompany the building height criteria of the existing policy. The existing building heights in the current policy are well established in the low-density suburbs of Swanbourne and Dalkeith. They are tailored to the Nedlands context with the heights allowing for dwellings to be built easier on land that slopes down to the river or the ocean. Reducing building heights would lead to inconsistent streetscapes.

Discussion

The draft Policy differs from the current adopted version (**Attachment 3**). The proposed changes are discussed in detail below.

Layout and Formatting of Policy

The revised Policy has been drafted to distinguish how each policy measure applies and make navigation easier. This has been done with the use of colour coding, a table format and inclusion of a schedule of amendments.

Building Height

A comparison between the existing building height criteria of the Policy and the R-Codes Volume 1 are shown in the below table:

Table 1: Policy versus R-Codes Vol 1 heights

Element	R-Codes Volume 1 Height	Existing Policy Height
Wall height (roof above)	7m	8.5m
Wall height (gable, skillion and concealed roof)	8m	8.5m
Roof height	10m	10m

Should Council adopt the height settings of the R-Codes Volume 1, it would reduce the Deemed-to-Comply wall heights across the City. It is recommended that the height settings of the existing policy remain. Further to this:

- The City of Nedlands height controls were originally enshrined in Council's former Town Planning Scheme No. 2. Dwellings have been developed to this greater Deemed-to-Comply allowance for several decades, with the design response well enshrined throughout the City.

- The areas of Swanbourne and Dalkeith tend to have larger houses, owing to the steep slope of the natural ground level of the sites (particularly near the river and the ocean) and the general expectations of residents. Reducing the current Deemed-to-Comply heights to meet the R-Codes would disadvantage newer houses and additions to existing houses compared to any immediate neighbours. The Deemed-to-Comply height reduction would also impact any house on a lot with steeply sloping ground level, particularly those near the Swan River and the ocean. Any reduction in the current height criteria is likely to result in more houses seeking a Design Principles assessment.

- The City of Nedlands traditionally has higher quality development with better amenity than the R-Codes allows. A key measure of indoor liveability is floor to ceiling heights. Larger floor to ceiling heights make house interiors seem more spacious, and allow for better sunlight access and ventilation through the use of larger windows. Retaining the increased building heights will continue to encourage high quality housing.

- The Policy seeks to introduce a Local Housing Objective for solar access on adjoining sites. This will reduce the effect that building height has on existing solar collectors and outdoor living areas on neighbouring properties.

Given the longstanding nature of the height controls in place in Nedlands, their general acceptance by the community, and the improved internal amenity outcomes, removal of the local planning policy height provisions is not recommended.

Solar Access for Adjoining Sites

A new Local Housing Objective is proposed to encourage protection of existing solar collectors and outdoor living area on adjoining lots.

Guidance has been adopted from the State of Victoria Planning Practice Note 88 to assist in the assessment of whether the location of solar panels is reasonable and appropriate for purposes of a Design Principles assessment. For instance, consideration can be given to whether the panels are located high on the roof, whether the adjoining building is set back appropriately, etc. During drafting of the policy, it was found that some of the considerations given can be applied to protecting existing outdoor living areas too. The Local Housing Objectives have been adapted to include these protections. Importantly, these considerations can only be used where a house does not meet the Deemed-to-Comply criteria for overshadowing. Attempting to make this mandatory would require WAPC approval, which is unlikely to be forthcoming.

Interpretation of R-Codes Definitions

The R-Codes Volume 1 contains a definition for ‘soft landscape’. There are related terms such as ‘deep soil area’, and ‘impervious surfaces’ which rely on the definition of ‘soft landscape’. The ‘soft landscape’ definition states that turf is included in the definition, however this can create confusion as turf is a broad term and can include traditional lawns but also artificial turf and turf cell which can occasionally be impermeable and strays from the purpose of soft landscaping and deep soil area which is for vegetation and natural areas.

Officers have drafted Clause 8.1 to provide clarification by stating that artificial turf and turf-cell are considered to be included in impervious areas/surface and materials so therefore do not contribute to soft landscape.

Additional Deemed-to-Comply Criteria and Design Principles for Single Houses on Land Coded R30-R40

The release of the Medium Density Code in early 2023 proposed to radically change the assessment of medium density dwellings. The considerations of the Medium Density Code required that development be more site responsive, include better open space and tree coverage and improve the sustainability and internal amenity of dwellings.

The deferral of the Medium Density Code in August 2023 to review elements of the policy and remove applicability of the policy from single houses below R50 meant that the benefits of the code were unlikely to be as far reaching within the City of Nedlands. The criteria were considered to increase the cost of delivering housing and would have been a burden towards development in WA's low- and medium-income areas. Officers considered that the proposed policy did offer many benefits to medium density housing development.

It is proposed that elements of the Medium Density Code should be introduced into the draft Policy for single houses R30 to R40 where the City can adopt them free of WAPC approval.

The following elements have been added to the draft Policy:

- Private Open Space
  - Although the R-Codes Volume1 requires open space in any residential development, there is a lack of criteria about how that space is laid out. The private open space element includes requirements such as minimum dimensions, maximum permanent cover, and tree planting requirements which ensure open space is usable and that there is a balance of shade, solar access and provision of tree canopy.

- Size and Layout of Dwellings (excluding storage)
  - The element specifies ceiling heights, maximum depth of primary living space vs ceiling height, minimum internal floor area, a mix of dwelling sizes in large developments and protection of internal amenity.

- Solar Access and Natural Ventilation
  - This element ensures that each habitable room in a dwelling has sufficient daylight and natural ventilation, and the dwellings are responsive to the warm temperate climate.

- Waste Management
  - This element requires provision of waste facilities, screening of bins and protection of the streetscape, major openings and primary garden areas from the amenity impacts of waste storage.

- Site Works and Retaining Walls
  - This element requires that any excavation, fill and retaining is done with respect to the site's natural ground level, the amenity of adjoining properties and can respond to the drainage requirements of the land and need for natural light.

Deleted or Modified Clauses

The review of the policy has not only included new requirements that improve the quality of development in the City but has also sought to remove clauses that are not necessary and add complexity. The policy also modifies some existing clauses. **Attachment 2** provides detailed notes on how policy measures in the current adopted policy have been changed. The following policy measures have been deleted or modified:

- Lot boundary setback
  - Clause 4.4.1 C3.1vii of the existing policy regarding the assessment of swimming pool fences and pool pump screens behind the street setback line has been deleted. The treatment of this scenario will be included in an internal Statutory Planning Practice document to ensure consistent assessment and thus is no longer required in policy.
- Street Setback
  - The draft Policy proposes to modify the provisions relating to street setback of minor incursions to allow for flexibility of building positioning without impacting on soft landscaping.
- Dividing Fences
  - The dividing fences section of the policy and definitions relating to dividing fences have been removed from the policy as they were advice only and held no statutory weight.
- Building Heights
  - Two footnotes regarding the measurement of external walls for gable walls, and roof ridges, have been removed to maintain consistency with the current R-Codes Volume 1.
- Street Walls and Fences
  - Clause 4.6.1 C4.1ii has been removed as passive surveillance to the street is already maintained under clause 5.2.3 C3.1 of the R-Codes.
- Laneway Widening Provision
  - The provision in the current Policy to increase lot boundary setbacks to accommodate future laneway widening has been found to be unenforceable without WAPC approval as it varies Clause 5.1.3 Lot Boundary Setbacks in the R-Codes. It is recommended that consideration of future laneway widening should form part of the assessment of any varied lot boundary setbacks. The consideration of laneway widening has been moved to Clause 7 and is to be used as a Local Housing Objective rather than Deemed-to-Comply criteria.

Revocation of Existing Policy at Adoption

Officers are of the opinion that the draft Policy is different enough from the current adopted Policy to warrant treatment as a new policy. Amending policies should

generally result in few changes and where such changes exist, they should apply to existing clauses or include small additions and deletions.

As the draft Policy proposes multiple additions, deletions and reorders the policy provisions, it warrants treatment as a new Policy. Officers have proposed that upon conclusion of advertising, the existing adopted Policy be revoked, and the draft Policy be adopted in its place.

Officers recommend the draft Policy retains the name of the existing adopted Policy as this accurately describes the Policy's application.

Consultation

Although advertising of an amended policy took place in December 2022, the Policy has changed significantly with some proposed clauses being removed, others added and various changes in the state and local planning framework over the course of 2023. No advertising has taken place for the current version of the draft Policy.

It is recommended that Council adopt the policy for the purpose of advertising.

If Council adopts the Policy for the purpose of advertising, it will be advertised in accordance with the City's Consultation of Planning Proposals Local Planning Policy.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2023-33 vision and desired outcomes as follows:

Vision	**Sustainable and responsible for a bright future**
Pillar	**Planet**
Outcome	5. Climate resilience.
Pillar	**Place**
Outcome	6. Sustainable population growth with responsible urban planning.

Budget/Financial Implications

Nil

Legislative and Policy Implications

Clause 4 of the Deemed Provisions of the Planning and Development (Local Planning Schemes) Regulations 2015 provides the procedure for preparation of a Local Planning Policy. Where a Local Planning Policy is advertised, the City must publish a

notice of the proposed policy for a period of not less than 21 days and seek submissions.
Following the advertising period, the Policy will be presented back to Council to consider any submissions received to:

a) Proceed with the Policy without modification;
b) Proceed with the Policy with modification; or
c) Not proceed with the Policy.

Decision Implications

If Council resolves to adopt the Policy for advertising, it will be advertised in accordance with the process outlined above.

If Council resolves to adopt the Policy for advertising with modifications, the policy will be amended to include the modifications and will be advertised to the public. If any modifications require approval of the Commission, they will be referred to the Commission for approval.

If Council resolves not to endorse the recommendation, the existing Policy will remain in use by the City.

Conclusion

The draft Local Planning Policy 1.1: Residential Development has been prepared to enhance and protect the existing Nedlands streetscape, improve the quality of dwellings and increase the quantity of vegetation on residential land. It is recommended that Council adopt the draft Local Planning Policy 1.1 – Residential Development for the purpose of advertising.

Further Information

Nil.

LOCAL PLANNING POLICY 1.1: RESIDENTIAL DEVELOPMENT

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1	**PURPOSE**
1.1	To provide guidance and supplementary requirements to Local Planning Scheme No. 3 (LPS 3) and the Residential Design Codes (R-Codes) Volume 1 in relation to single houses and grouped dwellings in all density codes; and multiple dwellings with an R-Code of R60 or less.
1.2	To ensure consistent assessment and decision making in the application of the LPS 3 and R-Codes Volume 1.
1.3	To ensure the context and character of the City of Nedlands is reflected in the built form and landscaping outcomes for residential development.
2	**APPLICATION OF POLICY**
2.1	This Policy applies to all development within the scheme area to which the R-Codes Volume 1 applies.

3 SCHEDULE OF AMENDMENTS TO THE R-CODES

3.1 This Policy augments or replaces Deemed-to-Comply requirements relating to existing design elements of the R-Codes Volume 1 as shown in Table 1 below. The Deemed-to-Comply columns of the following table are set out to first mention the existing clause of the R-Codes and then the Clause of the policy that replaces or augments that clause.

Table 1: R-Codes Volume 1 Elements that are varied or replaced by this Policy

Design Element	Additional Local Housing Objectives	Vol 1 Part B Deemed-to-Comply Requirement	Vol 1 Part C Deemed-to-Comply Requirement
Street setback	Clause 6.3.1	*See footnotes in Clause 6.1* Clause 5.1.2 C2.1 i to iv is replaced by Clause 6.1.1 a). Clause 5.1.2 C2.1 iii is replaced by Clause 6.1.1 b) Clause 5.1.2 C2.4 is replaced by Clause 6.1.1 c) Clause 5.1.2 is augmented by Clause 6.1.1 d) Clause 5.1.2 is augmented by Clause 6.1.1 e)	*See footnotes in Clause 6.1* Clause 3.6 is augmented by Clause 6.1.1 e)
Lot Boundary setback	Clause 6.3.2	-	-
Building height	Clause 6.3.3	Clause 5.1.6 C6 is replaced by Clause 6.1.2 a) Clause 5.1.6 is augmented by Clause 6.1.2 b)	-
Setback of garages and carports	Clause 6.3.8	*See footnotes in Clause 6.1* Clause 5.2.1 C1.1-C1.4 is replaced by Clause 6.1.3 a) Clause 5.2.1 is augmented by Clause 6.1.3 b)	-

Garage width	-	Clause 5.2.2 is augmented by Clause 6.1.4 a)	-
Street walls and fences	Clause 6.3.9	Clause 5.2.4 C4.1 is replaced by Clause 6.1.5 a) Clause 5.2.4 C4.2 is replaced by Clause 6.1.5 b) Clause 5.2.4 is augmented by Clause 6.1.5 d) Clause 5.2.4 is augmented by Clause 6.1.5 e) Clause 5.2.4 is augmented by Clause 6.1.5 f)	Clause 3.6 C3.6.7 is replaced by Clause 6.1.4 a) Clause 3.6 C3.6.8 is replaced by Clause 6.1.5 b) Clause 3.6 C3.6.9 is replaced by Clause 6.1.5 c) Clause 3.6 is augmented by Clause 6.1.5 d) Clause 3.6 is augmented by Clause 6.1.5 e) Clause 3.6 is augmented by Clause 6.1.5 f)
Sightlines	-	Clause 5.2.5 is augmented by Clause 6.1.6	-
Parking	Clause 6.3.5	-	-
Vehicular access	Clause 6.3.6	-	-
Solar access for adjoining sites	Clause 6.3.7	-	-
Site works and retaining walls	-	For Single Dwellings R30 to R40 (inclusive) Clause 5.3.7 is replaced by Clause 6.2.5	-

Note: *Not all Local Housing Objectives in this policy relate to modified or additional requirements of the R-Codes.*

3.2 This policy provides additional Deemed-to-Comply requirements and Design Principles relating to new design elements not included in the R-Codes Volume 1. Clause 6.2 of this policy, which only applies to Single Dwellings with an R-Code of R30 to R40 (inclusive), augments the existing elements of Part B with the exception of Clause 6.2.5 which replaces Clause 5.3.7 of Part B. Any replacement of Volume 1 or other policy provisions are noted where necessary.

4 RELATIONSHIP TO OTHER POLICIES AND LEGISLATION

4.1 This Policy has been prepared in accordance with Clause 4 of the Deemed Provisions of Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015.

4.2 This Policy should be read in conjunction with the following planning instruments, and its requirements apply unless specifically stipulated elsewhere in any of the below:

- *Planning and Development Act 2005*
- *Planning and Development (Local Planning Schemes) Regulations 2015*
- *Residential Design Codes Volume 1*
- *City of Nedlands Local Planning Scheme No. 3*
- *City of Nedlands Local Planning Policy 5.10 Precincts*
- *City of Nedlands Local Planning Policy 1.3 Sustainable Design – Residential*
- *City of Nedlands Local Planning Policy 3.3 Tree Retention*

4.3 Where this Policy is inconsistent with a Local Development Plan, Structure Plan, Precinct Plan or Local Planning Policy that applies to a specific site, precinct, area or R-Code, the provisions of that specific instrument shall prevail for the extent of the inconsistency.

5 OBJECTIVES

5.1 To maintain the spacious, leafy green character and enhance the amenity and aesthetics of the City of Nedlands.

5.2 To ensure development does not detrimentally impact the amenity of adjoining properties or the streetscape.

5.3 To provide for residential development that is consistent with the established or desired future character.

5.4 To reduce the dominance (scale, mass and bulk) of buildings as viewed from the street.

5.5 To facilitate quality residential development that provides occupants with high amenity and liveable housing for an enhanced quality of life.

6 AMENDMENTS TO THE RESIDENTIAL DESIGN CODES VOLUME 1 AND LOCAL HOUSING OBJECTIVES

The following provisions in Clauses 6.1 and 6.2 below replace and/or augment the R-Codes. Clause 6.1 applies to all development assessed under Volume 1 of the R-Codes unless a specific R-Code or other situation is identified. Clause 6.2 only applies to Single Dwellings assessed under Volume 1 of the R-Codes coded R30 to R40 (inclusive). The Local Housing Objectives in Clause 6.3 provide guidance in the judgement of merit for all developments subject to the R-Codes Volume 1 that do not meet the Deemed-to-Comply criteria.

Development Applications that do not meet the Deemed-to-Comply criteria will be assessed against the relevant Design Principles of the R-Codes, objectives of the scheme, provisions and objectives of this policy, the Local Housing Objectives in Clause 6.3 and the Design Principles of this policy (Clause 6.2) where applicable.

6.1 Deemed-to-Comply Provisions

The following Deemed-to-Comply provisions replace or augment the Deemed-to-Comply provisions of the R-Codes Volume 1. Each subclause specifies where it replaces or augments a clause of the R-Codes including which Part it applies to. Where a subclause does not specify its application, it is additional to the R-Codes and applies to both parts of the R-Codes.

Table 1 provides further clarity regarding what clauses of the R-Codes are replaced or augmented.

Clause	Subclause
6.1.1 Street Setback	**a)** In relation to land coded R10, R12.5 and R15, other than lots identified in Figure 14 - St John's Wood, Clause 5.1.2 C2.1 i to iv of Part B is replaced by the following: Buildings are to be set back a minimum of 9m.[1, 2] **b)** In relation to land coded R20 and above, Clause 5.1.2 C2.1 iii of Part B is replaced by the following: The minimum primary street setback may be reduced by up to 50%, provided the area of any building (including a garage or unenclosed balcony) encroaching into the setback area is compensated for by at least an equal area of open space (of which 50% is provided as deep soil area) that is located between the setback area and a line drawn parallel to it at twice the setback distance. Common property access legs do not contribute towards compensating open space.[2]

	c) Clause 5.1.2 C2.4 of Part B is replaced by the following: A projection such as a porch, balcony, verandah, architectural feature or the equivalent may project not more than 1m into the street setback area without applying the compensating area in Clause 5.1.2 C2.1 iii of Part B as modified by this policy in Clause 6.1.1 b) above.[2] **d)** Clause 5.1.2 of Part B has the following additional subclause: For lots with a density code of R20 or greater, projections greater than 1m may project into the street setback area provided an equivalent open space area behind the street setback is provided under Clause 5.1.2 C2.1iii of Part B as modified by this policy. **e)** Subject to Sightline criteria (Clause 5.2.5 of Part B as modified by this policy or Clause 3.6 of Part C), gatehouses are permitted within primary and secondary street setback areas to a maximum building height of 3.5m, maximum width of 2m and total area of 4m^2, as measured from the street and outside of the posts (refer to Figure 2 in Appendix).
6.1.2 Building Height	**a)** Clause 5.1.6 C6 of Part B is replaced with the following: Buildings which comply with the following heights[2]: **Table 2: Building Height** **Element** / **Height above natural ground level** **Wall height (gable, skillion and concealed roof)** / 8.5m **Roof height** / 10m **Wall height (roof above)** / 8.5m **b)** Clause 5.1.6 of Part B has the following additional subclause: Architectural features and building projections (such as, but not limited to, lift shafts and feature walls) are permitted to project above the external wall height to a maximum height of 10m provided the feature does not exceed 3m in width.
6.1.3 Setback of Garages and Carports	**a)** In relation to land coded R10, R12.5 and R15, other than lots identified in Figure 14 – St John's Wood, Clause 5.2.1 C1.1-C1.4 of Part B is replaced with the following: Garages and carports set back 9m from the primary street and 1.5m from the secondary street.[1, 2]

b) On land coded R10, R12.5 and R15, other than lots identified in Figure 14 – St John's Wood, Clause 5.2.1 of Part B has the following additional subclause: Unenclosed carports may be setback forward of the 9m primary setback line provided that the following is met:

i. the width of the carport does not exceed 50 percent of the lot frontage;
ii. the carport allows an unobstructed view between the dwelling and the street, right-of-way or equivalent;
iii. the carport is set back a minimum of 3.5m from the primary street;
iv. the carport is not greater than 36m^2 in floor area as measured from the outside of the posts;
v. the carport meets the Deemed-to-Comply provisions for lot boundary setbacks under the R-Codes as modified by this Policy; and
vi. the carport meets the provisions of Table 3: Maximum carport height below.

Table 3: Maximum carport height

Carport type	Wall height	Building height
Pitched Roof	3.0m	4.5m
Flat or Skillion Roof	N/A	3.5m

6.1.4 Garage Width

a) Clause 5.2.2 of Part B has the following additional subclause: For lots with a frontage of less than 10m and no access to a secondary street or a laneway 5m or greater in width, garage doors and supporting structures facing the primary street may be a maximum of 6m wide as viewed from the street provided:

i. the upper floor or balcony extends for more than half the width of the garage and supporting structures;
ii. the entrance to the dwelling is clearly visible from the primary street; and
iii. the garage is set back from the street at least 1m more than the main wall of the ground or first floor of the dwelling (excluding a patio, verandah, balcony or similar).

6.1.5 Street Walls and Fences	**b)** Clause 5.2.4 C4.1 of Part B and Clause 3.6 C3.6.7 of Part C is replaced by the following: Fencing within front setback areas is permitted to be a maximum of 1.2m solid and visually permeable infill above to a maximum height of 1.8m, measured from natural ground level on the street side of the fence. Compliance with policy measures and R-Codes requirements regarding sightlines is required.[2] **c)** Clause 5.2.4 C4.2 of Part B and Clause 3.6 C3.6.8 of Part C are replaced by the following: Solid pillars that form part of front fences not more than 2.1m above natural ground level provided the horizontal dimension of the pillars is not greater than 500mm by 500mm and pillars are separated by visually permeable fencing in line with Clause 6.1.5 a) above.[2] **d)** Clause 3.6 C3.6.9 of Part C is replaced by the following: For sites on street corners, street fences or walls within the secondary street setback area are to be designed in accordance with Clause 6.1.5 a) and b) for a minimum 50 per cent of the street boundary behind the primary street setback (refer to Figure 3.6d in Part C of the R-Codes)[2]. **e)** For the purposes of housing a utility/meter box, solid fencing within the primary setback area may be: • a maximum 1.2m in width; • a maximum 1.8m in height; • perpendicular to the street; and • integrated with the design of the front fence. **f)** Fencing within the primary street setback area shall be constructed of brick, stone, concrete, timber, wrought iron, tubular steel or glass. **g)** Fencing to secondary streets, laneways and boundaries to reserves shall be a maximum of 1.8m in height above natural ground level, measured from the secondary street, laneway or reserve side of the fence except where Clause 6.1.5 c) above applies.
6.1.6 Sightlines	**a)** Clause 5.2.5 of Part B has the following additional subclause: The following obstructions are permitted within the 1.5m truncation area stipulated under Clause 5.2.5 C5 of Part B: i. one pier with a maximum length and width of 0.5m; and/or

	ii. Solid fencing up to 0.75m in height with visually permeable in-fill fencing to a maximum of 1.8m in height, both measured from natural ground level on the vehicle access side.

Footnotes:

[1] The provisions for averaging and reductions of the R-Codes Part B (Clause 5.1.2 C2.1 i – iv, and Clause 5.2.1 C1.1 – C1.4 of Part B of the R-Codes) do not apply to lots coded R10, R12.5 or R15 but continue to apply to lots identified in Figure 14 – St John's Wood.
[2] Replaces an R-Codes Deemed-to-Comply requirement.

6.2 Additional Deemed-to-Comply Provisions and Design Principles for Single Houses on land coded R30-R40

Clause 6.2 is presented in a two-column format. The Design Principles in the left-hand column and the Deemed-to-Comply provisions in the right-hand column.
The following Deemed-to-Comply requirements and Design Principles apply only to Single Houses on land coded R30-R40 (inclusive) where assessment of a Development Application is required. These are to be read as additional elements to Part B.

Clause	Design Principles Subclause	Deemed-to-Comply Subclause
6.2.1 Private Open Space	**P1.1** Dwellings are designed to have direct access to private open space which provides for entertaining, leisure and connection to the outdoors that is: i. of sufficient size and dimension to be functional and usable for the intended number of dwelling occupants; ii. is sited, oriented and designed for occupant amenity, including consideration of solar access and natural ventilation appropriate to the climatic region; and iii. capable of use in conjunction with a primary living space of the dwelling. **P1.2** Private open space allows for sufficient uncovered area to: i. permit winter sun and natural ventilation into the dwelling; and ii. provide for soft landscaping, including the planting of a tree(s) and deep soil area.	**Primary garden area** **C1.1** A single consolidated primary garden area provided behind the primary street setback, in accordance with Table 4. **C1.2** A minimum 1/3rd of the required minimum primary garden area is to be soft landscaping with a minimum dimension of 1m. **Table 4: Primary garden area requirements**

Site area (m²)	Minimum primary garden area (m² per dwelling)	Maximum permanent roof cover^	Minimum dimension*
Greater than 220	40	One-third of the primary garden area provided	3m
191-220	35		
161-190	30		
131-160	25	0m² (open to the sky)	
100-130	20		

	P1.3 Balconies balance the need for outlook, solar access and natural ventilation with: i. visual privacy considerations; ii. acoustic and noise impacts; and iii. local climatic considerations such as high winds.	*Site area rounded up to the nearest whole number.* *^ Permanent roof cover excludes eaves.* ** Minimum dimension refers to the minimum length and width of the primary garden area. Refer to Figure 5 in the Appendix for dimensions and calculations of primary garden areas.* **Private open space and balconies** **C1.3** Balconies are to be unscreened for at least 25% of the total perimeter of the balcony (refer to Figure 6 in Appendix). *Note: Provisions of element 5.4.1 of the Part B Visual Privacy apply.* **Table 5: Private open space requirements** **Dwelling size** / **Minimum private open space area** / **Minimum private open space dimension** **Studio / 1 bedroom** / 8m² / 2m **2 bedrooms** / 10m² / 2.4m **3 or more bedrooms** / 12m² / 2.4m **Ground floor dwelling** / 15m² / 3m
6.2.2 Size and Layout of Dwellings	**P2.1** Dwellings have a primary living space that: i. is proportionate to the type and size of the dwelling and intended number of occupants; **ii.** has a physical and visual relationship with the primary garden area, private open space and/or public open space; and	**Primary living space** **C2.1** Each dwelling is to have one room that is the designated primary living space and can accommodate a dimension of at least 3.8m x 3.8m[1] (refer to Figure 7 in Appendix). *[1] Exclusive of built-in cabinetry along walls.*

	iii. incorporates environmental Design Principles, including passive solar design and appropriate daylighting and shading, appropriate for the climate. **P2.2** Ceiling heights and room dimensions provide for well-proportioned spaces that facilitate good natural ventilation and daylighting. **P2.3** The size and layout of dwellings: i. is functional and flexibly accommodates furniture; ii. is appropriate to the intended number of occupants; and iii. ensures functional, high amenity spaces. **P2.4** Each dwelling provides adequate, conveniently located storage for large items that are: i. proportionate to the size of the dwelling and intended number of occupants; and ii. integrated into the design of the building and/or screened from view to ensure that it is not visually intrusive when viewed from the street. **P2.5** The siting and layout of dwellings minimises potential impacts on amenity and provide appropriate visual and acoustic privacy to habitable rooms by: i. locating, orienting or setting back habitable rooms; ii. providing adequate landscape screening as a buffer; and/or iii. providing acoustic treatments to reduce noise transfer.	**C2.2** For single houses: i. where the primary living space is provided on the ground floor, it is to have direct physical and visual access to the primary garden area; or ii. Where the primary living space is provided on an upper floor, it is to have direct physical and visual access to a private open space (such as a balcony or rooftop terrace) in accordance with Table 5 above. **C2.3** The maximum depth[1] of a single aspect primary living space shall be a maximum three times (3x) the ceiling height (refer to Figure 8in Appendix). [1] *Exclusive of built in cabinetry along walls.* ***Note:*** *Additional livings spaces (such as a second lounge room) are not subject to the requirements of C2.1. – C2.3* **Habitable rooms** **C2.4** Bedrooms have a minimum internal floor area of 9m^2 and can accommodate a minimum dimension of 2.7m x 2.7m (refer to Figure 9 in Appendix). ***Note:*** *Minimum area is inclusive of built-in robes and cabinetry, however the minimum dimension excludes built-in robes and cabinetry.*

6.2.3 Solar Access and Natural Ventilation	**P3.1** The development is sited, oriented and designed to optimise winter solar gain whilst limiting summer sunlight into: i. the primary living space and habitable rooms; and ii. private open spaces, including the primary garden area; iii. while balancing site constraints, outlook and views of significance. **P3.2** Windows to habitable rooms are designed and positioned to optimize daylight, natural ventilation and outlook, while maintaining a reasonable level of visual privacy. **P3.3** Dwellings optimize natural ventilation to habitable rooms (and bathrooms where possible) that is responsive to the site and climate conditions.	**Windows and openings** **C3.1** Every habitable room has a minimum of one openable external window: i. visible from all parts of the room; ii. with an aggregate glazed area not less than 10 per cent of the habitable room internal floor area; and iii. comprising a minimum of 50 per cent of transparent glazing. ***Note:*** *Element 5.4.1 of Part B Visual privacy provisions may still apply.* **C3.2** Where a courtyard is the only source of daylight to a habitable room, the courtyard must be uncovered and open to the sky[1] with a: i. minimum dimension of 0.5 times the wall height; and ii. minimum area of $4m^2$ (refer to Figure 10 in Appendix). [1] *Excludes minor projections* **C3.3** Bathrooms located on external walls (excluding boundary walls) must have a minimum of one openable window for natural ventilation. **Orientation of major openings** **C3.4** A major opening to the primary living space is oriented between north-west and east in accordance with Figure 11 (in Appendix) with an adjoining uncovered open area with: i. a minimum dimension 3m x 3m[1] in accordance with Figure 12 (in Appendix); and ii. the exception of shading devices up to 2m depth.

		[1] The centre line of the minimum 3m x 3m area must be contained within the glazed area of the major opening (refer to Figure 13 in Appendix).
6.2.4 Waste Management	**P4.1** Sufficient space for waste storage is provided that: i. is convenient for residents; ii. has collection areas which can be accessed by service vehicles; and iii. can be secured and managed where required. **P4.2** Waste management facilities are located and screened to minimise negative impacts on the streetscape, building entries, major openings, and the local amenity.	**C4.1** A dedicated and accessible space is provided to accommodate the required number and type of waste storage bins for the development, in line with requirements of the City. **C4.2** Waste storage bins are screened from view from the street, public open space, and other areas accessible to the public.
6.2.5 Site Works and Retaining Walls	**The below Design Principles are unchanged from the R-Codes Volume 1 Part B and are reproduced here for ease of reference.** **Clause 5.3.7 of Part B Design Principles states:** ***"P7.1*** *Development that considers and responds to the natural features of the site and requires minimal excavation/fill.* ***P7.2*** *Where excavation/fill is necessary, all finished levels respecting the natural ground level at the lot boundary of the site and as viewed from the street.*	**The existing Deemed-to-Comply criteria of Clause. 5.3.7 C7.1-C7.3 of the R-Codes are replaced with the following:** **C5.1** Retaining walls, fill and excavation forward of the street setback line, not more than 0.5m above or below the natural ground level, except where necessary to provide for pedestrian universal access and/or vehicle access, drainage works, or natural light to a dwelling. **C5.2** Retaining walls and fill within the site and behind the street setback to comply with Table 6.

	P7.3 *Retaining walls that result in land which can be effectively used for the benefit of residents, do not detrimentally affect adjoining properties and are designed, engineered and landscaped having due regard to [the provisions of the R-Codes Part B element 5.4.1 Visual privacy].”*	**C5.3** Excavation within the site is permitted behind the street setback line and may be constructed up to the lot boundary. ***Note:*** *NCC and engineering requirements may apply.*

Table 6: Setback of retaining walls and fill

Height of retaining walls and fill[1] As measured from natural ground level	**Setback required**
1m or less	0m
1.5m	1.5m
2m	2m
2.5m	2.5m
3m +	3m

[1] *Take the nearest higher value for all height calculations. Measurement of the height of site works or retaining walls for the purpose of calculating Table 6 setback is to be taken from the natural ground level at the lot boundary adjacent to that point of the site works or retaining wall.*
The relevant R-Codes Part B provisions of 5.4.2 Solar access for adjoining sites and 5.4.1 Visual privacy apply.

6.3 Local Housing Objectives

The following Local Housing Objectives augment the R-Codes and guide judgements of merit for developments that do not meet the Deemed-to-Comply criteria. They assist the decision maker in assessing development against the Design Principles of the R-Codes, but do not limit considerations when assessing a development.

The numbering for the Local Housing Objectives corresponds to elements of the R-Codes.

Clause	Local Housing Objectives
6.3.1 Street Setback	**The City may consider a street setback reduction in the following circumstances:** **a)** Existing Streetscape: i. 50% or more of dwellings (excluding carports and minor projections) on one side of a street block bound by intersecting streets, have a setback of less than 9m to the primary street boundary; and ii. The proposed setback corresponds with the average setback of dwellings (excluding carports and minor projections) fronting the same side of the street and within the same block (*Refer to Figure 3 in the Appendix*). **b)** Site constraints: i. A lot has a significant site constraint including but not limited to an irregular configuration, topography changes or being considerably undersized for the assigned density code; and ii. the mass and form of the building is designed with an appropriate bulk and scale which minimises impact to the streetscape and adjoining lots.
6.3.2 Lot Boundary Setbacks	**a)** The City may consider buildings (other than outbuildings) within the rear setback area on lots with a density of R15 or less for the following: i. Buildings in the rear setback area may be considered where: 1. the immediate locality is characterised by similar-sized buildings within rear setback areas; 2. the building provides for more effective use of space on-site for outdoor living areas; 3. the building does not necessitate the removal of mature vegetation; 4. the rear setback remains predominantly soft landscaped;

	5. the cumulative bulk and distribution of all buildings on site has a reduced impact on neighbouring properties; 6. the reduced setback demonstrates that a laneway widening could be accommodated in future (For properties that abut a laneway less than 6m wide) (Refer to Figure 1 in Appendix).
6.3.3 Building Height	**a)** When assessing Design Principles for building and/or wall height in relation to amenity impacts, the City may consider: i. Slope of the natural ground level; ii. Heights of existing development on lots immediately abutting the site; and iii. Impact on adjoining properties from setbacks and visual privacy as a result of the height.
6.3.5 Parking	**a)** The City may consider a reduction in the provision of visitor parking in instances where a regulated tree is retained OR where the development exceeds the minimum tree planting requirements in Clause 5.3.2 of Part B or Clause 1.2 of Part C. **b)** Where a regulated tree is retained for the reduction in provision of visitor parking, the subject tree will need to be protected for the life of the development and an arborist report may be required to confirm the health of tree.
6.3.6 Vehicular Access	**a)** In relation to Clause 5.3.5 C5.1 of Part B or Clause 3.7 C3.7.1 of Part C, where a lot abuts a laneway or public right-of-way (other than a common property driveway), vehicle access may be considered from the secondary or primary street where: i. The laneway is less than 5m in width; and ii. The laneway is not appropriately sealed and drained; OR iii. Vehicle access from the laneway will result in removal of mature trees on the private property worthy of retention.

6.3.7 Solar Access for Adjoining Sites	**a)** In assessing the overshadowing impacts to solar collectors and existing outdoor living areas under the Design Principles, the following factors may be considered: i. The extent of existing overshadowing of the solar collectors and/or outdoor living areas from existing buildings or permanent structures; ii. Whether the new development meets the side and rear setback and north-facing windows standards of the R-Codes; iii. Whether the protections of the existing solar collectors and outdoor living area will unreasonably constrain or compromise the proposed development; iv. The type of existing solar collector affected. A multiple string system is less affected by shading than a single string system. System features such as micro inverters or bypass diodes can help solar collectors to continue operating efficiently where there is partial shading; and v. To what extent the siting of the existing solar collectors considers the potential future development of adjoining properties promoted or permitted under LPS 3. Solar collectors positioned higher on a roof are usually less affected by neighbouring development (Refer to Figure 4 in the Appendix).
6.3.8 Setback of Carports and Garages	**a)** In assessing a carport or garage within the primary street setback under the Design Principles, the following factors may be considered: i. Consistency of the proposed carport or garage with the existing or desired streetscape. This includes consideration of heights and setbacks of other carports and garages in the same street and on the same block; and ii. The quality of materials and finishes on the proposed garage or carport.
6.3.9 Street Walls and Fences	**a)** In assessing a primary street fence or secondary street fence under the Design Principles, the following factors may be considered: i. Consistency of the proposed fence with the heights and materiality of other fences within the same street and on the same block; ii. Primary fence maintains passive surveillance of the street; and iii. Secondary fence subject to Part C maintains passive surveillance of the street.

7 MISCELANEOUS PROVISIONS

7.1 Development Abutting a Laneway

7.1.1 Where a property abuts a laneway, finished floor levels of dwellings and garages are to be designed to mitigate potential stormwater drainage impacts.

7.1.2 Where a property abuts a laneway and variations to lot boundary setbacks are sought, the Design Principles assessment should consider whether a laneway widening could be accommodated as per Clause 6.3.2 (refer to Figure 1 in Appendix).

8 INTERPRETATION PROVISIONS

8.1 Impervious Surfaces

Impervious area/surface/material is defined in the R-Codes. For purposes of clarity, the City considers that swimming pools, artificial turf, turf-cell, pavement, gravelled or pebble areas and the like are considered to be impervious surfaces.

The following surfaces are **not** considered to be impervious surfaces and are therefore acceptable landscaping options: Garden beds, ground covers, shrubs and trees, lawn, rockeries and ornamental ponds.

9 DEFINITIONS

For this policy the following definitions apply:

Gatehouse	A roofed open-sided entry feature usually incorporated into front fencing. (refer to Figure 2 in Appendix)
Part B	Refers to the Residential Design Codes Volume 1 Part B
Part C	Refers to the Residential Design Codes Volume 1 Part C
Regulated Tree	An existing tree which has a: 1) Average canopy diameter of 6m or greater; and/or 2) Height of 8m or greater; and/or 3) In the case of a tree with a single trunk, a trunk circumference of 1.5m or greater, measured 1.4m above the ground; or in the case of a tree with multiple trunks, a total circumference of 1.5m or greater, with an average trunk circumference of 625 millimetres or greater, measured 1.4m above the ground. Excludes trees of a species that is on a State or local weed register, or shown in Appendix 1 of *Local Planning Policy 3.3 Tree Retention*.

Council Resolution Number	PD52.19
Adoption Date	OCM 17 December 2019
Date Reviewed/Modified	

10 APPENDIX

Figure Credits

Figure 4: **Department of Transport and Planning – Victoria State Government (Planning Practice Note 88: Planning for Domestic Rooftop Solar Energy Systems)**

Figures 5-13 **Western Australian Planning Commission – Government of Western Australia (Residential Design Codes Volume 1 (R-Codes Volume 1)**

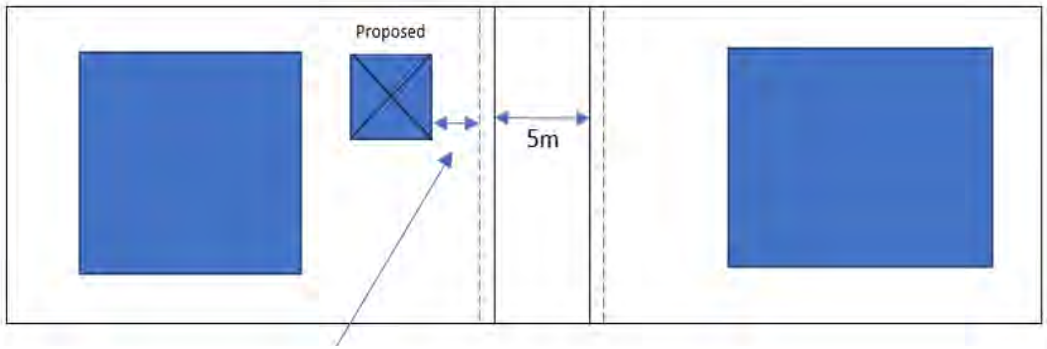


Figure 1: Setbacks from laneways for future widening.

Where a Design Principles assessment considers the ability of a reduced lot boundary setback to accommodate a laneway widening, the shortfall amount between the 6m required and the existing laneway width should be shared equally between the properties on both sides of the laneway. (e.g., A 5m wide laneway should accommodate 0.5m on each side for future widening)

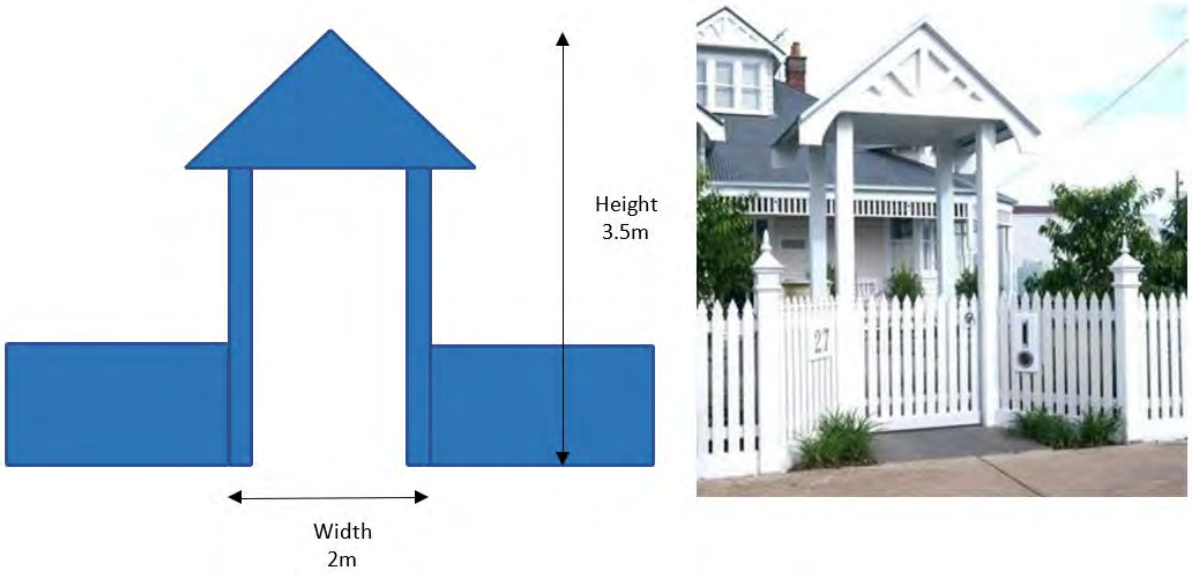


Figure 2: Gatehouse example.

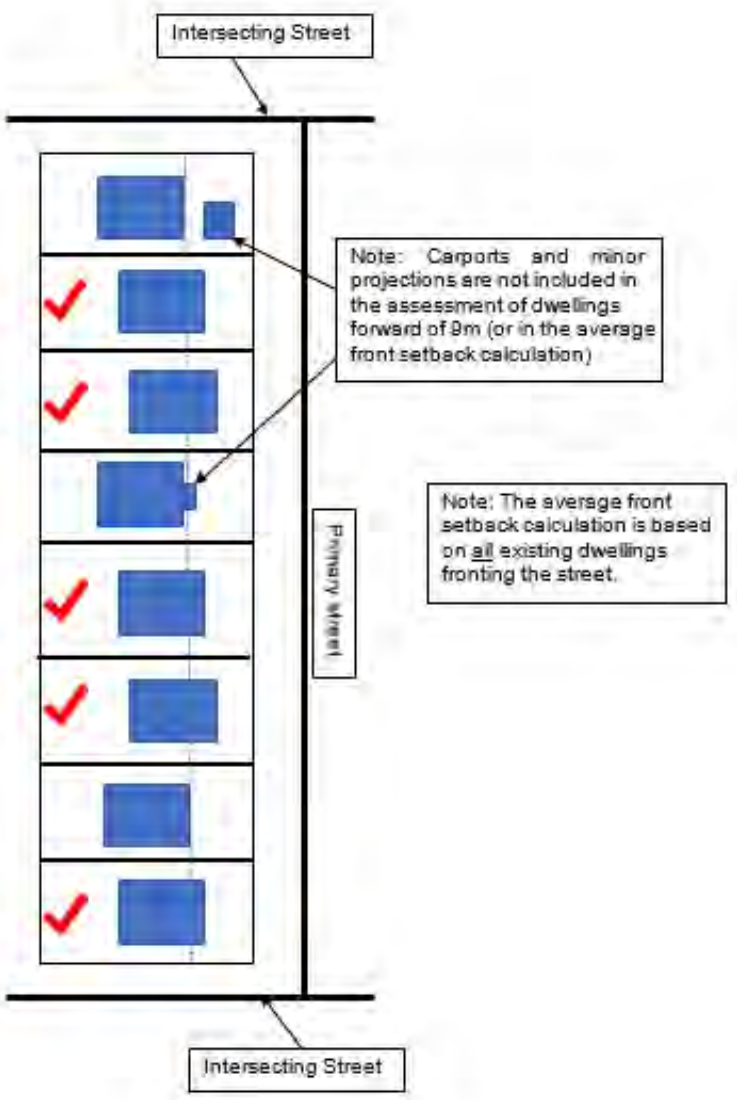


Figure 3: Street setbacks for averaging.

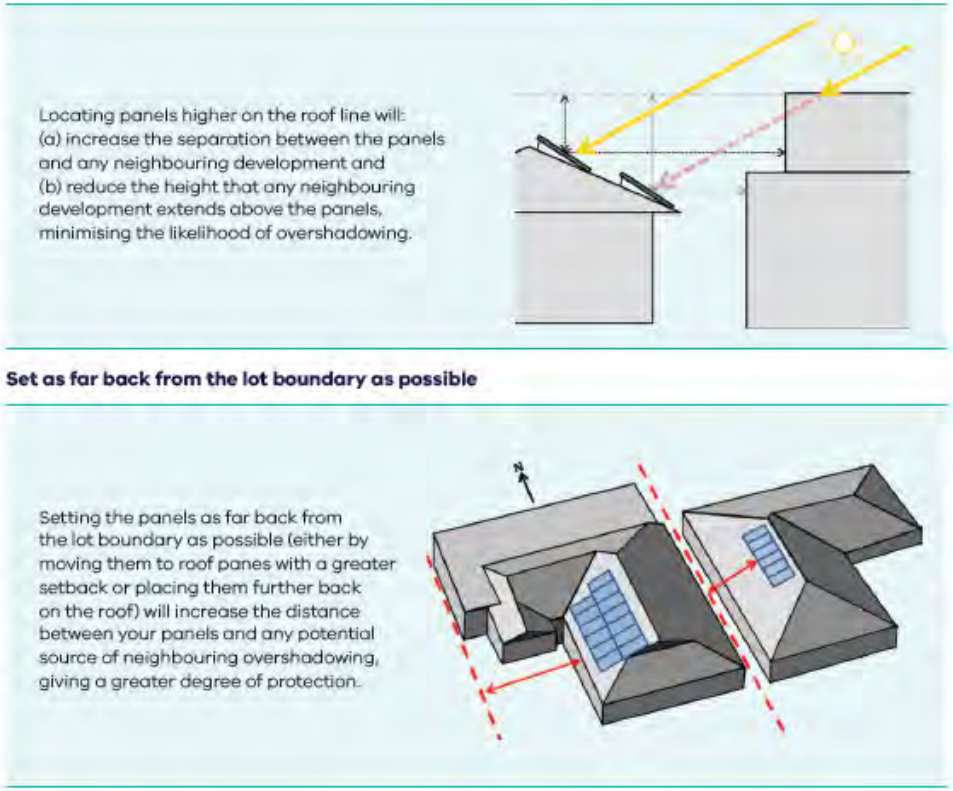


Figure 4: Appropriate locations for solar panels.

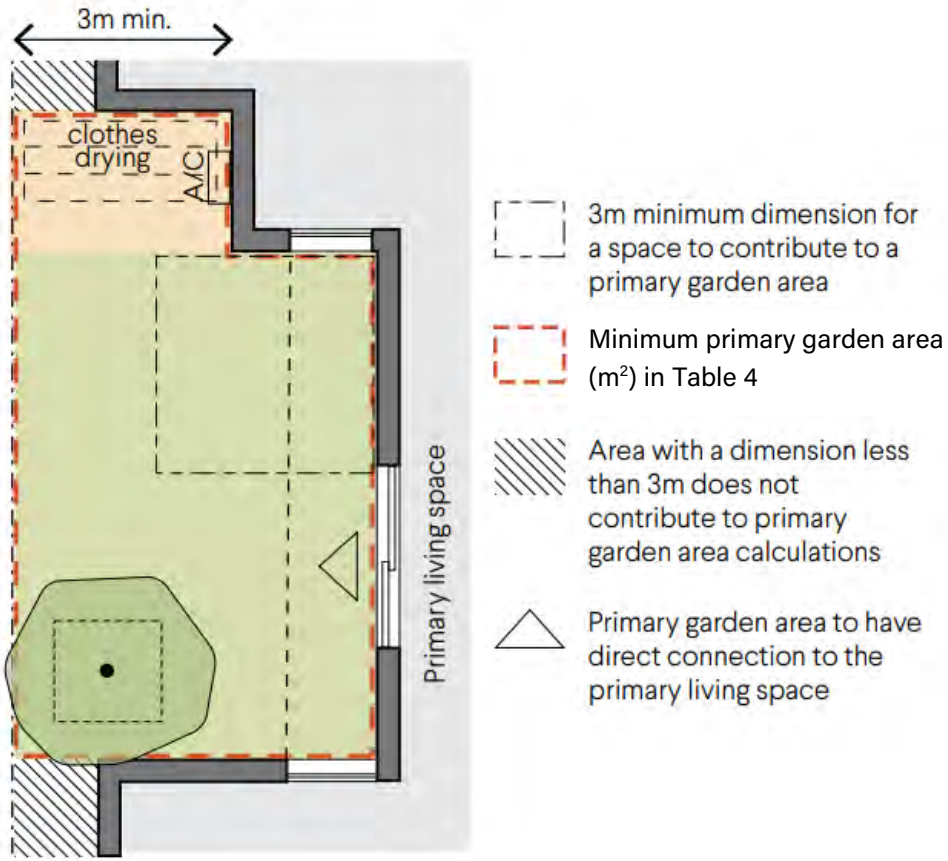


Figure 5: Primary garden area minimum dimensions.

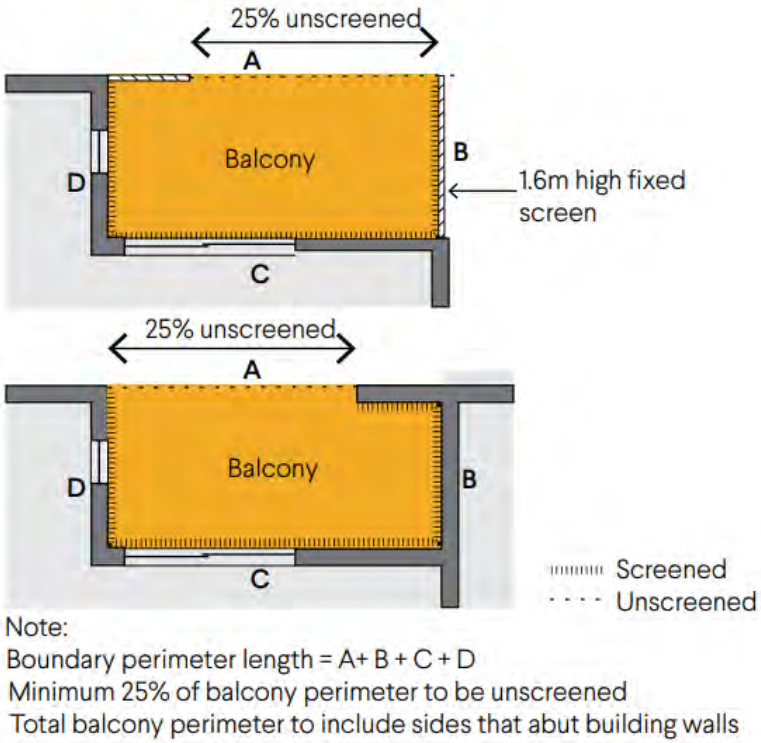


Figure 6: Extent of screening to private open space.

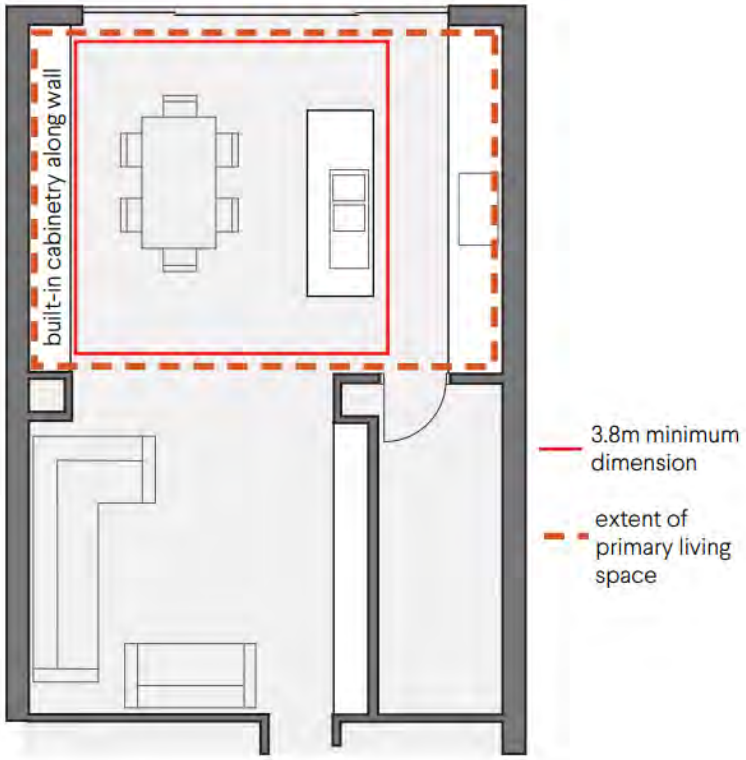


Figure 7: Calculating primary living space minimum dimensions.

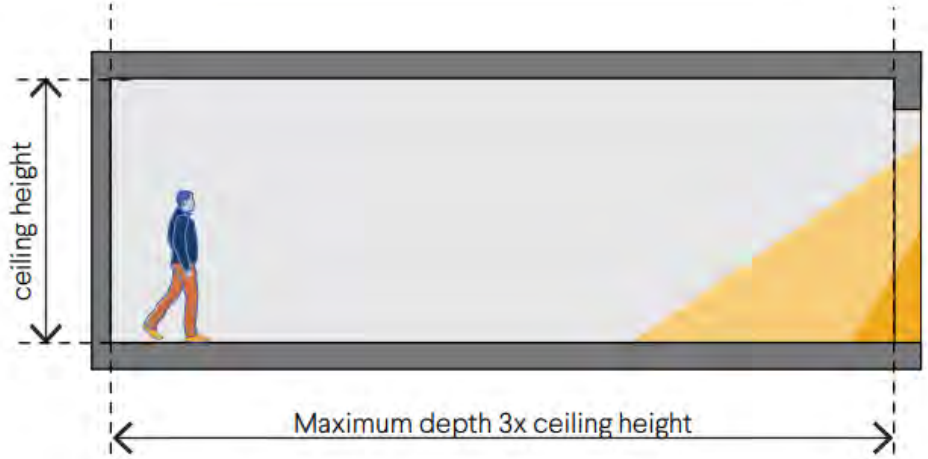
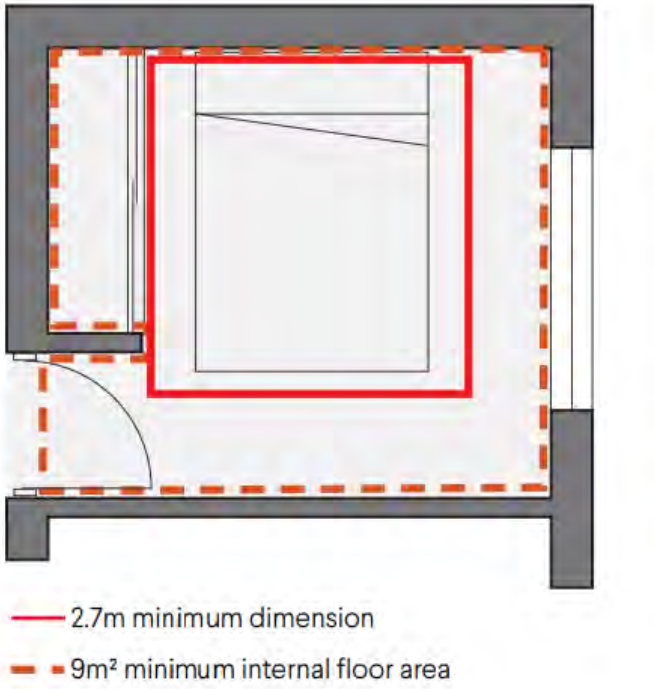


Figure 8: Single aspect primary living space depth and ceiling height.

Figure 9: Calculating bedroom minimum dimensions.



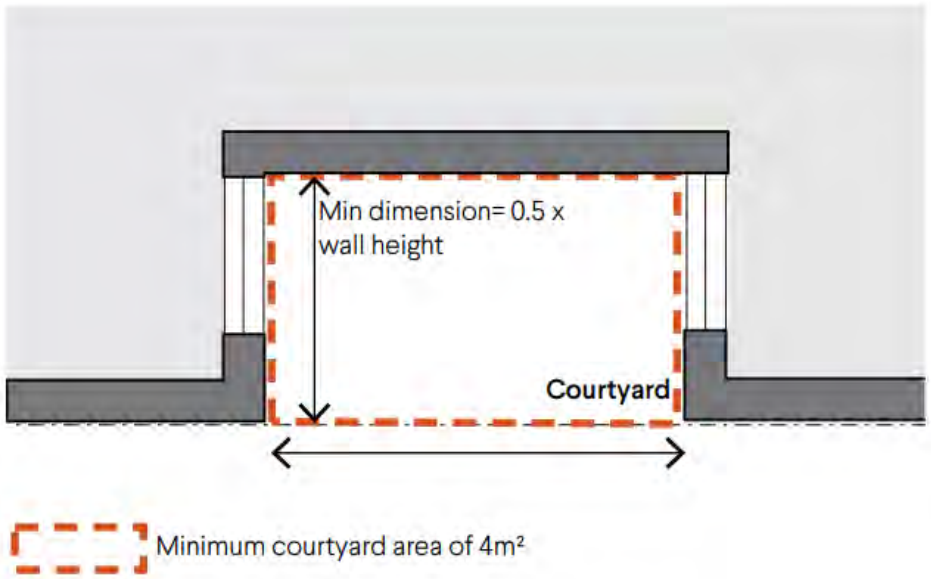


Figure 10: Courtyard minimum dimensions.

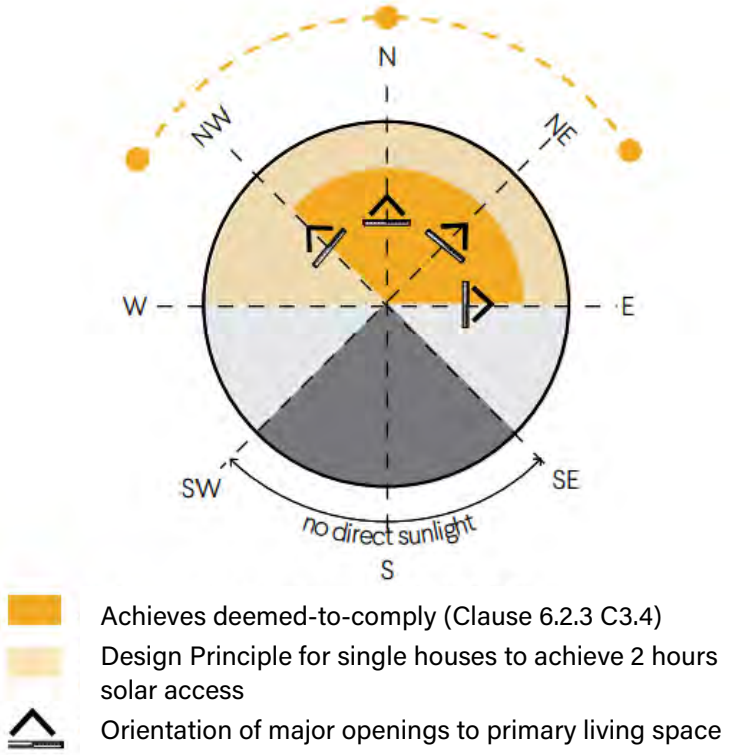


Figure 11: Orientation of major opening to the primary living space.

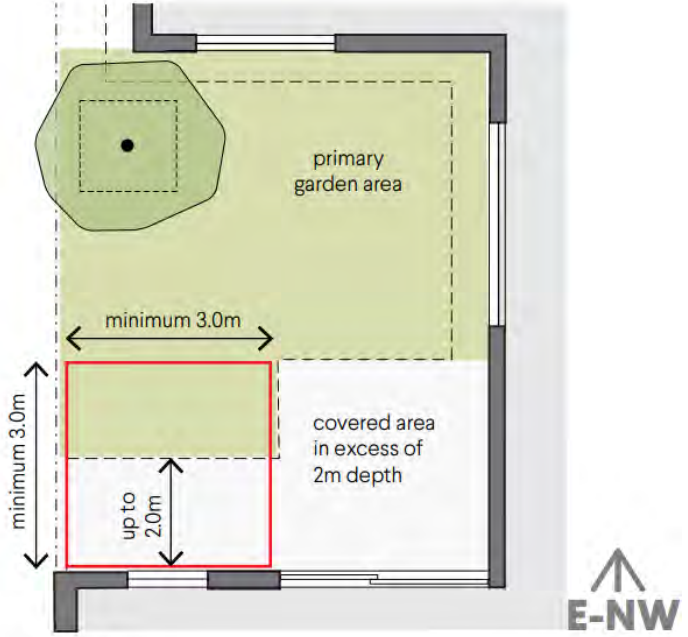


Figure 12: Minimum dimension of an uncovered open area.

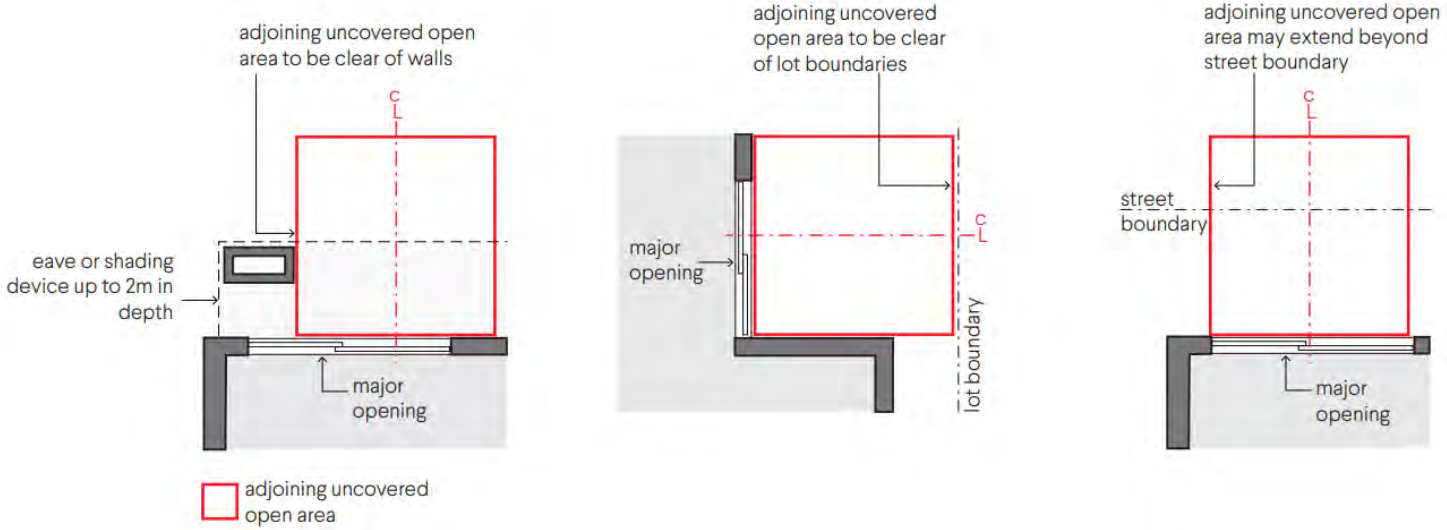


Figure 13: Adjoining uncovered open areas.

Figure 14: St John's Wood. Lots (shaded) to which Clause 6.1.1 a) and Clause 6.1.3 a) and b) of this policy do not apply.

LOCAL PLANNING POLICY 1.1: RESIDENTIAL DEVELOPMENT: Change Notes

The purpose of this document is to show what measures have been kept, inserted, modified or moved when comparing the current adopted Residential Development Local Planning Policy and the proposed policy. Deleted words are struck through. Inserted words are in red and notes about changes are marked with an asterisk and in green.

*Contents Page has been inserted.

1.0 PURPOSE

1.1 To provide guidance and supplementary requirements to Local Planning Scheme 3 (LPS 3) and ~~State Planning Policy 7.3~~ the Residential Design Codes (R-Codes) Volume 1 ~~(R-Codes Vol.1)~~ in relation to single and grouped dwellings in all density codes, and multiple dwellings with a density code of R60 or less. ~~developments within the City of Nedlands~~.

1.2 To ensure consistent assessment and decision-making in the application of the LPS 3 and R-Codes Vol. 1.

1.3 To ensure the context and character of the City of Nedlands is reflected in the built form and landscaping outcomes for residential development.

2.0 APPLICATION OF POLICY

2.1 This policy applies to all development within the scheme area to which the R-Codes Volume 1 applies. ~~single and grouped dwelling developments anywhere the R-Codes Vol. 1 apply.~~

~~2.2 This Policy is read in conjunction with R-Codes Vol.1 and Clause 26 of LPS 3 which relates to street setbacks, setbacks of garages and carports, and open space.~~

~~2.3 Where this Policy is inconsistent with a Local Development Plan or Local Planning Policy that applies to a specific site, area or R-Code, the provisions of that specific Local Development Plan or Local Planning Policy shall prevail.~~

~~2.4 When considering developments which do not meet the deemed-to-comply provisions of this policy, the proposal is to be assessed against the relevant objectives, local housing objectives of this policy and the design principles of the R-Codes Vol. 1.~~ *2.2 to 2.4 has been rewritten to specify the related planning instruments and moved to a new Clause 4 RELATIONSHIP TO OTHER POLICIES AND LEGISLATION.

* A new Clause 3 has been added which contains a schedule of amendments to the R-Codes.

3.0 OBJECTIVES *Objectives has been renumbered to Clause 5.

~~3.1 To enhance the amenity and aesthetics of areas within the City.~~ To maintain the spacious, leafy green character and enhance the amenity and aesthetics of the City of Nedlands.

To ensure development does not detrimentally impact the amenity of adjoining properties or the streetscape.

3.2 To provide for residential development that is consistent with established or desired future streetscapes.

3.3 To reduce the dominance (scale, mass and bulk) of buildings as viewed from the street.

~~3.4 To provide for building heights which are consistent with the character of the area and the topography of the site.~~ To facilitate quality residential development that provides occupants with high amenity and liveable housing for an enhanced quality of life.

~~3.5 To prevent inappropriate buildings within rear setback areas in order to protect the amenity of surrounding properties and maintain the spacious green character of the City.~~

4.0 POLICY MEASURES LPS 3 modification of R-Codes *The content of Clause 4 has been broken apart in the new policy to form Clause 6.1 and 6.3.

4.1 Street setback

In relation to land coded R10, R12.5 and R15, other than lots identified in Figure 14 - St John's Wood, Clause 5.1.2 C2.1 i to iv of Part B is replaced by the following: Buildings are to be set back a minimum of 9m.

4.1.1 ~~The following Local Housing Objective qualifies a 'prevailing development context and streetscape' as provided for under Design Principle P2.2 of 5.1.2 Street setback, to guide decision-making in the assessment of a development application for a dwelling setback less than 9m to the primary street as specified in Clause 26(1)(a)(i) of LPS 3:~~

The following has been moved to Clause 6.3 Local Housing objectives:

a) Existing Streetscape:

i. ~~Where~~ 50% or more of dwellings (excluding carports and minor projections) on one side of a street block, bound by intersecting streets have a setback of less than 9m to the primary street boundary; and

ii. a dwelling may be setback to correspond with the average setback of dwellings (excluding carports and minor projections) fronting that side of the street (refer Figure 1).

b) Site Constraints

i. ~~Where~~ a lot has a significant site constraint ~~(~~including but not limited to an irregular configuration, topography changes or being considerably undersized for the assigned density code~~),~~; and

ii. ~~which prevents the setback of a dwelling being consistent with an established streetscape, a reduced setback may be considered appropriate where~~ the mass and form of the building is designed with an appropriate bulk and scale which minimises impact to the streetscape and adjoining lots. *Reworded and moved to Clause 6.3

~~4.1.2 The following Local Housing Objective provides guidance for decision-making in considering a development application which does not meet the Design Principles of 5.1.2 Street Setback:~~

In relation to land coded R20 and above Clause 5.1.2 C2.1 iii of Part B is replaced by the following: The minimum primary street setback may be reduced by up to 50%, provided the area of any building (including a garage or unenclosed balcony) encroaching into the setback area is compensated for by at least an equal area of open space (of which 50% is provided as deep soil area) that is located between the setback area and a line drawn parallel to it at twice the setback distance. Common property access legs do not contribute towards compensating open space.

Existing Clause 4.3 moved here.

4.2 Setback of garages and carports

4.2.1 ~~In addition to Clause 26(1)(b) of LPS 3, Clause 5.2.1 of the R-Codes is amended to include the following additional deemed-to-comply requirements:~~ In relation to land coded R10, R12.5 and R15, other than lots identified in Figure 14 – St John's Wood, Clause 5.2.1 C1.1-C1.4 of Part B is replaced with the following: Garages and carports set back 9m from the primary street and 1.5m from the secondary street.

On land coded R10, R12.5 and R15, other than lots identified in Figure 14 – St John's Wood, Clause 5.2.1 of Part B has the following additional subclause: ~~C1.6 On land coded R10, R12.5 and R15, other than lots identified in Schedules 2 & 3 of LPS 3,~~ unenclosed carports may be setback forward of the 9m primary street setback line provided that the following is met:

i. the width of the carport does not exceed 50 percent of the lot frontage, ~~and~~
ii. the carport allows an unobstructed view of ~~between~~ the dwelling and the street, right-of-way or equivalent;
iii. the carport is setback a minimum of 3.5m from the primary street;

iv. the carport is not greater than 36m^2 in floor area as measured from the outside of the posts;
iv. ~~Side setbacks as per the R-Codes;~~ The carport meets the deemed-to-comply provisions for lot boundary setbacks under the R-Codes as modified by this Policy; and
v. the carport meets the provisions of Table 3 ~~complies with Table 1~~ - Maximum carport height;
vi. ~~the carport cannot be accommodated behind the street setback line and compliant with side setback provisions of the R-Codes.~~
vii. ~~The carport does not contain a visually permeable door.~~

Table 1 – Maximum carport height

Carport type	Wall height	Building height
Pitched Roof	3.0m	4.5m
Flat or Skillion Roof	N/A	3.5m
~~Skillion Roof~~	~~N/A~~	~~3.5m (high side)~~

R-Code amendments

~~The following provisions replace or augment the deemed-to-comply requirements of the R-Codes and include Local Housing Objectives to provide guidance for decision making in the determination of a development application. Where a development does meet the deemed-to-comply provisions contained in this Policy, a development application is required which will be assessed by the relevant local housing objectives, design principles of the R-Codes and objectives of this policy.~~

~~4.3 Street setback~~

~~4.3.1 Clause 5.1.2 C2.4 of the R-Codes is replaced with the following deemed-to-comply requirements:~~

C2.4i. A ~~minor~~ incursion such as a porch, balcony, verandah, architectural feature or the equivalent may project not more than 1m into the street setback area provided that the total of such projects does not exceed 50% of the building façade as viewed from the street. *Moved to Clause 6.1.1 c)

C2.4ii. For lots with a density code of R20 or greater~~greater than R15~~, projections greater than 1m ~~and exceeding 50% of the building façade~~ may project into the street setback area provided an equivalent open space area behind the street setback is provided ~~is~~ under Clause 5.1.2 C2.1iii of Part B as modified by this policy. *Moved to Clause 6.1.1 d)

~~4.3.2 Clause 5.1.2 is modified to include the following deemed-to-comply requirements:~~

C2.5 Subject to ~~Clause 5.2.5 of the R-Codes~~ Sightline criteria, gate houses are permitted within ~~front~~ primary and secondary street setback areas to a

maximum building height of 3.5m, maximum width of 2m and total area of 4m^2, as measured from the street and outside of the posts (refer to Figure 2 in Appendix). *Moved to Clause 6.1.1 e)

4.4 Lot boundary setback

4.4.1 Clause 5.1.3 C3.1 of the R-Codes is modified to include the following additional deemed-to comply requirements:

7.1 Development Abutting a Laneway

7.1.1 Where a property abuts a laneway, finished floor levels of dwellings and garages are to be designed to mitigate potential stormwater drainage impacts.

C3.1vi. Where a ~~site~~ property abuts a laneway and variations to lot boundaries are sought, the Design Principles assessment should consider whether a laneway widening could be accommodated as per Clause 6.3.2 (refer to Figure 1 in Appendix). ~~less than 6 meters wide, building setback provisions are to be determined after allowing for any future laneway widening requirement from the lot, assuming equal widening on both sides of the laneway where appropriate (refer to Figure 3).~~ *Moved to Clause 7.1 and modified

~~C3.1vii. Subject to C3.1(vi), a swimming pool fence/barrier and pool pump screens behind the street setback line are permitted within the lot and up to lot boundaries to a maximum height of 1.8m, above any approved site works.~~

~~4.4.2 The following Local Housing Objectives provide further guidance for decision making (in the determination of a development application) in relation to buildings (other than outbuildings) within the rear setback area on lots with a density of R15 or less.~~

(a) The City may consider buildings (other than outbuildings) within the rear setback area on lots with a density of R15 or less for the following:~~On land coded R15 or less, detached buildings in the rear setback area may be considered for the purposes of a patio, 'pool house', or similar where:~~

- the immediate locality is characterised by similar sized buildings within rear setback areas;
- the building provides for more effective use of space on-site for outdoor living areas; ~~and/or~~
- the building does not necessitate the removal of mature vegetation;
- the rear setback remains predominantly soft landscaped;
- the cumulative bulk and distribution of all buildings on site has a reduced impact on neighbouring properties; and
- the reduced setback demonstrates that a laneway widening could be accommodated in future (For properties that abut a laneway less than 6m wide) (Refer to Figure 1 in Appendix).

(b) ~~On land coded R15 or less which abuts a laneway or right-of-way to the rear boundary, single-storey carports and garages may be considered with a minimum setback of 1.5m in accordance with the objectives set out in~~

~~(a).~~

~~4.5 Building Heights~~

4.5.1 Clause 5.1.6 C6 of the R-Codes is replaced with the following deemed-to comply requirement:

C6 Buildings which comply with Table 2 – Maximum building heights below:

Table 2 – Maximum building heights

Maximum building heights	
~~Top of external wall~~ Wall height (roof above) ~~(i)~~	8.5m
~~Top of external wall (concealed roof)~~ Wall height (gable, skillion and concealed roof)	8.5m
~~Top of pitched roof (ii)~~ Roof height	10m

(i) ~~Gable walls above eaves height:~~
- ~~Less than 9m long: exempted~~
- ~~Greater than 9m long: add one third of the height of the gable, between the eaves and the apex of the gable wall, to the eaves height.~~

(ii) ~~Applies to ridges greater than 6m long. Short ridges: add 0.5m height for each 2m reduction in length.~~

~~4.5.2 Clause 5.1.6 is modified to include in the deemed-to-comply requirements:~~

C6.1 Clause 5.1.6 of Part B has the following additional subclause: Architectural features and building projections (such as, but not limited to lift shafts and feature walls) are permitted to project above the external wall height to a maximum height of 10m provided the feature does not exceed 3m in width. *Building Height provisions have been moved to Clause 6.1.2

~~Note: Methodology of building height assessment is as per the R-Codes.~~

~~4.6 Street walls and fences (including gates)~~

Clause 5.2.4 C4.1 of Part B and Clause 3.6 C3.6.7 of Part C are replaced by the following: Fencing within front setback areas is permitted to be a maximum of 1.2m solid and visually permeable infill above~~,~~ to a maximum height of 1.8m, measured from natural ground level on the ~~primary~~ street side of the fence. Compliance with policy measures and R-Codes requirements regarding sightlines is required. ~~Fencing is also permitted in accordance with the following (refer Figures 4 and 5).~~

~~4.6.1 Clause 5.2.4 of the R-Codes is modified to include the following additional deemed-to-comply requirements:~~

C4.1i. ~~Fencing/wall piers, including those forming part of a pergola or vergola, to be a maximum of 0.5m wide and deep and 2.1m in height above natural ground level; and~~ Clause 5.2.4 C4.2 of Part B and Clause 3.6 C3.6.8 of Part C are replaced by the following: Solid pillars that form part of front fences not more than 2.1m above natural ground level provided the horizontal dimension of the pillars is not greater than 500mm by 500mm and pillars are separated by visually permeable fencing in line with Clause 6.1.5 a) above.

~~C4.1ii. Fencing/wall piers, including those forming part of a pergola or vergola, are to be separated by no less than 1.5m.~~

Clause 3.6 C3.6.9 of Part C is replaced by the following: For sites on street corners, street fences or walls within the secondary street setback area are to be designed in accordance with Clause 6.1.5 a) and b) for a minimum 50 per cent of the street boundary behind the primary street setback (refer to Figure 3.6d in Part C of the R-Codes).

C4.2 For the purposes of housing a utility/meter box, solid fencing within the primary setback area is permitted where it is:

i. a maximum ~~1m~~ 1.2m in width;
ii. a maximum 1.8m in height;
iii. perpendicular to the street; and
iv. ~~setback at least 1.5m from where a vehicle access point intersects with a public street on any property.~~ Integrated with the design of the front fence.

C4.3 Fencing to secondary streets, laneways and boundaries to reserves shall be a maximum of 1.8m in height above natural ground level, measured from the secondary street, laneway or reserve side of the fence ~~(piers permitted as per clause C4.1) and comply with clause 5.2.5 of the R-Codes, as amended by this policy.~~ Except where Clause 6.1.5 c) above applies.

C4.4 Fencing within the primary street setback area shall be constructed of brick, stone, concrete, timber, wrought iron, tubular steel or glass. *moved above the existing Clause C4.3

~~4.7 Sight lines~~

~~4.7.1 Clause 5.2.5 of the R-Codes is modified to include the following additional deemed-to-comply requirements:~~

C5.1 Clause 5.2.5 of Part B has the following additional subclause: The following obstructions are permitted within the 1.5m truncation area stipulated under ~~C5, the following obstructions are acceptable~~ Clause 5.2.5 of Part B:

i. one pier with a maximum width and length of 0.5m; and/or
ii. ~~Visually permeable in-fill fencing to a maximum of 1.8m in height, in addition to 0.75m high solid fencing, both measured from natural ground level.~~ Solid fencing up to 0.75m in height with

visually permeable in-fill fencing to a maximum of 1.8m in height, both measured from natural ground level on the vehicle access side.

~~4.9 Vehicular access~~

~~In relation to the location of a vehicle entry point, the following Local Housing Objectives provide guidance for decision-making (in the determination of a development application) in considering a secondary or primary street in lieu of access from a laneway.~~

4.9.1 In relation to Clause 5.3.5 C5.1 of Part B or Clause 3.7 C3.7.1 of Part C, ~~vehicle access C5.1,~~ where a lot abuts a laneway or public right-of-way (other than a common property driveway), vehicle access may be considered from the secondary or primary street where:

(a) The laneway is less than 5m in width; and
(b) The laneway is not appropriately sealed and drained; or
(c) Vehicle access from the laneway will result in removal of mature trees on the private property worthy of retention.

~~Dividing Fences~~

~~Dividing Fencing behind the street setback area is subject to the requirements of the Dividing Fences Act 1961 (the Act). This Policy does not interpret any matters considered under the Act and where there is a conflict between the Act and this policy, the Act shall prevail.~~

Development abutting a laneway

Where a property abuts a laneway, finished floor levels of dwellings and garages are to be designed to mitigate potential stormwater drainage impacts.

4.10 Where a property abuts an unconstructed laneway, landowners are advised to contact the City's Technical Services team with regards to appropriate finished floor levels of dwellings and garages to mitigate potential stormwater drainage impacts. *Moved to Clause 7

5.0 ~~RELATED LEGISLATION~~ RELATIONSHIP TO OTHER POLICIES AND LEGISLATION

5.1 This policy has been prepared in accordance with ~~Schedule 2 Part 2 Clause 4~~ Clause 4 of the Deemed Provisions of Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015.

5.2 This policy should be read in conjunction with the following ~~additional~~ planning instruments, and its requirements apply unless specifically stipulated elsewhere in any of the below:

- Planning and Development Act 2005
- Planning and Development (Local Planning Schemes) Regulations 2015
- Residential Design Codes Volume 1

- City of Nedlands Local Planning Scheme No. 3
- City of Nedlands Local Planning Policy 5.10 Precincts
- City of Nedlands Local Planning Policy 1.3 Sustainable Design – Residential
- City of Nedlands Local Planning Policy 3.3 Tree Retention
- ~~State Planning Policy 7.3 - Residential Design Codes - Volume 1~~

Where this Policy is inconsistent with a Local Development Plan, Structure Plan, Precinct Plan or Local Planning Policy that applies to a specific site, precinct, area or R-Code, the provisions of that specific instrument shall prevail for the extent of the inconsistency.
*This clause has been moved to Clause 4.

6.0 DEFINITIONS

6.1 For this policy the following definitions apply:

Definition	Meaning
~~Boundary Fence~~	~~A fence set back less than 1m from a dividing lot boundary, behind the street setback line.~~
~~Dividing Fence~~	~~As per Dividing Fences Act 1961.~~
Gate house	A roofed open-sided entry feature usually incorporated into front fencing. (refer to Figure 2 in Appendix)
~~Patio~~	~~An unenclosed structure covered in a water impermeable material which may or may not be attached to a dwelling.~~
~~Vergola~~	~~A patio with an open-close/louvered roof system. Also known as a solar patio.~~
Part B	Refers to the Residential Design Codes Volume 1 Part B
Part C	Refers to the Residential Design Codes Volume 1 Part C
Regulated Tree	An existing tree which has a: 1) Average canopy diameter of 6m or greater; and/or 2) Height of 8m or greater; and/or 3) In the case of a tree with a single trunk circumference of 1.5m or greater, measured 1.4m above the ground; or in the case of a tree with multiple trunks, a total circumference of 1.5m or greater, with

	an average trunk circumference of 625 millimetres or greater, measured 1.4m above the ground. Excludes trees of a species that is on a State or local weed register, or shown in Appendix 1 of Local Planning Policy 3.3 Tree Retention.

~~6.2 A word or expression that is not defined in the Policy has the same meaning as it has in the R-Codes.~~

~~7.0 EXPLANATORY ASSESSMENT GUIDE~~

~~The following is an explanatory guide only to provide clarity of the method for assessment of various provisions of the R-Codes.~~

~~7.1 For the purposes of assessing lot boundary setbacks to a screen or fence:~~

~~(a) Where setback 1m or greater from a side lot boundary, a screen/fence is considered under the R-Code definition of a 'wall', being a structure appurtenant to a dwelling, and is subject to Clause 5.1.3 C3.1i of the R-Codes for the purposes of lot boundary setback requirements.~~

The following Clauses are new to the policy in their entirety:

Clause 3: Schedule of Amendments to the R-Codes

Clause 6.1.4 Garage Width

a) Clause 5.2.2 of Part B has the following additional subclause: For lots with a frontage of less than 10m and no access to a secondary street or a laneway 5m or greater in width, garage doors and supporting structures facing the primary street may be a maximum of 6m wide as viewed from the street provided:

i. the upper floor or balcony extends for more than half the width of the garage and supporting structures;
ii. the entrance to the dwelling is clearly visible from the primary street; and
iii. the garage is set back from the street at least 1m more than the main wall of the ground or first floor of the dwelling (excluding a patio, verandah, balcony or similar).

Clause 6.2 Additional Deemed-to-Comply Provisions and Design Principles for Single Houses. *This section is entirely new. Refer to the Draft Policy for these provisions.

*New Local Housing Objectives:

Clause 6.3.3: Building Height

a) When assessing Design Principles for building and/or wall height in relation to amenity impacts, the City may consider:
   i. Slope of the natural ground level;
   ii. Heights of existing development on lots immediately abutting the site; and
   iii. Impact on adjoining properties from setbacks and visual privacy as a result of the height.

Clause 6.3.5: Parking

a) The City may consider a reduction in the provision of visitor parking in instances where a regulated tree is retained OR where the development exceeds the minimum tree planting requirements in Clause 5.3.2 of Part B or Clause 1.2 of Part C.

b) Where a regulated tree is retained for the reduction in provision of visitor parking, the subject tree will need to be protected for the life of the development and an arborist report may be required to confirm the health of tree.

Clause 6.3.7 Solar Access for Adjoining Sites

a) In assessing the overshadowing impacts to solar collectors and existing outdoor living areas under the Design Principles, the following factors may be considered:
   i. The extent of existing overshadowing of the solar collectors and/or outdoor living areas from existing buildings or permanent structures;
   ii. Whether the new development meets the side and rear setback and north-facing windows standards of the R-Codes;
   iii. Whether the protections of the existing solar collectors and outdoor living area will unreasonably constrain or compromise the proposed development;
   iv. The type of existing solar collector affected. A multiple string system is less affected by shading than a single string system. System features such as micro inverters or bypass diodes can help solar collectors to continue operating efficiently where there is partial shading; and
   v. To what extent the siting of the existing solar collectors considers the potential future development of adjoining properties promoted or permitted under LPS 3. Solar collectors positioned higher on a roof are usually less affected by neighbouring development (Refer to Figure 4 in the Appendix).

Clause 6.3.8: Setback of Carports and Garages

a) In assessing a carport or garage within the primary street setback under the Design Principles, the following factors may be considered:
   i. Consistency of the proposed carport or garage with the existing or desired streetscape. This includes consideration of heights and setbacks of other carports and garages in the same street and on the same block; and
   ii. The quality of materials and finishes on the proposed garage or carport.

Clause 6.3.9: Street Walls and Fences

a) In assessing a primary street fence or secondary street fence under the Design Principles, the following factors may be considered:
   i. Consistency of the proposed fence with the heights and materiality of other fences within the same street and on the same block;
   ii. Primary fence maintains passive surveillance of the street; and
   iii. Secondary fence subject to Part C maintains passive surveillance of the street.

*New Miscellaneous Provisions:

Clause 8.1: Impervious Surfaces

Impervious area/surface/material is defined in the R-Codes. For purposes of clarity, the City considers that swimming pools, artificial turf, turf-cell, pavement, gravelled or pebble areas and the like are considered to be impervious surfaces.

The following surfaces are not considered to be impervious surfaces and are therefore acceptable landscaping options: Garden beds, ground covers, shrubs and trees, lawn, rockeries and ornamental ponds.

*For new figures see the Draft Policy. Figures 4 to 14 are new.

LOCAL PLANNING POLICY 1.1: RESIDENTIAL DEVELOPMENT: SINGLE AND GROUPED DWELLINGS

1.0 PURPOSE

1.1 To provide guidance and supplementary requirements to Local Planning Scheme 3 (LPS 3) and State Planning Policy 7.3 Residential Design Codes Volume 1 (R-Codes Vol.1) in relation to single and grouped dwelling developments within the City of Nedlands.

1.2 To ensure consistent assessment and decision-making in the application of the LPS 3 and R-Codes Vol. 1.

2.0 APPLICATION OF POLICY

2.1 This policy applies to all single and grouped dwelling developments anywhere the R-Codes Vol. 1 apply.

2.2 This Policy is read in conjunction with R-Codes Vol.1 and Clause 26 of LPS 3 which relates to street setbacks, setbacks of garages and carports, and open space.

2.3 Where this Policy is inconsistent with a Local Development Plan or Local Planning Policy that applies to a specific site, area or R-Code, the provisions of that specific Local Development Plan or Local Planning Policy shall prevail.

2.4 When considering developments which do not meet the deemed-to-comply provisions of this policy, the proposal is to be assessed against the relevant objectives, local housing objectives of this policy and the design principles of the R-Codes Vol. 1.

3.0 OBJECTIVES

3.1 To enhance the amenity and aesthetics of areas within the City.

3.2 To provide for residential development that is consistent with established or desired streetscapes.

3.3 To reduce the dominance (scale, mass and bulk) of buildings as viewed from the street.

3.4 To provide for building heights which are consistent with the character of the area and the topography of the site.

3.5 To prevent inappropriate buildings within rear setback areas in order to protect the amenity of surrounding properties and maintain the spacious green character of the City.

4.0 POLICY MEASURES LPS 3 modification of R-Codes

4.1 Street setback

4.1.1 The following Local Housing Objective qualifies a 'prevailing development context and streetscape' as provided for under Design Principle P2.2 of 5.1.2 Street setback, to guide decision-making in the assessment of a development application for a dwelling setback less than 9m to the primary street as specified in Clause 26(1)(a)(i) of LPS 3:

(a) Where 50% or more of dwellings (excluding carports and minor projections) on one side of a street block, bound by intersecting streets have a setback of less than 9m to the primary street boundary, a dwelling may be setback to correspond with the average setback of dwellings (excluding carports and minor projections) fronting that side of the street (refer Figure 1).

4.1.2 The following Local Housing Objective provides guidance for decision-making in considering a development application which does not meet the Design Principles of 5.1.2 Street Setback:

(b) Where a lot has a significant site constraint (including but not limited to an irregular configuration, topography changes or being considerably undersized for the assigned density code), which prevents the setback of a dwelling being consistent with an established streetscape, a reduced setback may be considered appropriate where the mass and form of the building is designed with an appropriate bulk and scale which minimises impact to the streetscape.

4.2 Setback of garages and carports

4.2.1 In addition to Clause 26(1)(b) of LPS 3, Clause 5.2.1 of the R-Codes is amended to include the following additional deemed-to-comply requirements:

C1.6 On land coded R10, R12.5 and R15, other than lots identified in Schedules 2 & 3 of LPS 3, unenclosed carports may be setback forward of the 9m primary street setback line provided that the following is met:

i. the width of the carport does not exceed 50 percent of the lot frontage, and the carport allows an unobstructed view between the dwelling and the street, right-of-way or equivalent;
ii. the carport is setback a minimum of 3.5m from the primary street;
iii. the carport is not greater than 36m^2 in floor area as measured from the outside of the posts;
iv. Side setbacks as per the R-Codes;
v. the carport complies with Table 1 - Maximum carport height;
vi. the carport cannot be accommodated behind the street setback line and compliant with side setback provisions of the R-Codes.
vii. The carport does not contain a visually permeable door.

Table 1 – Maximum carport height

Carport type	Wall height	Building height
Pitched Roof	3.0m	4.5m
Flat Roof	N/A	3.5m
Skillion Roof	N/A	3.5m (high side)

R-Code amendments

The following provisions replace or augment the deemed-to-comply requirements of the R-Codes and include Local Housing Objectives to provide guidance for decision making in the determination of a development application. Where a development does meet the deemed-to-comply provisions contained in this Policy, a development application is required which will be assessed by the relevant local housing objectives, design principles of the R-Codes and objectives of this policy.

4.3 Street setback

4.3.1 Clause 5.1.2 C2.4 of the R-Codes is replaced with the following deemed-to-comply requirements:

C2.4i. A minor incursion such as a porch, balcony, verandah, architectural feature or the equivalent may project not more than 1m into the street setback area provided that the total of such projects does not exceed 50% of the building façade as viewed from the street.

C2.4ii. For lots with a density code greater than R15, projections greater than 1m and exceeding 50% of the building façade may project into the street setback area provided an equivalent open space area is under Clause 5.1.2 C2.1iii.

4.3.2 Clause 5.1.2 is modified to include the following deemed-to-comply requirements:

C2.5 Subject to Clause 5.2.5 of the R-Codes, gate houses are permitted within front setback areas to a maximum building height of 3.5m, maximum width of 2m and total area of 4m^2, as measured from the street and outside of the posts (refer to Figure 2).

4.4 Lot boundary setback

4.4.1 Clause 5.1.3 C3.1 of the R-Codes is modified to include the following additional deemed-to comply requirements:

C3.1vi. Where a site abuts a laneway less than 6 meters wide, building setback provisions are to be determined after allowing for any future laneway widening requirement from the lot, assuming equal widening on both sides of the laneway where appropriate (refer to Figure 3).

C3.1vii. Subject to C3.1(vi), a swimming pool fence/barrier and pool pump screens behind the street setback line are permitted within the lot and up to lot boundaries to a maximum height of 1.8m, above any approved site works.

4.4.2 The following Local Housing Objectives provide further guidance for decision making (in the determination of a development application) in relation to buildings (other than outbuildings) within the rear setback area on lots with a density of R15 or less.

(a) On land coded R15 or less, detached buildings in the rear setback area may be considered for the purposes of a patio, 'pool house', or similar where:

- the immediate locality is characterised by buildings within rear setback areas;
- the building provides for more effective use of space on-site for outdoor living areas; and/or
- the cumulative bulk and distribution of all buildings on site has a reduced impact on neighbouring properties.

(b) On land coded R15 or less which abuts a laneway or right-of-way to the rear boundary, single-storey carports and garages may be considered with a minimum setback of 1.5m in accordance with the objectives set out in (a).

4.5 Building Heights

4.5.1 Clause 5.1.6 C6 of the R-Codes is replaced with the following deemed-tocomply requirement:

C6 Buildings which comply with Table 2 – Maximum building heights below:

Table 2 – Maximum building heights

Maximum building heights	
Top of external wall (roof above) (i)	8.5m
Top of external wall (concealed roof)	8.5m
Top of pitched roof (ii)	10m

(i) Gable walls above eaves height:

- Less than 9m long: exempted
- Greater than 9m long: add one third of the height of the gable, between the eaves and the apex of the gable wall, to the eaves height.

(ii) Applies to ridges greater than 6m long. Short ridges: add 0.5m height for each 2m reduction in length.

4.5.2 Clause 5.1.6 is modified to include in the deemed-to-comply requirements:

C6.1 Architectural features and building projections (such as, but not limited to lift shafts and feature walls) are permitted to project above the external

wall height to a maximum height of 10m provided the feature does not exceed 3m in width.

Note: Methodology of building height assessment is as per the R-Codes.

4.6 Street walls and fences (including gates)

Fencing within front setback areas is permitted to be a maximum of 1.2m solid and visually permeable infill above, to a maximum height of 1.8m, measured from the primary street side of the fence. Fencing is also permitted in accordance with the following (refer Figures 4 and 5).

4.6.1 Clause 5.2.4 of the R-Codes is modified to include the following additional deemed-to-comply requirements:

C4.1i. Fencing/wall piers, including those forming part of a pergola or vergola, to be a maximum of 0.5m wide and deep and 2.1m in height above natural ground level; and

C4.1ii. Fencing/wall piers, including those forming part of a pergola or vergola, are to be separated by no less than 1.5m.

C4.2 For the purposes of housing a utility/meter box, solid fencing within the primary setback area is permitted where it is:

i. a maximum 1m in width;
ii. a maximum 1.8m in height;
iii. perpendicular to the street; and
iv. setback at least 1.5m from where a vehicle access point intersects with a public street on any property.

C4.3 Fencing to secondary streets, laneways and boundaries to reserves shall be a maximum of 1.8m in height above natural ground level, measured from the secondary street, laneway or reserve side of the fence (piers permitted as per clause C4.1) and comply with clause 5.2.5 of the R-Codes, as amended by this policy.

C4.4 Fencing within the primary street setback area shall be constructed of brick, stone, concrete, timber, wrought iron, tubular steel or glass.

4.7 Sight lines

4.7.1 Clause 5.2.5 of the R-Codes is modified to include the following additional deemed-to-comply requirements:

C5.1 Within the 1.5m truncation area stipulated under C5, the following obstructions are acceptable:

i. one pier with a maximum width and length of 0.5m; and/or
ii. Visually permeable in-fill fencing to a maximum of 1.8m in height, in addition to 0.75m high solid fencing, both measured from natural ground level.

4.9 Vehicular access

In relation to the location of a vehicle entry point, the following Local Housing Objectives provide guidance for decision-making (in the determination of a development application) in considering a secondary or primary street in lieu of access from a laneway.

4.9.1 In relation to Clause 5.3.5 vehicle access C5.1, where a lot abuts a laneway or public right-of-way, vehicle access may be considered from the secondary or primary street where:

(a) The laneway is less than 5m in width;
(b) The laneway is not appropriately sealed and drained; or
(c) Vehicle access from the laneway will result in removal of mature trees on the private property worthy of retention.

Dividing Fences

Dividing Fencing behind the street setback area is subject to the requirements of the Dividing Fences Act 1961 (the Act). This Policy does not interpret any matters considered under the Act and where there is a conflict between the Act and this policy, the Act shall prevail.

Development abutting a laneway

4.10 Where a property abuts an unconstructed laneway, landowners are advised to contact the City's Technical Services team with regards to appropriate finished floor levels of dwellings and garages to mitigate potential stormwater drainage impacts.

5.0 RELATED LEGISLATION

5.1 This policy has been prepared in accordance with Schedule 2 Part 2 Clause 4 of the Planning and Development (Local Planning Schemes) Regulations 2015.

5.2 This policy should be read in conjunction with the following additional planning instruments and its requirements apply unless specifically stipulated elsewhere in any of the below:

- Planning and Development Act 2005
- Planning and Development (Local Planning Schemes) Regulations 2015
- Local Planning Scheme No. 3
- State Planning Policy 7.3 - Residential Design Codes - Volume 1

6.0 DEFINITIONS

6.1 For this policy the following definitions apply:

Definition	Meaning
Boundary Fence	A fence set back less than 1m from a dividing lot boundary, behind the street setback line.
Dividing Fence	As per Dividing Fences Act 1961.
Gate house	A roofed open-sided entry feature usually incorporated into front fencing.
Patio	An unenclosed structure covered in a water impermeable material which may or may not be attached to a dwelling.
Vergola	A patio with an open-close/louvered roof system. Also known as a solar patio.

6.2 A word or expression that is not defined in the Policy has the same meaning as it has in the R-Codes.

7.0 EXPLANATORY ASSESSMENT GUIDE

The following is an explanatory guide only to provide clarity of the method for assessment of various provisions of the R-Codes.

7.1 For the purposes of assessing lot boundary setbacks to a screen or fence:

(a) Where setback 1m or greater from a side lot boundary, a screen/fence is considered under the R-Code definition of a 'wall', being a structure appurtenant to a dwelling, and is subject to Clause 5.1.3 C3.1i of the R-Codes for the purposes of lot boundary setback requirements.

Figure 1 – Street Setback

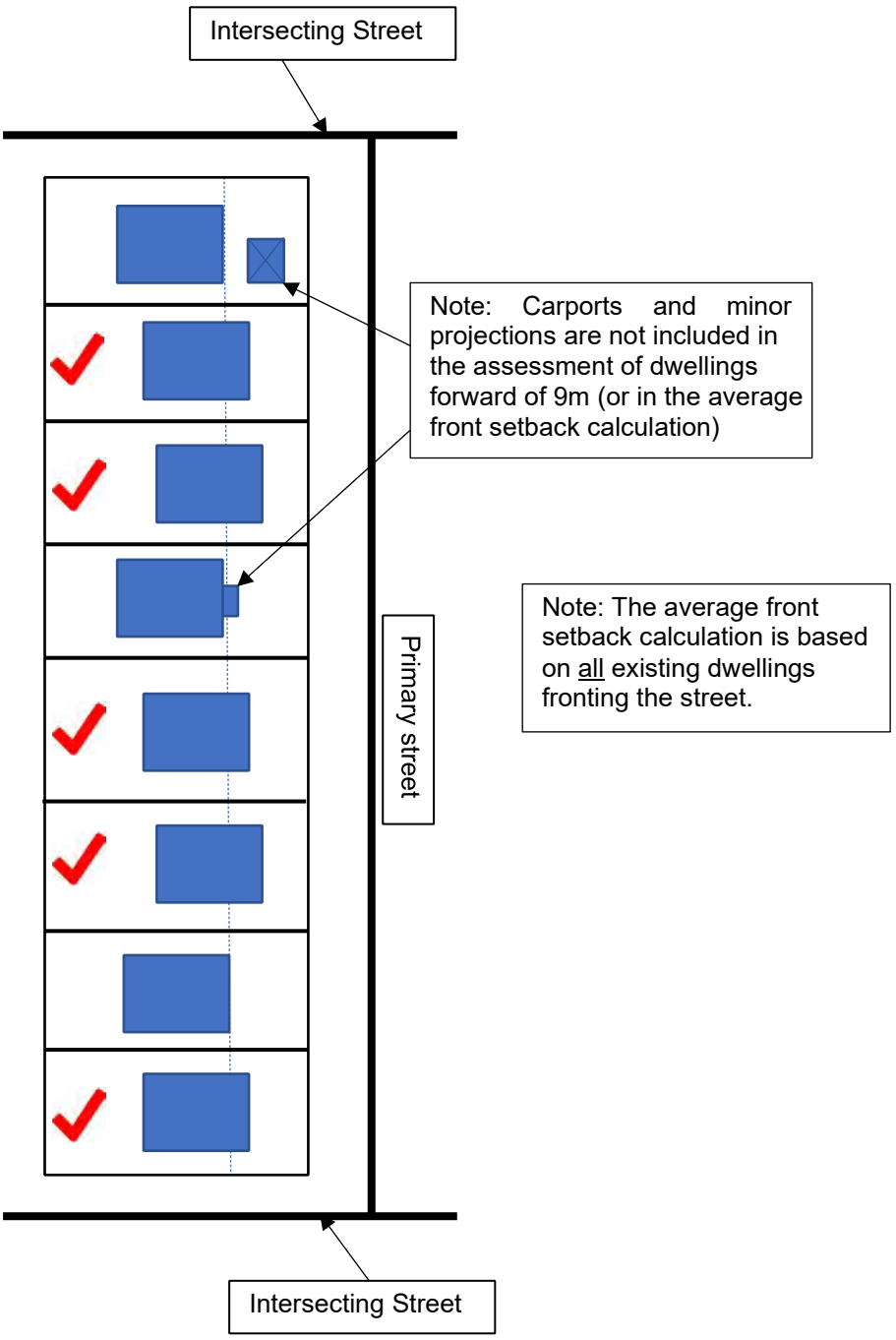


Figure 2 – Gatehouses

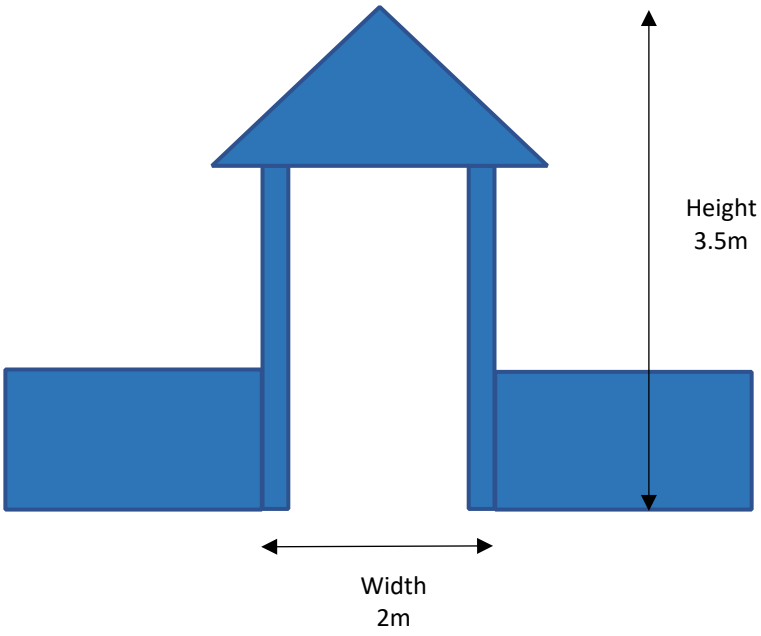
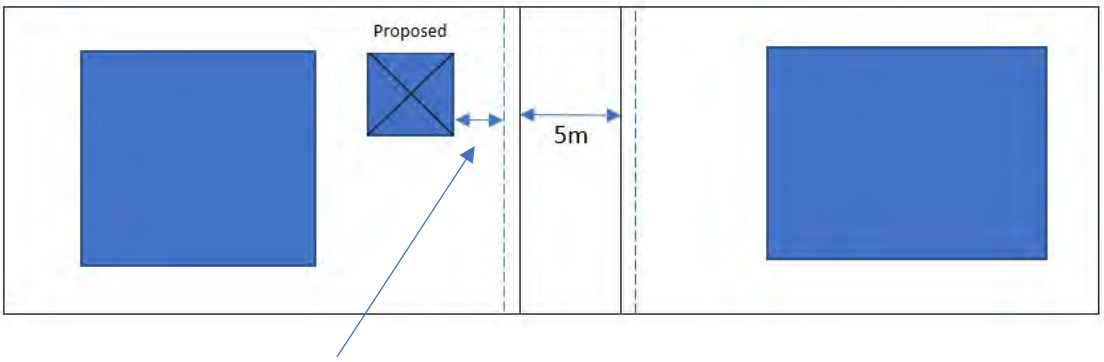


Figure 3 – Setback of buildings to laneways less than 6m wide



Setbacks for new buildings are determined 0.5m from the laneway boundary to provide for future widening either side (to 6m)

Figure 4 – Primary street setback area fencing

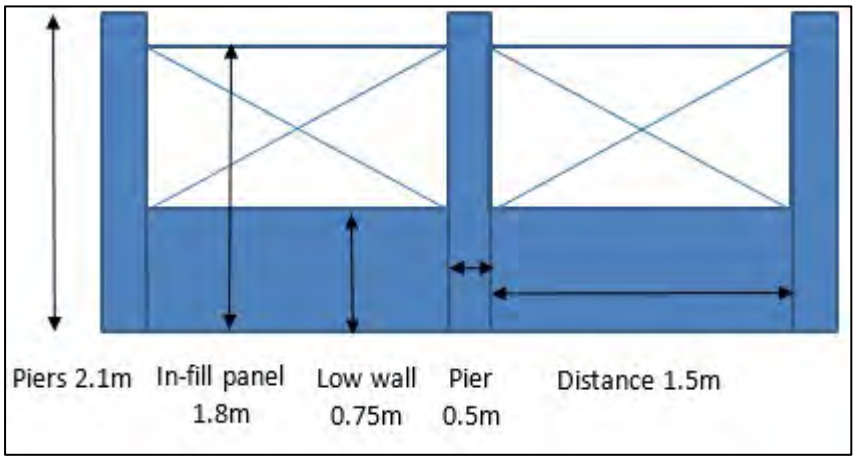
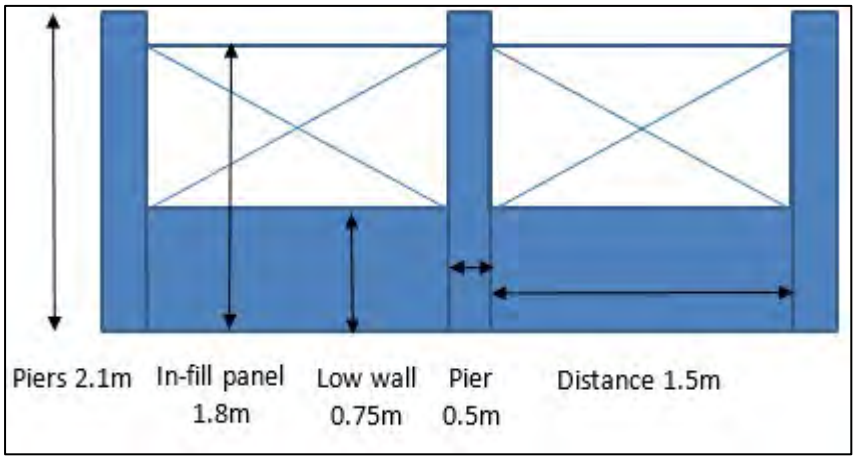


Figure 5 – Fencing within 1.5m of a vehicle access point



Council Resolution Number	PD52.19
Adoption Date	OCM 17 December 2019
Date Reviewed/Modified	

16.6 PD36.05.24 Consent to Advertise draft Local Planning Policy – Precincts

Meeting & Date	Council Meeting - 28 May 2024
Applicant	City of Nedlands
Employee Disclosure under section 5.70 Local Government Act 1995	The author, reviewers and authoriser of this report declare they have no financial or impartiality interest in this matter.
Report Author	Nathan Blumenthal – Acting Manager Urban Planning
Director	Roy Winslow – Acting Director Planning & Development
Attachments	1. Draft Local Planning Policy - Precincts

Purpose

The purpose of this report is for Council consider adoption of the draft Local Planning Policy – Precincts (the Policy), found at **Attachment 1**, for the purpose of advertising.

Recommendation

That Council adopts the draft Local Planning Policy – Precincts (Attachment 1) for the purpose of advertising in accordance with Clause 4 of the Deemed Provisions of Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015.

Voting Requirement

Simple Majority.

Background

This Policy seeks to consolidate the previously adopted Broadway, Hampden-Hollywood and Nedlands Stirling Highway Activity Corridor – Residential (NSHAC-R) Precinct Local Planning Policies (LPP) in to one Policy, with the addition of the draft Waratah Precinct LPP. The Policy also includes new criteria what were not previously adopted.

The adopted LPPs and the advertised Waratah Precinct LPP have been reviewed in light of the gazettal of the new Residential Design Codes Volume 1 (R-Codes Volume 1) on 10 April 2024. As a result of the review process, this Policy has been developed to include only provisions which do not require approval from the Western Australian Planning Commission (WAPC). It is proposed that once this Policy is adopted that the Broadway, Hampden-Hollywood and NSHAC-R LPPs be revoked.

Discussion

Early last year the City resolved to adopt three Precinct LPPs:

- **5.10 Broadway Precinct**
- **5.11 Hampden-Hollywood**
- **5.12 Nedlands Striling Highway Activity Corridor – Residential (NSHAC-R)**

A fourth precinct LPP for Waratah was also scheduled to be adopted prior to the Minister for Planning announcing deferral of the introduction of the Medium Density R-Codes Volume 1. Uncertainty around timeframes and a lack of clear direction surrounding the introduction of the Medium Density R-Codes led to a delay in the Waratah Policy being presented back to Council post advertising. In addition, all four of the precinct LPPs contained provisions which triggered the need for WAPC approval.

The individual precinct policies sought to amend several provisions of the R-Codes Volume 1 and 2 which required WAPC approval. Initial verbal advice from the WAPC was that the policies could be adopted in their entirety, but those elements requiring WAPC approval could not be enforced until such approval was granted. At a later meeting with the WAPC, City Officers were verbally advised that the strict reading of the Planning and Development (Local Planning Schemes) Regulations 2015 (the Regulations) meant that any policies amending criteria that required WAPC approval could not be lawfully adopted until after the WAPC had granted approval. This puts the adopted precinct policies into a grey area and open to challenge. City Officers have not been provided a timeframe of when the approvals requested would likely to be granted or if they will be supported by the WAPC. However, public statements by the Minister for Planning lead City Officers to believe that any variations to the recently gazetted R-Codes which require WAPC approval will not be supported.

The new R-Codes Volume 1 was gazetted on 10 April 2024. The R-Codes Volume 1 set out improved criteria for single houses and grouped dwellings, as well as multiple dwellings on lots coded up to R60. The criteria include new considerations for internal amenity, such as ventilation and sunlight to habitable rooms, as well as a primary garden area. Overall, City Officers considered that the proposed changes were an improvement on the previous R-Codes, and so similar in many ways to the City's recently adopted precinct policies as to make some of the criteria unnecessary. In that respect, City Officers began simplifying and combining the individual precinct policies into a single Policy.

Precincts LPP

The draft Policy simplifies the existing policies both in format and complexity, taking into account the recent legislative changes discussed above. The draft Precincts LPP proposes to combine elements of the Broadway, Hampden-Hollywood, NSHAC-R and Waratah Policies so that each precinct is discussed in a separate section. The Policy includes only those items that can be adopted without WAPC approval.

Each precinct of the draft Policy includes a Desired Future Character Statement which carries the intent of the provisions provided within the Policy. The following provisions were in the precinct policies but have been removed from the draft Policy:

- Landscaping
- Sustainability
- Mixed Use
- Side and rear setbacks for single and grouped dwellings
- Building Height for R80 and R160 lots (single and grouped dwellings only)

The general provisions for landscaping and sustainability have been removed from the Policy as these items require WAPC approval to have effect. Modified sustainability provisions have been absorbed LPP3.3 Sustainable Design – Residential. LPP1.1 incorporates elements proposed for the Medium Density Codes that improve internal amenity and garden space. The Precincts Policy refers to those elements in LPP1.1 and 3.3 so that outcomes are consistent across the City.

The current versions of the Hampden-Hollywood, NSHAC-R and draft Waratah Precinct Policies contained building heights for R80 and R160 lots which vary provisions of the R-Codes Volume 1. As with the above landscaping and sustainability provisions, WAPC approval is required for these variations. The draft Policy reverts to the R-Codes Volume 1 deemed to comply provision of 4 storeys for single and grouped dwellings on R80 and R160 lots.

The Desired Future Character Statements have been carried over from the four individual Policies. These statements have been formulated based on the key priorities and values highlighted by the community during the engagement process and provide a basis for the provisions contained within the draft Policy.

It is proposed that should Council resolve to proceed with the draft Precincts LPP, upon final adoption, the Broadway, Hampden-Hollywood and NSHAC-R Precinct Policies be revoked.

Consultation

Each of the four precincts have been subject to comprehensive community consultation. This included stakeholder and community reference groups, open house community information sessions, engagement via the City's Your Voice portal and formal advertising of the draft Policies.

Due to the extent of the changes proposed and Officers presenting this as a new Policy, the Policy is required to be advertised to the community prior to final adoption.

Should Council resolve to advertise the Policy, it will be advertised in accordance with the City's Constitution of Planning Proposals Local Planning Policy.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2023-33 vision and desired outcomes as follows:

Vision **Sustainable and responsible for a bright future**

Pillar **Place**
Outcome 6. Sustainable population growth with responsible urban planning.

Budget/Financial Implications

The remaining expenses for the Precinct Policy work relate to public advertising. No additional budget is required to complete the work for the Policy.

Legislative and Policy Implications

Clause 3(1) of the Deemed Provisions of Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015 allows the City to prepare a local planning policy in respect to any matter related to the planning and development of the Scheme area. Once Council resolves to prepare an LPP, in accordance with Clause 4 of the Deemed Provisions it must publish a notice of the proposed Policy for a period of not less than 21 days and seek submissions. Advertising will also include details being posted on the City's website and Your Voice engagement portal. Following the advertising period, the policy will be presented back to Council to consider any submissions received and resolve to:

a) Proceed with the Policy without modification; or
b) Proceed with the Policy with modification; or
c) Not proceed with the Policy.

Decision Implications

If Council resolves to prepare the Policy, it will be advertised in accordance with the process above.

If Council resolves not to endorse the recommendation, the Policy will not be advertised, or progressed. This will result in there being no Policy in place with specific built form controls for the Waratah Precinct. This would also mean the three adopted Policies would remain unchanged with elements which are not approved by the WAPC.

Conclusion

As a result of extensive research and consultation, the Local Planning Policy – Precincts, provides contextually appropriate built form outcomes for the Broadway,

Hampden-Hollywood, Nedlands Stirling Highway Activity Corridor – Residential and Waratah Precincts. It incorporates elements of the newly gazetted Residential Design Codes wherever possible and improves landscaping and sustainability outcomes. It is recommended that Council adopt the draft Policy for formal advertising.

Further Information

Nil.

City of Nedlands

LPP 5.10: Precincts

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1 PURPOSE

1.1 To outline the desired future character of development within the Broadway, Hampden-Hollywood, Nedlands Stirling Highway Activity Corridor (NSHAC) – Residential and Waratah Precincts.

1.2 To provide built form requirements which respond to the context of each precinct and promote design quality of new development.

2 APPLICATION OF POLICY

2.1 This Policy applies to the Precinct areas as identified in the Precinct Maps.

2.2 The Policy applies to subdivision applications and development applications for single houses, grouped dwellings, multiple dwellings and mixed use development, as well as non-residential development in the mixed use zone.

2.3 This Policy amends, replaces or provides additional deemed-to-comply and acceptable outcome requirements of the Residential Design Codes (R-Codes) specific to the identified Precinct contexts as shown in the table below. Unless specified all other provisions of the deemed to comply or acceptable outcome as contained in the R-Codes applies.

Primary Controls of this Policy	Vol.1 Part B Deemed to comply requirement	Vol.1 Part C Deemed to comply requirement	Vol. 2 Acceptable Outcome requirement
Building Height	Replaces 5.1.6 C6.		Replaces A2.2.1
Minimum primary street setback	Replaces 5.1.2 C2.1(i-iii) and C2.4	Augments 3.3 C3.3.1 Replaces 3.3 C3.3.2	Replaces A2.3.1
Minimum secondary street setback	Replaces 5.1.2 C2.2	Replaces C3.3.1 Augments C3.3.3	Replaces A2.3.1
Minimum side setback			Replaces A2.4.1
Rear setback			Replaces A2.4.1
Boundary walls	Replaces 5.1.3 C3.2(iii)	Augments 3.4 C3.4.4 & C3.4.5 C3.4.4 (ii-iii) remain	Augments A2.4.1 & A2.4.2
Vehicle access	Replaces 5.3.5 C5.1	Replaces 3.7 C3.7.1 & C3.7.2	Augments A3.8

3 RELATIONSHIP TO OTHER POLICIES AND LEGISLATION

3.1 This Policy has been prepared in accordance with Schedule 2 Part 2 Clause 4 of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

3.2 This Policy should be read in conjunction with the following legislative instruments and its requirements apply unless specifically stipulated elsewhere in any of the below:

- *Planning and Development Act 2005*
- *Planning and Development (Local Planning Schemes) Regulations 2015*
- *City of Nedlands Local Planning Scheme No. 3*
- *Residential Design Codes Volumes 1 and 2*
- *City of Nedlands Local Planning Policy 1.1: Residential Development*
- *City of Nedlands Local Planning Policy 1.3: Sustainable Design – Residential*
- *City of Nedlands Local Planning Policy 3.3: Tree Retention*

3.3 Where this Policy is inconsistent with a Local Development Plan, Structure Plan or Local Planning Policy that applies to a specific site, area, or density code, the provisions of that instrument shall prevail over this Policy to the extent of any inconsistencies.

3.4 Where this Policy is inconsistent with the provisions of another general Local Planning Policy, the provisions of this Policy shall prevail.

4 OBJECTIVES

4.1 Define the desired future character of the Precincts in context of their zoning and density code.

4.2 Ensure new development contributes to the desired future character of the relevant Precinct, whilst respecting and reflecting the existing character.

4.3 Provide appropriate built form transitions between areas of higher density and areas of lower density.

4.4 Ensure setback provisions facilitate a consistent streetscape and built form, and ensure buildings co-exist with neighbouring properties.

4.5 Facilitate housing diversity appropriate to the needs of the local community, encouraging a permanent population and aging in place.

4.6 Facilitate high-quality development which maximises residential amenity.

4.7 Maintain and enhance the leafy green landscape character of the Precincts, promoting growth of the urban forest through tree canopies in yard spaces, front and rear setbacks, and along streets.

5 CRITERIA APPLICABLE TO ALL RESIDENTIAL DEVELOPMENT

5.1 Refer to the City's Local Planning Policy 1.1: Residential Development for additional provisions and local housing objectives which supersede the R-Codes. The provisions in LPP 1.1 apply only where such provisions are not amended by this Precincts Policy. For all residential development this includes, but may be not limited to:

- Garage width
- Street walls and fences
- Sightlines

Clause 6.2 within LPP 1.1 introduces additional criterion that apply to all single house developments on land coded R30 - 40 where assessment of a Development Application is required. This includes but may not be limited to:

- Private open space
- Size and layout of dwellings
- Solar access and natural ventilation
- Waste management
- Site works and retaining walls

5.2 Refer to the City's Local Planning Policy 1.3: Sustainable Design – Residential for additional provisions which may apply to development within the Precincts of this Policy.

5.3 Building Separation: For R-Codes Vol. 2 assessments refer to Table 2.7 of R-codes Vol. 2 for building separation provisions. For buildings ≤ 4 storeys the side and rear setbacks contained in this Policy prevail over those referred to in Table 2.7.

5.4 Vehicle Access:

a) Vehicle access to on site car parking to be provided via the lowest available street in the hierarchy, as follows:
   i. From a right-of-way or communal street available for lawful use to access the relevant site and which is trafficable and drained from the property boundary to a constructed street; or
   ii. from the secondary street; or
   iii. from the primary street.

b) Vehicle access points are to be limited to one per lot except where:
   i. An existing dwelling is being retained as part of a development proposal.
   ii. dwellings front the street and access is not available from a communal street or rear right-of-way, in which case a maximum of one vehicle access point is permitted per dwelling.

5.5 Building Heights:

Number of Storeys	Indicative Building Height in metres
2	Up to a maximum 8.5m for wall or concealed roof height, up to 10m pitched roof height.
3 & above	As per Table 3.2a of R-Codes Vol. 1 Part C, or subject to indicative building heights outlined in Table 2.2 of R-Codes Vol. 2 as applicable.
Note: Maximum overall building height inclusive of rooftop articulation and lift overruns	

6 BROADWAY PRECINCT

6.1 Broadway Precinct Map

Figure 1 – Broadway Precinct Map

6.2 Desired Future Character Statement

Overview

The Broadway Precinct will provide for a diversity of dwelling types and configurations, accommodating a range of household types. New development will take advantage of being within the UWA-QEII Specialised Activity Centre while catering to the needs of the community. New development will follow sustainable building design principles and feature a palette of high-quality, diverse materials and finishes to create a contemporary architectural response that reflects the existing character. Built form and landscaping will be designed to provide appropriate transitions from high-density development along Stirling Highway and Broadway through to lower density residential areas in the south and west.

Residential sub-precinct form

New development in the residential zones will fit comfortably within the existing open, leafy streetscapes through street setbacks which achieve a balance between the prevailing street setbacks and the expectation of the density code. New developments will maintain and, where possible, enhance the existing urban street canopy by prioritising tree canopy and deep soil areas. Vehicle access and parking will be designed to minimise visual impact and dominance over the street and to maximise space for deep soil and trees within the street setback and verge areas. The existing detached streetscape character will be retained by minimising the impact of boundary walls on the street.

Mixed use development form

New development within the Mixed use zone along Stirling Highway and Broadway will contribute to the creation of high amenity, attractive streetscapes and will interact with the street to enhance the pedestrian environment. Single house and group dwelling developments are not appropriate within the mixed use sub-precinct as they are likely to result in poor amenity when located between expected large multiple dwelling developments and along a busy commercial strip, nor do they contribute to the anticipated ground storey commercialisation along Broadway.

The Stirling Highway sub-precinct will accommodate the most intense built form within the Broadway Precinct and is the most appropriate location for purely commercial developments, including offices, provided that these developments maintain a strong connection to the public realm. Podiums will provide an opportunity for creating a diversity of scale and form at lower levels, while taller elements will comprise of setbacks accommodating rooftop terraces and gardens at varying levels throughout the development. Alternative means to reduce bulk and scale such as green walls and façade articulation are also encouraged. New development will be massed towards the highway to minimise the building bulk and solar access impacts on the R160 properties to the rear. A uniform 6m rear setback to lots along Stirling Highway will provide the opportunity for two-way vehicle access to be provided at the rear, minimising the creation of new crossovers onto the highway. In addition, a uniform setback of development from Stirling Highway will allow for trees and deep soil areas within the street setback area, softening the interface with the highway and improving pedestrian amenity.

New development in the Broadway mixed use sub-precinct will be massed towards Broadway and designed to account for the topographical differences between Broadway and Kingsway, to minimise building bulk impacts on the R60 properties to the rear. The street interface of new developments will contribute to the public realm, provide an active frontage and will provide opportunity for passive surveillance over the street. Tenancies for ground storey non-residential uses will be suitably proportioned to provide a meaningful contribution to street activation.

6.3 Primary Controls – Broadway Precinct						
	R40	**R60**	**R160**		**Stirling Highway R-AC1**	**Broadway R-AC1 & R-AC3**
Building Height	2 storeys	as per R-Codes			7 storeys **OR** 10 storeys[1]	6 storeys
Minimum Primary Street setback[2,3,4]	6m	**Kingsway:** 5m **all other:** 6m	**ground & 1st storey:** 6m **all other storeys:** 7m		**ground, 1st, 2nd & 3rd storey** 2.5m **all other storeys** 5.5m	**ground & 1st storey** nil **2nd & 3rd storey** 4m **all other storeys** 6m
Minimum Secondary Street setback[7,4]	1.5m					
Minimum Side Setback[3,5,10]	as per R-Codes	**single/grouped dwelling** as per R-Codes	**multiple dwelling** **<u>where adjoining R60</u>** **ground storey:** 2m **1st & 2nd storey:** 3m **all other storeys:** 5m **<u>where adjoining R160, R-AC3 or R-AC1</u>** **ground storey:** 2m **all other storeys:** 3m		**multiple dwelling/mixed use** **ground, 1st, 2nd & 3rd storey** nil **all other storeys** 6m	**multiple dwelling/mixed use** **ground & 1st storey** Nil **2nd & 3rd storey** 3m **all other storeys** 5m
Rear Setback[7,10]			**multiple dwelling** **<u>where Adjoining R60</u>** **ground, 1st & 2nd storey:** av 4m; min 3m **all other storeys**: 6m **<u>where adjoining R160, R-AC3 or R-AC1</u>** min 3m; av 4m		**multiple dwelling/mixed use** min 6m, which shall include public vehicle access across the lot	**multiple dwelling/mixed use** **ground, 1st & 2nd storey** 6m **all other storeys** 9m
Boundary walls[8,9,10]	max 1 storey (3.5m) max of 2/3 of the length of the boundary behind the front setback line located a minimum 3m behind primary street setback line permitted to 1 lot boundary **OR** 2 lot boundaries[6]				max 4 storeys (13m) unlimited length permitted to 2 side boundaries	max 2 storeys (7m) unlimited length permitted to 2 side boundaries

1. These additional building heights may be considered where 2 hours of solar access per day on 21 June, between 10am and 4pm, is maintained for all affected rear properties and where vehicle access is provided via a secondary street (with no vehicle access to Stirling Highway) and the development achieves a certified 5-star Green Star rating.
2. R40, R60 & R160 lots: The minimum primary street setback may be reduced by up to 2m provided the area of any building (including a garage or unenclosed balcony) encroaching into the setback area is compensated for by at least an equal area of open space (of which 50 per cent is provided as deep soil area) that is located between the setback area and a line drawn parallel to it at twice the setback distance.
3. Provisions of the R-Codes relating to the primary street setback for carports apply. Additionally, carports may have a nil setback to one side boundary in the front setback area where the carport aligns with the crossover.
4. Setbacks along Stirling Highway are to be taken from the boundary after the road widening.
5. R160, R-AC1 & R-AC3 lots: Service areas (such as lifts and stairs) may protrude into the side setback areas a maximum width (parallel to the lot boundary) 12m.
6. Boundary walls may be built up to 2 lot boundaries where a minimum 20 per cent of the site area is provided as deep soil area.
7. For the purpose of assessing average setbacks, lot boundary walls and patios are to be included. Refer to Appendix 1 – Rear Averaging Methodology.
8. Where the subject site and an affected adjoining site are subject to different density codes, the length and height of any boundary wall on the boundary between them is determined by reference to the lower density code.
9. Walls may be built up to a lot boundary where it abuts an existing or simultaneously constructed wall of equal of greater proportions.
10. Boundary setbacks will also be determined by provisions for building separation, deep soil areas and visual privacy within R-Codes Vol. 1 and Vol. 2, and building separation provisions of the National Construction Codes. (see 5.3 of this Policy for further building separation guidance).

7 HAMPDEN-HOLLYWOOD PRECINCT

7.1 Hampden-Hollywood Precinct Map

Figure 2 – Hampden-Hollywood Precinct Map

7.2 Desired Future Character Statement

Overview

New development and associated land uses within the Hampden-Hollywood Precinct will respond to their location within the UWA-QEII Specialised Activity Centre, while also catering to the needs of the local community. The Precinct will provide diverse housing options for residents. New development will contribute to high amenity and attractive streetscapes, retaining the Precinct's leafy green character by enhancing and prioritising tree canopy and landscaping. Built form and landscaping will be designed to provide appropriate transitions from areas of higher density to areas of lower density. New development will utilise a palette of high-quality, natural materials, and diverse architectural styles to create a contemporary interpretation of the prevailing streetscape elements and materiality.

Residential sub-precinct form

New dwellings in the residential sub-precinct will perform a key role in transitioning from the high-density urban environment expected along Hampden Road, Monash Avenue and Leura Street, towards the lower density residential R10 and R12.5 areas to the west. New dwellings will address the street and laneways with courtyards, balconies, low fences, and front gates to reinforce the existing residential character and promote passive surveillance. New developments should fit comfortably within the existing leafy streetscapes, with generous street setbacks that strike a balance between the prevailing street setbacks and the expectations of the density code.

Setbacks and landscaping

Street and rear (laneway) setbacks will accommodate deep soil areas for tree retention and provision. Vehicle access and parking will be designed to minimise visual impact to the street and maximise space for deep soil areas and trees within the street setback area and verge. Substantial areas of landscaping will be integrated with the new developments to soften the interface with the street and surrounding properties, and to provide an attractive outlook for residents of the developments.

The existing mature trees on Lot 276 (No. 15 Hampden Road) should be retained and incorporated as part of a landscaped alcove or alfresco area.

Locating boundary walls to either the southern or eastern boundary of lots will assist in maintaining an open streetscape and consolidated areas of open space and deep soil areas. Larger areas of usable open space created by moving the boundary wall to one consistent setback will provide more access to sunlight and solar access to habitable rooms on adjoining properties.

Mixed use development form

New developments within the Mixed use zone will contribute to the creation of attractive and green streetscapes and interact with the street to enhance the pedestrian environment. Active land uses on the ground storey within this zone will connect the private and public realms, interfacing with the street through open unobscured frontages and/or alfresco dining options. A diversity of dwelling types which provide for a range of household configurations is encouraged on the upper storeys. A uniform rear setback will maintain the provision of vehicle access and servicing at the rear and will provide opportunities for trees and deep soil areas. The street interface of new developments will contribute positively to the public realm and provide opportunity for passive surveillance of the street. On-structure planting is encouraged to add greenery and soften any built form.

New single houses and grouped dwellings are not appropriate along Hampen Road or Monash Avenue given the density and proximity to the hospital precinct.

Hampden Road will continue to be a bustling, mixed use main street environment, with the sub-precinct accommodating the most intense built form within the Precinct. The north-south orientation is conducive to optimal urban design outcomes and developments shall be designed to the human scale. Taller elements are encouraged to be set back from the street, including provision of rooftop terraces and gardens at varying levels throughout. New development should address both Hampden Road and Hampden Lane. Pedestrian linkages from Hampden Road to Hampden Lane will promote activation and interest, using landscape features and improved connectivity within the Precinct.

New mixed use development with less active ground storey uses and medical related uses are anticipated along Monash Avenue to support Hollywood Hospital and QEII Medical Centre. New development is to address and be massed towards Monash Avenue to minimise building bulk and impacts on the R60 properties to the south of Micrantha Lane.

Leura Street
Future development on Leura Street should reflect its proximity to Hampden Road and R60 lots the west, with new developments to address Leura Street and Hampden Lane. A reduction in building height for development along Leura Street will assist in providing a transition from development on Hampden Road to the lower density residential development to the west.

7.3 Primary Controls – Hampden-Hollywood Precinct									
	R40	**R60**		**R160**		**Hampden Rd R-AC3**	**Monash Ave R-AC3**	**Leura St R-AC3**
Building Height	2 storeys	as per R-Codes		as per R-Codes		6 storeys		5 storeys
Minimum Primary Street setback[1,2]	4m	**single/grouped dwelling** 4m	**multiple dwelling** **ground & 1st storey** 4m **all other storeys** 5m	**single/grouped dwelling** 4m	**multiple dwelling** **ground & 1st storey** 4m **all other storeys** 6m	**ground & 1st storey** nil[3] **2nd, 3rd & 4th storey** 4m **all other storey** 6m		**ground & 1st storey** 2m **2nd & 3rd storey** 4m **all other storeys** 6m
Minimum Secondary Street setback	1.5m	1.5m		1.5m		1.5m	**ground & 1st storey** 1.5m **all other storeys** 3m	
Minimum Side Setback[2,7]	as per R-Codes	as per R-Codes		**single/grouped dwelling** as per R-Codes	**multiple dwelling** **northern lot boundary** 3m **southern lot boundary** **ground storey** nil **all other storeys** 1.5m	**multiple dwelling/mixed use** **ground, 1st & 2nd storey** nil[4] **all other storeys** 3m		
Rear Setback[7]	as per R-Codes	as per R-Codes		**single/grouped dwelling** as per R-Codes	**multiple dwelling** min 3m	min 3m	**ground – 4th storey** nil **all other storeys** 3m	min 3m
Boundary wall[5,6,7]	1 storey (3.5m) southern side only located a min 2m behind the primary setback line	1 storey (3.5m) southern lot boundary only for east/west lots eastern lot boundary only for north/south lots located a min 2m behind primary setback line		1 storey (3.5m) southern boundary of parent lot only located a min 2m behind the primary setback line		max 3 storeys (10m) up to 2 side boundaries only		

1. R40, R60 & R160 lots: The minimum primary street setback may be reduced by up to 2m provided the area of any building (including a garage or unenclosed balcony) encroaching into the setback area is compensated for by at least an equal area of open space (of which 50 per cent is provided as deep soil area) that is located between the setback areas and a line drawn parallel to it at twice the setback distance.
2. Provisions of the R-Codes relating to the primary street setback for carports apply. Additionally, carports may have a nil setback to one side boundary in the front setback area where the carport aligns with the crossover.
3. A nil primary street setback is required to Hampden Road, except where a deep soil area or landscaped alcove is provided within the setback area.
4. Where a side setback greater than nil is proposed for properties along Hampden Road, it must accommodate deep soil areas, activation or provide a meaningful pedestrian connection to Hampden Lane or Micrantha Lane.
5. Where the subject site and an affected adjoining site are subject to different density codes, the length and height of any boundary wall on the boundary between them is determined by reference to the lower density code.
6. Walls may be built up to a lot boundary where it abuts an existing or simultaneously constructed wall of equal or greater proportions and located a minimum of 2m behind the primary street setback line.
7. Boundary setbacks will also be determined by provisions for building separation, deep soil and visual privacy with R-Codes Vol. 1 and Vol. 2, and building separation provisions of the National Construction Codes. (see 5.3 of this Policy for further building separation guidance).

8 NEDLANDS STIRLING HIGHWAY ACTIVITY CORRIDOR (NSHAC) – RESIDENTIAL PRECINCT

8.1 Nedlands Stirling Highway Activity Corridor – Residential Precinct Map

Figure 3 – Nedlands Stirling Highway Activity Corridor – Residential Precinct Map

8.2 Desired Future Character Statement

Overview

The NSHAC Residential Precinct shall facilitate a transition from high-density development along the Highway to lower-density residential neighbourhoods of Nedlands. The Precinct will spread north and south from Stirling Highway, facilitating residential development around an existing busy urban corridor. The residential streets of the Precinct will consist of local, leafy streets designed for walking, providing respite from the traffic and busyness of the highway. Future development will encourage public realm interfaces that provides comfortable and attractive pedestrian journeys through the neighbourhood.

Landscaping, setbacks and built form

Local streets will function as the green 'ribs' of the greater NSHAC Precinct. Trees, especially well-established mature trees, will be preserved wherever possible. Trees are a critical part of the material heritage and identity of place in the Precinct, and their presence is highly valued by the local community. The retention of significant existing trees and provision of new trees and landscaping is expected to maintain the green and leafy tree canopy that characterises the Precinct. New developments should fit comfortably within the existing leafy streetscapes, achieved through generous street setbacks, striking a balance between the prevailing street setbacks and density code. Built form should be reflective of the traditional separated dwellings and highly landscaped and tree-filled front yards. The existing detached streetscape character will be retained by minimising the impact of boundary walls on the street. Crossovers shall be at a minimum, with shared crossovers utilised wherever possible to reduce the impact of vehicle access points and hardstand on the streetscape.

Environmental and cultural sustainability is important in the establishment of quality-built form. New development will be of a form and scale that is appropriate to the contemporary vision for the Precinct as a medium-rise and higher density residential, near-City urban neighbourhood. New development shall also be appropriate for its density, with underdevelopment of R160 lots discouraged and having regard to potential large multiple dwelling developments directly abutting Stirling Highway.

The R160 lots south of Stirling Highway will be sympathetic to the lower density R60 lots to their south. The R160 lots fronting Jenkins Avenue between Bay Road (in Claremont) and Taylor Road will have a reduced multiple dwelling building height to reflect their location directly across the street from low density R12.5 lots. This will provide not only a transition of height, bulk and scale, but also reduce the effects of overshadowing to lots to the south.

Housing will exhibit quality design that reflects the existing, traditional patterns of development. Through these measures the future form of development and growth in the NSHAC Residential Precinct will create distinctive places to support a local neighbourhood feel.

8.3 Primary Controls – NSHAC Residential Precinct			
	R60	**R160**	
Building height	as per R-Codes	**single/grouped dwelling** as per R-Codes	**multiple dwelling** 5 storeys **OR** 4 storeys applicable to: • all R160 lots where it abuts R60 • all R160 lots north of Jekins Ave, between Bay Rd & Jenkins Ave
Minimum Primary street setback[1,2,3]	**ground & 1st storey** 4m **all other storeys** 6m	**ground, 1st & 2nd storey** 4m	**all other storeys** 5m
Minimum Secondary street setback	**ground & 1st storey** 1.5m **all other storeys** 3m	**single/grouped dwelling** 1.5m	**multiple dwelling** **ground, 1st & 2nd storey** 3m **all other storeys** 4.5m
Minimum Side setback[3,4,5,11]	as per R-Codes	**single/grouped dwelling** as per R-Codes	**multiple dwelling** **ground, 1st & 2nd storey** 1.5m **all other storeys** 3m
Rear setback[11]	as per R-Codes	**single/grouped dwelling** as per R-Codes	**multiple dwelling** av 6m; min 3m[6,7]
Boundary walls[9,10,11]	• max 1 storey • located 3m behind primary setback and excluding rear setback • to one side boundary **OR** • 2 (where a min 20% deep soil areas is provided OR 15% deep soil area where a significant existing tree is retained on site[8])	• max 1 storey • located 3m behind primary setback and excluding rear setback to one side boundary **OR** • 2 (where a min 20% deep soil areas is provided OR 15% deep soil area where a significant existing tree is retained on site[8])	

1. The minimum primary street setback may be reduced by up to 2m provided the area of any building (including a garage or unenclosed balcony) encroaching into the setback area is compensated for by at least an equal area of open space (of which 50 per cent is provided as deep soil area) that is located between the setback areas and a line drawn parallel to it at twice the setback distance.
2. Where a corner lot has been subdivided and a common property driveway at the rear of the lot serves two or more dwellings, the front setback may be reduced by 2m with no further front setback dispensation.
3. Provisions of the R-Codes relating to the primary street setback for carports apply. Additionally, carports may have a nil setback to one side boundary in the front setback area where the carport aligns with the crossover.
4. Where a lot sides onto a laneway, minimum side setback provisions apply in place of secondary street setback provisions.
5. Service areas (such as lifts and stairs) may protrude into the side setback areas a maximum width (parallel to the lot boundary) 12m.
6. Rear setbacks may be reduced by up to 1m where a significant existing tree is retained within the setback area and deep soil area requirements are still met. Arboriculturist report to be provided to be provided to demonstrate the building location will not harm the long term viability of the tree.
7. For the purpose of assessing average setbacks, lot boundary walls and patios are to be included. Refer to Appendix 1 – Rear Averaging Methodology.
8. Arboriculturist report to be provided to be provided to demonstrate the building location will not harm the long term viability of the tree.
9. Where the subject site and an affected adjoining site are subject to different density codes, the length and height of any boundary wall on the boundary between them is determined by reference to the lower density code.
10. Walls may be built up to a lot boundary where it abuts an existing or simultaneously constructed wall of equal or greater proportions and located a minimum of 2m behind the primary street setback line.
11. Boundary setbacks will also be determined by provisions for building separation, deep soil and visual privacy with R-Codes Vol. 1 and Vol. 2, and building separation provisions of the National Construction Codes. (see 5.3 of this Policy for further building separation guidance).

9 WARATAH PRECINCT

9.1 Waratah Precinct Map

Figure 4 – Waratah Precinct Map

9.2 Desired Future Character Statement

Overview
The Waratah Precinct will provide diverse housing options for residents within attractive, high-quality streetscapes. The precinct's defining attribute is its leafy green character, which will be retained through enhancing and prioritising tree canopy and deep soil areas in new developments. New development will follow sustainable building design principles and will feature a palette of high-quality materials and finishes while reflecting the patterns of traditional development.

Streetscape and vehicle access
New development within the residential sub-precincts shall reflect the established generous street setbacks. There is an opportunity to maintain and enhance tree canopy within the front and rear setbacks, as well as using landscaping to soften interfaces between density codes. Significant deep soil area shall be provided within the front setback area, maximising soft landscaping and the capacity for mature trees to be retained and established. One single width crossover shall be permitted for development and vehicle access is to be from the rear laneway whenever possible to enhance the pedestrian friendly streetscape.

Alexander Road
New development in the Alexander Road sub-precinct shall acknowledge the existing pattern of narrow lot development and provide consistency of development along the streetscape. Boundary walls can be used to maximise the development potential on subdivided lots. Vehicle access for sites within the north-western portion shall be from the rear laneway to maintain the pedestrian friendly nature of Alexander Road.

Philip Road
The upper storey developments on Philip Road R80 sites should be massed centrally and away from the street, to ensure that larger developments sit comfortably within the streetscape and do not dominate the public realm. The R60 sites on the northern side of Philip Road shall take advantage of the northern aspect through generous upper storey setbacks.

Waratah Sub-precinct
The Waratah sub-precinct shall provide for a diversity of dwelling types and configurations that provide for a range of household types. New development on Genesta Crescent shall include generous front and rear setbacks, reflecting the existing built form. Development on Adelma Road shall include moderate street and rear setbacks, reflective of the emerging built form character created by the subdivision of single lots into multiple smaller lots. New development should replicate the fine grain nature of development that is creating an emerging character consisting of townhouses that address Adelma Road.

Land uses
Land uses within the Mixed Use and Local Centre zones will suit the scale and function of the Waratah Precinct as a local centre for the surrounding residential area. Active uses will be located at the street level with clear glazing and wide openings creating ease of movement between private and public realms. The casual demarcation between the private and public realms will enhance the pedestrian environment on Waratah Avenue, promoting a vibrant and active local centre. Appropriate uses that promote activity during the evening hours are encouraged, such as small bars and restaurants, creating a lively option for residents to socialise within a safe, suburban setting. Non-active uses may be located above street level, contributing to the

activation of the area by drawing in staff and customers.

Mixed use development

New development in the Mixed Use zone will assist in creating a high-quality public realm by interacting with the Nedlands Community Centre and Genesta Park, and maintain and enhance any heritage significance of existing buildings. Development in the Mixed Use and Local Centre zones shall be stepped down to interface sensitively with the surrounding residential sub-precincts. Significant landscaping, deep soil and on-structure plantings are encouraged, particularly on the western and northern areas of lots and should seek to enhance the existing tree canopy cover. Enhancing the tree canopy cover and leafy green environment will add to the 'boulevard' feel along Waratah Avenue, encouraging a comfortable pedestrian experience and a natural connection between the Local Centre and Mixed Use zones of the Precinct. Street setbacks for new development shall be consistent with existing new developments. Vehicle access shall be from the rear laneway wherever possible to promote a safe, pedestrian-friendly boulevard.

9.3 Primary Controls – Waratah Precinct

	Alexander Rd		Philip Rd			Waratah Ave		
	R40	**R80**	**R40**	**R60**	**R80**	**R40**	**R60** (Adelma Rd)	**R60** (Genesta Cres & Waratah Ave)
Building height[3]	2 storeys	**single/grouped dwelling** as per R-Codes **multiple dwellings** 3 or 4 storeys[1]	2 storeys	as per R-Codes	**single/grouped dwelling** as per R-Codes **multiple dwelling** 4 storeys	2 storeys	as per R-Codes	
Minimum Primary street setback[2,4,5]	**ground & 1st storey** 5m **all other storeys** 6m		5m	**ground & 1st storey** 5m **all other storeys** 8m		5m	3m	4m
Minimum Secondary street setback[5]	2m		2m	**ground & 1st storey** 2m **all other storeys** 3m		2m		
Minimum Side setback[4,10]	as per R-Codes	**single/grouped dwelling** as per R-Codes **multiple dwelling ground & 1st storey** 2m **all other storeys** 3m	**single/grouped dwelling** as per R-Codes **multiple dwelling ground & 1st storey** 2m **all other storeys** 3m			as per R-Codes		
Rear setback[6,10]	as per R-Codes	**single/grouped dwelling** as per R-Codes **multiple dwellings** av 6m min 3m	**single/grouped dwelling** as per R-Codes **multiple dwelling ground storey** av 6m; min 3m **all other storeys** 6m			as per R-Codes		
Boundary walls[7,8,10]	1 storey 2/3 the length of the lot boundary behind the front setback line 3m behind primary setback line 1 side boundary only **OR** 2 side boundaries[9]		1 storey 2/3 the length of the lot boundary behind the front setback line 3 min behind primary setback line 1 side boundary only **OR** 2 boundaries[9]			1 storey 2/3 the length of the lot boundary behind the front setback line 3 min behind primary setback line 1 side boundary only **OR** 2 side boundaries[9]		

	Mixed Use Zone – Waratah Ave (R-AC3) See Figure 5 below for map				Local Centre Zone – Waratah Ave (R60)
	Lots 384, 388, Lot 1 & 2: DP 26956 & No. 87 Waratah Ave	Lots 385, 386 & 387 Waratah Ave	Lot 8 Waratah Ave	Lot 396 Waratah Ave	Lots 337, 1, 3 & 4 Waratah Ave
Building height[3]	6 storeys				as per R-Codes
Minimum Primary street setback	**ground, 1st & 2nd storey** nil **all other storeys** 3m				**ground & 1st storey** nil to Robert St & Waratah Ave **all other storeys** 2m to Robert St & Waratah Ave
Minimum Secondary street setback	nil				nil
Side setback[6,10]	**ground, 1st & 2nd storey** Nil **all other storeys** Min 3m	**Lot 387** ground: eastern side setback 7m in accordance with part 9.4 of this Policy for the purpose of creating a laneway. **all other lots** as per R-Codes	**ground** western side 7m in accordance with part 9.4 of this Policy. eastern side as per R-codes	as per R-Codes	where abutting R60, lot setback for Lot 4 **ground, 1st & 2nd storey** Nil **all other storeys** 3m where abutting a lower density (R40 Lot 340) lot setback for Lot 4 av 5m; min 3m
Rear setback[6,10]	**Lot 384** as per R-Codes **all other lots** 7m – see Vehicle Access below.	as per R-Codes			average 3m
Boundary wall[7,8,10]	**abutting mixed use site** 3 storeys **abutting residential zoned site** as per R-Codes Vol. 1				max 1 storey max 2/3 the length of the lot boundary behind the front setback line
Vehcile Access	vehicle access to be from the laneway at the rear of the Waratah Avenue mixed use sites refer to part 9.4 of this Policy for additional guidance				no vehicle access permitted from Waratah Ave or Roberts Street

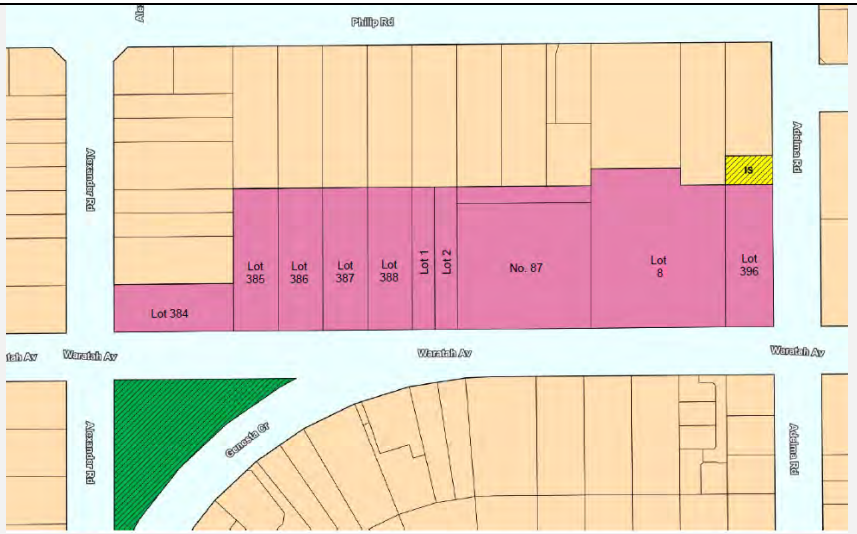


Figure 5: Mixed Use Zone

1. Additional storey permitted where it is demonstrated that the proposal allows for 2 hours per day solar access on 21 June for existing solar panels and primary garden areas on neighbouring properties.
2. Minimum primary street setback may be reduced by up to 2m, provided the area of any building (including a garage or unenclosed balcony) encroaching into the setback areas is compensated for by at least an equal area of open space (of which 50 per cent is provided as deep soil) that is located between the setback area and a line drawn parallel to it at twice the setback distance.
3. On a development site where basement parking is proposed, additional building height of up to 1.5m may be considered by the City, where there is minimal adverse impact on the streetscape and amenity of adjoining properties.
4. Provisions of the R-Codes relating to the primary street setback for carports apply. Additionally, carports may have a nil setback to one side boundary in the front setback area where the carport aligns with the crossover.
5. Reduced setbacks may be considered where a significant existing tree is retained on site. An Arboriculturist report is to be provided to demonstrate the building location will not harm the long term viability of the tree.
6. For the purpose of assessing average setbacks, lot boundary walls and patios are to be included. Refer to Appendix 1 – Rear Averaging Methodology.
7. Where the subject site and an affected adjoining site are subject to different density codes, the length and height of any boundary wall on the boundary between them is determined by reference to the lower density code.
8. Walls may be built up to a lot boundary where it abuts an existing or simultaneously constructed wall of equal or greater proportions and located a minimum of 3m behind the primary street setback line.
9. Boundary walls may be built up to two side boundaries where a minimum 20 per cent deep soil area is provided OR 15 per cent deep soil area where a significant existing tree is retained on site.
10. Boundary setbacks will also be determined by provisions for building separation, deep soil and visual privacy with R-Codes Vol. 1 and Vol. 2, and building separation provisions of the National Construction Codes. (see 5.3 of this Policy for further building separation guidance).

9.4 Waratah Laneway Avenue

Figure 6 – Waratah Avenue Laneway

NOTE: Indicative map. Specification and route to be determined

9.4.1	Laneways shall be provided where illustrated in Figure 6, including 6m by 6m truncations where identified.
9.4.2	Laneways shall have a width of 7m, including a 0.5m infrastructure and landscaping strip either side of the 6m wide carriageway, and with a finished level 150mm less than those of the adjoining properties along the entire boundary.
9.4.3	Where a laneway is required, it shall be constructed and drained at the proponent's cost to the specifications and satisfaction of the City of Nedlands prior to the creation of new titles (as a result of subdivision) or to the occupation of the new development (as a result of development approval), unless an alternative suitable arrangement is entered into. Necessary works will include bollard lighting and servicing strip.
9.4.4	The portion of easement for the creation of a laneway along the shared boundary of 81 and 87 Waratah Avenue shall be constructed of 1m width on Lot 1000 (No.87) Waratah Avenue and 6m width on Lot 8 (No.81) Waratah Avenue.
9.4.5	The proposed laneway at the rear of the mixed use properties facing Waratah Avenue shall be created entirely by the relevant property, with no portion being taken from existing adjacent residential properties on Philip Road.
9.4.6	Prior to the occupation of development, trees with a species and pot size to be specified by the City will be planted at 3m intervals within the infrastructure and landscaping strips to be maintained by the landowner in perpetuity. Where land is ceded to the City, a maintenance period of a minimum of 2 years from the occupation applies to the satisfaction of the City. Where laneway widening is identified on a site, suitable arrangements are to be made to the City's satisfaction ensuring that public access and maintenance is provided in perpetuity.
9.4.7	Setbacks to an identified laneway may be reduced to nil up through the third storey where adequate articulation is provided to reduce the impact of bulk and scale on rear properties.
9.4.8	Sites that are affected by an identified laneway may use the pre-ceded area (if relevant) in the calculation of plot ratio. Should this result in height and setback variations in order to achieve the plot ratio, small variations may be considered where supported by the City's Design Review Panel.

10 DEFINITIONS

10.1 For this Policy, the following definitions apply:

Word	Meaning
Ground storey	The storey of a building at pedestrian level at the primary street entrance.

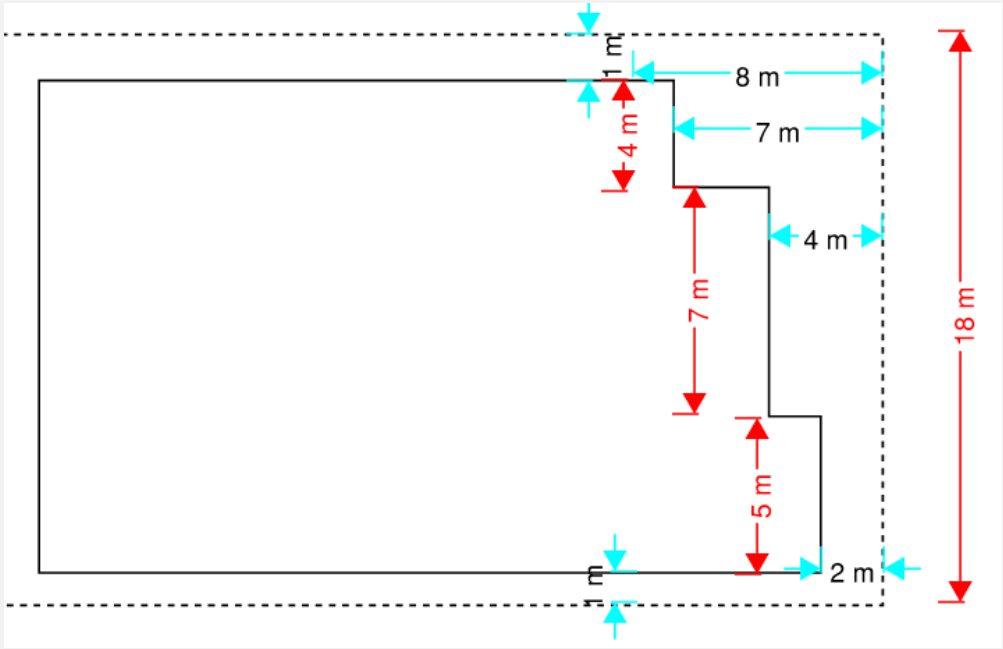
Council Resolution Number	XXX
Adoption Date	XXX

11 APPENDIX

11.1 Rear Averaging Methodology

Rear setback calculations are measured by calculating the length of each setback as a proportionate percentage of the length of the rear boundary. Only areas within twice the maximum average distance are included for calculation purposes.

Example:
For a rear setback requiring a minimum average of 4 metres:



Setback	Length of setback portion	Proportionate weighting ((Portion length / Total Length) x Setback
8	1	0.44
7	4	1.56
4	7	1.56
2	5	0.56
8	1	0.44
	SUM TOTAL =	4.56

16.7 PD37.05.24 Invitation for Involvement in the Design Process of the Proposed Greenspace Adjacent to WA Bridge Club, Allen Park, Swanbourne

Meeting & Date	Council Meeting - 28 May 2024
Applicant	City of Nedlands
Employee Disclosure under section 5.70 Local Government Act 1995	Nil.
Report Author	Nathan Blumenthal – Acting Manager Urban Planning
Director	Roy Winslow – Acting Director Planning & Development
Attachments	1. Perth Children's Hospital Foundation Presentation – Proposed Rehabilitation of Vacant Land adjacent to WA Bridge Club, Allen Park, Swanbourne

Purpose

The purpose of this report is to allow Council to consider participating in the design process for the proposed greenspace adjacent to the WA Bridge Club located at Allen Park, Swanbourne.

Recommendation

That Council accepts the invitation from the Perth Children's Hospital Foundation for elected members and senior City officers to participate in the design process of the proposed greenspace adjacent to the WA Bridge Club located at Allen Park, Swanbourne.

Voting Requirement

Simple Majority.

Background

The Perth Children's Hospital Foundation (PCHF) has extended an invitation to the City to be involved in the design process of a proposed greenspace located between the WA Bridge Club and future WA Children's Hospice (WACH) located at Allen Park, Swanbourne (Figure 1).

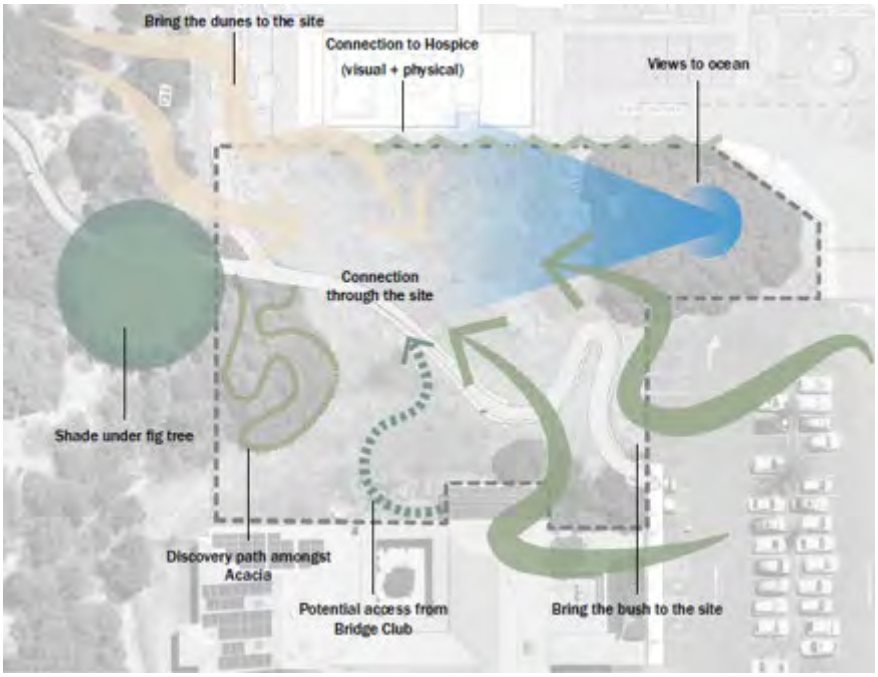


Figure 1: Location of greenspace

Discussion

The PCHF is proposing to rehabilitate the cleared land between the WA Bowls Club and WACH and are inviting the City to be involved in the design process. The area surrounds the Norn Bidi trail pathway, which the City has committed to constructing. Rehabilitating and rejuvenating the cleared land is an opportunity to provide additional greenspace for the community to enjoy.

The site for the greenspace is 3000m^2 and predominately cleared of vegetation. Participation in the greenspace design process would assist in making a space which complements the design of the Norn Bidi trail pathway.

The PCHF is committing $4 million to the consultation, design, construction and maintenance of the greenspace, subject to securing a funding sponsor. The PCHF are also committed to appointing and funding community engagement professionals to lead the Council, community and stakeholder engagement for the design process. The final design is intended to be referred to Council for approval.

A licence agreement between the City and PCHF for the construction of the greenspace is proposed by PCHF. The agreement would cover site access and conditions. Post construction, PCHF are proposing an additional licence agreement for a period of 10 years, with three 10 year options to extend. PCHF are prepared to pay an annual licence fee agreed to by the City and PCHF. Maintenace costs for the greenspace would be covered by PCHF at an agreed rate for the period of the licence agreement. Details of all agreements would be negotiated between the City and PCHF.

The Proposed Rehabilitation of Vacant Land Adjacent to WA Bridge Club, Allen Park, Swanbourne (Attachment 1) outlines the PCHF vision and design concept for the greenspace.

Consultation

Should Council decide to be involved in the design process for the greenspace the PCHF has committed to appointing and funding community engagement professionals to conduct consultation with the community and stakeholders.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2023-33 vision and desired outcomes as follows:

Vision	**Sustainable and responsible for a bright future**
Pillar	**People**
Outcome	1. Art, culture and heritage are valued and celebrated.
Pillar	**Planet**
Outcome	4. Healthy and sustainable ecosystems.
Pillar	**Place**
Outcome	6. Sustainable population growth with responsible urban planning. 7. Attractive and welcoming places.

Budget/Financial Implications

There is no cost to the City proposed for this project. The project and improvement of the vacant land will be a positive addition to the Allen Park location that the community will benefit from.

Legislative and Policy Implications

Nil.

Decision Implications

Should Council decide to accept the invitation to be involved in the design process elected members and senior City officers would contribute their input throughout the design process, including progress reports back to Council.

Should Council decide not to accept the invitation, the design will likely proceed with support from the State, and the City will have limited input into the design of the greenspace.

Conclusion

It is recommended that Council accept the invitation from the Perth Childrens Hospital Foundation to be involved in the design process for the rehabilitation and rejuvenation of the greenspace adjacent to the WA Bowls Club at Allen Park, Swanbourne.

Further Information

Nil.

Perth Children's Hospital Foundation

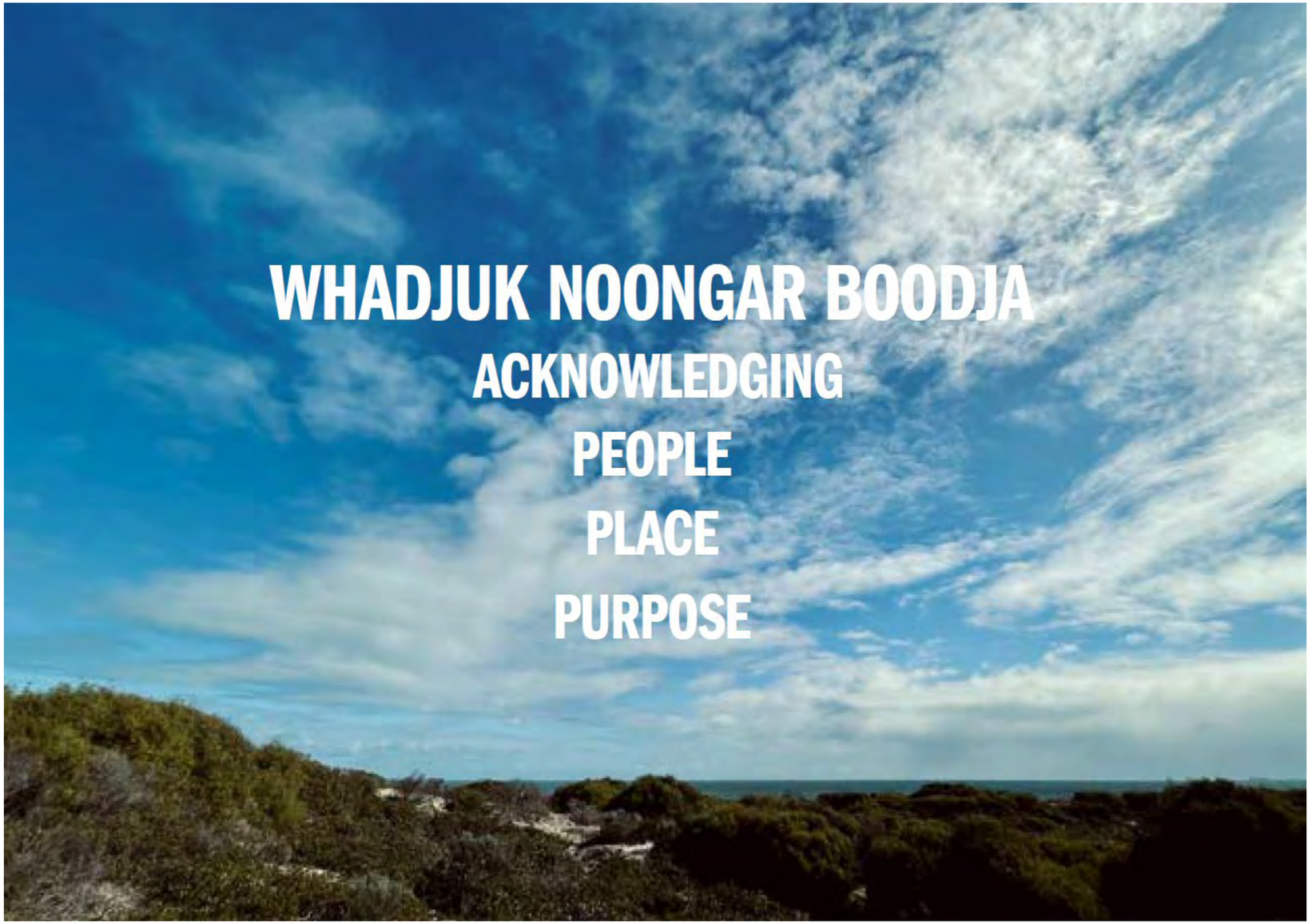
Proposed Rehabilitation of Vacant Land adjacent to WA Bridge Club, Allen Park, Swanbourne

THE FOUNDATION ON THE FRONTLINE

Project Vision

- Opportunity to rejuvenate and rehabilitate a neglected, ignored and sterilised place that has incredible nature and cultural heritage.
- Opportunity to add increased green space to the City of Nedlands.

Cultural Narrative


WHADJUK NOONGAR BOODJA
ACKNOWLEDGING
PEOPLE
PLACE
PURPOSE

Acknowledging People

"The living cultural, spiritual, familial and social relationship that the Noongar people have with the Noongar lands, and the significant and unique contribution that the Noongar people have made, are making, and will continue to make, to the heritage, cultural identity, community and economy of the State".

Noongar (Koorah, Nitja, Boordahwan) (Past, Present and Future) Recognition Bill, 2015.

Acknowledging People

MOORO NOONGAR PEOPLE

Mooro Whadjuk Noongar people are the traditional custodians of the Swanbourne area. Prior to colonisation, and since time immemorial, this was the traditional Country of Yellagonga, uncle of Yagan.

Mooro Country stretches from the Swan River in Perth north to the Moore River beyond the northern limits of metropolitan Perth and east to Ellen Brook.

CULTURAL PROTOCOLS AND CEREMONY

Noongar spirituality is one of many kaartdijin (knowledge) systems within Aboriginal Australia, and like other knowledge systems, there is diversity in our Noongar interpretations.

Noongar spirituality lies in the belief of a cultural landscape and the connection between the human and spiritual realms. Everything in our vast landscape has meaning and purpose. Life is a web of inter-relationships where maam and yok (men and women) and nature are partners, and where kura (long ago, the past) is always connected to yey (present).

Noongar connection with nature and boodjar (country) signifies a close relationship with spiritual beings associated with the land. We express this through our caring for boodjar and observing Noongar lore through an oral tradition of story-telling. Through our paintings, music and koroboree/kobori (dance) we are paying respect to our ancestral creators, and at the same time, strengthening our belief systems.

Acknowledging Place

The WACH project is situated on Mooro Whadjuk Noongar Country. There are areas of surrounding bushland which contain diverse numbers of plants, fungi, and wildlife.

Some structural plant communities in the area are mapped below, and include Open Tuart Forrest with Peppermint trees, Jarrah and Marri woodlands, Acadia rostellifera shrublands, coastal Acacia Shrublands, and grasslands.

Some different types of Acacias included in these shrublands include:

- Woolya or Wilyawa (Acacia cyclops - Coastal or red-eyed wattle)
- Panjang or Pajang (Acacia lasiocarpa)
- Coojong or Cujong, Kalyung, Kileyung, and Biytch (Acacia saligna - Orange wattle)

Shenton Bushland is known for its food and medicinal plants. Allen Park, Swanbourne includes coastal heath, open tuart, peppermint woodland, jarrah and large marri trees, some over a hundred years old. It is home to possums, many reptiles and birds including the Variegated Fairywren.

Acknowledging Place

The Country on which the WACH Project will be located is inherently significant to Mooro Noongar people.

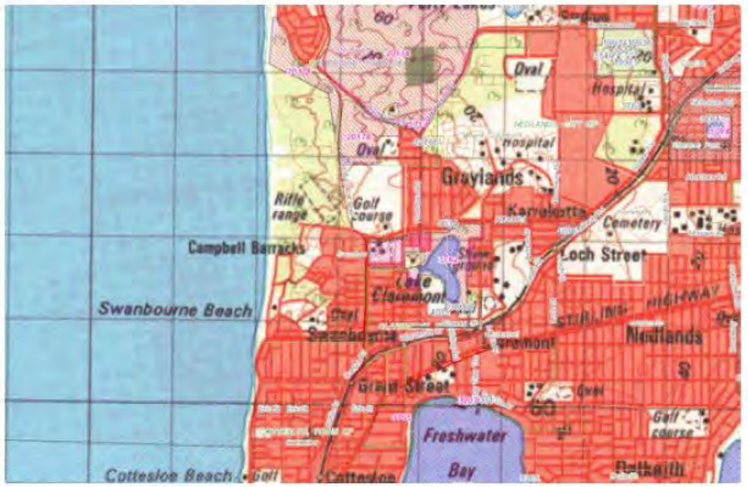
SURROUNDING ABORIGINAL SITES

At the time of writing an Aboriginal Heritage survey is yet to be carried out for the Project. A search of the Register of Aboriginal Sites (Aboriginal Heritage Inquiry System or AHIS) for the Project area surrounds shows a number of Registered Heritage Sites including:

- Registered Aboriginal Site 3762. LAKE CLAREMONT.
- Registered Aboriginal Site 3536. DERBARL YERRIGAN (SWAN RIVER)
- Registered Aboriginal Site 20178. BOLD PARK.
- Registered Aboriginal Site 3734. STEPHENSON AVENUE.

A series of Other Heritage Places within or adjacent to the 'Indigenous Land Use Agreement(s): Whadjuk People Indigenous Land Use Agreement' are also identified within the area, including:

- Other Heritage Place 4034. LISLE STREET.
- Other Heritage Place 36707. LAKE CLAREMONT 1
- Other Heritage Place 4035. KOTT TERR, LAKE CLAREMONT



Acknowledging Place

Nestled next to Allen Park and Melon Hill, the WACH Project Site is located in direct proximity to a number of existing Whadjuk Walking biddi (trails).

WHADJUK WALKING TRAIL NETWORK

The network of Whadjuk Walking Trails connect remnant bushland areas in the western suburbs of Perth. The location of the network of trails resulted from comprehensive input from the community and WESROC member Councils over many years. With links to iconic, heritage and Noongar trails in the area, they offer users a unique experience and appreciation for the land, catering for a large variety of interests.

The adjacent map highlights biddi that closely intersect and surround the WACH Project Site. These are:

- Bush to Beach Biddi - which goes directly through the site;
- Wardun Beelier Biddi - south of the site;
- Yange Keep Biddi - east of the site.

These walking trails are accesible all year round and marked with trianglular wayfinding icons. The biddi also contain signs featuring Noongar cultural information, as well as various plants, animals and features within the landscapes.

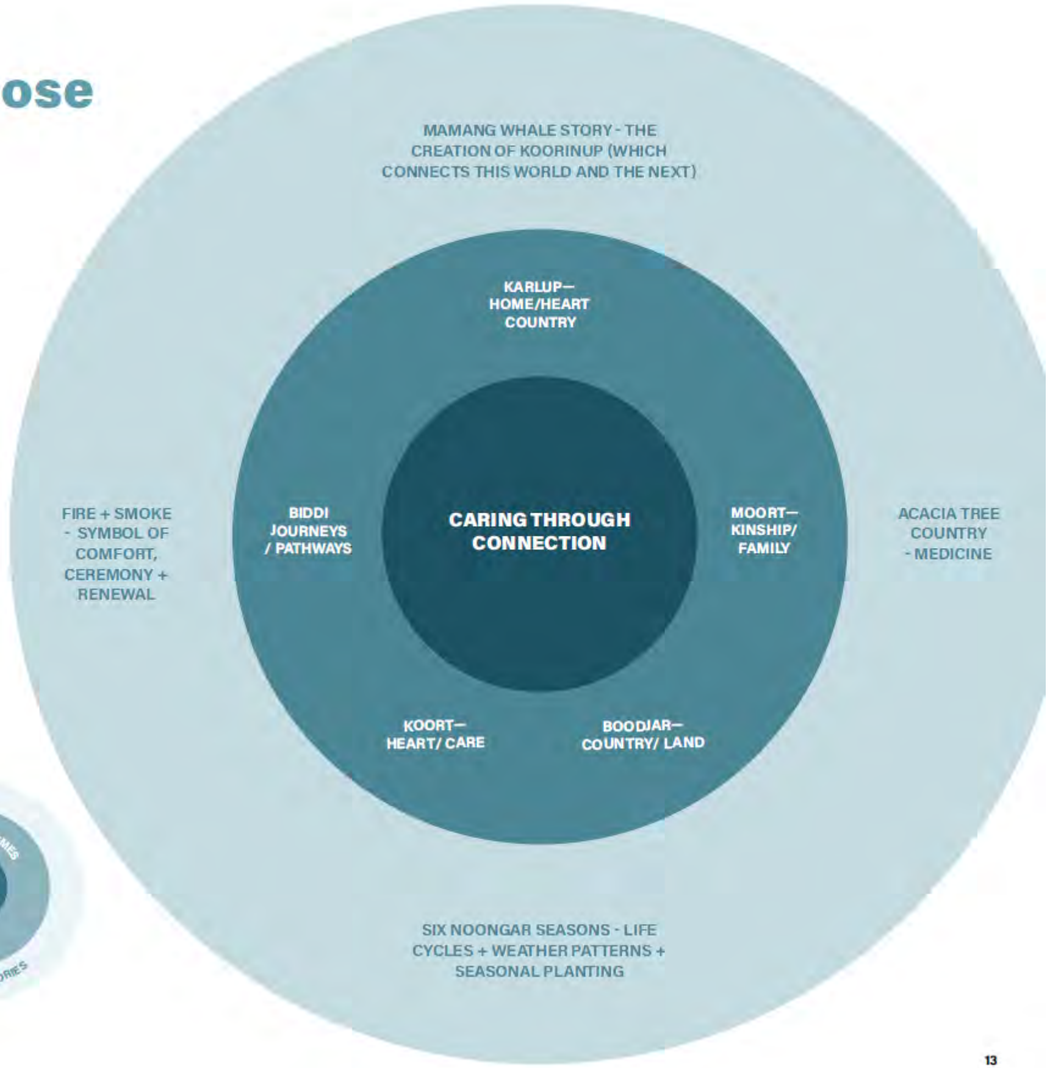
- Bush to Beach
- Wardun Beelier Bidi
- Yange Kep Bidi
- Karda Bidi
- Karak Bidi
- Waarlitj Bidi *
- Bidi Bo Djinoong *
- Connections *
- Existing Heritage Trails *

Acknowledging Purpose

NOONGAR CULTURAL VISION, THEMES + STORIES

- The Vision is the core driving force that remains at the heart of the Project from start to finish.
- The Themes are key elements that are important to the Project and their role is to guide it as it develops.
- The Stories are points of knowledge and wisdom that are distinctively of this Place. They tie this Project to the Country that it sits on.

Each Vision, Theme, and Story relates to, informs, and builds on each other to create a strong network. This framework ensures that Noongar Culture is embedded and guides the Project in a meaningful way that is connected to place.



Acknowledging Purpose

CULTURAL THEMES—KOORT

Koort is a Noongar word which translates to 'heart, hearts, two hearts together.'

WHY

This theme has been identified for the WACH Project for the following key reasons:

- Understanding that this Hospice will be a place that holds 'care' and 'heart' as central to its purpose.
- This Project is meaningful and important for the people of Western Australia.
- With aspirations to embody feelings of care for residents and families.

HOW

Within the project, this may inspire designs and/or artworks that facilitate: Within the project, this may inspire designs and/or artworks that facilitate:

- Care shown through inclusive design that advocates and provides for people with diverse abilities, cultures, faiths, ages, and genders.
- The quality and warmth of the materiality, colours, and textures selected.
- Ensuring that children feel cared for in individual and collective ways through sensitive design and art made for them.

Acknowledging Purpose

CULTURAL THEMES—MOORT

Moort is a Noongar word meaning 'family/ relations.'

WHY

This theme has been identified for the WACH Project for the following key reasons:

- Kinship is central to the intention of this facility, which provides a place for children and their loved ones at crucial moments of illness and hardship.
- To honour and celebrate the sentiment of togetherness, shared experiences.

HOW

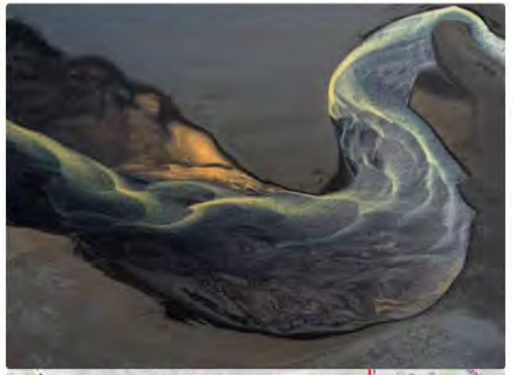
Within the project, this may inspire designs and/or artworks that facilitate:

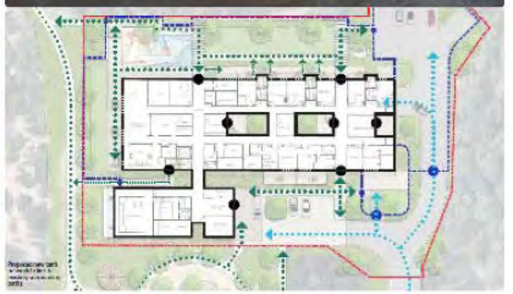
- Areas of play and rest that accommodate multiple people, and intergenerational interaction.
- Symbols and designs that relate to feelings of togetherness, love, and support.
- Sensitivity to different types of support structures, including familial and peer based.
- Foster a sense of community through engaging design and art structures.

Acknowledging Purpose

CULTURAL THEMES - BIDDI

Biddi is the Noongar word for 'pathways.'





WHY

This theme has been identified for the WACH Project for the following key reasons:

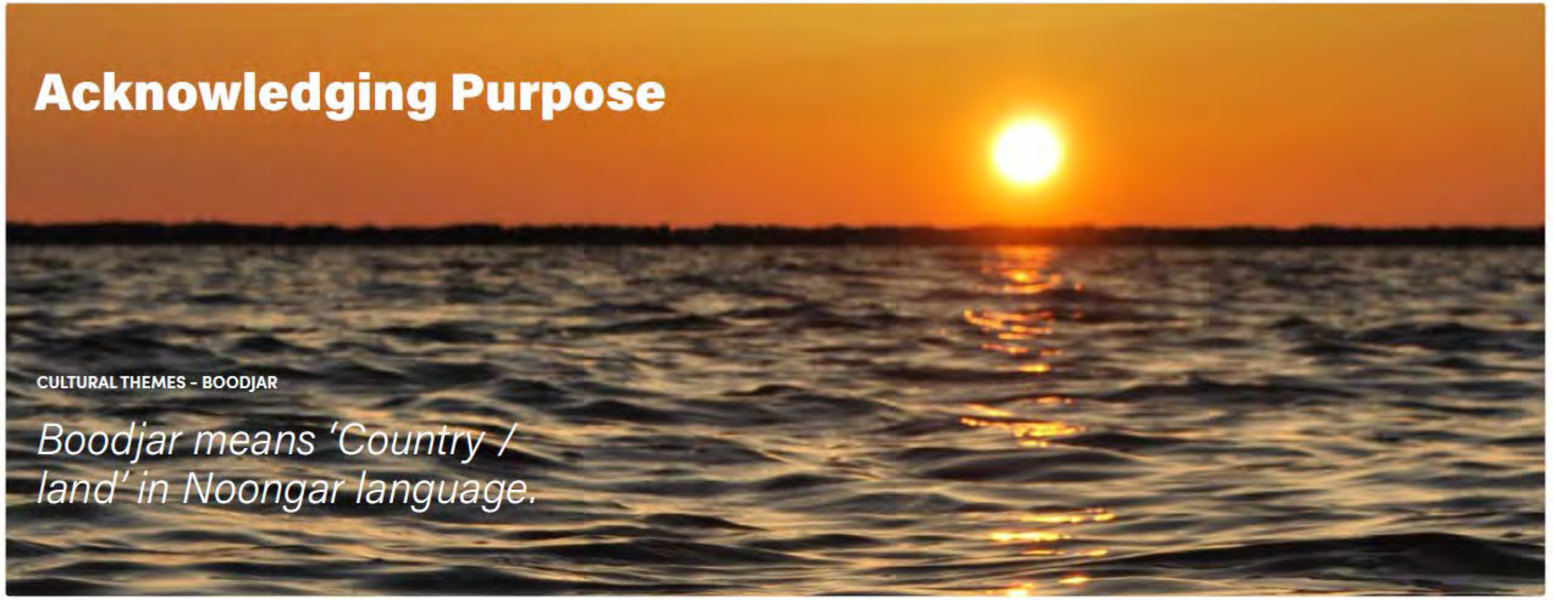
- The Project site is located on Country that has Whadjuk walking trails that pass interact with the site.
- Honouring that this hospice will be a place of transition, journey, and departure for young children.
- Understanding that the Country is located on Whadjuk Noongar Boodjar that is close to many areas of Country, including ocean and acacia bushland.
- Echoing the Project design that has planned multiple possible journeys within and throughout the building and landscape gardens to suit a range of purposes and people.

HOW

Within the project, this may inspire designs and/or artworks that facilitate:

- Journeying between areas of the Hospice, landscape, surrounding areas.
- Visual depictions of journeying, travel, pathways.
- Artworks and Designs that convey storytelling and take children on learning journeys.
- Evoke hope and wonder.
- Sensorial journeys that support children and families through their own milestones and paths.

Acknowledging Purpose



CULTURAL THEMES - BOODJAR

Boodjar means 'Country / land' in Noongar language.

WHY

This theme has been identified for the WACH Project for the following key reasons:

- Emphasising connection between the Hospice and the surrounding Country.
- Evoke the nurturing qualities of the landscape.
- The importance of Country and connection to place to create a feeling of wellbeing.
- Honour this site as Whadjuk Noongar Boodjar and pass on that understanding to all who live and visit this place.

HOW

Within the project, this may inspire designs and/or artworks that facilitate:

- Landscape designs that reflect endemic planting typologies, patterns, and seasonal cycles.
- Designs and artworks that inspire learning, wonder, exploration.
- Facilitate connection to Country through sensorial qualities of place - including visual, aural, and tactile.
- Spatial designs that emphasise relationship between interior and exterior.

Acknowledging Purpose

CULTURAL THEMES—KARLUP

Karlup is the Noongar term for 'fire place/hearth; meaning home/heart Country'

WHY

This theme has been identified for the WACH Project to:

- Springboarding from the Project Team's landscape themes and narratives, the Cultural theme 'Karlup' responds to the idea of home, nests, embrace, gathering, shelter, warmth, and protection.
- To inspire intimate spaces for children to take respite, to gather, to feel safe, to feel comforted;
- Understanding the WACH as a hospice - a place of respite, a home that provides care and attends to physical, emotional, and spiritual needs of children;
- To create a place with the quality of a home, one that supports families to spend time together, and care for each other.

HOW

Within the project, this may inspire designs and/or artworks that facilitate:

- Pockets of protection and retreat, and areas of privacy.
- Spaces to gather and feel connected with family, friends, residents, peers.
- Evoke feelings of home and protection and create nurturing journeys for children.
- Support people to find solace in their own way and feel at rest and at peace.

Hassell

Design Team Credentials

Perth Zoo Playground

Perth Children's Hospital Greenspace

Stadium Park and Chevron Parkland

Hibernian Place

Margaret River Main Street Design Improvements

Esperance Waterfront

Sunset Heritage Precinct

WA Museum Boola Bardip

Lakeway Redevelopment

Hassell

Landscape Opportunity and Design Concept

THE OPPORTUNITY
HEALING OF BOODJA
PLACE OF NATURE
RESTORE AND REHABILITATE
THE SAND, AIR, PLANTS AND ANIMALS
COMMUNITY
SERENE AND CALM
PEACE AND LETTING GO

CONTEXT

The site sits against the edge of the Allen Park Bushland, with several local public amenities close by, including the Allen Park ovals, Melon Hill Lookout and Swanbourne Beach.

There is no existing infrastructure on the site, although it is adjacent to the existing W.A. Bridge Club which has an outlook onto the site. On the north side is the future WA Children's Hospice.

The closest public transport is the bus route, with most users arriving to the site by car or foot.

There is significant bushland and dunal planting close by. The site itself is an un-irrigated, degraded open area of grass with little shelter from sun or other elements.

Figure 1. Proposed Location for the Residence – Satellite Image

Allen Park Masterplan
by City of Nedlands

SITE ANALYSIS

Key features of the site and its edges include the following.

WA Bridge Club sits elevated south of the site

Dune re-vegetation works edge the west of the site

Car park edges the south east corner

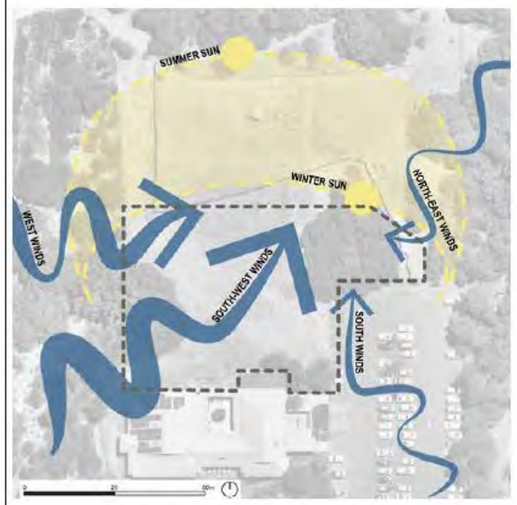
Large Acacia bushes create strong landscape structure

Mature fig tree to the south-west corner offers structure and shade

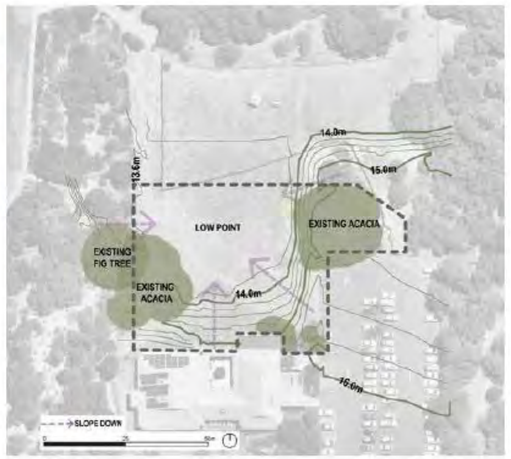
The site effecively sits in a bowl with all four edges elevated

SITE ANALYSIS

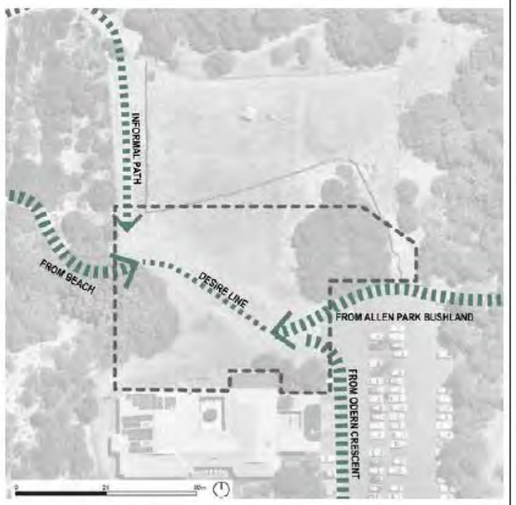
The site area is 3,000m2. It has a small amount of vegetation with little protection from the sun. There is a slope across half of the site with existing pedestrian entries to the east and west.



Sun + Wind

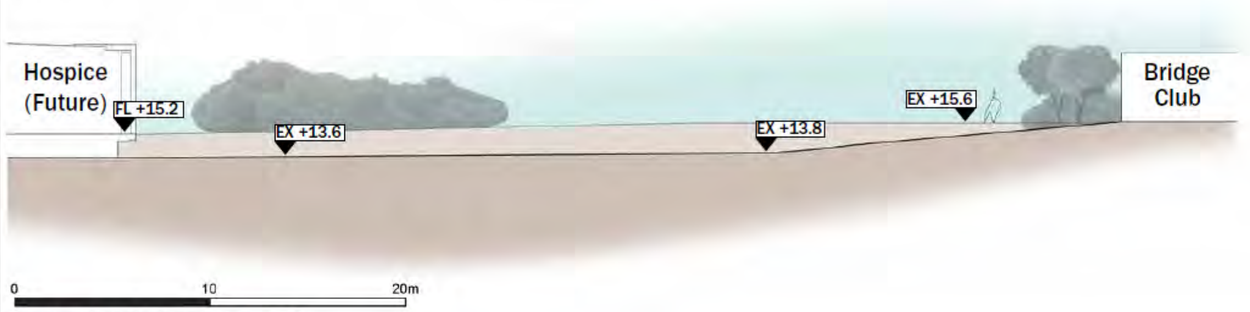


Topography + vegetation

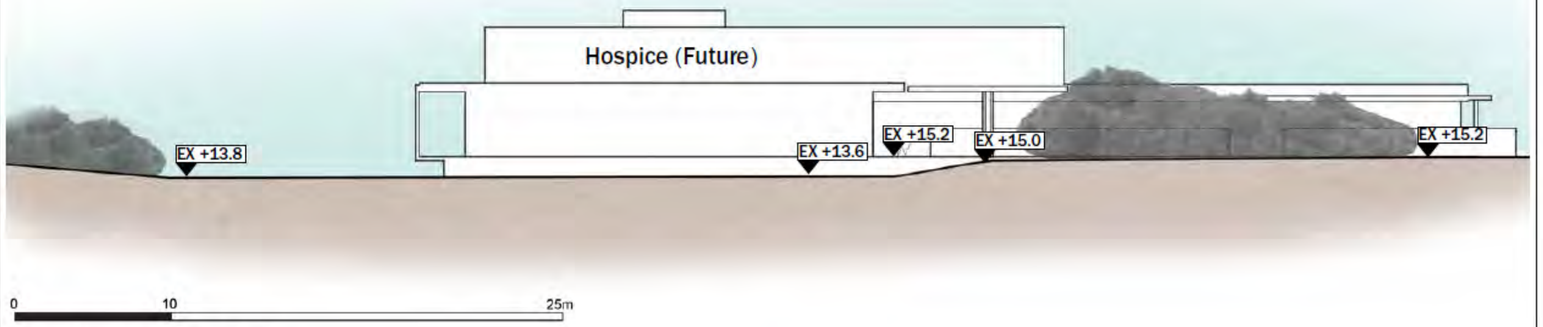


Site entries + pathways

SITE ANALYSIS



North - South Section 1:200



East - West Section 1:250

BUSHFIRE CONSTRAINTS

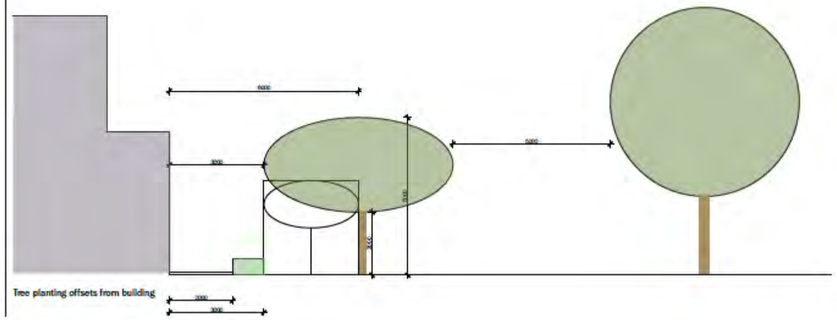
The site crosses several BAL rating zones.

Standards for Asset Protection Zones (Schedule 1 Guidelines for Planning in Bushfire Prone Areas V1.3):

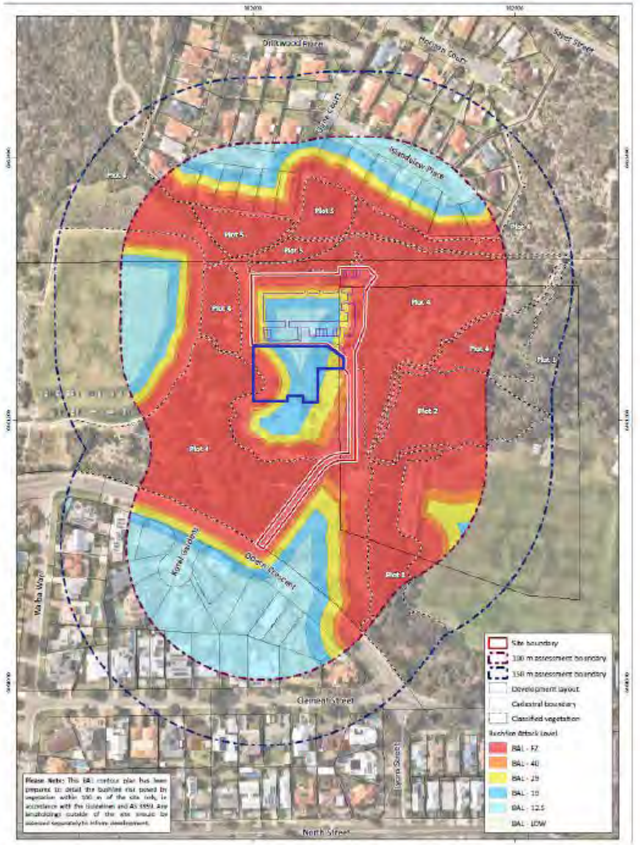
Trees: No tall trees .5m (trunks) are to be within six (6) metres of a building and branches are not to overhang a building or be within three (3) metres. Trim branches vertically to minimum 2 metres.

Shrubs: No shrubs or trees up to 3m are to be within three (3) metres of a building.

Grasses: No grasses within the facility should exceed 50mm and vegetation less than 0.5m high is to be no closer than 2m from the building.



Tree planting offsets from building



BAL mapping undertaken as a part of the Hospice project

VEGETATION

The site is situated between the Allen Park bushland and coastal dune landscape.

Dune species

Olearia axillaris

Exocarpos sparteus

Rhagodia baccata

Scaevola crassifolia

Bushland species

Eucalyptus gomphocephela (Tuart)

Banksia sessilis

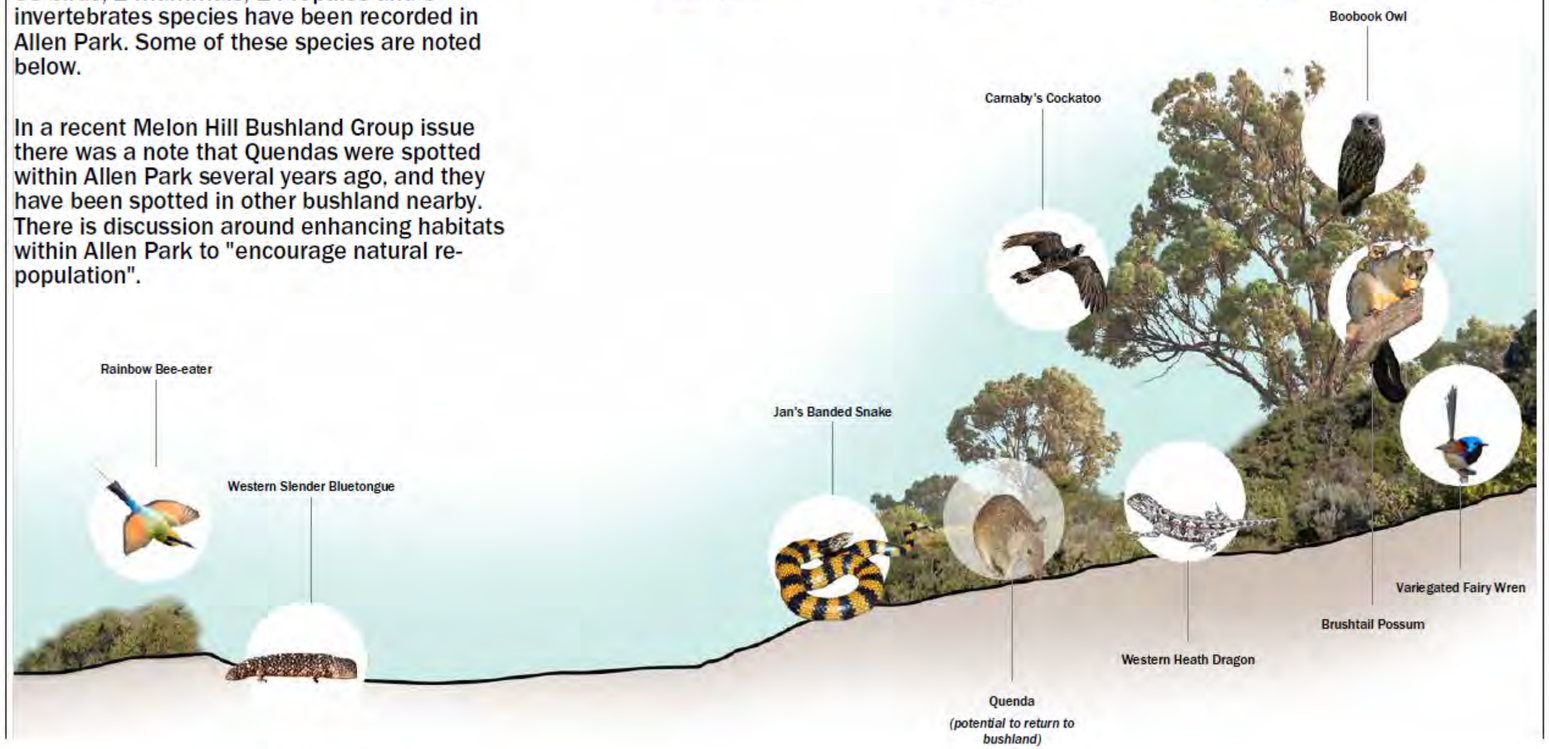
Acacia rostellifera

Melaleuca systema

HABITAT

The Allen Park bushland to the east and north of the site is habitat for a range of fauna. The Allen Park Management Plan notes that 33 birds, 2 mammals, 14 reptiles and 3 invertebrates species have been recorded in Allen Park. Some of these species are noted below.

In a recent Melon Hill Bushland Group issue there was a note that Quendas were spotted within Allen Park several years ago, and they have been spotted in other bushland nearby. There is discussion around enhancing habitats within Allen Park to "encourage natural re-population".



CHARACTER

It is important to appreciate the inherent landscape character of the site and its surrounds.

The bushland and dunes create a distinct feel with endemic vegetation, trails, hollows and paths undulating through the topography adding interest through texture, colour, light and form.

Textures, patterns and colours of foliage

Dappled light

Gnarly twigs

Sandy and gravelly

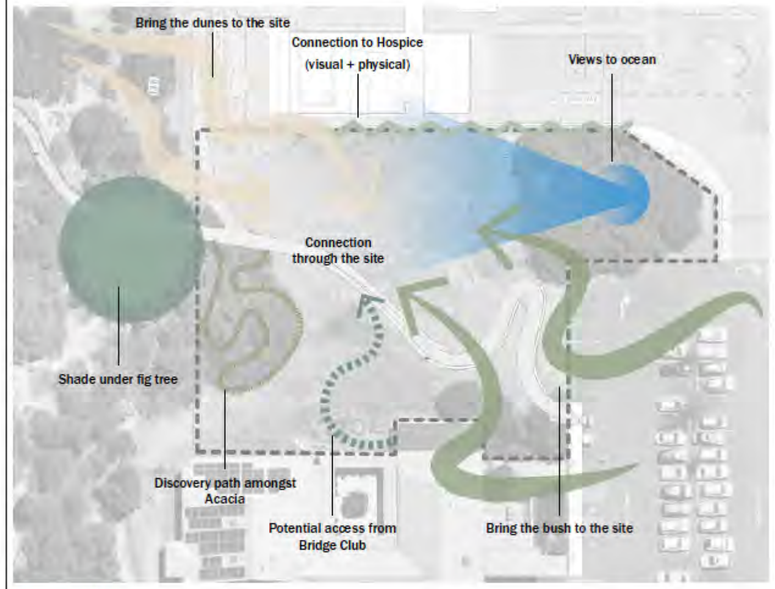
Informal

Dry wood

Fine textures

Shady tunnels

OPPORTUNITIES + CONSTRAINTS



Opportunities

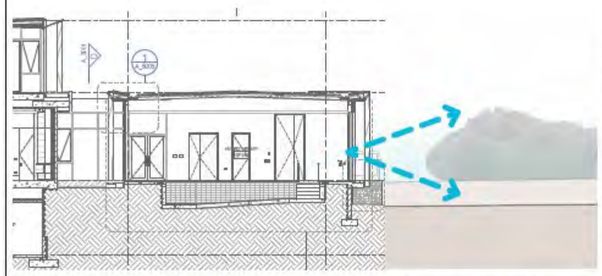
There are opportunities to take advantage of the existing vegetation to provide shade and create places to discover and explore. Making connections is critical, both through the site as part of the Bush to Beach Biddi trail, as well to the Bridge Club and future Hospice site. There are opportunities to support and celebrate local vegetation and wildlife conservation efforts in the creation of a space which is culturally appropriate and enticing for all of the community to enjoy.

Constraints

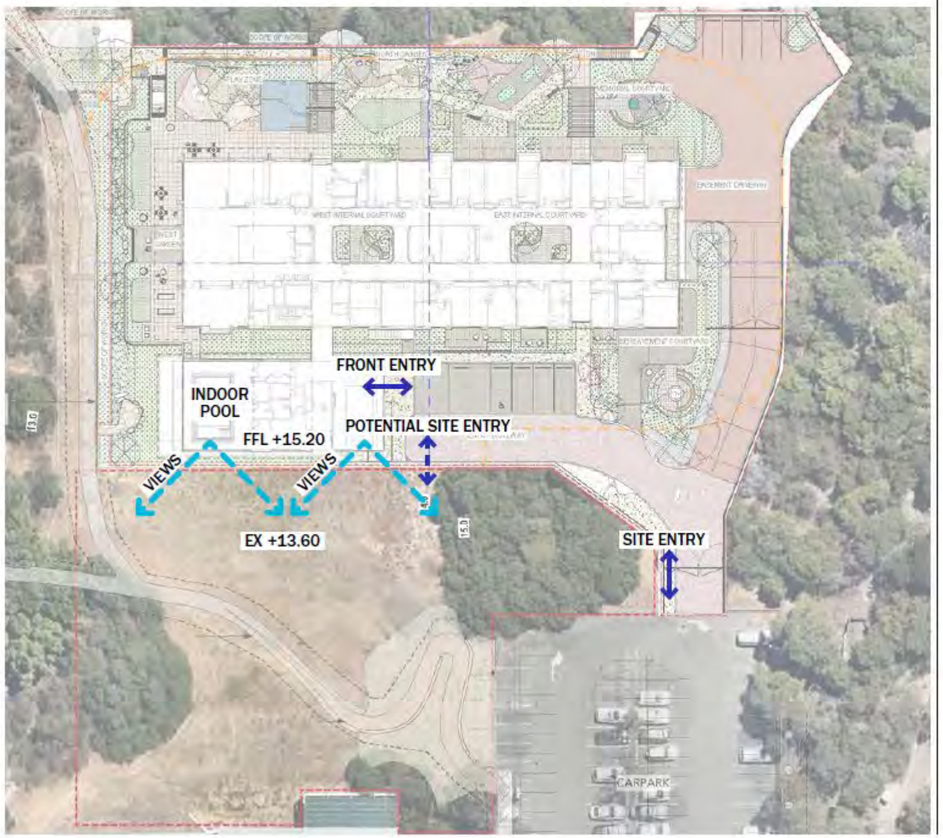
The site is mostly exposed to full sun, so providing shade will be important. The bowl topography is both an opportunity as winds will be mitigated but there are challenges in achieving accessible grades for universal access. It is critical to understand and to design in accordance with the Bushfire regulations. Currently the site is un-irrigated so a water connection will be required.

OPPORTUNITIES + CONSTRAINTS

It is important that the design for the Swanbourne Greenspace responds to the new Hospice development. The finished floor level of the building (+15.20m) sits above the current average Greenspace level (+13.60m) so there is a grade change which requires a design solution. Views to and from the Hospice are important, as is the desire to soften the visual impact of the development, integrating it within the landscape.



Section through pool room - views to Greenspace site



INSPIRATION

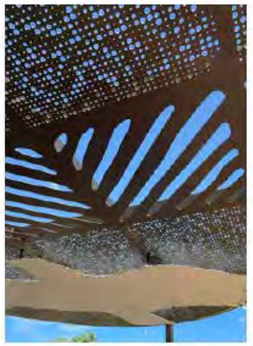
Sunset views and lawn

Shaded gathering and lookout space

Inspired by Whadjuk Noongar culture

Spaces to explore

Sand play



Smaller shade structures

Artwork and nature

Nature play

Seating and tables

Re-using natural materials

INSPIRATION

Passive watering bowls

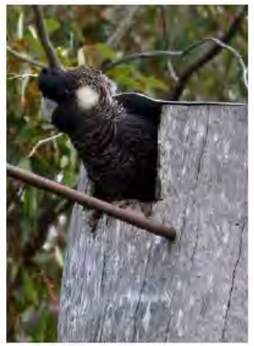
Utilise existing landscape elements

Connecting to nature through art

Endemic plant species

Gabion walls

'Insect hotels'



Tree hides

Small habitats

Hide-out 'bungalows'

Understorey canopy

SUSTAINABLE DESIGN

Sustainability is a key driver in developing a robust and future-proofed design.

Utilising these types of design elements will create a highly sustainable outcome.

Robust design elements

Retain significant canopy and plant more trees

Endemic dune + bushland planting

Minimal lawn

Water-wise planting

Re-use site elements

Retain and enhance vegetation

CONCEPT

THE DESIGN CONCEPT FOCUSES AROUND THE THEMES OF NATURE, CARE AND CONNECTION

NATURE

CELEBRATING, ENJOYING AND RESTORING THROUGH IMMERSION IN NATURE

CARE

FOR EACH OTHER, THE LAND, PLANTS AND ANIMALS

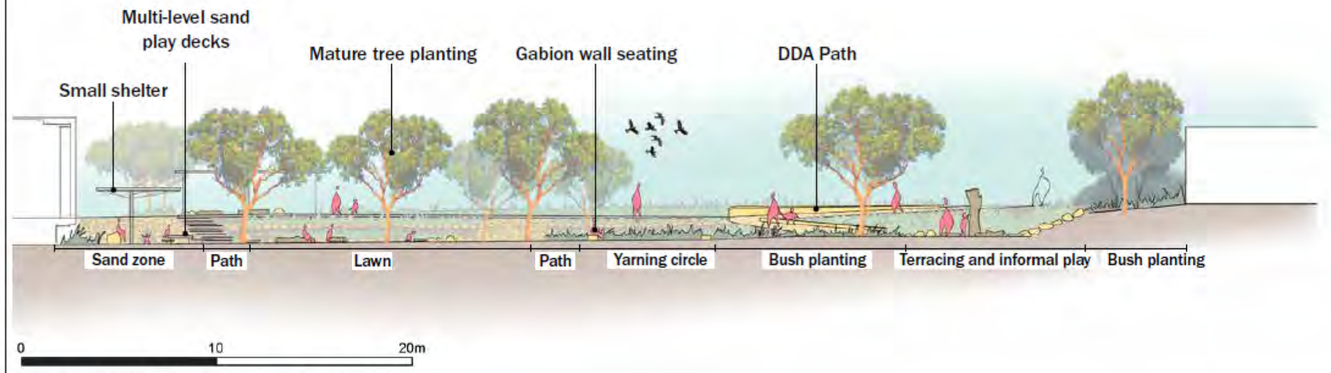
CONNECTION

TO EACH OTHER, PLACE, PEOPLE AND THE SPIRITS

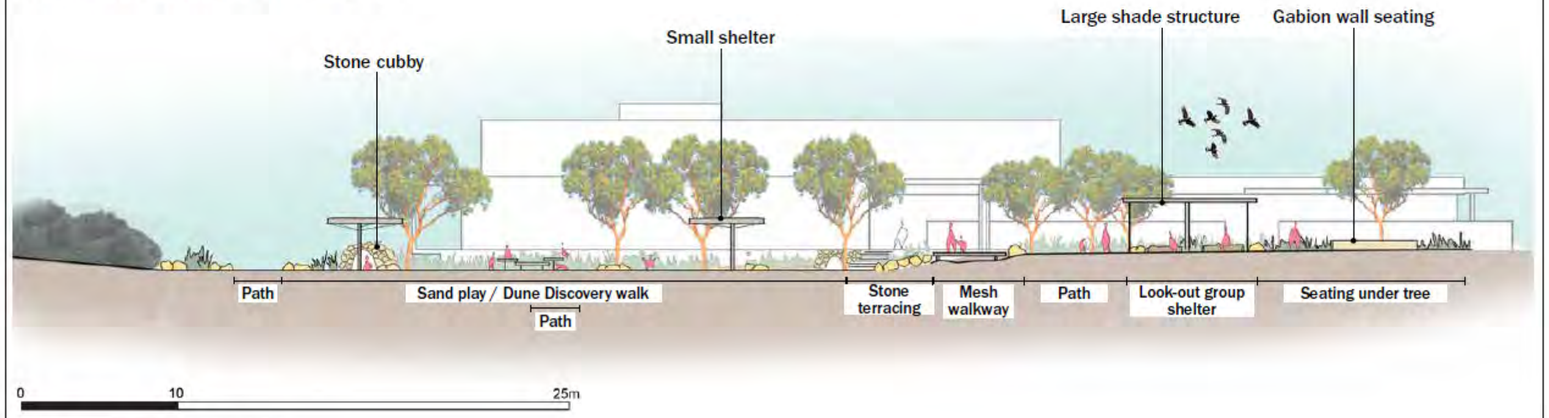
LANDSCAPE PLAN

1 - Hospice entry
2 - Hospice parking
3 - Connection to open space via steps and an accessible grade ramp
4 - Look-out group space shelter
5 - Snake path by City of Nedlands
6 - Lawn
7 - Informal stone step terracing
8 - Informal seating spaces under mature tree transplant
9 - Stone terracing and planting to Bridge Club bank with informal play
10 - Informal stepped access point to Bridge Club entry
11 - Shelter structure with table and seating
12 - Bush path through vegetation with animal themed discovery elements scattered throughout
13 - Informal seating and swing attached to mature Fig tree. Crown lifted.
14 - Pathway upgrade by City of Nedlands
15 - Stone cubby cave
16 - Cubby and cave
17 - Sand with multi-level shade decks
18 - Mature tree planting with reclaimed timber benches
19 - New path by City of Nedlands
20 - WA Bridge Club
21 - Yarning circle
22 - Grated mesh walkway over bush landscaping
23 - Habitat elements scattered throughout the design

SECTIONS



North - South Concept Section 1:200



East - West Section 1:250

SPACES AND CONNECTIONS

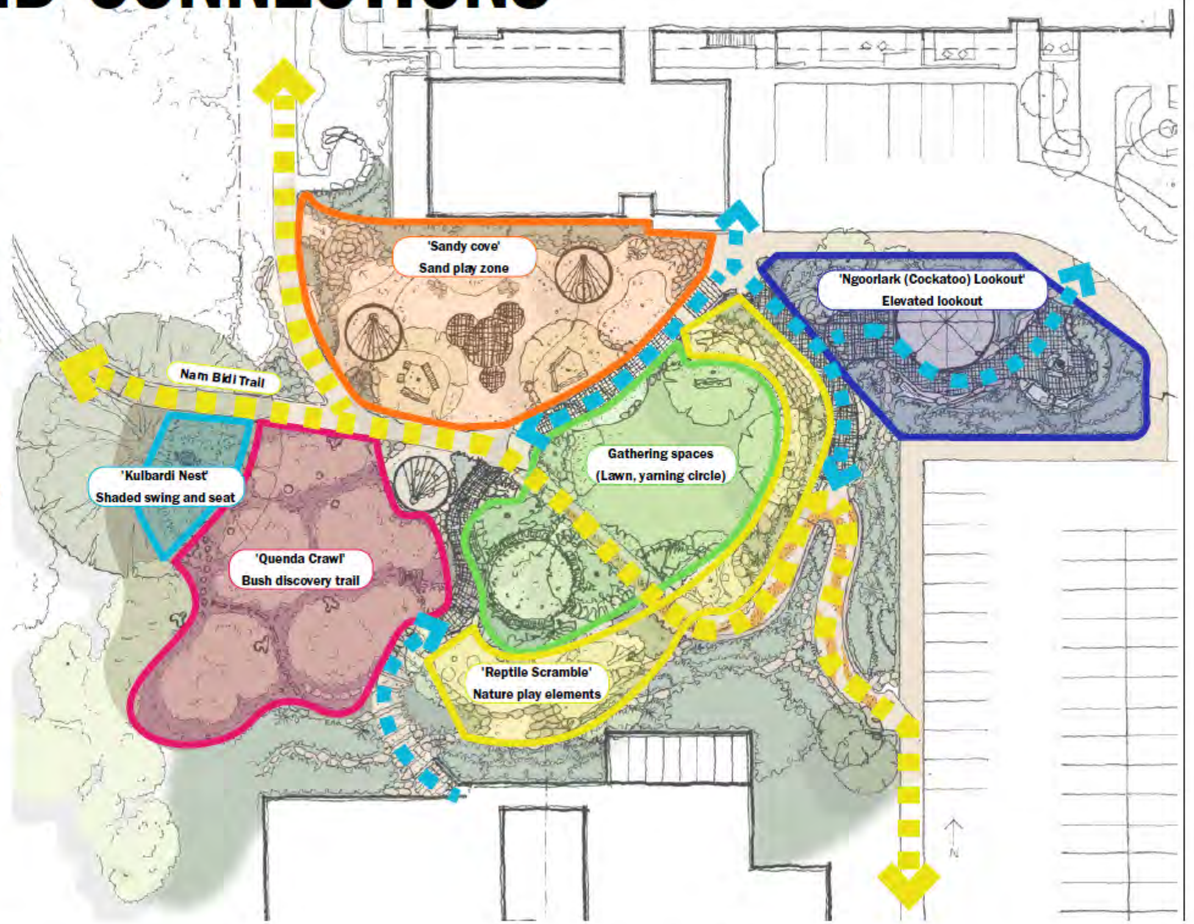
The design concept establishes a cohesive new Greenspace with smaller areas providing a range of experiences and uses.

There are a range of gathering spaces to meet friends, colleagues and family. These spaces can be themed on their particular use with a connection to local wildlife.

The Snake Path is incorporated and new connections are formed to ensure people can access from the Bridge Club and Hospice.

Micro-spaces and trails are formed under existing vegetation and amongst terraced edges, formed from limestone boulders and logs.

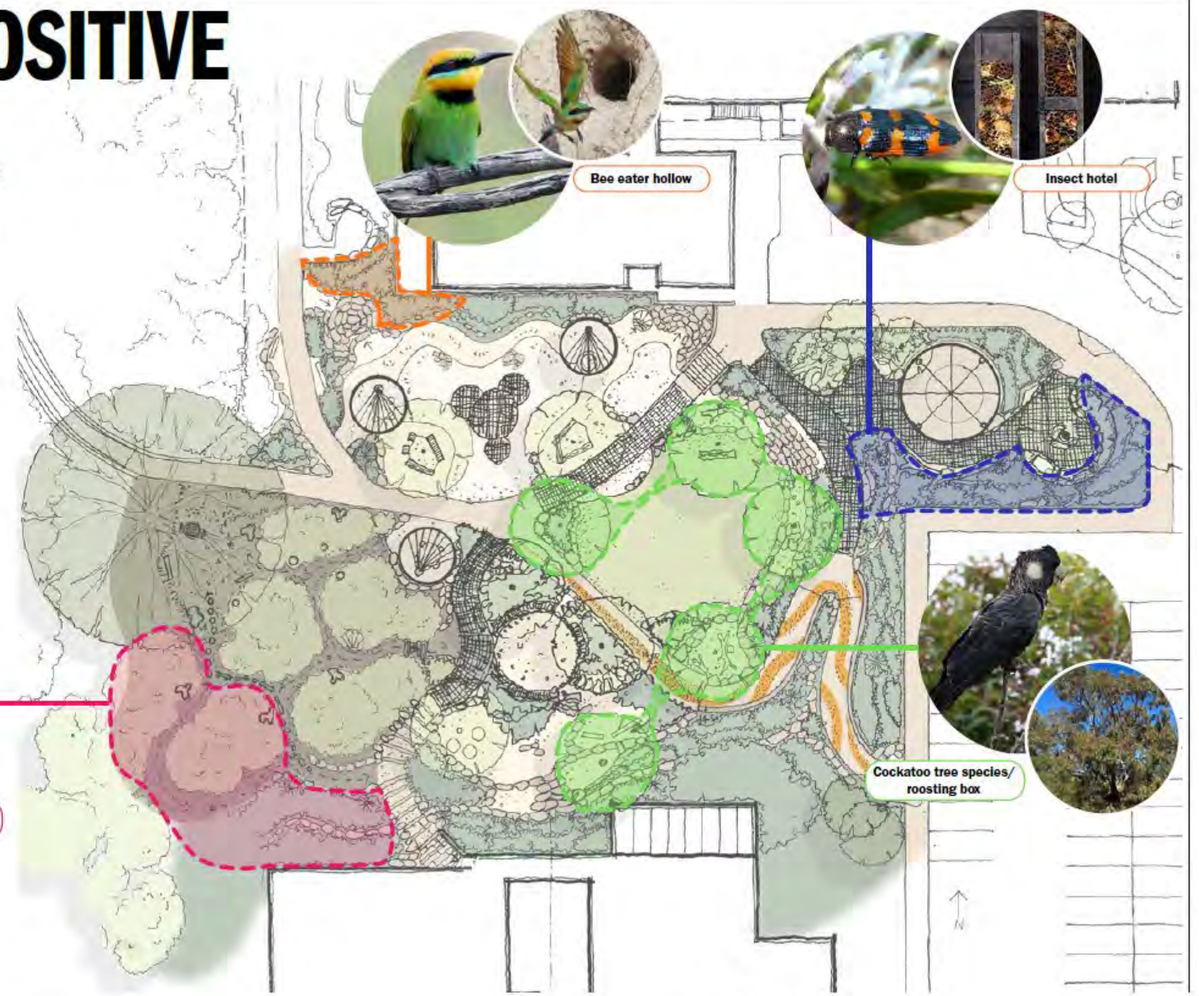
The design includes for the planting of 12 mature tree transplants, creating day 1 shade. There are 4 shade structures.



NATURE POSITIVE

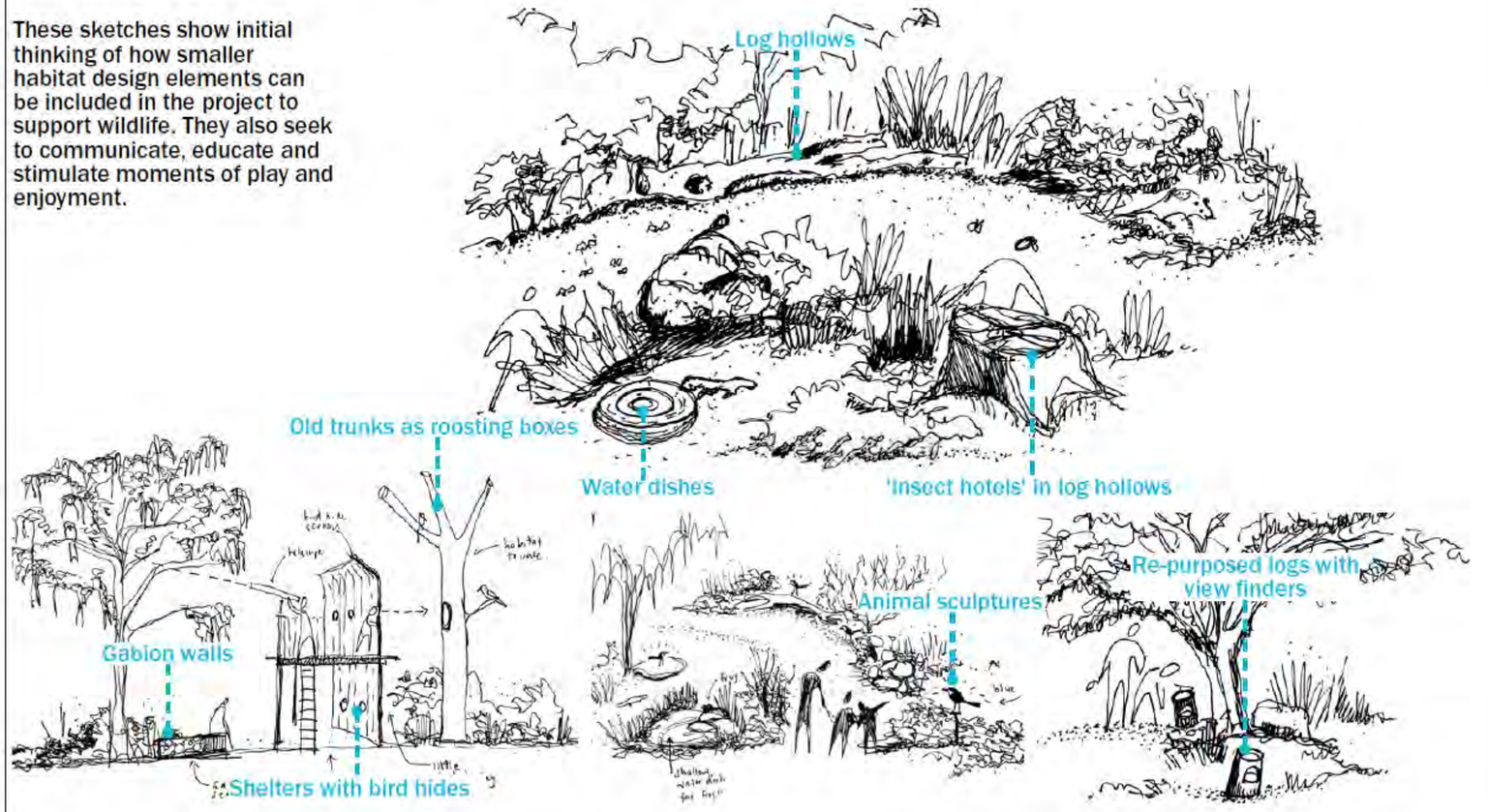
The design is pro-actively nature positive, with a strong desire to provide habitat for endangered local wildlife.

Our intention would be to work with the local community and cultural advisors to integrate design elements, such as those proposed here, to support insects, birds and animals.



CONNECTING WITH THE ANIMALS

These sketches show initial thinking of how smaller habitat design elements can be included in the project to support wildlife. They also seek to communicate, educate and stimulate moments of play and enjoyment.



PLANTING

This page illustrates a provisional list of plant species which we feel are appropriate for use in the design. These species relate to the endemic location and have been approved for use in the adjacent Hospice development.

Banksia menziesii

Eucalyptus gomphocephela

Acacia rostellifera

Acacia saligna

Banksia sessilis

Enchylaena tomentosa

Meleleuca huegelii

Rhagodia baccata

Olearia axillaris

Scaevola crassifolia

Perth Children's Hospital **Foundation**

Project Detail

THE FOUNDATION ON THE FRONTLINE

Construction Funding

- PCHF commits to $4m for consultation, design, construction and maintenance
- Subject to a funding sponsor being secured

Community Engagement

- PCHF to appoint and fund a professional community engagement organisation to lead a Council, community and stakeholder design input process

Design Process

- Final design to be agreed formally by City of Nedlands Council

Construction Licence Agreement

- PCHF proposes formal construction licence agreement be entered into with City of Nedlands covering site access and conditions

Licence Agreement

- PCHF proposes that City of Nedlands and PCHF enter into a licence agreement post construction for 10 years with a further three 10-year options
- PCHF are prepared to pay an annual licence fee to be agreed

Maintenance Costs

- PCHF agrees to cover maintenance costs to an agreed standard/value for the period of the licence agreement

Thank you!

16.8 PD38.05.24 West Waratah Precinct Parking Restrictions Consultation

Meeting & Date	Council Meeting – 28 May 2024
Applicant	City of Nedlands
Employee Disclosure under section 5.70 Local Government Act 1995	Nil.
Report Author	Andrew Melville (Manager Health and Compliance)
Director/CEO	Roy Winslow (Acting Director Planning and Development)
Attachments	1. Current West Waratah Precinct Parking Restrictions 2. Option 1 – Proposed Limited Parking Restrictions around Waratah Avenue 3. Option 2 – Proposed Timed Parking Restrictions Waratah Precinct 4. Option 3 – Proposed No Parking Restrictions Waratah Precinct

Purpose

To undertake community consultation within the West Waratah Precinct on the proposal to introduce timed parking restrictions. The aim of this is to alleviate parking impacts on residents and business, in response to increased construction activities particularly around the development at 129-133 Waratah Avenue, Dalkeith.

Recommendation

That Council:

1. **Notes the proposed consultation with residents, businesses, and community/sporting organisations to introduce temporary parking restrictions for the streets surrounding the development as per attachments 2,3 and 4; and**

2. **Notes the consultation period for the introduction of temporary parking restrictions be for a minimum of 28 days.**

Voting Requirement

Simple Majority.

Background

A Development Application has been approved by the Joint Development Assessment Panel for the development of a three-story health and wellness centre at 129-133 Waratah Avenue, Dalkeith.

The majority of on-street parking surrounding the development is currently unrestricted and primarily used for residential purposes, with very few commercial entities operating within the vicinity. It is anticipated that the demand for on street parking will increase markedly when the development begins its construction phase.

Discussion

The Administration will continue to require builders to address parking as part of their construction management plans. However, the City is limited in its ability to encourage and enforce builders to manage the parking associated with their development without changes to the existing parking restrictions. It is expected that vehicles associated with the construction will predominately park close to the building sites. Officers are seeking to consult with the local community on parking restriction for the duration of the build.

Officers are proposing the three options which include a variety of temporary parking restrictions. A section of verge adjacent Dalkeith Tennis and Dalkeith Nedlands Bowling Victoria on Avenue has been proposed in options 2 and 3 which allocates parking to the construction company at a cost and designated as ‘Authorised Vehicles Only.’

It is anticipated that this will ensure equitable use of the on street parking surrounding the development. This reflects similar arrangements adopted by Council in:

- February 2022 for the Broadway Precinct Parking Restrictions and the allocation of land on Bruce Street, and
- September 2023 for the West Melvista Parking Restrictions and the allocation of land adjacent College Park.

This area will be allocated for vehicles only, with storage of materials not being permitted. Payment to reserve a parking area for trades vehicles associated with the construction site will be in accordance with the City’s Fees and Charges Schedule 2023/24 which will be approximately $1,200 each month the space is occupied.

Option 1 proposes limited temporary parking restrictions surrounding the construction site permitting vehicles to park unrestricted. Restrictions will include ‘No Parking 7am – 5pm Monday to Saturday’ on both sides on Waratah Avenue from Alexander Road to Victoria Avenue.

This will encourage traffic flow along a busy Local Distributor road. This option will also propose ‘No Parking’ on one side of the road on Roberts Street from Watkins Road to Neville Road, ‘No Parking’ on one side on Leon Road from Alexander Road

to Victoria Avenue, and ‘No Parking’ on one side on Philip Road from Alexander Road to Victoria Avenue.

Certain sections of streets not covered by 'No Parking' signs would still allow trades vehicles to park near the construction site as parking availability is high in these residential streets.

This Option aims to minimise inconvenience for residents outside the designated area by avoiding the need for parking restrictions and parking permit applications.

Option 2 proposes temporary implementation of two-hour time restricted parking 7am – 5pm Monday to Saturday’ on one side of all streets within the precinct, with ‘No Parking 7am – 5pm Monday to Saturday’ applying to the other side surrounding this development.

A section of verge on the eastern side of Victoria Avenue adjacent Dakeith Tennis and Dalkeith Nedlands Bowling Club will be allocated to the construction company at a cost and designated as ‘Authorised Vehicles Only’. The use of the verge allocated as ‘Authorised Vehicles Only’ will be invoiced in accordance with the City’s Fees and Charges 2023/24 at $2.50 per square metre. This would equal to $1,200 per month.

Option 3 proposes the temporary implementation of ‘No Parking – City of Nedlands Permit Holders Exempt’ applying to both sides of the streets surrounding the development. The section of verge on the eastern side of Victoria Avenue adjacent Dakeith Tennis and Dalkeith Nedlands Bowling Club will also be allocated to the construction company at a cost and designated as ‘Authorised Vehicles Only’ which will be invoiced in accordance with the City’s Fees and Charges 2023/24 at $2.50 per square metre, totalling $1,200 per month. This option reflects the Council Resolution made at the Ordinary Council Meeting held 26 September 2023 item 16.3 West Melvista Parking Restrictions whereby Attachment 3 was adopted. Attachment 3 included a precinct wide ‘No Parking’, with the exemption for parking permits.

In support of Option 2 and 3, the City currently offers parking permits to residents in accordance with the City of Nedlands Parking and Parking Facilities Local Law 2013. This allows residents and their visitors to park over the time limitation on streets near their property when displaying a valid permit.

The number of permits an eligible person may receive is dependent on how many on-site parking bays at the property. For example: if a property has no on-site parking bays, an eligible person can receive four permits. Most properties will have a double garage which will entitle a person to have two parking permits. Notwithstanding, the City acknowledges the impact of the construction in this residential area and may under unusual circumstances, be prepared to accommodate temporary additional parking permits under the discretionary authority provision. Residents will be advised through this consultation process of this option and how they can apply.

The current parking restrictions for the West Waratha Precinct are illustrated in the attachments 2, 3, and 4. The proposed parking restriction options is listed in the table below.

Street	Section	Current Restriction	Option 1	Option 2	Option 3
Watkins Road	Adelma Road – Victoria Avenue	No restrictions	No restrictions	No Parking 7am-5pm Mon-Sat (one side) 2P 7am-5pm Mon-Sat (other side)	No Parking City of Nedlands Permit Holders Exempt (both sides)
Philip Road	Alexander Road – Victoria Avenue	No restrictions	No Parking 7am-5pm Mon-Sat (one side)	No Parking 7am-5pm Mon-Sat (one side) 2P 7am-5pm Mon-Sat (other side)	No Parking City of Nedlands Permit Holders Exempt (both sides)
Waratah Avenue	Alexander Road – Robert Street	30mins Mon – Fri 'No Parking', and Bus Zone	No Parking (both sides), 30mins Mon – Fri, Bus Zones	No Parking 7am-5pm Mon-Sat (both sides), Bus Zones	No Parking 7am-5pm Mon-Sat (both sides)
Waratah Avenue	Robert Street – Victoria Avenue	No restrictions	No Parking	No Parking 7am-5pm Mon-Sat (both sides), Bus Zones	No Parking 7am-5pm Mon-Sat (both sides)

Leon Road	Alexander Road – Victoria Avenue	No restrictions	No Parking 7am-5pm Mon-Sat (one side)	No Parking 7am-5pm Mon-Sat (one side) 2P 7am-5pm Mon-Sat (other side)	No Parking City of Nedlands Permit Holders Exempt (both sides)
Neville Road	Alexander Road – Victoria Avenue	No restrictions	No restrictions	No Parking 7am-5pm Mon-Sat (one side) 2P 7am-5pm Mon-Sat (other side)	No Parking City of Nedlands Permit Holders Exempt (both sides)
Viking Road	Alexander Road – Victoria Avenue	No restrictions	No restrictions	No Parking 7am-5pm Mon-Sat (one side) 2P 7am-5pm Mon-Sat (other side)	No Parking City of Nedlands Permit Holders Exempt (both sides)
Minora Road	Alexander Road – Victoria Avenue	No restrictions	No restrictions	No Parking 7am-5pm Mon-Sat (one side)	No Parking City of Nedlands Permit Holders Exempt (both sides)

				2P 7am-5pm Mon-Sat (other side)	
Beatrice Avenue	Alexander Road – Victoria Avenue	No restrictions	No restrictions	No Parking 7am-5pm Mon-Sat (one side) 2P 7am-5pm Mon-Sat (other side)	No Parking City of Nedlands Permit Holders Exempt (both sides)
Victoria Avenue	Jutland Road – Beatrice Road	No Parking at entry to Pt Resolution	No Parking at entry to Pt Resolution	No Parking 7am-5pm Mon-Sat (both sides) 'Authorised Vehicle Only' (verge)	No Parking City of Nedlands Permit Holders Exempt (both sides)
Victoria Avenue	Beatrice Road – Watkins Avenue	Solid white road line and sections of No Parking	Solid white road line and sections of No Parking	No Parking 7am-5pm Mon-Sat (one side) 2P 7am-5pm Mon-Sat (other side)	No Parking City of Nedlands Permit Holders Exempt (both sides)

Bishop Road	Victoria Avenue	No restrictions	No restrictions	No Parking 7am-5pm Mon-Sat (one side) 2P 7am-5pm Mon-Sat (other side)	No Parking City of Nedlands Permit Holders Exempt (both sides)
Hynes Road	Beatrice Road – Leon Road	No restrictions	No restrictions	No Parking 7am-5pm Mon-Sat (one side) 2P 7am-5pm Mon-Sat (other side)	No Parking City of Nedlands Permit Holders Exempt (both sides)
Robert Street	Neville Road – Waratah Avenue	No restrictions	No Parking 7am-5pm Mon-Sat (one side)	No Parking 7am-5pm Mon-Sat (one side) 2P 7am-5pm Mon-Sat (other side)	No Parking City of Nedlands Permit Holders Exempt (both sides)
Robert Street	Waratah Avenue – Watkins Road	No restrictions	No Parking 7am-5pm Mon-Sat (one side)	No Parking 7am-5pm Mon-Sat (one side) 2P 7am-5pm Mon-Sat (other side)	No Parking City of Nedlands Permit Holders Exempt (both sides)

With regard to other signage within this precinct, the installation of 'No Stopping' signs at each intersection will align with the proposed in the parking maps and in accordance with Australian Standards and the Road Traffic Code.

Officers are recommending not to mark additional yellow lines within this precinct. Yellow line marking is a more permanent method of controlling parking that can last more than five years. As the City is implementing temporary parking restrictions for the construction phase, it is more cost effective to install signs only. When the construction phase is complete and the health centre transitions into being operational, it would then be appropriate for the City to consult with the community about the long-term and permanent parking restrictions, which may then include a combination of parking signs and yellow line marking.

With regard to the enforcement by the City's Ranger Service, additional resources will be required for both Options 2 and 3 to maintain current service levels. The Ranger Service will respond to complaints in accordance with its priority but will be limited proactive monitoring. This is in response to the increasing number of complaints regarding non-compliant parking at construction sites.

With the same resources and FTE allocation, Officers are suggesting there will be an overall decrease in the service level to all areas of the City resulting in longer response times and less enforcement activity. The Ranger Service will be able to maintain current service levels if Option 1 was to be implemented.

Out of business hours complaints will be directed to the City's afterhours service. Currently all calls outside ordinary administration office hours (8:30am – 5pm Monday to Friday) are directed to the out of hours' service provider. This provider escalates the call to the appropriate 'on-call' officer based on the scenario and risk of the call. The Ranger Service is able respond effectively to a variety of calls, including calls regarding serious thoroughfare obstructions, damages to Council infrastructure etc. as to not expose the organisation to unnecessary risk. Complaints regarding obstruction of driveways, major activity on the road, or damages to infrastructure will be escalated to the on-call Ranger for a response.

Consultation

Officers will consult with residents, businesses and sporting/community groups in the areas affected by letter to explain proposed parking restrictions along with the impacts if these parking measures are not in place. As part of the consultation, residents would be advised of the opportunity to apply for parking permits if Option 2 or 3 was adopted, in line with the current scheme to allow them or their visitors on street parking where posted restrictions are proposed to be implemented.

Further information regarding the changes to the parking restrictions will be communicated to Dalkeith Pre Primary & Kindergarten, Dalkeith Primary School, PRCC, Dalkeith Nedlands Junior Football Club, Collegians Football Club, Dakeith Nedlands Bowling Club, Dalkeith Tennis Club, and the Western Suburbs Cricket Club.

The community consultation for these proposals will include a targeted letter campaign to the residents of the precinct likely to be affected by the changes, along with an online community engagement through Your Voice on the City's website.

This will be advertised for a minimum of 28 days following a resolution of Council. This will be undertaken in accordance with the Community Engagement Council Policy as it relates to engagement processes with respect to consultation. This feedback obtained through the consultation period will be then collated and the information presented to Council for consideration with names and contact details having been redacted.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2023-33 vision and desired outcomes as follows:

Vision	**Sustainable and responsible for a bright future**
Pillar	**People**
Outcome	2. A healthy, active and safe community.
Pillar	**Place**
Outcome	8. A city that is easy to get around safely and sustainably.
Pillar	**Performance**
Outcome	12. A happy, well-informed and engaged community.

Budget/Financial Implications

The consultation expenditure will be accounted for within the existing operational accounts.

With regard to the implementation of any parking restrictions, there is no budget allocation for 2023/24 Financial Year.

The City has been quoted the following:

- Option 1 – Proposed Limited Parking Restrictions around Waratah Avenue - $20k.
- Option 2 – Proposed Timed Parking Restrictions Waratah Precinct - $62k.
- Option 3 – Proposed No Parking Restrictions Waratah Precinct - $63k.

Legislative and Policy Implications

City of Nedlands Parking and Parking Facilities Local Law 2013 Section 1.8 and 2.1.
Community Engagement Council Policy

Decision Implications

Should Council not support the recommendation to consult with the community regarding these temporary parking restrictions, it would be contrary to the Community Engagement Council Policy. This Policy outlines the Council's commitment to community and stakeholder engagement to support the City's vision and internationally accepted core engagement values.

Without the implementation of temporary parking restrictions, the control, management and enforcement of vehicles will be problematic. Parking access to residents situated around the construction area will likely be impacted by increases to parking demand within their vicinity.

Conclusion

Increased demand for parking is anticipated in the West Waratah Precinct due to the construction activity at 129-133 Waratah Avenue, Dalkeith.

Officers recommend that Council approve a consultation period to obtain feedback on the three options to introduce temporary parking restrictions in the surrounding streets and progress parking arrangements with builders for the exclusive use of a section of verge on Victoria Avenue.

Further Information

Nil.

ALEXANDER RD
ALEXANDER RD
WATKINS RD
WARATAH AVE
NEVILLE RD
VIKING RD
MINORA RD
BEATRICE RD
ROBERT ST
HYNES RD
VICTORIA AVE
PHILIP RD
LEON RD
VICTORIA AVE

PROPOSED PARKING RESTRICTIONS LEGEND

- NO STOPPING
- 2 HOUR PARKING 8am - 5pm, MON - FRI
- NO PARKING 8am - 5pm
- 30 MIN PARKING 8am - 6pm, MON - FRI
  8am - 1pm, SAT
- NO PARKING
- 30 MIN PARKING 8am - 5pm, MON - FRI
- BUS ZONE

PARKING PRECINCT

PROPOSED PARKING RESTRICTIONS

AMENDMENTS

No.	DRN	REVISION DATE	DESCRIPTION	APPROVED BY	APPROVED DATE
0	R.V	07/03/24	Issued for Review		

ORIENTATION

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DESIGNED BY	07/03/24	DRAWING NUMBER
DRAWN BY	R.V 07/03/24	Current Condition
CHECKED BY		
APPROVED BY		A3 REVISION A

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ALEXANDER RD
ALEXANDER RD
WATKINS RD
WARATAH AVE
NEVILLE RD
VIKING RD
MINORA RD
BEATRICE RD
ROBERT ST
HYNES RD
VICTORIA AVE
PHILIP RD
LEON RD
VICTORIA AVE

PROPOSED PARKING RESTRICTIONS LEGEND

- NO STOPPING
- 2 HOUR PARKING 7am - 5pm, MON - SAT
- NO PARKING 7am - 5pm
- 30 MIN PARKING 8am - 6pm, MON - FRI 8am - 1pm, SAT
- NO PARKING
- 30 MIN PARKING 8am - 5pm, MON - FRI
- BUS ZONE

PARKING PRECINCT

PROPOSED PARKING RESTRICTIONS

AMENDMENTS

No.	DRN	DATE	REVISION	DESCRIPTION	APPROVED BY	APPROVED DATE
0	R.V	07/03/24		Issued for Review		

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APPROVED BY		

DRAWING NUMBER

Option 1

A3

REVISION A

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ALEXANDER RD

ALEXANDER RD

WATKINS RD

WARATAH AVE

NEVILLE RD

VIKING RD

MINORA RD

BEATRICE RD

ROBERT ST

HYNES RD

VICTORIA AVE

PHILIP RD

LEON RD

VICTORIA AVE

PROPOSED PARKING RESTRICTIONS LEGEND

- NO STOPPING
- 2 HOUR PARKING 7am - 5pm, MON - SAT
- NO PARKING 7am - 5pm
- 30 MIN PARKING 8am - 6pm, MON - FRI 8am - 1pm, SAT
- 30 MIN PARKING 8am - 5pm, MON - FRI
- BUS ZONE
- NO PARKING ON ROAD & AUTHORIZED VEHICLE ON VERGE ONLY
- NO PARKING

PARKING PRECINCT

PROPOSED PARKING RESTRICTIONS

AMENDMENTS

No.	DRN	REVISION DATE	DESCRIPTION	APPROVED BY	APPROVED DATE
0	R.V	07/03/24	Issued for Review		

ORIENTATION

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CHECKED BY		
APPROVED BY		

DRAWING NUMBER

Option 2

A3

REVISION A

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PARKING PRECINCT

PROPOSED PARKING RESTRICTIONS

AMENDMENTS

REVISION			DESCRIPTION	APPROVED	
0	R.V	07/03/24	Issued for Review		
1	A.M	06/05/24	Updated colours for "Permit Holders Exempt"	A.M	A.M
No.	DRN	DATE		BY	DATE

ORIENTATION

City of Nedlands

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DESIGNED BY	07/03/24
DRAWN BY	R.V 07/03/24
CHECKED BY	A. MACNISH
APPROVED BY	A. MACNISH

DRAWING NUMBER

Option 3

A3

REVISION 1

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17. Divisional Reports - Technical Services

17.1 TS17.05.24 Brockway Roadside Safety Inspection

Meeting & Date	Council Meeting – 28th May 2024
Applicant	City of Nedlands
Employee Disclosure under section 5.70 Local Government Act 1995	Nil.
Report Author	Aaron MacNish – Coordinator Transport and Development
Director	Matthew MacPherson – Director Technical Services
Attachments	1. Attachment 1 – Brockway Road Road Safety Inspection 2. Attachment 2 – Brockway Road Corrective Action Report

Purpose

At the Council meeting on the 1st of December 2023, the Council resolved to request the Chief Executive Officer to:

1. Commission an independent Road Safety Audit by a suitable practitioner to audit Brockway Road between Alfred Road and Camelia Avenue with additional consideration given to Camelia Avenue on the approach to Brockway Road; and
2. Present the findings and recommendations from the Road Safety Audit to the Council for further consideration.

This report fulfils action two of the above Council resolution following the completion of the Road Safety Inspection in March 2024.

Recommendation

That Council

1. receives the Road Safety Inspection and corresponding Corrective Action Report for Brockway Road / Camelia Avenue / Quintilian Road, and

2. lists for considerations an allocation of $30,000 for the detailed design and construction of Local Area Traffic Management devices on Camelia Avenue for consideration in the 2024/25 budget.

Voting Requirement

Simple Majority

Background

The City of Nedlands has a Traffic Warrant Guideline which ranks potential safety improvement locations on a risk-based assessment. This guideline defines the investigation process and considers data collection and crash history.

A complaint was received from a member of the public in 2023. The complaint focused on the speed of vehicles travelling along Camelia Avenue and Brockway Road and requested the following actions to occur:

- install a 'speed hump' on Camelia Avenue to slow vehicle speeds,
- replace the intersection control at Camelia Avenue / Brockway Road from give-way sign control to stop sign control.
- a pedestrian crossing to allow children and parents safe access to the other side of Brockway Road, and
- reduce the speed limit along Brockway Road between Alfred Road and Camelia Avenue to 50 km/h.

City officers investigated the complaint and collected data including traffic volumes, vehicle speeds and the 5-year crash history. A summary of the data collected is presented below:

- Traffic Volume – 1,348 Vehicles Per Day
- Speed – Posted speed limit 50km/h, 85% speed 54km/h.
- Crash history – no crashes along Camelia Avenue, 3 crashes at the intersection of Brockway Road and Camelia Avenue.

Based on the above information, the section of Camelia Avenue between Mooro Drive and Brockway Road did not meet the Warrant Criteria to consider physical Local Area Traffic Management devices.

The resident was informed of the outcome of the City's investigation and disagreed with the findings. The investigation process adopted by the administration allows complainants who are not satisfied with the warrant criteria determination to seek input from City of Nedlands Council who can raise a Notice of Motion requesting a Road Safety Audit (RSA).

A Notice of Motion was put to the Council at the December 2023 OCM, and the Council resolved to commission an independent Road Safety Audit. That Road Safety Audit was completed in March 2024.

Discussion

A Road Safety Inspection (RSI) is a formal examination of an existing road in which an independent, qualified team reports on the crash potential and likely safety performance of the location.

A Road Safety Audit is a formal, systematic assessment of the potential safety risks associated with a new road project or road improvements project. The assessment considers all road users and suggests measures to eliminate or mitigate those risks. Audits of existing road environments are known as Road Safety Inspections and are recognised as an important process towards ensuring the ongoing safety of the foreseeable road user groups travelling on an established road. As this intersection is an existing road, an RSI is the correct naming convention and was undertaken as opposed to an RSA.

While items with a high-risk rating(s) should be viewed with due importance by the City, it is important to remember that it is not mandatory for the City to accept any findings or recommendations within a Road Safety Inspection report.

Four findings and recommendations were made, City officers have considered the findings and the recommendations and agree with all four. City officers are seeking the Councils input on the proposed actions moving forward. For simplicity, each recommendation will be discussed individually below.

Finding 2.1 High number of conflicting movements

The first and most critical finding of the Road Safety Inspection is that a four-way intersection with sign-controlled (give-way signs) conflicting movements may result in a number of different crash types, with a likelihood of right-angle crashes as a result of through and turning movements and potential rear-end crashes as a result of overshoot or restart crashes. The recommendation states:

“With 85th percentile speeds above 50km/h and with a crash resulting in someone requiring hospital treatment, implement a higher form of control at the intersection such as controlling the conflicting movements formally through a roundabout or traffic signals, or remove the right turn movements through the implementation of left in/left out only arrangements or closure of side road access assessing the impact of this on rerouting of traffic.”

Austroads Guide to Road Safety Part 2: Safe Roads provides a safe system assessment framework hierarchy of intersection treatments as follows:

Hierarchy	Treatment	Influence (E = exposure L = likelihood S = severity)
Safe System options ('primary' or 'transformational' treatments)	• Close intersection • Grade separation • Low speed environment/speed limit • Roundabout • Raised platform	L, S E L, S L, S L, S
Supporting treatments (compatible with future implementation of Safe System options)	• Left-in/left-out, with protected acceleration and deceleration lanes where required • Ban selected movements • Reduce speed environment/speed limit	L, S E L, S
Supporting treatments (does not affect future implementation of Safe System options)	• Redirect traffic to higher quality intersection • Turning lanes • Vehicle activated signs • Improved intersection conspicuousness • Advanced direction signage and warning • Improved sight distance • Traffic signals with fully controlled right turns • Skid resistance improvement • Improved street lighting.	E L L L L L L L L
Other considerations	• Speed cameras combined with red light cameras • Route planning to avoid unprotected right turns	L, S E

Considering the above table from Austroads City officers propose to investigate the following treatments for the intersection of Brockway Road / Camelia Road / Quintilian Road:

- Closing Camelia Avenue to vehicle traffic.
- Closing Quintilian Road to vehicle traffic.
- Extending the median island along Brockway Road to make both side streets left-in/left-out.
- Reconstruct the intersection as a signalised intersection.
- Reconstruct the intersection as a roundabout.

City officers proposed to run the five options through a Multi-Criteria Analysis to determine a preferred treatment. The results of the Multi-Criteria Analysis and the preferred treatment could then be used to shortlist the most beneficial treatments for community consultation. Given the location of the intersection, community engagement and consultation are going to be critical, particularly with the following stakeholders:

- Quintilian School
- Moerlina School
- Department of Health
- Department of Defense
- Public Transport Authority
- Main Roads WA

Constraints at the intersections include the high voltage transmission line on the southwest corner of the intersection, current bus routes that utilise Camelia Avenue, and the limited land availability for any additional intersection footprint.

Finding 2.2 – Safe Intersection Sight Distance at Camelia Avenue and Brockway Road

The verge planting along Brockway Road immediately to the south of Camelia Avenue is partially obscuring sight lines for vehicles existing on Camelia Avenue.

The recommendation is:

"*Adequate Safe Intersection Sight Distance should be provided in accordance with Austroads guidelines."*

A works request has been raised with the Park Service's team to prune the hedge in the Brockway Road reserve adjacent to 2 Camelia Avenue and relocate the young tree that has been recently planted on this verge.

No further action is considered necessary to complete the recommendation attached to this finding.

Finding 2.3 – Speed on Camelia Avenue on approach to Brockway Road

The default speed limit in built-up areas is 50 km/h. The City will often receive requests from residents complaining that the speed on their street is too high and that the City should do something to lower the vehicle speeds.

It would be an expensive and impractical exercise for the City to commit to providing traffic calming measures on every street where vehicle speeds exceed 50 km/h. A general rule of thumb, the City considers the 85% speed of vehicles travelling on the street when making a decision about needing any speed reduction measures. The 85% speed refers to the speed at which 85% of vehicles along a section of road are travelling at or below.

In the case of Camelia Avenue, the 85% speed was 54 km/h. This means that 85% of users on Camelia Avenue were travelling at or below 54km/h. The low volume of traffic on Camelia Avenue (1,348 vehicles per day) coupled with the relatively minor increase in 85% speed above 50km/h means that on speed and traffic data alone Camelia Avenue does not meet the City's threshold intervention levels to warrant capital expenditure.

As discussed earlier, the Road Safety Inspection process does not consider things like available resources or the condition and safety of other assets across the City when making their findings. Considering recent feedback from the Council and the wider community regarding various Local Area Traffic Management treatments it would be irresponsible for City officers to recommend the installation of "speed humps" along Camelia Avenue without following due process.

City officers propose to prepare several viable options for traffic calming devices along Camelia Avenue that will be effective in reducing the 85% speed to below 50km/h. These options will then be presented to the community for consultation.

It is proposed to include the $30,000 for detailed design and construction of LATM devices in the upcoming 2024/25 budget.

Finding 2.4 – Unprotected Bike Lanes

The Road Safety Inspection identified that the on-street cycle lanes along Brockway Road do not have any physical protection between vehicles and the users of the bike lane.

It is well-established that the human body can only withstand certain forces when subject to a crash. The limit that the human body can withstand depends largely on the speed at which the crash occurs and the nature of the crash.
The acceptable limit for crashes involving vulnerable road users like cyclists and pedestrians is 30km/h.

The City of Nedlands is yet to adopt a Long-Term Cycling Network and as such has made little progress by way of planning for active transport corridors. The recommendation from the Road Safety Inspection states:

"Provide physical protection along the on-street bike lane."

The immediate action of the City officers will be to prepare options for the on-street cycle lanes along Brockway Road between Lemnos Street and Alfred Road these options will include an option to construct a protected on-street cycling lane that physically separates riders from vehicle traffic.

Alternative options for consideration are the removal of the on-street lanes, widening the verges and providing a comparable off-street cycling facility or consider downgrading the role Brockway Road plays in the City's cycling network and removing the cycling infrastructure altogether.

The investigation of various options is proposed to be undertaken in the 2024 / 25 financial year with any capital works that may be required as a result being prepared for consideration in the 25/26 capital budget.

Consultation

No consultation has occurred regarding the results of the Road Safety Inspection nor the proposed recommendations.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2022-23 vision and desired outcomes as follows:

Vision **Sustainable and responsible for a bright future**

Pillar **People**
Outcome 2. A healthy, active and safe community.

Pillar **Place**
Outcome 8. A city that is easy to get around safely and sustainably.

Pillar **Performance**
Outcome 11. Effective leadership and governance.
12. A happy, well-informed and engaged community.

Budget/Financial Implications

Recommendation 2.2 has been resolved as part of the City's usual operational maintenance. Items 2.1, 2.3 and 2.4 are currently unfunded projects.

If the recommendation is adopted, $30,000 for investigation, design and delivery of the treatment options for Camelia Avenue will be listed for consideration on the draft Capital Budget for 2024/25.

It is worth noting that while the City would likely be required to meet the cost of funding the design component, undertaking an RSI permits submission to the blackspot program may attract either full or two-third / one-third funding for the construction component.

Legislative and Policy Implications

Nil.

Decision Implications

Should the Council endorse the recommendation City officers will focus on the planning, design, and consultation of Local Area Traffic Management devices for installation on Camelia Avenue in the 2024/25 financial year with the investigation and planning for upgrades at the Camelia Avenue / Brockway Road / Quintilian Road intersection to follow.

Conclusion

The Road Safety Inspection recommended several improvements to the intersection of Camelia Avenue / Brockway Road / Quintilian Road. The nature of these improvements means

that investigation and community engagement are required before any decisions should be made on the preferred outcome. Proper planning and investigation of these options will ensure that any project is considered in the context of the City's overall capital works program, taking the needs of the wider community and stakeholders into account.

Further Information

Nil.

ROAD SAFETY INSPECTION

Camelia Avenue, Brockway Road & Quintilian Road, Mt Claremont

Inspection Ref: 07951

Prepared for:

City of Nedlands

By:

Tim Judd and Tanya Moran

PJA

Report Issue Date: **14/03/2024**

Road Safety Inspection Document Control Sheet

Project Location:	Camelia Avenue, Brockway Road & Quintilian Road, Mt Claremont
Prepared for:	City of Nedlands
Prepared by 1:	Tim Judd and Tanya Moran
Prepared by 2:	PJA
Inspection Team Leader:	Tim Judd
Inspection Team Leader Organisation:	PJA
Inspection Reference:	07951
Report Issue Date:	14/03/2024

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1. INTRODUCTION

1.1 Scope of the Inspection

A Road Safety Inspection is a formal examination of an existing road or road related area in which an independent, qualified team report on the crash potential and likely safety performance of the location. (Formerly known as an 'Existing Road Safety Audit').

This Road Safety Inspection has been conducted following the general principles detailed in *Austroads Guide to Road Safety Part 6: Road Safety Audit* and in accordance with the requirements contained in the Main Roads Western Australia Policy and Guidelines for Road Safety Audit.

This report results from a request for a Road Safety Inspection to be conducted at Camelia Avenue, Brockway Road & Quintilian Road, Mt Claremont .

The background and objective of the inspection is in response to a resident's concerns regarding the safety of the existing intersection, particularly during the afternoon peak school period. The objective of this RSI is to document any hazards and risks of crashes occurring due to the current intersection configuration and control type so that the City can consider if any upgrades are required in this location.

The Road Safety Inspection was undertaken by Tim Judd of PJA with reference to the details provided by the City.

The Road Safety Inspection comprised an examination of the area identified by City of Nedlands.

All the findings described in Section 2 of this report are considered by the inspection team to require action in order to improve the safety of the existing road environment and to minimise the risk of crash occurrence and reduce potential crash severity.

The inspection team has examined and reported only on the road safety implications of the road infrastructure as presented.

1.2 The Inspection Team

Auditor No.	Name	Role	Organisation
275(S)	Tim Judd	Inspection Team Leader	PJA
320(A)	Tanya Moran	Inspection Team Member	PJA

The inspection team visited the site on 26/02/2024 at 2pm. At the time of the site visit the weather was sunny and the existing road surface was dry.

A night-time site visit was undertaken on 1/03/2024 at 7.30pm.

1.3 Specialist Advisors

No other specialist advisors attended.

1.4 Safe System Findings

The aim of Safe System Findings is to focus the Road Safety Inspection process on considering safe speeds and by providing forgiving roads and roadsides. This is to be delivered through the Road Safety Inspection process by accepting that people will always make mistakes and by considering the known limits to crash forces the human body can tolerate. This is to be achieved by focusing the Road Safety Inspection on particular crash types that are known to result in higher severity outcomes at relatively lower speed environments to reduce the risk of fatal and serious injury crashes.

The additional annotation "**IMPORTANT**" shall be used to provide emphasis to any Road Safety Inspection finding that has the potential to result in fatal or serious injury, or findings that are likely to result in the following crash types above the related speed environment: head-on (>70 km/h), right angle (>50 km/h), run off road impact object (>40 km/h), and crashes involving vulnerable road users (>30 km/h), as these crash types are known to result in higher severity outcomes at relatively lower speed environments.

The exposure and likelihood of crash occurrence shall then be considered for all findings deemed "**IMPORTANT**" and evaluated based on an auditors professional judgement. Auditors should consider factors such as, traffic volumes and movements, speed environment, crash history and the road environment, and apply road safety engineering and crash investigation experience to determine the likelihood of crash occurrence. The likelihood of crash occurrence shall be considered either "**VERY HIGH**", "**HIGH**", "**MODERATE**" or "**LOW**" and this additional annotation shall be displayed following the "**IMPORTANT**" annotation on applicable findings.

1.5 Previous Road Safety Inspections

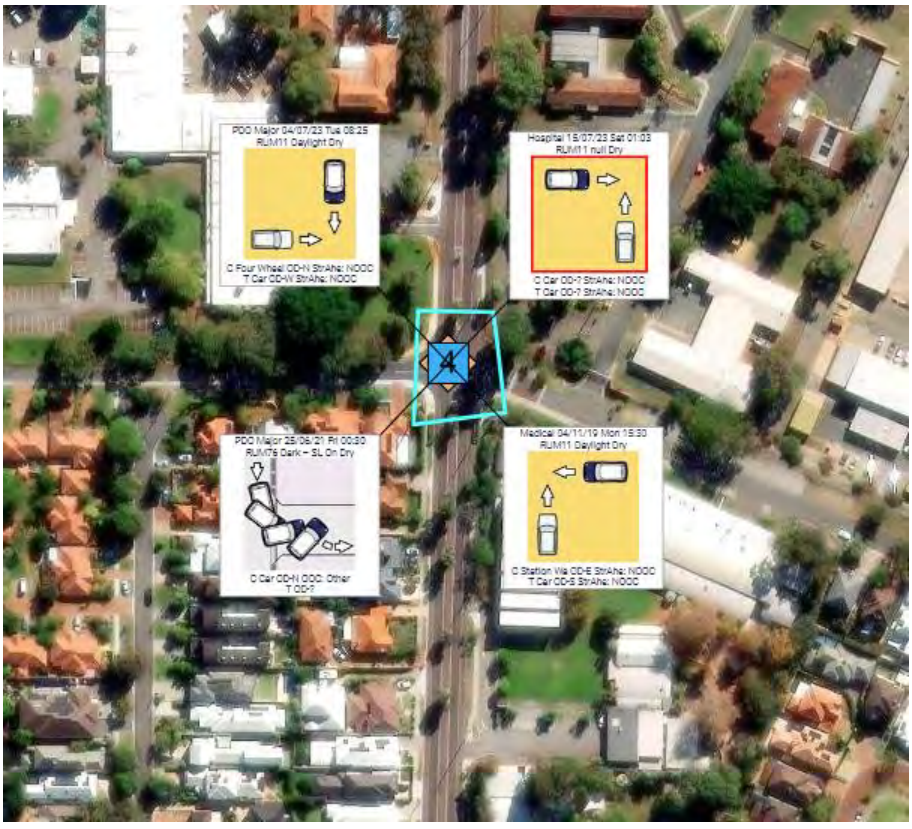
No previous RSIs or RSAs have been provided.

1.6 Background Data

1.6.1 Crash History

A study of the recent crash history has been conducted in the location considered in the inspection for the five-year period to the end of December 2023. This showed that there were four reported crashes within the extracted data which is summarised below:

- Only one crash has occurred during a typical school peak time at 15.30 PM
- One crash resulted in someone needing to go to hospital – reporting: 'a car struck me as I passed the intersection of Camelia Avenue'
- One crash resulted in someone requiring medical treatment – reporting: 'REGO1 driving northbound on Brockway Avenue past the Quintillion Street and Camelia Avenue intersection REGO1 was hit on the front drivers' side by REGO2 approaching suddenly from a westbound direction'
- One crash resulted in property damage only
- Three of the crashes were right angle crash types.



1.6.2 Traffic and Speed Data

A summary of recent traffic data is provided below:

Location	Vehicles per day (% heavy vehicles)	Date	Source
Camelia Ave, opposite 2 Erica Ave	1,355 (9%)	0:00 Thursday, 23 February 2023 to 0:00 Thursday, 9 March 2023	City of Nedlands
7-7A Brockway Rd	7,705 (8%)	0:00 Thursday, 23 February 2023 to 0:00 Thursday, 9 March 2023	City of Nedlands

A summary of recent speed data is provided below:

Location	Average Speed (km/h)	85th Percentile Speed (km/h)	Date	Source
Camelia Ave, opposite 2 Erica Ave	47	54	0:00 Thursday, 23 February 2023 to 0:00 Thursday, 9 March 2023	City of Nedlands
7-7A Brockway Rd	54	61	0:00 Thursday, 23 February 2023 to 0:00 Thursday, 9 March 2023	City of Nedlands

Existing speed limits:

- Brockway Road – 60km/h
- Camelia Avenue – 50km/h
- Quintilian Road – 50km/h.

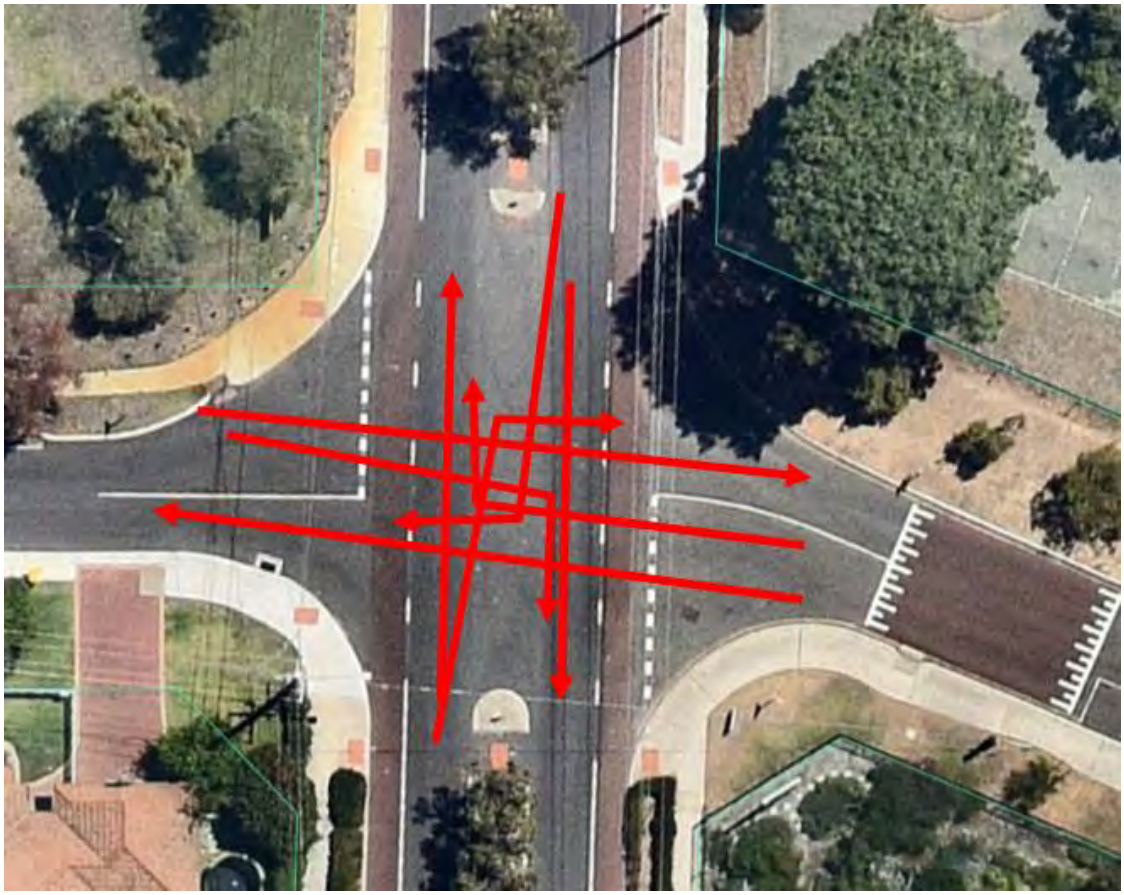
1.6.3 Appendices

Appendix A – Road Safety Inspection Findings Location Plan
Appendix B – Road Safety Inspection Photographs
Appendix C – Crash Reports
Appendix D – Corrective Action Report (CAR)

2. ITEMS RAISED IN THIS ROAD SAFETY INSPECTION

2.1 Finding – High number of conflicting movements

The intersection currently allows for a number of conflicting vehicular movements, straight through, right turn in, right turn out with only Give-Way priority control. In addition to these, there are cyclists and pedestrian movements generated by the adjacent bus stop and to/from nearby land uses.



Justification of the finding:

There is a risk that a four-way intersection with uncontrolled conflicting movements will result in a number of differing crash types, with a likelihood of right-angle crashes as a result of through and turning movements and potential rear-end crashes as a result of overshoot or restart crashes. This has been evidenced through the crash data with three of the four crashes being right angle type crashes.

Austroads Guide to Road Design Part 4: Intersections and Crossings notes that the selection of an appropriate type of intersection for a particular site may be influenced by, transport planning and environmental considerations, traffic management and road safety objectives, a range of road design considerations that are not necessarily related to traffic management, environmental considerations and economic considerations (costs and benefits).

Broad transport or environmental considerations, and traffic management and road safety objectives may be fundamental to the selection of the appropriate intersection treatment at a particular site or sites.

Intersections are controlled (roundabout or signalised) either to address a road safety or a traffic/transportation operational issue. *Austroads Guide to Road Safety Part 2: Safe Roads* notes that intersection collisions are one of the major sources of injury on the road network, most harm is associated with unprotected right turns and red light running, current design practices do not take into account key error types relating to dynamic visual obstruction and "looked but failed to see", it is likely that the majority of intersections that have severe injury crashes would pass engineering assessments for traffic control, geometry and sight distance according to current standards and, intersection designs that manage speeds on approach or within the intersection footprint are associated with good safety performance (e.g. via vertical or horizontal deflection devices).

The guide goes on to note that intersections with 90-degree intersecting approaches (including signalised, stop, give way and offset T junctions) should no longer be regarded as a primary treatment where in high speed environments (>50 km/h); alternatives should be used where possible, and safety enhancements provided where these are the only alternative. For non-signalised junctions, stop or give way controls have been a feature of traffic control for decades in both urban and rural areas. There is also a legacy in some jurisdictions that the T-junction rule is deemed sufficient for traffic control in lieu of stop or give way signs in certain situations.

The approach to intersection design and operation is predicated on road users firstly realising that an intersection is present and then making the right decisions when using the facility. There are a myriad of reasons and circumstances as to why road users make errors that lead to collisions at intersections. Intersection collisions need to be considered from a system failure perspective rather than as road user performance failure.

The Guide provides the following Safe System Assessment Framework hierarchy of intersection treatments:

Hierarchy	Treatment	Influence (E = exposure L = likelihood S = severity)
Safe System options ('primary' or 'transformational' treatments)	• Close intersection • Grade separation • Low speed environment/speed limit • Roundabout • Raised platform	L, S E L, S L, S L, S
Supporting treatments (compatible with future implementation of Safe System options)	• Left-in/left-out, with protected acceleration and deceleration lanes where required • Ban selected movements • Reduce speed environment/speed limit.	L, S E L, S

Hierarchy	Treatment	Influence (E = exposure L = likelihood S = severity)
Supporting treatments (does not affect future implementation of Safe System options)	• Redirect traffic to higher quality intersection • Turning lanes • Vehicle activated signs • Improved intersection conspicuousness • Advanced direction signage and warning • Improved sight distance • Traffic signals with fully controlled right turns • Skid resistance improvement • Improved street lighting.	E L L L L L L L L
Other considerations	• Speed cameras combined with red light cameras • Route planning to avoid unprotected right turns	L, S E

It was discussed on site with the City that the presence of power transmission poles and lines at the intersection do present a major challenge.

Recommendation

With 85th percentile speeds above 50km/h and with a crash resulting in someone requiring hospital treatment, implement a higher form of control at the intersection such as controlling the conflicting movements formally through a roundabout or traffic signals, or, remove the right turn movements through implementation of left in/left out only arrangements or closure of side road access assessing the impact of this on re-routing of traffic.

[IMPORTANT | HIGH]

2.2 Finding – Safe intersection Sight Distance at Camelia Avenue and Brockway Road

The verge planting (hedge and new street tree) within the verge on Brockway Road, to the south of Camelia Avenue partially obscures sight lines to the south for vehicles exiting Camelia Avenue in an eastbound direction.

Camelia Avenue looking south along Brockway Road

Justification of the finding:

There is a risk that vehicles could fail to give way whilst exiting the intersection which could result in right angle crashes.

The verge planting located to the south of the intersection approach for Camelia Avenue reduces Safe Intersection Sight Distance to approximately 55m. *Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersection* indicates that Safe Intersection Sight Distance is the minimum distance which should be provided on the major road at any intersection. Using an operating speed of 60km/h (assuming design speed = operating speed in this urban environment context) and reaction time of 2 seconds the required Safe Intersection Sight Distance is 97m measured 3m back along the side road from the conflict point.

Recommendation

Adequate Safe Intersection Sight Distance should be provided in accordance with Austroads guidelines.

[IMPORTANT | MODERATE]

2.3 Finding – Speed on Camelia Avenue on approach to Brockway Road

The downhill approach of Camelia Avenue toward Brockway Road encourages higher speeds than intended at 50km/h.

Camelia Avenue looking east toward Brockway Road

Justification of the finding:

There is a risk that vehicles could fail to stop in time at the intersection due to fast approach speeds which could result in overshoot crashes.

Main Roads WA Road Safety Auditing training notes that overshoot crashes are intersection crashes where the driver fails to anticipate the intersection, overshooting the intersection resulting in a crash. Overshoot crashes can be the result of insufficient Approach Sight Distance (ASD) to the intersection, poor approach signing and pavement marking provision on the approach to the intersection, or the speed environment on the approach to the intersection.

Recommendation

Implement a raised speed plateau on Camelia Avenue similar to that existing on Quintilian Road.

[IMPORTANT | MODERATE]

2.4 Finding – Unprotected Bike Lanes

The current bikes lanes on Brockway Road do not have any physical protection between vehicle and bike lane user (which could be a person riding a bike or e-scooter).

Brockway Road looking north toward Camelia Avenue intersection.

Justification of the finding:

There is a risk that errant vehicles (distracted motorists) could traverse into the bike lane across the painted white line which could result in vulnerable road user crashes above 30km/h.

As noted within section 1.4 of this report, Safe System recognises that vulnerable road user's exposure to vehicle speeds above 30km/h have a high propensity of resulting in killed or seriously injured road users.

Further, *Cycling Aspects of Austroads Guides* note where the difference between bicycle and motor traffic speeds is less than 20 km/h, full integration may be acceptable, i.e. where bicycles and motor traffic share the road without any special provisions. Conversely, segregation is most desirable where the differences between bicycle and motor traffic speeds exceed 40 km/h.

Recommendation

Provide physical protection along the on-street bike lane.

[IMPORTANT | HIGH]

3. ROAD SAFETY INSPECTION TEAM STATEMENT

I hereby certify that the inspection team have examined the identified location in undertaking this Road Safety Inspection. I also confirm that this inspection has been conducted following the general principles detailed in *Austroads Guide to Road Safety Part 6: Road Safety Audit* and in accordance with Main Roads Policy and Guidelines for Road Safety Audit.

The inspection has been carried out for the sole purpose of identifying any features of the existing road environment which could be altered or removed to improve the safety of the road infrastructure. The identified issues have been noted in this report. The accompanying findings and recommendations are put forward for consideration by the asset owner for implementation.

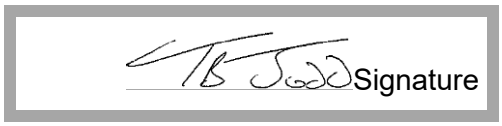
Inspection Team Leader

Tim Judd

Director
PJA

0427382288

Tim.judd@pja.com.au



14/03/2024 Date

Disclaimer

This report contains findings and recommendations based on examination of the site and/or relevant documentation. The report is based on the conditions viewed on the day of inspection and is relevant at the time of production of the report. Information and data contained within this report is prepared with due care by the Road Safety Inspection Team. While the Road Safety Inspection Team seeks to ensure accuracy of the data, it cannot guarantee its accuracy.

Readers should not solely rely on the contents of this report or draw inferences to other sites. Users must seek appropriate expert advice in relation to their own particular circumstances.

The Road Safety Inspection Team does not warrant, guarantee or represent that this report is free from errors or omissions or that the information is exhaustive. Information contained within may become inaccurate without notice and may be wholly or partly incomplete or incorrect. Before relying on the information in this report, users should carefully evaluate the accuracy, completeness and relevance of the data for their purposes.

Subject to any responsibilities implied in law which cannot be excluded, the Road Safety Inspection Team is not liable to any party for any losses, expenses, damages, liabilities or claims whatsoever, whether direct, indirect or consequential, arising out of or referrable to the use of this report, howsoever caused whether in contract, tort, statute or otherwise.

APPENDIX A

ROAD SAFETY INSPECTION FINDINGS LOCATION PLAN

Inspection findings within body of this report

APPENDIX B

ROAD SAFETY INSPECTION PHOTOGRAPHS

Vehicles waiting at intersection to turn

Bus stopping near intersection indicating pedestrian demand

View of verge planting and street tree restricting SISD

View of intersection from Quintilian Road at night

View of intersection along Brockway Road at night

APPENDIX C

CRASH REPORTS

Detailed Crash History

Selected Areas

Centre: (-31.966, 115.792) (Shape)

Parameter	Value	Description
From Date	01/01/19	
To Date	31/12/23	
Crash Type	ALL	
Severity	ALL	
Include Description?	Yes	

Road	Road Name	SLK	CWY	True Dist.	Intersection	Date	Day	Time	Severity	Crash No.	Type	Light Cond	Road Cond	Speed Limit	Traffic Control	Road Feature	Road Alignment	Speed Factor	Mft Nature	Location	RUM	Unit Type	Unit Dir	From Dir	To Dir	Veh/Ped Move	First Object Hit	Second Object Hit	Third Object Hit	Target Impact Point
12201 43	Brockway Rd	0.42	S	0.42	QUINTILIAN RD & CAMELIA AV (050418)	04/07/ 2023	Tuesday	0825	PDO Major	20232 97592	Intersection	Daylight	Dry	60	Give Way Sign	4-way intx		Right Angle		On Crwy	11:Intx: Thru	Four Wheel Drive (Not Car Design)				Straight: Ahead Not Out Of Control				
12201 43	Brockway Rd	0.42	S	0.42	QUINTILIAN RD & CAMELIA AV (050418)	04/07/ 2023	Tuesday	0825	PDO Major	20232 97592	Intersection	Daylight	Dry	60	Give Way Sign	4-way intx		Right Angle		On Crwy	11:Intx: Thru	Car	W - CAM ELIA AV	E - QUI NTILI AN RD	Straight: Ahead Not Out Of Control				Side
Location: Brockway Rd at Quintilian Rd & Camelia Av																													
12201 43	Brockway Rd	0.42	S	0.42	QUINTILIAN RD & CAMELIA AV (050418)	04/11/ 2019	Monday	1500	Medical	20193 06791	Intersection	Daylight	Dry	60	Stop Sign	4-way intx	Straight			On Crwy	11:Intx: Thru	Vehicle Types: Car - Four Wheel Drive (Not Car Design)								
12201 43	Brockway Rd	0.42	S	0.42	QUINTILIAN RD & CAMELIA AV (050418)	04/11/ 2019	Monday	1500	Medical	20193 06791	Intersection	Daylight	Dry	60	Stop Sign	4-way intx	Straight			On Crwy	11:Intx: Thru	Station Wagon	W - CAM ELIA AV	E - QUI NTILI AN RD	Straight: Ahead Not Out Of Control				
12201 49	Brockway Rd	0.42	S	0.42	QUINTILIAN RD & CAMELIA AV (050418)	04/11/ 2019	Monday	1530	Medical	20193 06791	Intersection	Daylight	Dry	60	Stop Sign	4-way intx	Straight			On Crwy	11:Intx: Thru	Car	S - BRO CKW AY RD	N - BRO CKW AY RD	Straight: Ahead Not Out Of Control				Side
Location: Brockway Rd at Quintilian Rd & Camelia Av																													
12201 43	Brockway Rd	0.42	S	0.42	QUINTILIAN RD & CAMELIA AV (050418)	15/07/ 2023	Saturday	0103	Hospital	20232 69751	Intersection	Dark - Street Lights On	Dry	60	Give Way Sign	4-way intx	Straight	Right Angle		On Crwy	11:Intx: Thru	Vehicle Types: Car - Station Wagon								
12201 43	Brockway Rd	0.42	S	0.42	QUINTILIAN RD & CAMELIA AV (050418)	15/07/ 2023	Saturday	0103	Hospital	20232 69751	Intersection	Dark - Street Lights On	Dry	60	Give Way Sign	4-way intx	Straight	Right Angle		On Crwy	11:Intx: Thru	Car	S - BRO CKW AY RD	N - BRO CKW AY RD	Straight: Ahead Not Out Of Control				Side
12201 43	Brockway Rd	0.42	S	0.42	QUINTILIAN RD & CAMELIA AV (050418)	15/07/ 2023	Saturday	1610	Hospital	20232 69751	Intersection	Dark - Street Lights On	Dry	60	Give Way Sign	4-way intx	Straight	Right Angle		On Crwy	11:Intx: Thru	Car	S - BRO CKW AY RD	N - BRO CKW AY RD	Straight: Ahead Not Out Of Control				Side
Location: Brockway Rd at Quintilian Rd & Camelia Av																													
12201 49	Brockway Rd	0.42	S	0.42	QUINTILIAN RD & CAMELIA AV (050418)	25/06/ 2021	Friday	0930	PDO Major	20212 93015	Intersection	Dark - Street Lights On	Dry	60	No Sign Ctrl	4-way intx	Straight		Hit Object	On Right Verge After Leaving Cway	T6:Loss Of Control: Left Turn - Intx	Vehicle Types: Car								
12201 49	Brockway Rd	0.42	S	0.42	QUINTILIAN RD & CAMELIA AV (050418)	25/06/ 2021	Friday	0930	PDO Major	20212 93015	Intersection	Dark - Street Lights On	Dry	60	No Sign Ctrl	4-way intx	Straight		Hit Object	On Right Verge After Leaving Cway	T6:Loss Of Control: Left Turn - Intx	Car	N - BRO CKW AN RD	E - QUI NTILI AN RD	Out Of Control: Other	Fence			
Location: Brockway Rd at Quintilian Rd & Camelia Av																													

Crash Description:

Crash Description: REGO1 driving northbound on Brockway Avenue past the Quintilian Street and Camelia Avenue intersection. REGO1 was hit on the front drivers side by REGO2 approaching suddenly from a westbound direction.

Crash Description: A car struck me as I passed the intersection of Camelia Avenue

Crash Description:

APPENDIX D

CORRECTIVE ACTION REPORT

Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
2.1 – Finding - High number of conflicting movements The intersection currently allows for a number of conflicting vehicular movements, straight through, right turn in, right turn out with only Give-Way priority control. In addition to these, there are cyclists and pedestrian movements generated by the adjacent bus stop and to/from nearby land uses.	Choose an item.		
Recommendation With 85th percentile speeds above 50km/h and with a crash resulting in someone requiring hospital treatment, implement a higher form of control at the intersection such as controlling the conflicting movements formally through a roundabout or traffic signals, or, remove the right turn movements through implementation of left in/left out only arrangements or closure of side road access assessing the impact of this on re-routing of traffic. **[IMPORTANT | HIGH]**	Choose an item.		

2.2 – Finding - Safe intersection Sight Distance at Camelia Avenue and Brockway Road The verge planting (hedge and new street tree) within the verge on Brockway Road, to the south of Camelia Avenue partially obscures sight lines to the south for vehicles exiting Camelia Avenue in an eastbound direction.	Choose an item.		
Recommendation Adequate Safe Intersection Sight Distance should be provided in accordance with Austroads guidelines. [IMPORTANT | MODERATE]	Choose an item.		
2.3 – Finding - Speed on Camelia Avenue on approach to Brockway Road The downhill approach of Camelia Avenue toward Brockway Road encourages higher speeds than intended at 50km/h.	Choose an item.		
Recommendation Implement a raised speed plateau on Camelia Avenue similar to that existing on Quintilian Road. [IMPORTANT | **MODERATE]**	Choose an item.		

2.4 – Finding - Unprotected Bike Lanes The current bikes lanes on Brockway Road do not have any physical protection between vehicle and bike lane user (which could be a person riding a bike or e-scooter).	Choose an item.		
Recommendation Provide physical protection along the on-street bike lane. [IMPORTANT | HIGH]	Choose an item.		

Corrective Action Report - Camelia Avenue, Brockway Road & Quintilian Road, Mt Claremont

Road Safety Inspection

NOTE:

- This Corrective Action Report is to be read in conjunction with the full Road Safety Inspection Report and its findings and recommendations.
- The asset owners (MRWA and/or LGA) **must** be informed of these findings, recommendations and proposed actions.
- Items not under the responsibility of this project representative must be forwarded to the persons / agencies who are responsible.

These findings and recommendations have been considered, and the actions listed will be taken accordingly.

Responsible Project Representative	**Company / Agency / Division**	**Position**	**Date**

Asset Owner Representative	**Company / Agency / Division**	**Position**	**Date**

Findings and Recommendations	Project Manager		
	Agree / Disagree	Reason for Disagreeing	Proposed Action and Comments
2.1 – Finding - High number of conflicting movements The intersection currently allows for a number of conflicting vehicular movements, straight through, right turn in, right turn out with only Give-Way priority control. In addition to these, there are cyclists and pedestrian movements generated by the adjacent bus stop and to/from nearby land uses.	Agree		
Recommendation With 85th percentile speeds above 50km/h and with a crash resulting in someone requiring hospital treatment, implement a higher form of control at the intersection such as controlling the conflicting movements formally through a roundabout or traffic signals, or, remove the right turn movements through implementation of left in/left out only arrangements or closure of side road access assessing the impact of this on re-routing of traffic. **[IMPORTANT | HIGH]**	Agree		The City will Investigate options for intersection upgrades to be considered for future Black Spot or MRRG Improvement programs. Five options: Median Island – LILO Close Camelia Close Quintilian Signalised Intersection Roundabout

			The City has developed a multicriteria analysis tool that will be used to initially screen the above options to be presented to Council for consideration.
2.2 – Finding - Safe intersection Sight Distance at Camelia Avenue and Brockway Road The verge planting (hedge and new street tree) within the verge on Brockway Road, to the south of Camelia Avenue partially obscures sight lines to the south for vehicles exiting Camelia Avenue in an eastbound direction.	Agree		
Recommendation Adequate Safe Intersection Sight Distance should be provided in accordance with Austroads guidelines. [IMPORTANT | MODERATE]	Agree		The hedge will be trimmed to not obscure sight distance and the tree will be considered for pruning or removal in line with the City of Nedlands Street Tree Council Policy.
2.3 – Finding - Speed on Camelia Avenue on approach to Brockway Road The downhill approach of Camelia Avenue toward Brockway Road encourages higher speeds than intended at 50km/h.	Agree		
Recommendation	Agree		A report will be prepared for Council recommending that Raised speed plateaus or alternative LATM devices on Camelia Avenue between

Implement a raised speed plateau on Camelia Avenue similar to that existing on Quintilian Road. [IMPORTANT **| MODERATE]**			Brockway Road and Mooro Drive to be included for in a future Capital Works Program for consideration by Council. **NOTE:** the outcome of investigations from item 2.1 are linked to the treatment for 2.3 and decisions made in treating item 2.1 may determine the need and effectiveness of the long-term treatments on adjoining roadways and vice-versa.
2.4 – Finding - Unprotected Bike Lanes The current bikes lanes on Brockway Road do not have any physical protection between vehicle and bike lane user (which could be a person riding a bike or e-scooter).	Agree		
Recommendation Provide physical protection along the on-street bike lane. [IMPORTANT | HIGH]	Agree		A report will be prepared for Council recommending that physical protection for the on-street cycle lanes should be included for in a future Capital Works Program for consideration by Council.

Corrective Action Report - Camelia Avenue, Brockway Road & Quintilian Road, Mt Claremont
Road Safety Inspection

NOTE:

- This Corrective Action Report is to be read in conjunction with the full Road Safety Inspection Report and its findings and recommendations.
- The asset owners (MRWA and/or LGA) **must** be informed of these findings, recommendations and proposed actions.
- Items not under the responsibility of this project representative must be forwarded to the persons / agencies who are responsible.

These findings and recommendations have been considered, and the actions listed will be taken accordingly.

Aaron MacNish	City of Nedlands	Coordinator Transport and Development	09/04/2024
Responsible Project Representative	**Company / Agency / Division**	**Position**	**Date**

Matthew MacPherson	City of Nedlands	Director Technical Services	16/04/2024
Asset Owner Representative	**Company / Agency / Division**	**Position**	**Date**

17.2 TS18.05.24 Tree Removal to Facilitate a City Project – WA Bridge Club Car Park

Meeting & Date	Council Meeting – 28th May 2024
Applicant	City of Nedlands
Employee Disclosure under section 5.70 Local Government Act 1995	Nil
Report Author	Jac Scott, Manager Urban Landscape and Conservation
Director/CEO	Matthew MacPherson, Director Technical Services
Attachments	nil

Purpose

The City is undertaking a project to realign and refurbish the car-park at the WA Bridge Club in Swanbourne. In order to facilitate the works it is proposed to remove six *Araucaria heterophylla* (Norfolk Island Pine) that are in poor condition and not performing well. They would be replaced with suitable alternative species that will provide shade and canopy cover and that will perform well in the car-park environment.

Approval of a tree of this size for removal is no longer an administrative decision following a Notice of Motion passed at the Ordinary Council Meeting held on 28th November 2023.

Recommendation

That Council approves the removal and subsequent stump grinding of six *Araucaria heterophylla* (Norfolk Island Pine) from the car park at the WA Bridge Club, Swanbourne to facilitate a City Project.

Voting Requirement

Simple Majority.

Background

At the Ordinary Council Meeting of 28th November 2023, the following Notice of Motion was passed.

That Council requests that the Chief Executive Officer present

1. Any verge tree above 5 metres in height which is not dead, diseased, or dying come before Council for approval to remove.

There are three trees in the main car park and three to the south where the new Whadjuk Trail (norm bidi) connection is proposed, completing the bush to beach pathway.

Figure 1: Location of Tree proposed for removal

The trees proposed for removal within the current car-park (Trees 1-3) are performing poorly, and are not expected to achieve their full potential. The location of the trees limits the ability to reconfigure the car park, as required by the project scope. Poor performance includes poor form, stunted growth, irregular and stunted branch development. The existing trees are estimated to be 6-10m height. There is evidence of trunk damage to the trees located within the current car park, likely due to impact from cars.

The trees proposed for removal for the southern pathway are in better condition, but also of small size, with average performance. Tree 6 exhibits evidence of trunk damage, however this appears to be healing.

Discussion

Replacement with suitable species, planted in dedicated tree wells, would both facilitate the works and also allow for more appropriate tree species to be planted that are expected to have better performance and provide improved future canopy.

The three trees proposed for removal within the car-park would be replaced with 8 trees in the car-park, with 4 trees to be replaced on the southern path. Twelve replacement trees aligns to the 2 for 1 replacement ratio required for private development under policy, and is considered good practice for City projects also where possible.

Species currently proposed for replacement are *Corymbia ficifolia* (Red Flowering Gum) or *Corymbia maculata* (Spotted Gum). Both species would perform well in this location, have suitable upright form, and broad canopies. The species finally selected will depend on stock availability, should alternative species be required it will be ensured that the species selected

is suitable to the environment with similar characteristics. It is proposed to plant 150 litre tree stock, subject to availability and budget capacity.

Corymbia ficifolia will grow approximately 60cm annually. *Corymbia maculata* grow slightly slower at 50cm per annum, however will achieve greater height and spread at maturity. The existing species, *Aracauria heterophylla*, is slow growing at 7-15cm per annum. Accordingly, the replacement trees would be expected to exceed the canopy of the existing trees within 5 years.

Consultation

The WA Bridge Club and Melon Hill Bush Group have been consulted about the removal of the car park trees.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2022-23 vision and desired outcomes as follows:

Vision **Sustainable and responsible for a bright future**

Pillar **Planet**
Outcome 4. Healthy and sustainable ecosystems.

Pillar **Place**
Outcome 7. Attractive and welcoming places.

Pillar Performance
Outcome 11. Effective leadership and governance.

Budget/Financial Implications

The removal and subsequent replacement costs were not included within the original estimate for the project. The removal and replacement costs are still being assessed in detail and the project is still forecast to be completed within 5% of budget.

Internal staff labour was spent in the formalisation of this report.

Legislative and Policy Implications

The removal aligns with the Street Tree Policy given no suitable design alternative exists.

Decision Implications

Should Council not endorse the removal, the City will be required to redesign the works to retain the existing trees in their current location, this would not meet the scope of the current project and would significantly reduce parking bay numbers.

Conclusion

The removal of the trees will ensure an improved design outcome. The replacement trees are expected to exceed the canopy coverage that would be provided by the current trees within 5 years.

Removal should be approved.

Further Information

Nil.

18. Divisional Reports – Community Services & Development

18.1 CDS02.05.24 Reclassification of Point Resolution Child Care Centre license

Meeting & Date	Council Meeting - 28 May 2024
Applicant	City of Nedlands
Employee Disclosure under section 5.70 Local Government Act 1995	Nil.
Report Author	Sally De Freitas - Acting Manager Community Development
Director	Matthew MacPherson – Acting Chief Executive Officer
Attachments	4. CONFIDENTIAL – Attachment 1 – Point Resolution Compliance issues and penalties

Purpose

This report aims to address compliance issues identified during the investigation of the Point Resolution Childcare Centre (PRCC) from January to April 2024, particularly regarding Workplace Health and Safety Management, Childcare Safety, Record Management, National Quality Standards, and First Aid requirements.

The report presents potential solutions to rectify these concerns, emphasising the necessity of maintaining compliance across all areas and adjusting staffing and educator ratios, given that the current model of accommodating 26 children has contributed to the shortfall in meeting educator requirements.

Recommendation

That Council, pending the outcome of recommended outcome 2 approves the reclassification of Point Resolution Childcare Centre's license to enrol up to 24 children per day from the ages of 8 months to 6 years of age.

Voting Requirement

Simple Majority.

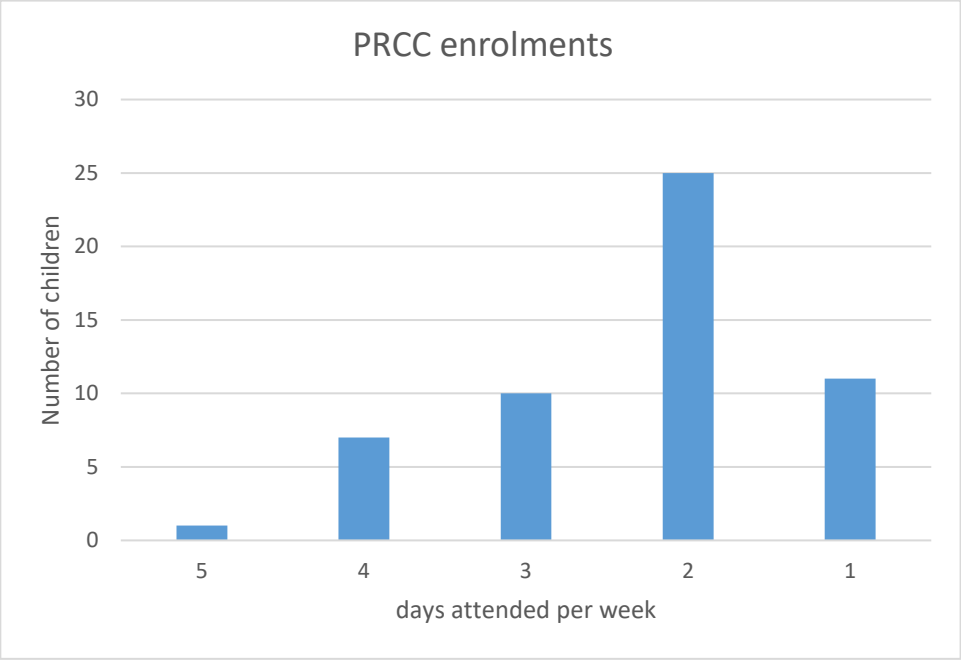
Background

Enrolment and Attendance

54 Children are enrolled to attend sessions across 5 days and fill up to 26 approved places in an open room setting. The City is approved by Education Care Regulatory Unit (ECRU) for up to 26 spaces which is decided based on maximum available floor space. As is, there is no option to increase enrolment numbers without increasing available floor space.

60% of current enrolled children are from within the City of Nedlands Boundaries.

Only 1 child is enrolled fulltime for 5 days with most children enrolled for 2 days a week and several attending on an ad hoc casual basis when space is available due to planned absence.

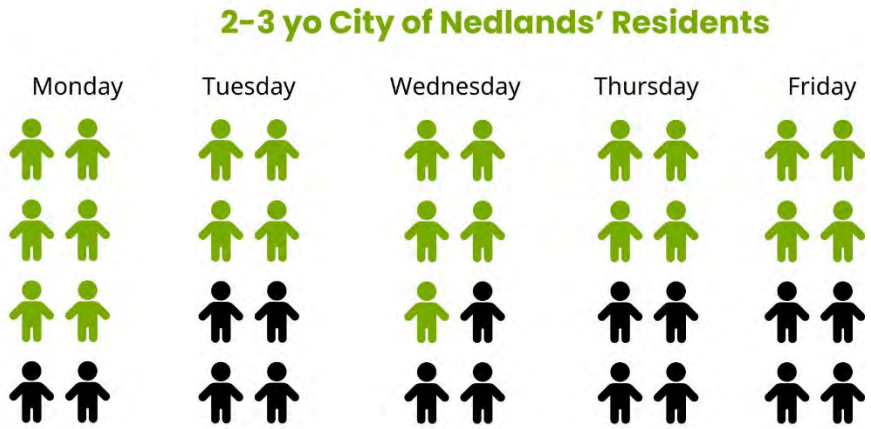


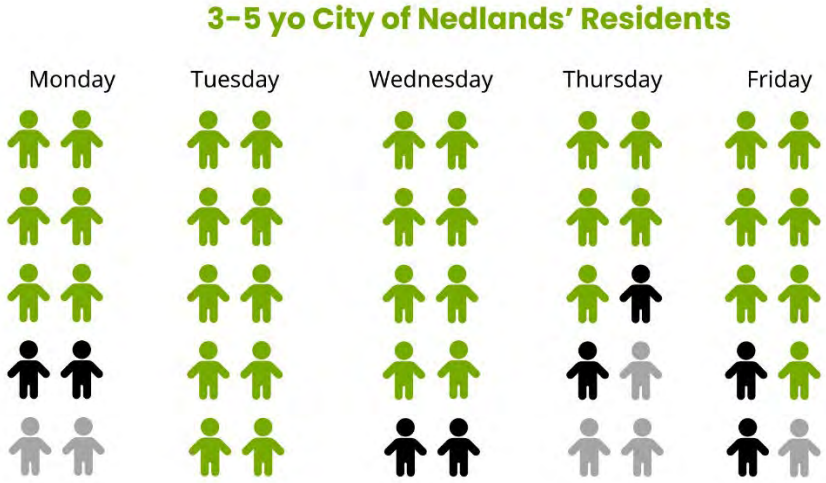
Although the City's enrolment policy states that priority will be City of Nedlands Residents, priority appears to be given to siblings of attending and past children, and any enrolment requests for days where there are spaces available at the time.

The enrolment and attendance records show that spaces are filled as they are offered, and full-time daycare does not appear to be an urgent priority. Typically, 3-5y enrolments would reflect a kindy attendance (families requiring care on the days the child is not at school),

however this is not reflective of PRCC. Staff have also commented that most of the children have other forms of care, including grandparents and nannies and use the centre as a form of socialisation.

The structure of enrolments is noticeably shaped by the staff to children's ratios. For example, children under the age of 2 require a lower ratio 1:4, 2-3 years is 1:5 whereas over 3 is 1:11. This means that enrolments and places are largely prioritised to certain age groups to meet ratios and ensure a full roster.





As of April, just over 25% of enrolled children are under two, and there are only 2 children under 12 months on any day.

This is a strong indication that there isn't a significant demand from ratepaying families for care for under 2s, in particular, for under 12 months. Of the under 2s, one third are younger siblings of other children currently attending or were attending at the time of enrolment.

The staffing ratios and tendency to 'fill spaces' restricts the ability to offer consistent and regular care required by families looking for full time care.

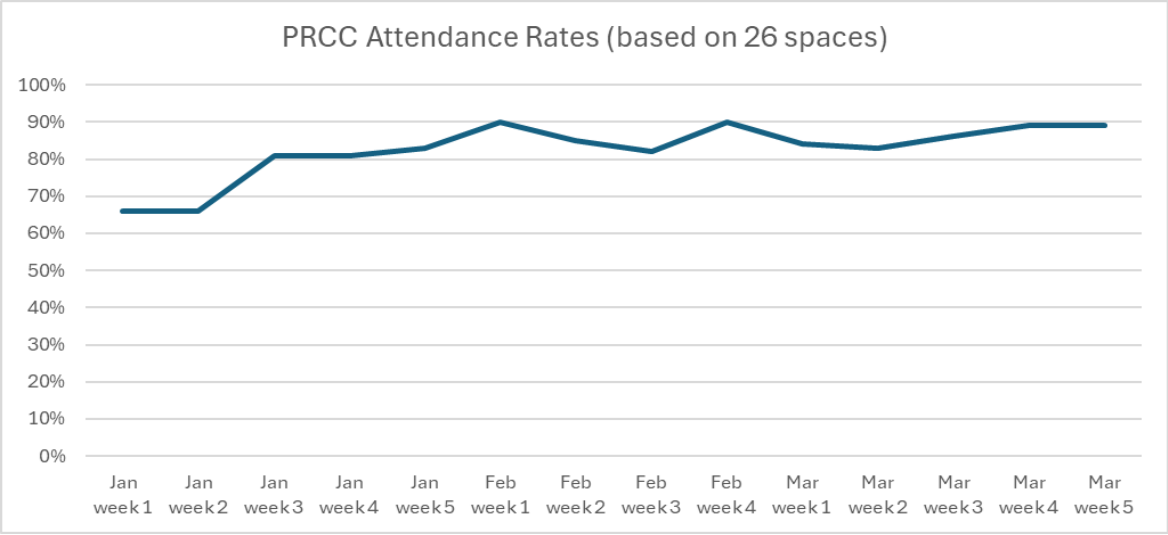
The need to fill the requirements of long daycare is also reflected in the operating hours. Typically, long day care opening hours start from 6.30/7 and finish at 6. PRCC reduced hours mean that it excludes a significant client base that require a longer day (12 hours) or flexibility on hours available.

For Q1 of 2024, there were only 2 days where the number of children enrolled to attend exceeded 24.

Fees

The current fees are a flat rate of $160 per day regardless of hours attended, with a childcare subsidy available to those eligible. There is an expected increase of $5 per day each financial year.

The centre does not offer a discount for planned absences (holidays etc) and families are charged the full rate for public holidays. The Child Care Subsidy still subsidise for up to 42 absence days per child, per financial year. The fees and enrolments are charged at the beginning of the calendar year when the child returns, this means that typically the centre operates at a lower capacity for attendance, resuming to usual capacity of an average of 24 children per day, this is despite 26 approved spaces.



Frequently, when families are on a planned absence, 'spaces' are offered to other families to meet the full enrolment. This means that there is often extra income as 'spaces' are

resold. This financial year an additional 312 spaces, or 1.7 per day have been ‘resold’ so far adding an additional $49,920.

The fee includes food (morning tea, lunch, afternoon tea).

Nappies and formula are not included in this fee, however with most of the enrolled children at or near toilet training age, this would not be significant cost to the centre.

There is also an annual fee of $150 per year per family which generates an added approximate $8,000 per year. It is not yet apparent what this fee goes to, or the service provided to families for this charge, and this is still being investigated.

Despite the location, the staffing levels mean that excursions are not possible, except for ‘kindy’ visits to Dalkeith Kindy for older children that are enrolled.

There are also no regular incursions, however irregular sessions with associates or family members are planned throughout the year, as are functions and events with families.

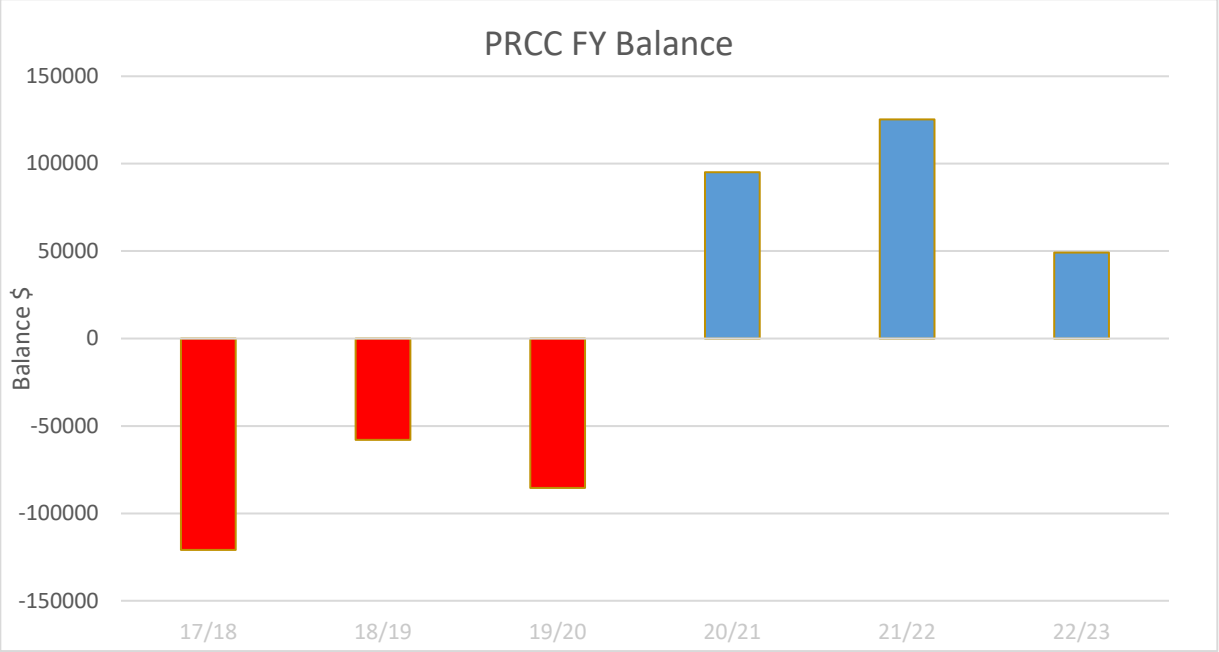
Compliance Issues

Refer to confidential attachment - PRCC Compliance and Issues

Other Care in Nedlands

There are 11 centres offering care in the Nedlands Dalkeith area. 10 of these have vacancies. The average cost for childcare around Nedlands is $150.25/day. The next sized similar style of service is Kidz Galore Nedlands franchise with 40 approved places charges $145 per day. At the higher end of the cost range Sparrow Early Learning Nedlands charges $171 per day however is a new modern facility with separate rooms for ages groups.

Financials



FY	17/18	18/19	19/20	**20/21***	**21/22**	**22/23**
(surplus)\deficit	120,906	57,958	85,455	(95,201)	(125,255)	(49,153)
Registered children	24	24	24	26	26	26
Budgeted children	24	24	24	24	24	24

From 2020 when licensing was increased to 26 per day the budget was not amended to reflect the increase in potential revenue; which in part has resulted in a false surplus.

For 5 years up to the FY 20/21 Point Resolution Daycare ran at a significant loss. A decision was made in November 2020 to increase the number of enrolled spaces to 26 children from Jan 2021, and increase the fees $15 per day per child. This would increase the expected revenue from $135 per day @ 24 spaces = $826,200 (expected annual income based on 51 weeks of operation) to $150 per day @ 26 spaces = $994,500 (expected annual income based on 51 weeks of operation), adding an additional $ 84,150 for the period Jan 2021-June 2021.

Inconsistencies

Budget & Estimating

FY	Approved spaces	Daily rate	expected annual income (24 spaces)	expected annual income (26 spaces)	variance	Adopted budget income	Actual income
19-20	24	$ 135		$ 826,200			
20-21	26	$ 150	$ 918,000	$ 994,500	$ 76,500	$ 650,000	$ 827,438
21-22	26	$ 155	$ 948,600	$ 1,027,650	$ 79,050	$ 586,000	$ 991,751
22-23	26	$ 160	$ 979,200	$ 1,060,800	$ 81,600	$ 930,000	$ 988,490
23-24	26	$ 160	$ 979,200	$ 1,060,800	$ 81,600	$ 995,000	

The additional 2 spaces that have been allocated and have service approval have not been included or reflected in the previous 3 budgets that were adopted. The annual administrative fee was not included until this most recent budget (23/24), and an estimate on income generated by casual spaces or late fees is not included for the previous 3 budgets.

This has meant that additional income from the 2 spaces, and other forms of income depicted in the Fees and Charges has not been accounted for and appears as a surplus since FY20/21.

Expenditure, Compliance and Spending

Staffing and ratios

Over the past 3 years there has been significant turn over resulting in a lower than planned spend on salary and wages. This has been reflected in an increase in spend in agency staff and casuals with $20,237 or 129% of the budget. While childcare industry experiences shortages, there has been a higher-than-expected turnover for the Early Childhood Teacher (ECT) role, with the last employee resigning after 3 months (this included a month in November when the centre was not operational). There was also a significant underspend in staff training and professional development where only 20% and 28% of the 22/23 budget was spent respectively, and only 18% for this financial year so far.

While most childcare providers struggle to operate at full capacity, the implications of increasing the enrolled spaces to 26 spaces can be seen through an inaccurate budget, and inability to maintain more consistent staffing ratios and positions. For example, an enrolment number of 24 only requires a part time ECT for 10 hours a week, whereas 26 children require an ECT onsite for at least 6 hours a day. As an ECT is a degree qualified educator, and local government rates are not competitive with award rates, PRCC has struggled to attract and retain this role. This means that agency staff will be required to infill, at a significant cost.

Food

The budget for food for has been well below the advised $3.50 per child per day for long daycare and is only budgeted for 24 children. This also presents a problem when casual spaces are allocated to children in the 3-5 year categories who require a higher quantity of food, and different nutritional requirements due to their developmental phase.

FY	Approved spaces	annual approved budget	Budgeted food per child per day	Actual spend
19-20	24	$ 4,000	$ 0.70	
20-21	26	$ 5,000	$ 0.80	
21-22	26	$ 10,000	$ 1.60	
22-23	26	$ 12,000	$ 1.90	$ 2.31
23-24	26	$ 17,500	$ 2.80	$ 1.65

This underspend has a direct correlation with the inadequate nutritional content of the food being served. An analysis of the shopping lists shows lower quality cuts of meat as substitutes for healthier offering. For example, minced meat is used in meals, where the menu insinuates something that uses a higher quality cut of meat i.e. Beef stir fry. Food that is high in refined carbohydrates, fat and salt are also purchased in favour of wholegrains and nutritionally dense food; instant noodles, macaroni, and white rice featured heavily throughout the week. A report provided by a nutritionist to PRCC in 2022 identified a several of these concerns as priorities to address.

Resources and equipment

The resources and equipment at PRCC are old, dated, and inadequate to support the development of the different ages of children attending. While the budget suggests that some effort has been made recently to purchase resources, many of the toys are second hand donations. Inside, the furniture and coverings are dated with some damaged exposing children to a health and safety risk. Because of the open plan room, and the accessibility to toys by younger children, it is critical that resources are in optimal condition to reduce the risk of injury. The outdoor area contains no fixed equipment to help develop gross motor skills, or engage in calculated and supervised risky play, and largely made up of plastic toys. Most of the outdoor equipment were sun damaged, and showed signs of disrepair, and in a few instances, there was equipment with visible exposed rust. The condition of resources and equipment has been identified several times by ECRU as being an issue with compliance notices issued as recent as 2023, and a breach being registered against PRCC in 2022 for this.

Resources should be purchased brand new from a reputable education supplier with an ongoing budget of around $5000 annually for a childcare of this size, this current financial year only $2500 has been budgeted, an increase from $2000 for the last financial year. An overview of the purchasing shows that resources were mostly purchased from Kmart, and a majority of the allocated budget was spent on decorations and theming items for events that parents attended.

Financial sustainability and compliance are vital considerations. Reserves will need to be used if the centre is to remain operational to purchase necessary equipment and resources aligned with children's developmental needs and educational requirements specified by the National Quality Framework (NQF), which are currently lacking at the centre.

This proactive investment not only ensures compliance but also enhances the educational environment, supporting holistic child development.

Discussion

PRCC currently has 54 children enrolled at the centre, 60% of which reside in the City of Nedlands. The centre operates as cost-neutral with reserves used for upkeep and replacement of equipment and maintenance requirements.

Four possible options for the future of PRCC have been outlined below for Council's consideration:

Option 1 (Not recommended)

Maintain current state of service (26 children ages 0-6)

To maintain the current enrolments at the Point Resolution Childcare Centre (PRCC), there's a need to increase the Full-Time Equivalent (FTE). According to the National Quality Framework (NQF), a centre with 26 children requires a full-time Early Childhood Teacher (ECT).

Ensuring the right number of caregivers for each child is crucial. The current model has challenges with the baby-to-staff ratio in the 0-2 age bracket, requiring 5 staff on the floor. This has been challenging to manage, relying mainly on casual workers or agency staff. This isn't ideal for the children who form bonds with their caregivers, and the turnover of casual workers is also costly.

Historically, PRCC has struggled to meet nutrition standards outlined by the NQF. PRCC will need to hire a dedicated cook for half of a full-time position (FTE 0.5). This is a requirement set by the Childcare Services Regulations 2006.

Maintaining compliance requires continuation of full-time equivalents (FTEs) for both the ECT and Coordinator, plus the additional 0.5 FTE for a dedicated cook which adds financial strain to a small centre; increasing to 7.0 from 6.5.

Option 2 (Recommended)

Reclassify Point Resolution Childcare Centre's license to enrol up to 24 children per day from the ages of 8 months to 6 years of age.

The Point Resolution Childcare Centre (PRCC) is facing persistent challenges in finding and keeping a full-time Early Childhood Teacher (ECT), as required by the National Quality Framework (NQF) for centres accommodating up to 26 children. Given the small size of the centre, one option may be to streamline the Coordinator's role to integrate the ECT responsibilities into the Coordinator position, which now requires tertiary qualifications. At 24 children or under an ECT is only required for 20% of the centres operating hours (10 hours per week).

This option meets regulatory standards and maximises the utilisation of existing staff structures. This consolidation enables the centre to focus more on meeting the needs of the children, aligning with its commitment to providing high-quality childcare services and age-appropriate programs and activities.

Despite these changes, maintaining optimal caregiver-to-child ratios remains a priority. The proposed reclassification ensures compliance with standards, with each caregiver responsible for four infants aged 0-2 years. Any decrease in enrolled children will occur naturally over time, preserving the centre's community involvement and continuity.

The centre has historically been unable to meet nutrition standards set by the NQF. In the proposed plan, PRCC will hire a dedicated cook for half of a full-time position (FTE 0.5). This is also a requirement under the Childcare Services Regulations 2006.

This option makes it easier for the centre to reach compliance to maintain an ECT; and reduces the total FTE at the centre to 6.0 from 6.5.

Option 3 (Not recommended)

Seek Expressions of Interest for outside childcare providers to take over the running of the centre.

Given the significant risks and expenses associated with operating a childcare centre, the Council may consider the possibility of opening up PRCC to Expressions of Interest from external providers (EOI).

Larger childcare providers often benefit from economies of scale, enabling them to manage staffing more efficiently across multiple locations. Considering that childcare is not a primary focus of local government community services, the Council must evaluate whether its involvement in this sector is still warranted. Specialised childcare providers are better equipped to handle the regulatory and quality standards, as well as marketing efforts to attract enrolments, areas where PRCC has faced challenges. It's important to note that while the centre operates on a cost-neutral basis, it's the community that ultimately subsidises family's attendance at the centre which is currently operating at 60% City of Nedlands residents.

This option also presents an opportunity for current staff to continue their employment under the new provider, ensuring continuity of care for the children currently enrolled at the centre.

The facility can become part of the City's portfolio of leasable or hireable facilities, considering its location on crown land and its current use as a childcare centre. Under a commercial arrangement like other leasehold facilities, the lessee would be responsible for the annual maintenance costs and would pay an agreed-upon rental rate, with no cost to the ratepayer. The City would continue to be responsible for maintaining and insuring the site, and a usage fee would be applied, estimated to be $65,000 per annum based on a valuation March 2024.

Outsourcing the service to an external provider will result in a reduction of 6.5 Full Time Equivalent (FTE) positions.

Option 4 (Not recommended)

Close Point Resolution Child Care Centre

The building, situated on Crown land and presently designated for childcare purposes, could be added to the list of City facilities available for hire, license, or lease. The building, situated on Crown land and presently designated for childcare purposes, could be added to the list of City facilities available for lease, licence, exclusive licence or hire arrangement.

Under this arrangement the City would make its community facilities available to eligible users based on the arrangement, subject to evaluation and approval process. The conditions of tenure will consider matters relating to obligations, costs, and compliance.

This proposal was presented to Council in September 2020 but was not supported.

Given the current challenges the centre faces with bringing it to compliance, and in line with best practice benchmarking against other like providers, the City is lacking sufficient information to justify a decision as significant as closing a service that is actively used by families and has ongoing enrolments.

Closing the service to an external provider will result in a reduction of 6.5 Full Time Equivalent (FTE) positions.

Consultation

For confidentiality reasons there has been no external consultation.

Should a change to the service or use of facility consultation will be required under Section 3.58 of the Local Government Act.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2023-33 vision and desired outcomes as follows:

Vision **Sustainable and responsible for a bright future**

Pillar People
Outcome 3. A caring and supportive community for all ages and abilities.

Pillar Prosperity
Outcome 10. Active participation in education and lifelong learning.

Pillar Performance
Outcome 11. Effective leadership and governance.

Budget/Financial Implications

Options 1 & 2 both require budget to ensure the centre meets compliance as outlined in attachment # It is recommended the centre makes allowances in the future budgets to reach best practice or exceed compliance to remain competitive in the market.

Option 3 the centre will need to meet compliance and address major structural needs to go to market for EOI.

Option 4 will still require budget to get the centre to meet compliance until such time it determined the centre will cease operations.

There is currently $140,000 in reserves which can be accessed immediately to meet compliance requirements as identified in Options 1 & 2

2024/25	Meet Compliance	Details
Electrical	$1601.00	Reduce hazards to current electrical
Playground Equipment & Maintenance	$40,000.00	There is no fixed outdoor play equipment in the centre that provides for children's development of gross motor skills. Bike track needs to be repaired or replaced.
Educational Resources	$10,000.00	Replacement of books, toys and other equipment not currently meeting standards.
Miscellaneous repairs	$17,102.00	Including maintenance for doors, shelving and render which are posing safety hazards to children and staff.
Staff offices and break areas	$5,000.00	Re-fit of space to meet WHS requirements
Total	**$73,703.00**	

Staffing implications

Options	FTE	Comment	Redundancy
1	7.0 (+0.5)	Increase FTE to allow for 1 FTE ETC and Cook	N/A
2	6.0 (-0.5)	Reduction in FTE by combining Coordinator/ECT role while still employing a cook	N/A
3	0		$96,278.00 (est.)
4	0		$96,278.00 (est.)

Legislative and Policy Implications

Childcare Services Regulations 2006

Department of Communities - Education Quality Care Unit (ECRU)

The City currently has two staff nominated as Persons with Management Control of the centre:

1. Tony Free (Acting CEO) - application has been completed

2. Sally De Freitas – application pending

The process to be approved as Persons with Management Control can take up to four months and a rigorous process that involves a Police Check, Working with Children's Check and the completion of an extensive online course.

Persons with management or control of the provider (PMC) have certain obligations and tasks they must perform.

A person responsible at the service has similar obligations to a PMC, but at the service level.

If these tasks aren't competed within certain timeframes, the provider risks:

- not being approved to run a childcare service
- losing approval to run a childcare service
- receiving an infringement.

The City is currently at risk of being non-compliant with current staffing changes.

The City is currently compliant with respect to a nominated supervisor who is responsible for the day-to-day operation of the centre. In the case of the City this staff member is Acting Coordinator Emma Bassett.

The Coordinator of PRCC does not currently satisfy the requirements of the Department to be the PMC.

Decision Implications

If the Council endorses the officer recommendation there will be favourable results for the City both financially and in terms of compliance. Integrating Early Childhood Teacher (ECT) responsibilities into the Coordinator role at the Point Resolution Childcare Centre (PRCC) aligns with the National Quality Framework (NQF) standards, optimising staff structure utilisation. This consolidation not only ensures regulatory compliance but also allows the centre to focus on providing high-quality childcare services.

Additionally, the proposed reclassification guarantees optimal caregiver-to-child ratios, maintaining compliance with standards and enhancing childcare quality. Natural attrition in enrolment preserves community involvement and operational continuity. Hiring a dedicated cook to meet nutrition standards further strengthens compliance efforts, aligning with Childcare Services Regulations 2006 requirements.

Overall, the endorsement of this recommendation promotes financial efficiency by maximising existing resources and mitigating potential compliance-related costs. It also demonstrates the City's commitment to providing quality childcare services while adhering to regulatory standards, fostering positive outcomes for both the community and the City's budget.

If Council does not endorse the officer recommendation and maintains the current status of PRCC an increase in Full-Time Equivalent (FTE) staff to meet regulations for the current enrolment of 26 children is required. This lack of investment in staffing and infrastructure not only compromises compliance but also reduces the quality of care and education provided.

The centre’s struggle to retain qualified staff, particularly Early Childhood Teachers (ECTs), due to uncompetitive salaries may necessitate reclassification and budgetary expansions. In its current state, PRCC faces ongoing challenges in fulfilling its obligations, endangering the well-being and developmental outcomes of the children.

The discrepancy between the current budget and the actual enrolments indicates an inaccurate surplus, likely leading to a return to a cost-neutral or deficit position if the status quo persists. Addressing these deficiencies is imperative to ensure PRCC's financial stability and ability to provide high-quality services.

Should Council wish to pursue an alternative option, potential alternative recommendations may be suitable as follows:

Option 1

That Council approves the increase of FTE at Point Resolution Childcare Centre to 7.0 from 6.5; to meet compliance requirements for the number of 26 children per day from the ages of 8 months to 6 years of age.

Option 3

That Council requests the CEO to:

a) call for Expressions of Interest (EOI) for an external childcare provider to undertake childcare services at 53 Jutland Parade, Dalkeith for a term of up to 21 years in accordance with the Management Order, with proviso that current staff and currently registered children are included in the transition of the service; and
b) report back to Council the outcome of the Expression of interest for further consideration.

Option 4

a) Approves the CEO to cease operations of the Point Resolution Childcare Centre (PRCC) at 53 Jutland Parade, Dalkeith at the earliest opportunity within the 2024/25 financial year;
b) Approves an increase to the budget for the Point Resolution Childcare Centre Employment costs by $90,000 of Municiple funds. The funds will be required to enable to payment of the due transitional costs (redundancies).

Conclusion

The report thoroughly addresses compliance issues identified at the Point Resolution Child Care Centre from January to April 2024, focusing on Workplace Health and Safety Management, Childcare Safety, Record Management, National Quality Standards, and First Aid requirements. Potential solutions are presented to rectify these concerns, highlighting the importance of maintaining compliance across all areas and adjusting staffing and educator ratios.

Given that the current capacity of accommodating 26 children has led to challenges in meeting educator requirements, the recommendation is for Council approval to reclassify the childcare centre's license to enrol up to 24 children per day, aged 8 months to 6 years.

Further Information

Nil.

19. Divisional Reports - Corporate Services

19.1 CPS23.05.24 Monthly Financial Report – April 2024

This item will be dealt with at the Council Meeting.

19.2 CPS24.05.24 - Monthly Investment Report - April 2024

This item will be dealt with at the Council Meeting.

19.3 CPS25.05.24 - List of Accounts Paid - April 2024

This item will be dealt with at the Council Meeting.

19.4 CPS26.05.24 – Powerlyt Solar Recommendations

Meeting & Date	Council Meeting – 28 May 2024
Applicant	City of Nedlands
Employee Disclosure under section 5.70 Local Government Act 1995	Nil.
Report Author	Aleisha Smit Land and Property Officer
Director	Michael Cole Director Corporate Services
Attachments	1. Powerlyt report – Nedlands Solar Recommendations V2

Purpose

This report is in response to a Council resolution to conduct an audit and report on utility costs. The City engaged electrical engineer Powerlyt to prepare a report with recommendations on how to decrease the City's top contributors of power usage by way of solar PV.

Recommendation

That Council:

1. **Receives the report from Powerlyt with recommended Solutions for the Provision or Augmentation of Solar PV Systems at 8 locations**

2. **Lists the recommendations for consideration in the forward capital works program**

Voting Requirement

Simple Majority.

Background

Following Council resolution from August 2022, due to extremely high utility costs in the budget, the CEO was directed to conduct an audit and report on utility costs on several items, one of which was to provide at least 80% of daytime electricity from solar PV at the City's staff occupied buildings.

The City of Nedlands awarded a contract to electrical engineers, Powerlyt. Powerlyt conducted inspections and research to prepare a report with recommendations on how to

decrease the City's top contributors of power usage. 8 facilities were identified to be equipped with Solar PV Systems. The nominated sites are as follows:

- Administration Building – 71 Stirling Highway, Nedlands
- Nedlands Cottage – 110 Smyth Road, Nedlands
- Carrington Street Depot – 1 Broome Street, Nedlands
- Nedlands Library – 60 Stirling Highway, Nedlands
- Mt Claremont Library – 105 Montgomery Avenue, Mt Claremont
- Tresillian Art Centre – 21 Tyrell Street, Nedlands
- Nedlands Positive Ageing – 97 Waratah Avenue, Dalkeith
- Point Resolution Child Care – 53 Jutland Parade, Dalkeith

An audit was carried out on the relevant facilities electricity cost and consumption history, with information provided to Powerlyt.

Inspections at the facilities commenced in February 2024, and were completed over a two-day period. The purpose was to identify which roof or parts of roof of the following buildings would be available for installing solar panels.

Following the audit on historic data in conjunction with the inspection, Powerlyt provided the City with a report modelling their recommendations of the appropriate size Solar PV Systems for each of the 8 sites.

Discussion

The option to have battery storage for the Solar systems has been considered, as it is thought that some of the power beyond a certain generation is perishable, as only a certain amount can be returned to the grid. This is a critical factor with the City's vehicle fleet being converted to electric in the future, with charging stations to be utilised at the City's Administration and Depot locations, both of which are a part of the 8 nominated facilities for solar PV installations.

Based on the preliminary assessment, Powerlyt advised that there are limited resources in the way of space available across the 8 facilities, preventing the correct size of solar panel to be installed for the load profile required to achieve a justifiable payback period. It was confirmed that the City would likely achieve a payback period of around 7 to 8 years with battery storage. As the typical lifecycle for the batteries is around 10 years, batteries were therefore decided against being included within the recommendation.

Other issues considered in shaping this recommendation were the financial outlay to the City. As required, numerous quotes for the works were obtained and evaluated. Powerlyt was chosen as the preferred contractor to the City as they successfully demonstrated the ability to satisfy the requirements for the project brief whilst providing the City with value for money within the market coming in at $15,480 plus Ancillary costs where required. It is therefore advantageous for the City to continue working with Powerlyt on this project.

Consultation

The Land and Property Officer coordinated a suitable inspection time and date for Powerlyt to inspect as required.

The City provided a consent form addressed to Western Power permitting Powerlyt access to the City's energy meter consumption data. In addition, data on both electricity consumption and cost for each of the nominated sites was extracted from Azility and provided to aid Powerlyt's calculations for recommendations of Solar PV to the City's top contributors of power usage.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2023-33 vision and desired outcomes as follows:

Vision **Sustainable and responsible for a bright future**

Pillar **Planet**
Outcome 4. Healthy and sustainable ecosystems.

Budget/Financial Implications

The recommendation can be included in the forward capital works program. While the City will incur additional expenditure for maintenance and renewal, the saving overall in expenditure on electricity consumption and carbon emissions will be fruitful.

Total cost of the project is $129,180 for all 7 buildings with a payback period ranging between 2 years and 8 months and 4 years and 7 months.

Administration have checked the condition of the roof structure of the nominated buildings against a recent condition survey. This condition survey indicates there is no requirement for major works (that would require the removal of any solar system) on the roofs of the buildings listed in this report in the short to medium term. There may be a requirement for minor repairs, but this is not expected to be impacted by the installation of any solar system.

Finally, a consideration is whether the reduced energy costs impact the contestability of these sites is yet to be determined. Provided consumption is more than 50,000 kWh of electricity per year or a spend more than $15,000 per annum this should remain contestable.

Legislative and Policy Implications

Referring to the Local Government Act 1995, Section 3.1 of the *Local Government Act 1995, the Community Plan and any sustainability policy that was adopted.* By proceeding with Powerlyt's recommendations to install the solar PV systems at the nominated facilities, the

City would be forward planning to ensure reduction in both electricity consumption expenditure and carbon emissions.

Local Government Act 1995 - [07-aj0-01].pdf (legislation.wa.gov.au)

Decision Implications

Should Council endorse this report, the recommendations will be listed for consideration in the forward capital works budget for consideration during budget discussions.

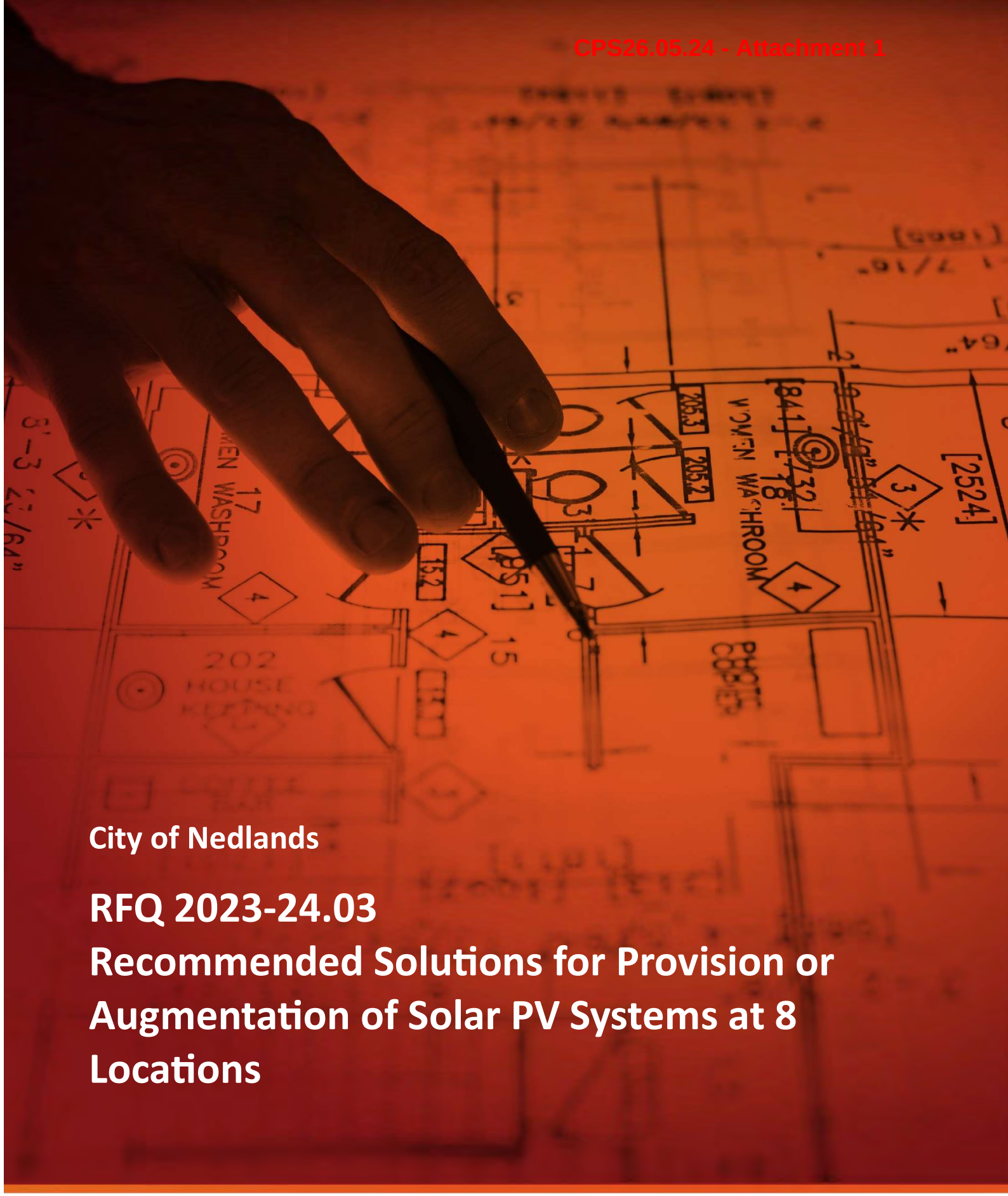
Alternatively, should Council decide not to proceed with Powertly's recommendations to install solar PV systems, alternate planning, prospecting, research, time and money will be required to resolve the significantly high utility costs within the budget.

Conclusion

The City has engaged electrical engineer Powerlyt to provide recommendations on how we can reduce the high utility costs within the budget from an electricity consumption perspective, with reduction of carbon emissions in mind. This aligns with the City's Council Plan on climate resilience, Outcome 5, 5.1, encouraging the adoption of sustainable practices to work towards being carbon neutral. The City recommends that the Council adopt this proposal so that we can work towards a more sustainable future for the City of Nedlands whilst reducing unnecessary expenditure.

Further Information

Nil.



City of Nedlands

RFQ 2023-24.03
Recommended Solutions for Provision or Augmentation of Solar PV Systems at 8 Locations

Revision Number: 02

File Name/Comments: Issued for Review

Document Date: 22 March 2024

1 Executive Summary

The City of Nedlands issued a scope of works to Powerlyt to review the energy usage at eight nominated sites and to prepare solutions for each of these, such that at least 80% of the consumed daytime electrical energy is supplied by solar photovoltaic systems.

The nominated sites were:

- Administration Building – 71 Stirling Highway, Nedlands
- Nedlands Cottage – 110 Smyth Road, Nedlands
- Carrington Street Depot – 1 Broome Street, Nedlands
- Nedlands Library – 60 Stirling Highway, Nedlands
- Mt Claremont Library – 105 Montgomery Avenue, Mt Claremont
- Tresillian Art Centre – 21 Tyrell Street, Nedlands
- Nedlands Positive Ageing – 97 Waratah Avenue, Dalkeith
- Point Resolution Child Care – 53 Jutland Parade, Dalkeith

Each of these were inspected and each presented a number of unique challenges that needed to be resolved. Example of these were:

1. Presence of existing solar PV systems provided some difficulty in finding suitable roof space with favourable orientation.
2. The older panels have a much lower output power capacity and therefore required more roof space than what would be required by current panels that have a larger power rating and are more efficient.
3. In determining what size system is required at each site for a proposed solar system to supply 80% of daytime load requires the following information.
    - Is there sufficient roof space available, with favourable orientation, to accommodate the required number of additional panels
    - Is there sufficient accommodation for the new inverters
    - Can existing switchboards house additional circuit breakers and isolators
4. An estimate had to be made of how much energy offset was already being provided by existing solar systems as actual data had not been available.
5. Two of the sites only had bi-monthly consumption data and the load profile had to be estimated using that of similar purpose buildings and making allowance for any existing solar energy generation that was present.
6. The payback periods varied considerably and this is largely dependent on the unit cost of energy, the size of the system and the presence of existing solar. The cost of energy has the largest impact where the lower the cost, the longer the payback period. Two sites have payback periods greater than four years, three greater than three years and for the rest it is between 1 year and 11 months to 2 years and 8 months
7. Some of the switchboards were crowed with little or no space for additional circuit breakers for the new inverters. This would require modification of the existing board or a complete replacement; which could be expensive.

During this exercise, endeavours were made limit each site to no more than 30kW of total inverter capacity. Systems exceeding this limit are required by Australian Standards (AS/NZS4777) to install a Grid Protection System which can cost in the vicinity of $7k to $10k. In addition, there is a requirement for the payment of 'Enquiry and Application' fees to Western Power that totals to $5,250. Exceeding the inverter 30kW limit, makes an installation considerably more expensive with no additional benefits to offset these additional costs. The smaller systems of 30kW or less do not attract such fees or requirements for additional grid protection equipment.

The Clean Energy Council limits the solar panel capacity to 133% of the inverter capacity, Inverters are designed to operate with this amount of oversizing, unless battery storage is present. In which case, through judicious selection of inverter type, a 30kW inverter system can support solar panel output capacity up to maximum of 220% (66kW).

In the majority of cases, it was considered prudent to retain the existing solar panels even though some of these are nearing end of warranty period; which in those early days it was somewhere between 12 to 15 years. Some of the modern solar panels have product and performance warranties of between 25 and 30 years and inverter warranties typically at 10 years and some even have 12 years.

The Administration Building is the only site where it is proposed to replace the existing inverter and connect the existing panels to the new system. A 39.65kW solar system using 3 x 10kW inverters is required if at least 80% of the daytime load is supplied from solar. It was found that by using 75 panels (33kW) and coupled with 6.65kW of existing solar, 133% system oversizing could be achieved. In the future, when the 18 existing panels reach end of service life, they can be easily replaced with a smaller number of the larger wattage panels. The three new inverters for this site will need to be judiciously selected so that they are compatible for operation with the two different types of panels that are likely to be in place.

In many cases there is an excess amount of solar energy that potentially would be exported. However, any system that is over 5kW is not permitted to export more than 1.5kW and so the inverter in conjunction with a smart meter would control the amount of export to prevent exceeding this limit. The consequence is that the excess energy is not utilised and is wasted. There may be some value in exploring the possibility of using battery storage to capture this excess for night time use.

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2 Scope of Project

The City required Electrical Engineering Services to:

a Review electricity usage of the 8 sites listed below

b To prepare solutions for each site that would at least provide 80% of daytime electricity from the proposed solar photovoltaic system at each location.

c The nominated sites are:

- Administration Building – 71 Stirling Highway, Nedlands
- Nedlands Cottage – 110 Smyth Road, Nedlands
- Carrington Street Depot – 1 Broome Street, Nedlands
- Nedlands Library – 60 Stirling Highway, Nedlands
- Mt Claremont Library – 105 Montgomery Avenue, Mt Claremont
- Tresillian Art Centre – 21 Tyrell Street, Nedlands
- Nedlands Positive Ageing – 97 Waratah Avenue, Dalkeith
- Point Resolution Child Care – 53 Jutland Parade, Dalkeith

3 Considerations for Executing this Project

Information regarding actual energy usage of each site listed in the Scope of Work is fundamental to developing the appropriate solutions for reducing energy costs and the dependency on Grid supply. Energy consumption data was obtained from Western Power – Metering Data Team. The preferred data type is the consumption at 30-minute Intervals from which the daily load profile was developed for the site. From this, the daytime consumption was calculated and used for sizing a solar PV system to supply at least 80% of the daytime consumption. Roof space availability is a critical factor in establishing whether a site can accommodate the number of solar panels necessary to generate enough power to meet the above 80% requirement.

Other considerations include space requirements to accommodate the new inverters and available switchboard space for the extra equipment such as isolation switches, breakers and possibly metering if deemed necessary.

4 Design Considerations for Solar PV Systems in City of Nedlands

It was preferable to limit the total installed inverter capacity (i.e. existing and proposed) to 30kW or less because above this level, there is a sudden step increase in the overall cost. For systems exceeding 30kW, Western Power will charge an Enquiry Fee of $250 and an Application Fee of $5,000. In addition, Australian Standards - AS/NZS 4777- requires the provision of additional secondary protection (Grid Protection System) which could increase the cost of an installation by $7k to $10k. These costs are considerable and would not provide any additional benefits for offsetting them.

Total panel output capacity cannot exceed inverter capacity by more than 133% as per Clean Energy Council requirements. However, this over sizing may be increased to 220% for installations that have battery storage.

Panel Positioning is very important where the following aspects need to be considered such as:

- Orientation – north, east and west facing is preferred whereas southern facing not recommended
- Available space to meet generation requirements.
- Use of optimisers - for areas affected by shading, or panels on same string with different orientations or having non-matching panels.

Consideration is given to whether existing PV systems should be retained as standalone, integrated with a proposed system or scrapped because approaching end of service life.

On 14 February 2022, the Government introduced the Emergency Solar Management (ESM) System for all customers with solar systems of 5kW or less whereby Synergy can remotely disconnect (and reconnect) rooftop solar systems during emergency periods of very low load conditions. The requirement for ESM applies to all customers who install or upgrade their systems after this date.

5 Administration Building – Proposal and Recommendations

5.1 Load Profile of this Site.

The load profile shown in Figure 1 was developed from the 30-minute interval consumption data for the period from 29 February 2022 to 2 March 2024.

This profile shows an immediate step increase in load (kW) after 6:00am in the morning through to 4:00pm in the afternoon. From then on, it decreases gradually, from a maximum of 12kW to 6kW by 9:00pm. It remains at this level over night until next morning.

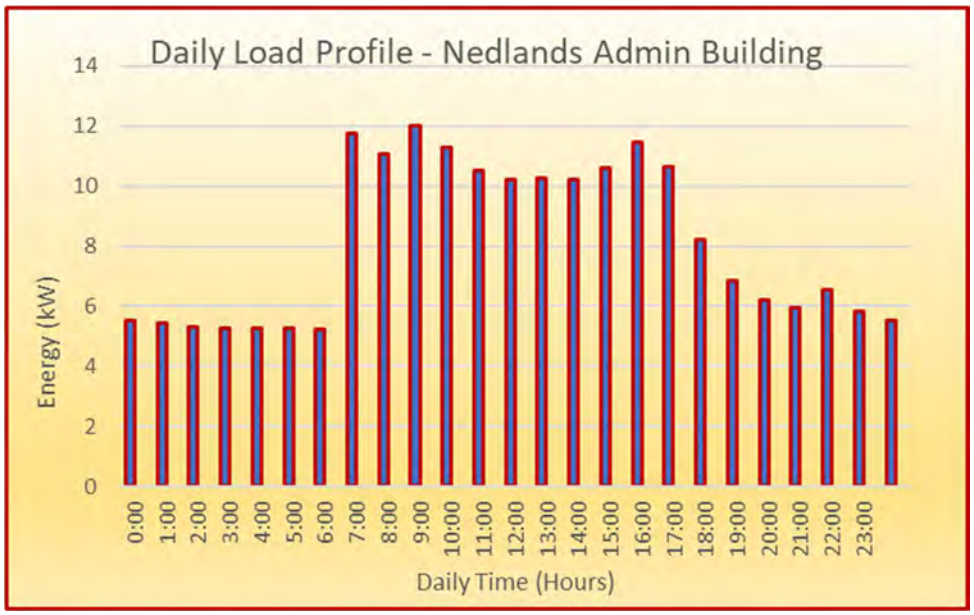


Figure 1 Average Daily Load profile for Nedlands Administration Building

The presence of the existing 6.6kW solar system with a 5kW inverter is evident in this load profile graph where there is a parabolic dip in the energy consumption during the solar irradiation period from 8:00am through to about 4:00pm.

The average daily consumption over a whole year is 197kWh and 48% (97.6kWh) of this occurs during the daylight period.

5.2 Proposed Solar System for the Nedlands Administration Building

5.2.1 System Configuration and Performance

Modelling has found that by installing 30kW of inverters, adding 33kW of new panels and retaining the existing 6.6kW of panels, the daily generation, averaged over a whole year, from this installation will be 140.7kWh. Only 87.9kWh will be consumed by this building's load and the rest will be wasted as Western Power does not allow the surplus to be exported to the Grid for installations greater than 5kW.

Figure 2 Panel Layout on the roof of the Nedlands Administration Building

In order for this site to supply at least 80% of the daytime load from solar generation requires a relatively large system with more than 30kW of panels. The present system has a 5kW inverter and 6.65kW of panels which was installed around 2010/2011.

A proposed solution would be to have a system of around 39.95kW total capacity comprising of 3 x10kW single phase inverters, 33kW (75 x440W) of new solar panels and the existing 6.65 kW of panels transferred across on to one of the new inverters. However, this will require the removal of the existing SoFar inverter.

Unlike previously, current solar designs tend to have up to 133% more solar panel capacity than the inverter capacity. This is why it was proposed to initially retain the existing 6.65kW of panels and connect them to one of the inverters and install only 33kW of new panels. This will allow maximising the utilisation

of the existing system and in the future when it is to be replaced, new panels with greater capacity and efficiency can easily be installed for minimal capital outlay.

The existing 18 x 370W panels, will need to be fitted with optimisers as the proposed new panels are of a different capacity and a different orientation on the roof. The proposed design is uses 440W panels as they are relatively cheaper and occupy less roof space than that of the earlier smaller panels.

Having a total of 39.66kW of panels feeding 30kW of inverters would be compliant with Clean Energy Council (CEC) requirements that a solar system must not be oversized by 133% unless battery storage is present. This means that the maximum output from this system is just under 40kW.

In modelling the expected payback period for the new system, the energy savings already achieved by the existing inverter had to be discounted because the existing inverter would be replaced with one of the new inverters.

Figure 3 shows that with just the new solar panels, the solar system supplies 87.9kWh to the load and exports (wastes) 52.8kWh. The reason for the relatively high export is that there is insufficient load at the time of high generation. During the Solar irradiation period (between 8:00am and 4:00pm), the load at this site consumes 97.6kWh. Thus 90% of the daytime load is being met by the solar system and satisfies the RFQ requirements.

When solar is not available, the Grid would supply the shortfall of 109kWh per day.

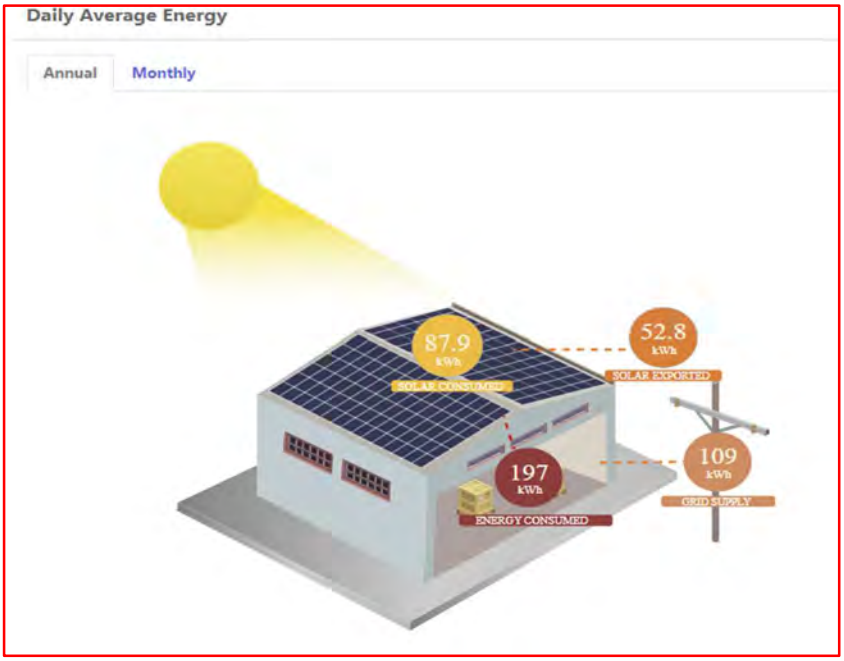


Figure 3 Average Daily Energy Production with 30kW of Inverters and 93solar Panels

Figure 4 Daily Performance Averaged over one Year

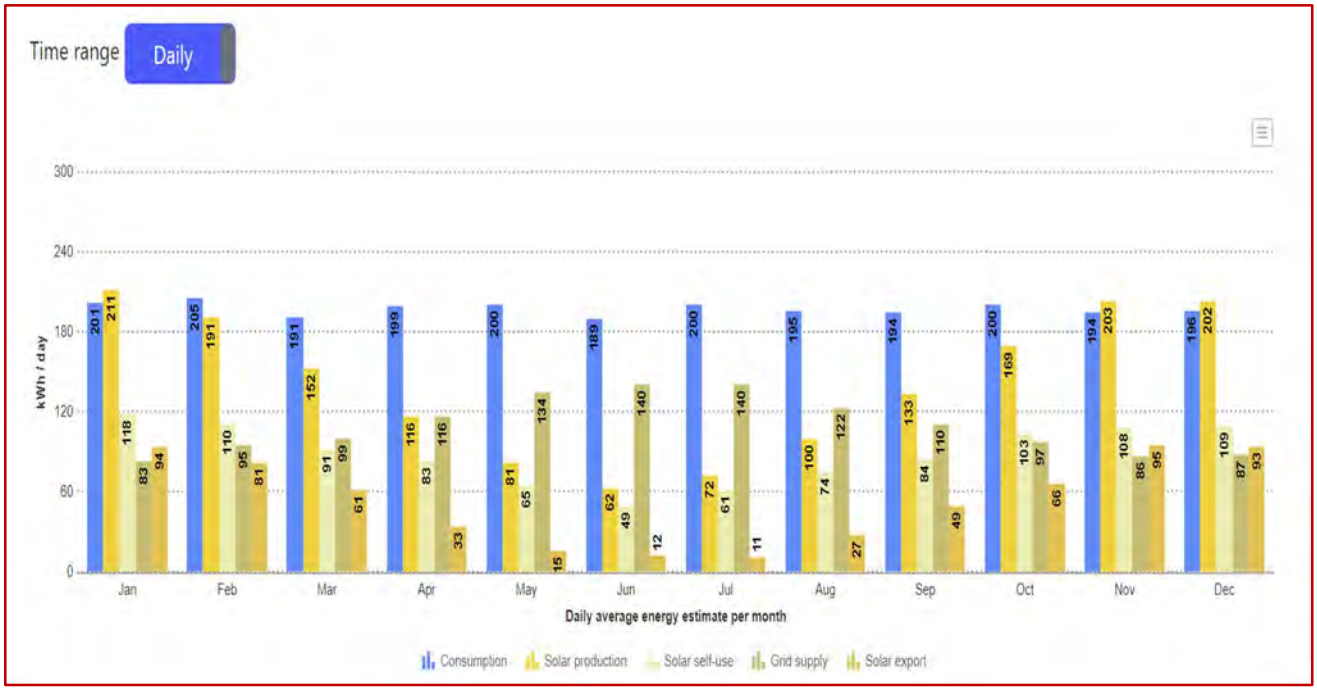


Figure 5 Consumption vs Production by Month

5.2.2 System Pricing

Retail price ex GST	$44,942
Retail price inc. GST	$49,,436
STC Incentives	-$12,843 (for 319 STC)

Total GST	$ 4,494
Estimated Price (Inc GST)	$36,593

5.2.3 System Estimated Payback Period

The Administration Building is one of the sites the City of Nedlands has on an "unbundled Contract" with Synergy.

The overall cost of energy for this site is equivalent to a flat rate of 24.3 cents per unit (kWh). Based on this unit cost the payback period for this solar installation is estimated to be **4 years and 7 months.** This is the only site with such a long payback period.

Had this site been on the standard Synergy L3 rate of 36.1484 cents/kWh for the first 1,650 units/day, and a daily supply charge of 197.2 cents/day, the payback period would be considerably shorter at **1 year and 11 months**.

5.2.4 System Lifetime Carbon Savings

CO_2e 612 tonnes

5.3 Inverter Location and Switchboard

Figure 6 Switchboard location within Building

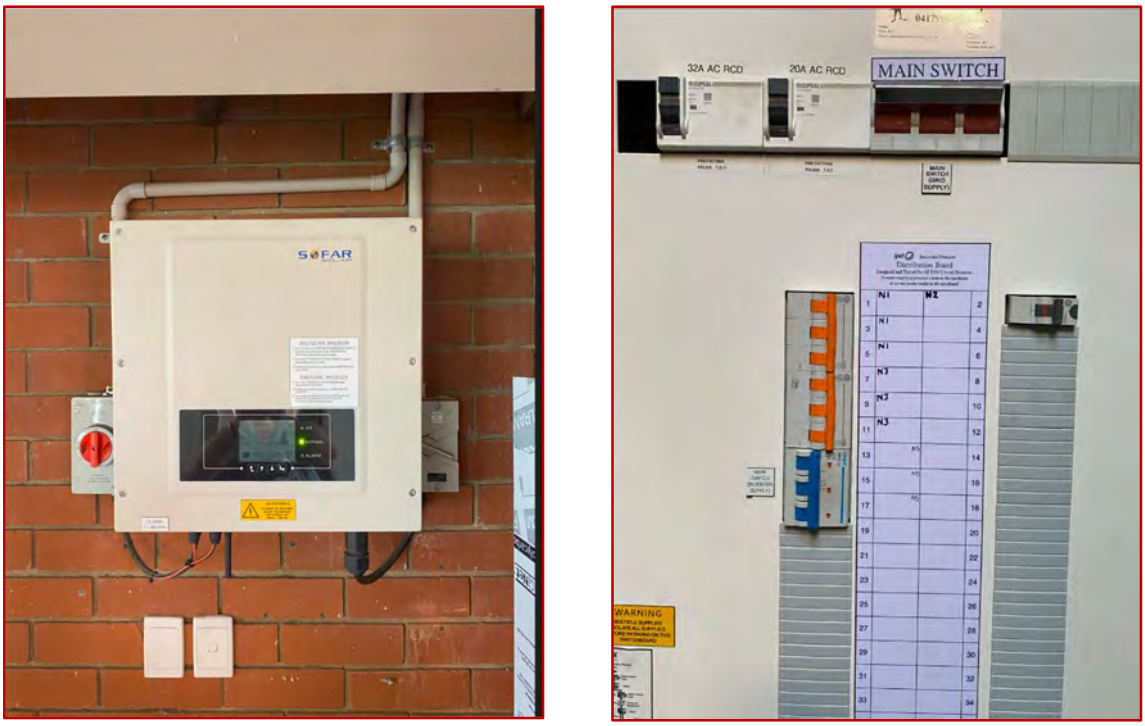


Figure 7 Installation of existing Inverter and switchboard within Building

Figure 7 shows the SoFar Inverter that is currently installed and the switchboard that houses the inverter AC Isolation equipment. There is ample space to accommodate additional AC isolation for another inverter.

6 Carrington Street Depot – Proposal and Recommendations

6.1 Load Profile of this site

The hourly load profile (kW) for this Depot shows a relatively high night time consumption of about 8kW typically from 7:00pm on the previous day to 5:00am next morning. Then there is a further 50% increase over the next 2 hours where it peaks to 12kW at 7:00am.

From 7:00am to 11:00am, the consumption drops parabolically from 12kW to 6kW which is characteristic of the presence of the 15kW solar system. It increases slightly around 2:00pm to 3:00pm as the sun's azimuth is in decline. The consumption reaches a minimum of 5kW around 4:00pm; possibly due to people departing at the end of day. Then between 4:00pm to 7:00pm it increases again by 50% to 8 kW and stays at this level until morning.

The daily average consumption over a whole year is 189.6kWh and of this 34% (64kWh) occurs during the daylight hours.

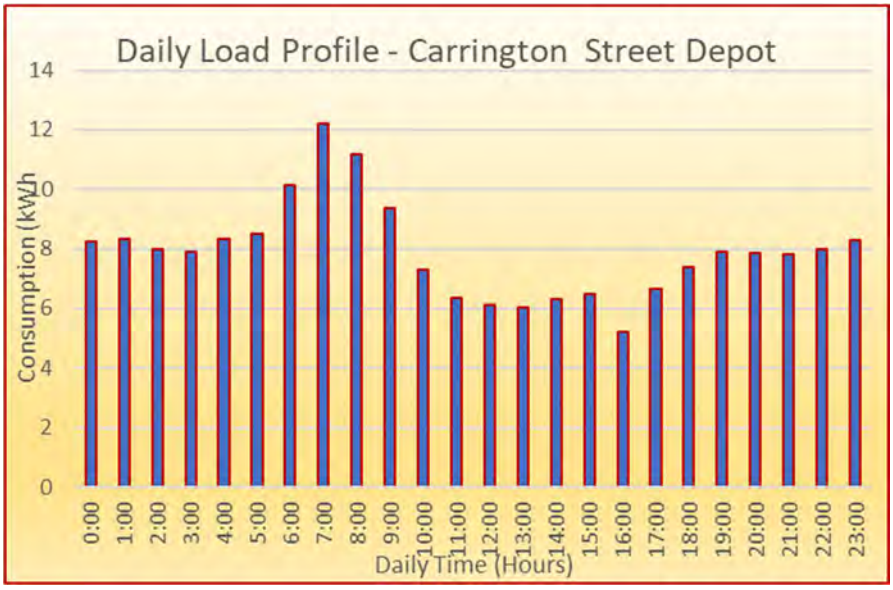


Figure 8 Average Daily Load profile for Nedlands Depot

6.2 Proposed Solar System for the Carrington Street Depot

6.2.1 System Configuration and Performance

Initial modelling examined installing 3 x 10kW inverters and replacing the existing 80 x 195W panels with 35 x 440W panels and then adding a further 54 new panels of the same type, on the available roof space to give a total solar capacity of 39.2kW. Modelling this system showed that it would produce 108.8kWh of

electricity but only 48 kWh would be consumed by the load and the rest would then be available for export (wasted). if it was allowed by Western Power.

Costing of this proposed system revealed a payback period of 8 years and 5 months which makes this option not economically viable primarily because only part of this installation is contributing to energy reduction and the rest was just replacements of existing equipment.

An alternative approach was to install a similar size but a separate system alongside the existing solar system and it was found that the available roof space could accommodate up to 36 x 440Watt panels (15.84kW). When modelling the proposed system, using 2 x 3.5kW and 1 x 5.0kW) inverters coupled to the above 36 solar panels, the Depot would consume no more than 49.2kWh/day of solar energy and 21.7kWh would be wasted (exported).

Currently, the existing 15kW SMA system has an oversizing ratio of about 1.0 and it will be operating in unison with the proposed system. During the site visit, this inverter sounded that it was working but we were unable to get a reading on the display screen.

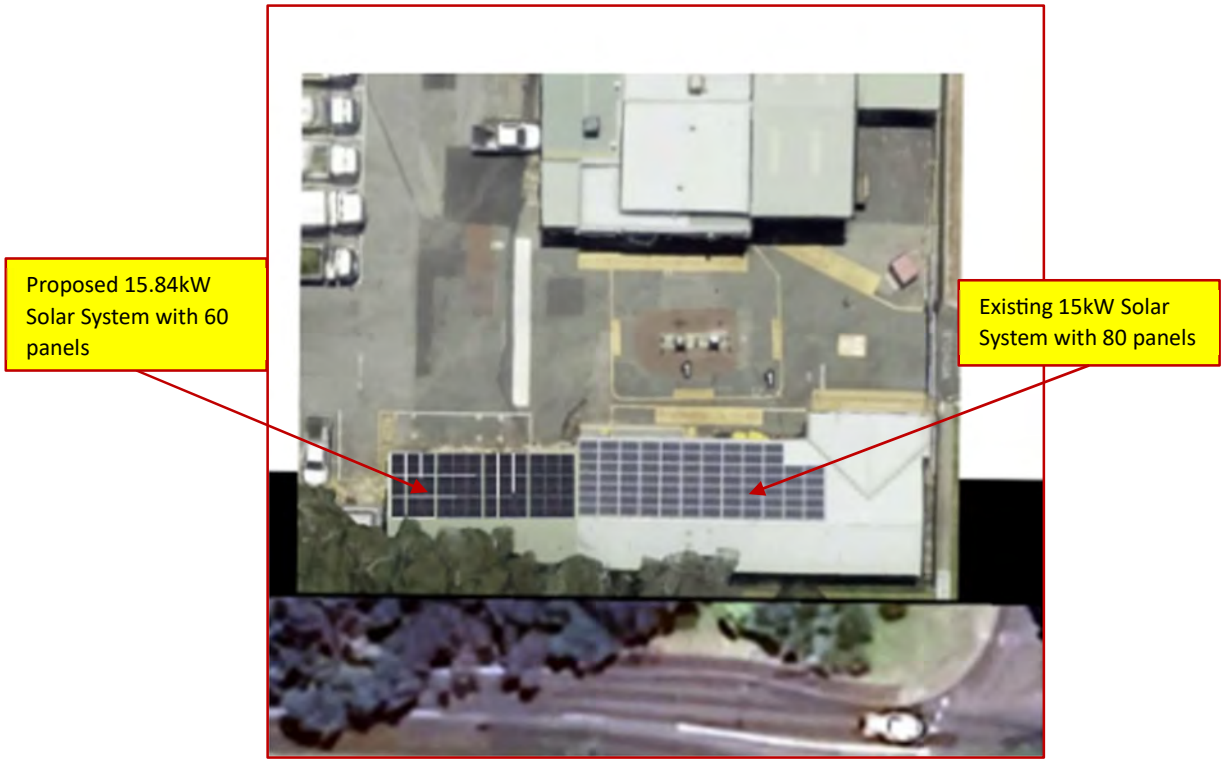


Figure 9 Panel Layout on the roof of the Carrington Depot

The modelling of the proposed system showed an expected payback period of **4 years and 1 month.**

Figure 10 shows that the solar supplies 46kWh to the load and exports (wastes) 14.6kWh, as there is insufficient load at the time of generations. The daytime load during the solar period is 58.6kWh and the load consumes from the solar 49.2kWh. With this system, 84% of the solar energy supplies day time load. The Grid supplies the shortfall of 140kWh per day for periods when solar is not available.

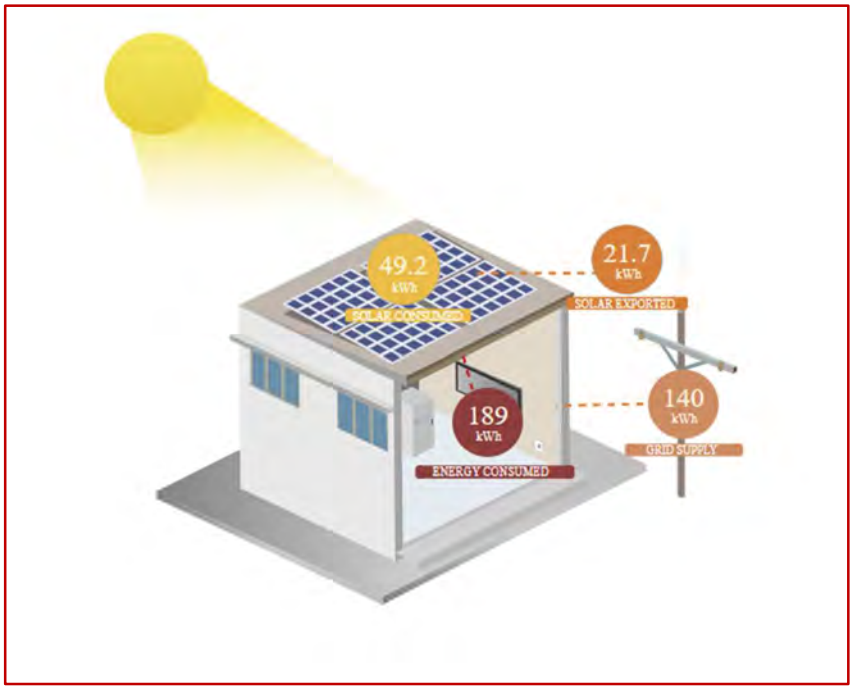


Figure 10 Average Daily Energy Production with 13kW of Inverter and 30 solar Panels

Figure 11 Daily Performance Averaged over one Year

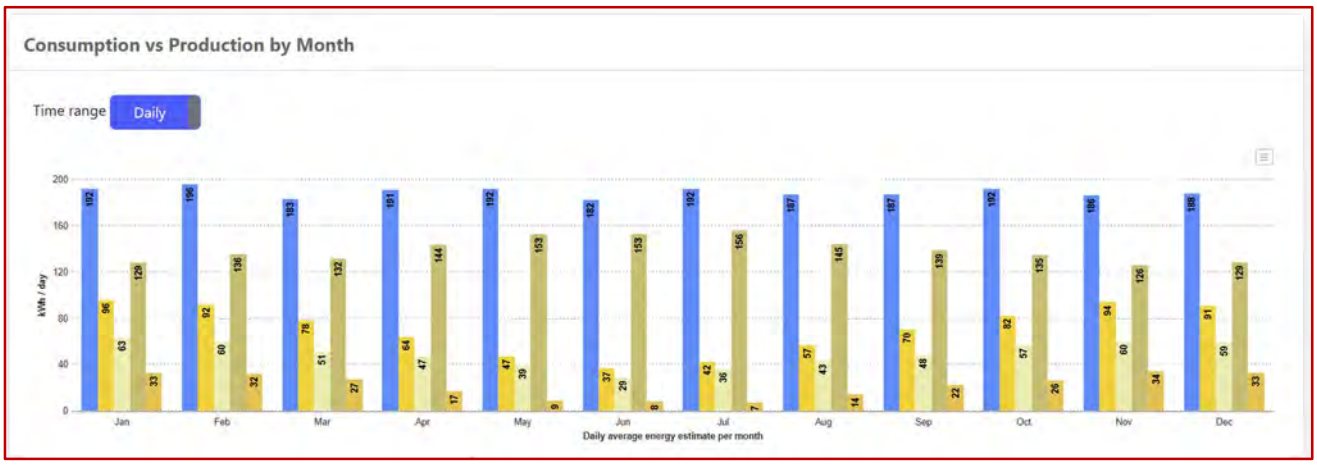


Figure 12 Consumption vs Production by Month

6.2.2 System Pricing

Retail price ex GST	$22,742
Retail price inc. GST	$25,015
STC Incentives	$6,160 (for 153 STC)
Total GST	$ 1,699
Estimated Price (Inc GST)	$18,856

6.2.3 System Estimated Payback Period

The Carrington Street Depot is on an "unbundled Contract" with Synergy with the overall cost of energy being equivalent to a flat rate of 22.6 cents per unit (kWh). Based on this unit cost the payback period for this solar installation is estimated to be **4 years and 1 months.**

Had this site been on the standard Synergy L3 rate of 36.1484 cents/kWh for the first 1,650 units/day, the payback period would be **2 years and 7 months**.

6.2.4 System Lifetime Carbon Savings

CO_2e	308 tonnes

6.3 Inverter Locations and Switchboard

Figure 13 Switchboard location within Building

Figure 14 Installation of existing Inverter and switchboard within Building

Figure 21shows the SMA Inverter that is currently installed and the switchboard that houses the inverter wiring and protection equipment. There is ample space to accommodate the wiring and protection equipment for another inverter.

7 Tresillian Arts Centre - Proposal and Recommendations

7.1 Load Profile of this Site.

The load profile for this Arts Centre, shown in Figure 15, was developed from the 30-minute interval meter data for the period from 29 February 2022 to 2 March 2024.

This site already has 15kW of solar and as such the daytime consumption overall is relatively low being no more than 3.5kW per hour. and as such the night time load is of similar magnitude. Normally, without solar, the daytime load would be very much higher.

It is not clear why the night time load drops progressively from midnight through to 8:00am in the morning. Then there is a sharp increase after 8:00am and after 9:00am this time there is some reduction due to the effects of solar generation between 9:00am to 2:00pm. Again, it is not clear why the consumption then starts to drop again, when the effects of the solar from 2:00pm through to 5:00pm is waning, before increasing again after 6:00pm to reach and remain at 3.0kW to 3.5kW overnight.

The daily consumption, averaged over a whole year is 68.7kWh and 37.8% (26kWh) occurs during the daylight hours which is very low.

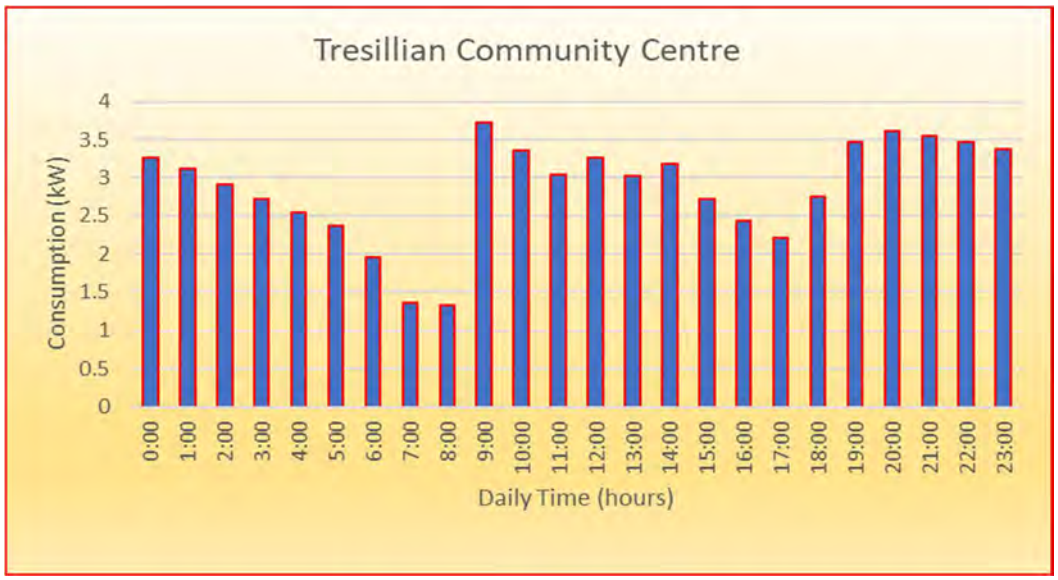


Figure 15 Average Daily Load profile for Tresillian Arts Centre

7.2 Proposed Solar System for the Tresillian Art Centre

7.2.1 System Configuration and Performance

There is roof space available on the west facing and east facing roofs on the east side of the building to accommodate 30 x 440W (13.2kW) solar panels. These will feed into 3 x 3.5kW single phase inverters.

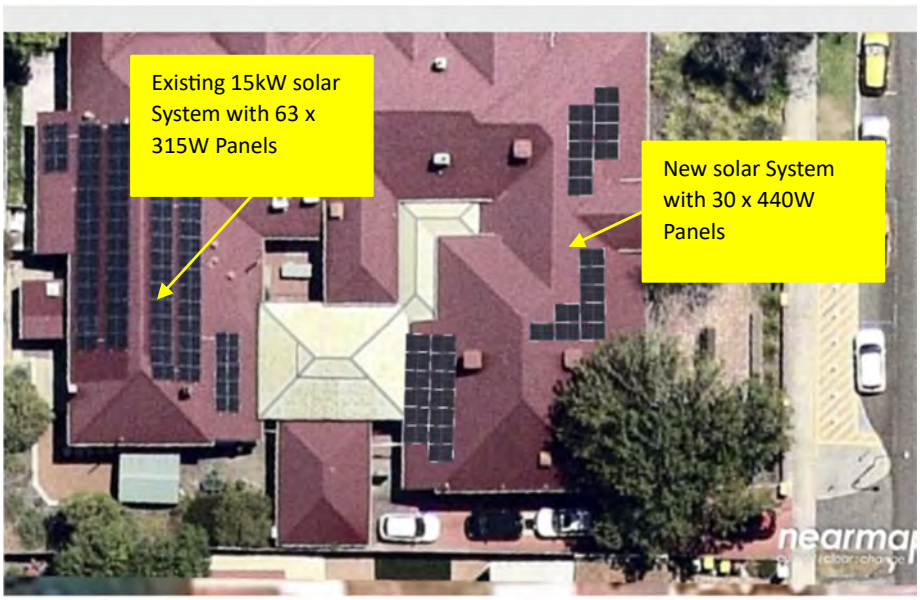


Figure 16 Panel Layout on the roof of the Tresillian Community Centre

Figure 17 Average Daily Energy Production with 10kW of Inverters and 30 solar Panels

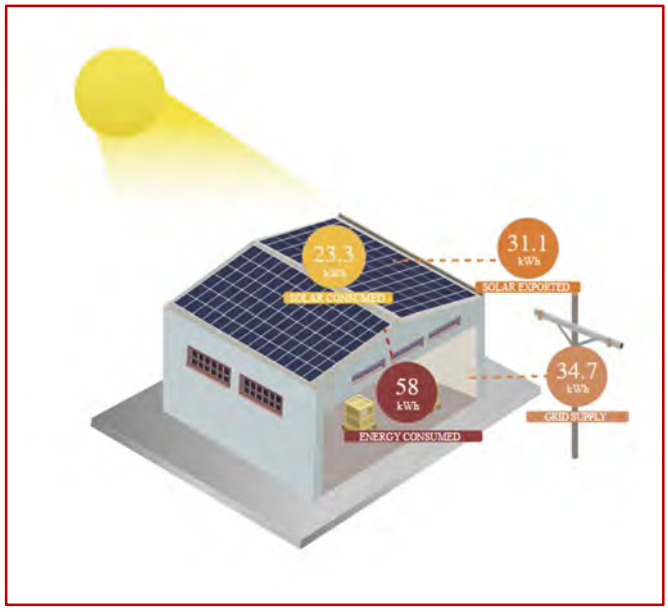


Figure 17 shows that with the additional 13.2kW of PV, there is only sufficient daytime load to absorb 23.3kWh of generated solar energy and therefore the remainder (31.1kWh) gets 'wasted'. The current total daytime load consumption is 26kWh and so with the maximum solar consumption of 23.3kWh, the proposed solar capacity increase would meet 89.6% of the daytime load requirements.

Figure 18 Daily Performance Averaged over one Year

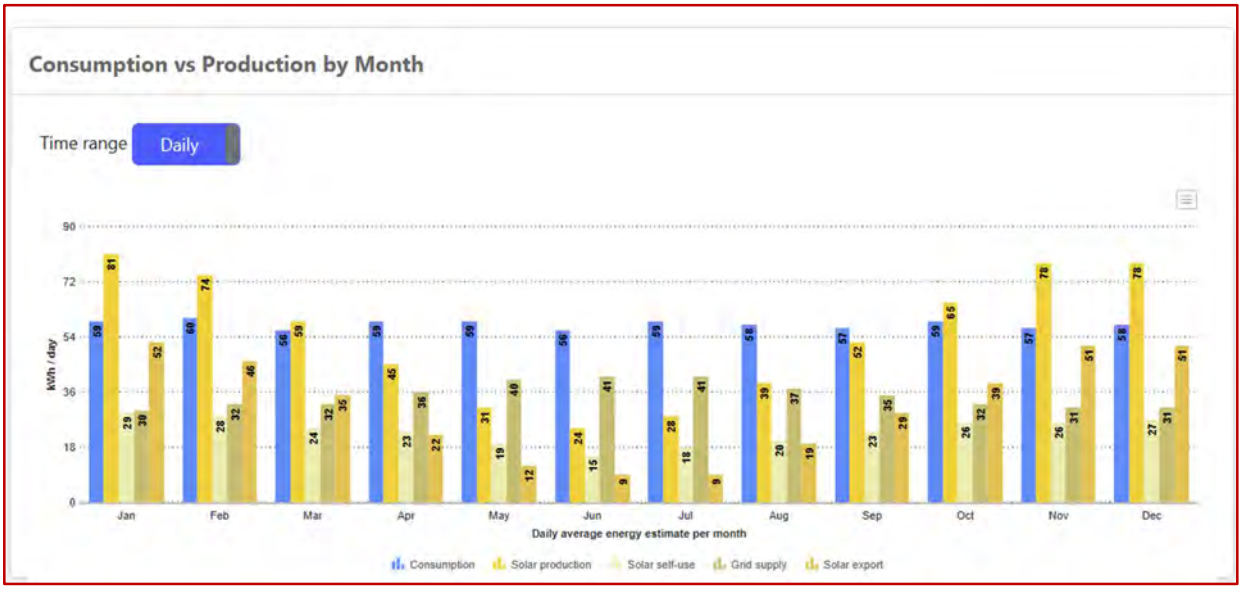


Figure 19 Consumption vs Production by Month

7.2.2 System Pricing

Retail price ex GST	$19,727

Retail price inc. GST	$21,699
STC Incentives	-$ 5,113 (for 127 STC)
Total GST	$ 1,873
Estimated Price (Inc GST)	$16,587

7.2.3 System Lifetime Carbon Savings

CO_2e 280 tonnes

7.2.4 System Estimated Payback Period

The Tresillian Arts Centre is not under the same "bundled Contract" as the other depots above but is likely to be on some form of contracted because overall it appears to be on an equivalent Synergy Anytime Service Plan flat rate of 28.9 cents/kWh. Based on this unit cost the payback period for this solar installation is estimated to be **3 years and 6 months.**

Modelling showed that further increasing the capacity of this system results in minimum increase in solar consumption and the majority of the generation would be exported. Modelling with a 5kW system resulted in a significantly reduced outlay and earlier payback, but only 77%of the generated solar would be consumed by the daytime load.

7.3 Inverter Location and Switch Board for Inverter AC Isolator

Figure 20 Switchboard location in the veranda of the building

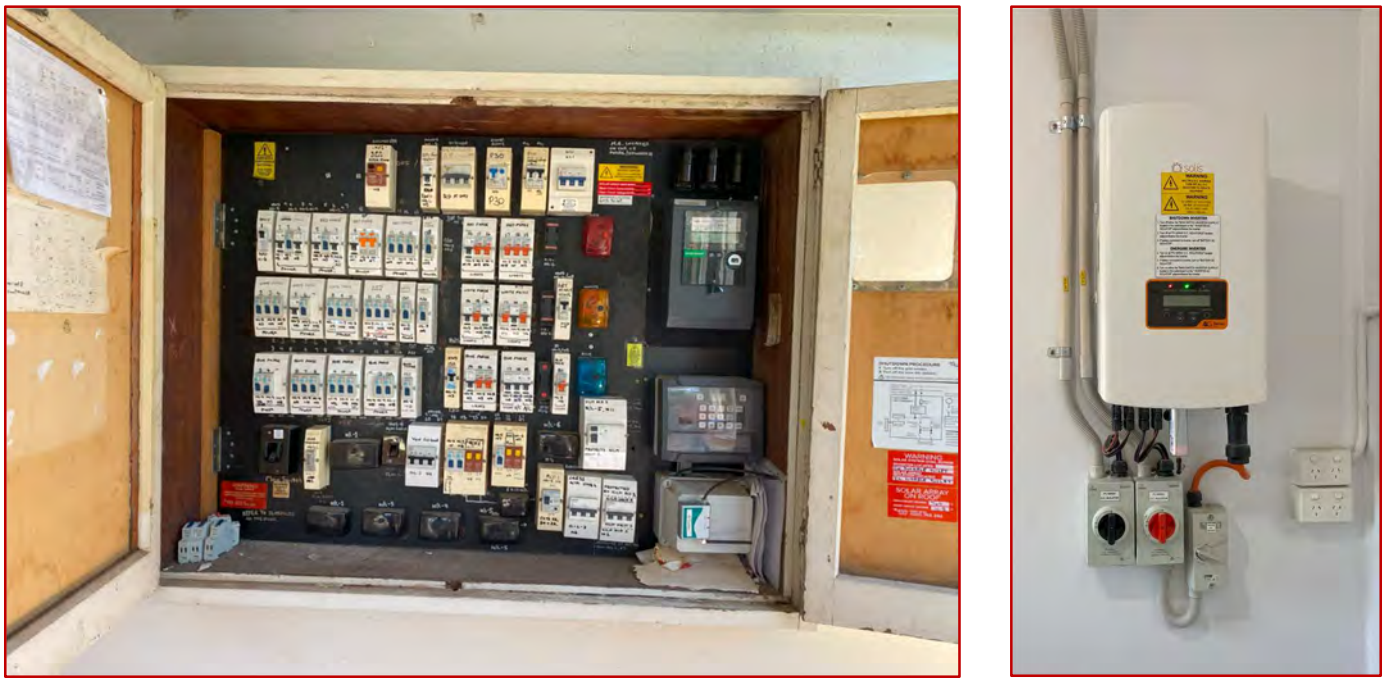


Figure 21 Installation of existing Inverter and switchboard within Building

This switchboard is very crowded and it does not have sufficient space to accommodate additional AC isolator for the new inverters. This switch board will either need to replaced or separate board is installed for any new solar installations.

8 Nedlands Library - Proposal and Recommendations

8.1 Load Profile of this Site

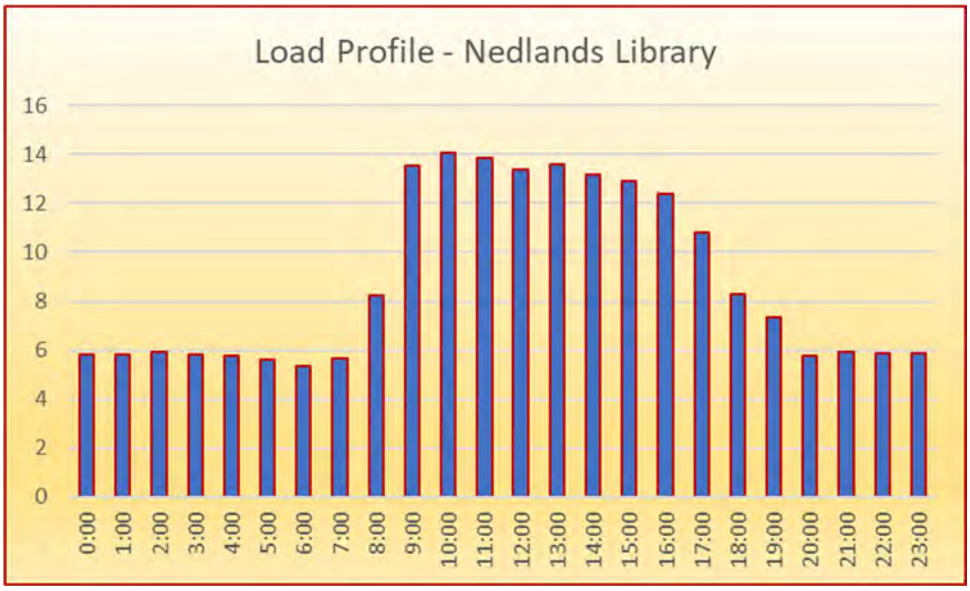


Figure 22 Average Daily Load profile for Nedlands Library

The load profile for this Library shown in Figure 22, was developed from the 30-minute interval meter data for the period from 29 February 2022 to 2 March 2023.

This site does not have any solar systems in place. The load profile for this site shows that the daily consumption averaged over a whole year is 210kWh and 54.9% (115.2kWh) is consumed during the daylight hours of 8:00am and 4:00pm, which is the solar irradiation period.

Starting from 8:00am there is a 33% step increase in consumption and then by 10:00 it peaked by a further 75%. It then decreased gradually from 14kW to about 12kW over a 4-hour period. The night time load is steady at around 6kW.

8.2 Proposed Solar System for the Nedlands Library

8.2.1 System Configuration and Performance

Figure 23 Panel Layout on the roof of the Nedlands Library

With the exception of 2 large air-conditioning units, the roof of this building is largely unobstructed and can accommodate 75 x 440W (33kW) of solar panels that are connected to a 3 phase, 25kW inverter. With this system, the load at this library will consume 96.4kWh of the generated solar and 43.9kWh will be exported (wasted) because there was insufficient load at that time to consume all the generated energy. This size solar system would be supplying nearly 83.6% of the load during the solar irradiation period from 8:00am to 4:00pm. The Grid would supply the 114kWh of load when there is insufficient solar generation

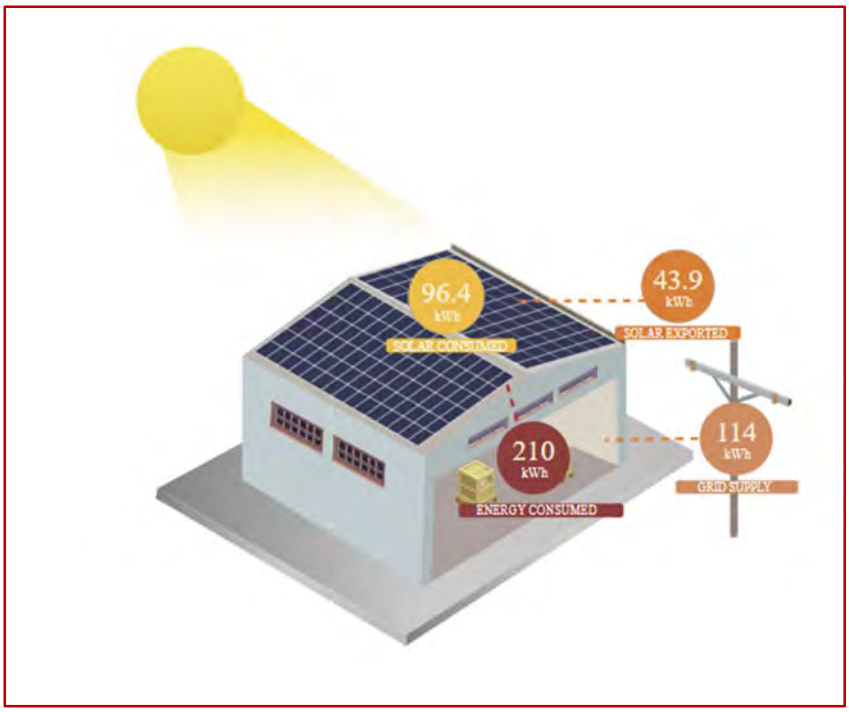


Figure 24 Average Daily Energy Production with 25kW of Inverter and 75 solar Panels

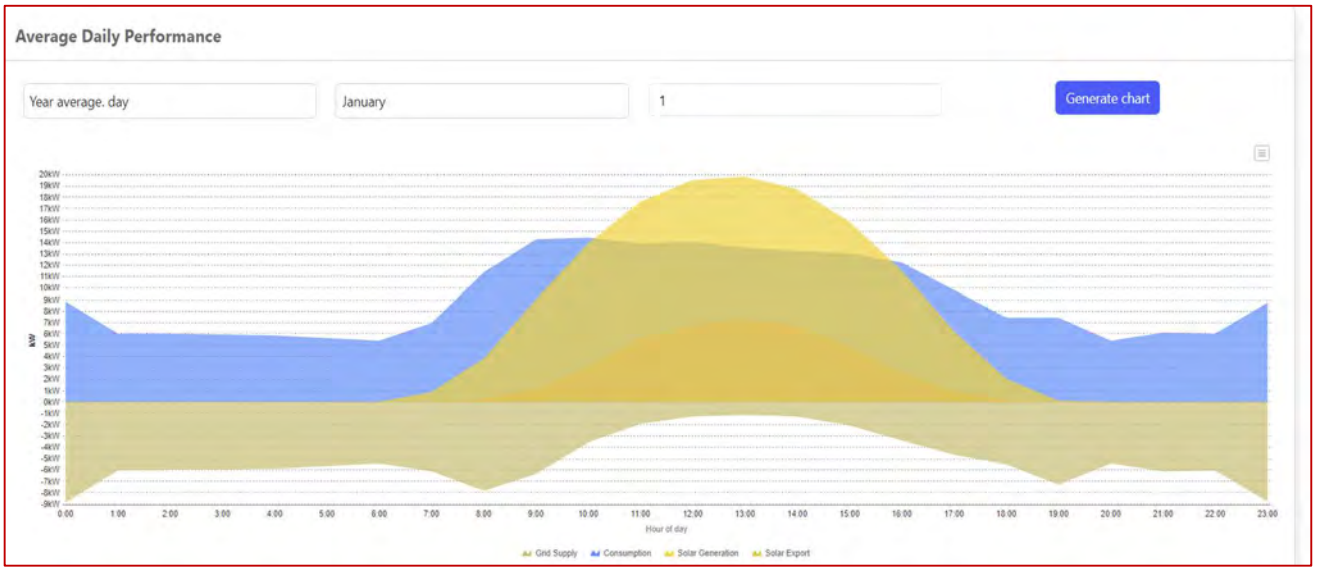


Figure 25 Daily Performance Averaged over one Year

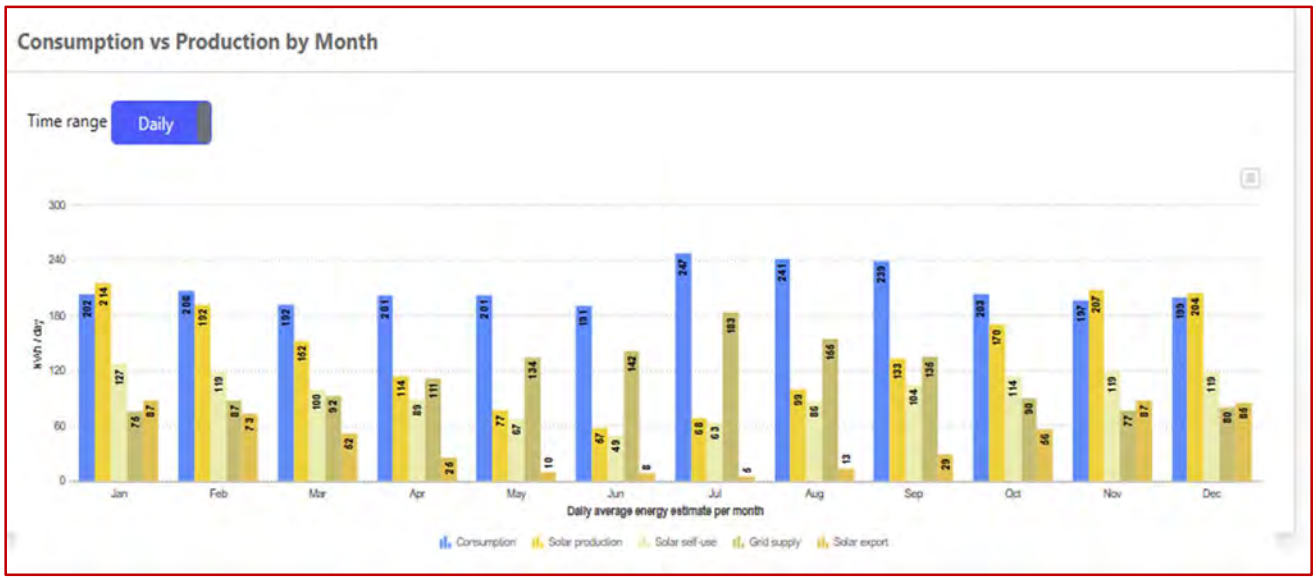


Figure 26 Consumption vs Production by Month

8.2.2 System Pricing

Retail price ex GST	$37,743
Retail price inc. GST	$41,518
STC Incentives	-$12,843 (for 319 STC)
Total GST	$ 3,774
Estimated Price (Inc GST)	$28,675

8.2.3 System Estimated Payback Period

This site been is also on an equivalent of an “Unbundled Contract” rate of 25.5 cents/kWh the payback period would be 2 years and 9 months.

8.2.4 System Lifetime Carbon Savings

CO_2e	610 tonnes

8.3 Switchboard Accommodation for Inverters AC Isolator

Figure 27 Installation of existing switchboard within Building

This switchboard will be able to accommodate the AC isolator required by the proposed solar system.

9 Point Resolution Child Care

9.1 Load Profile of this Site

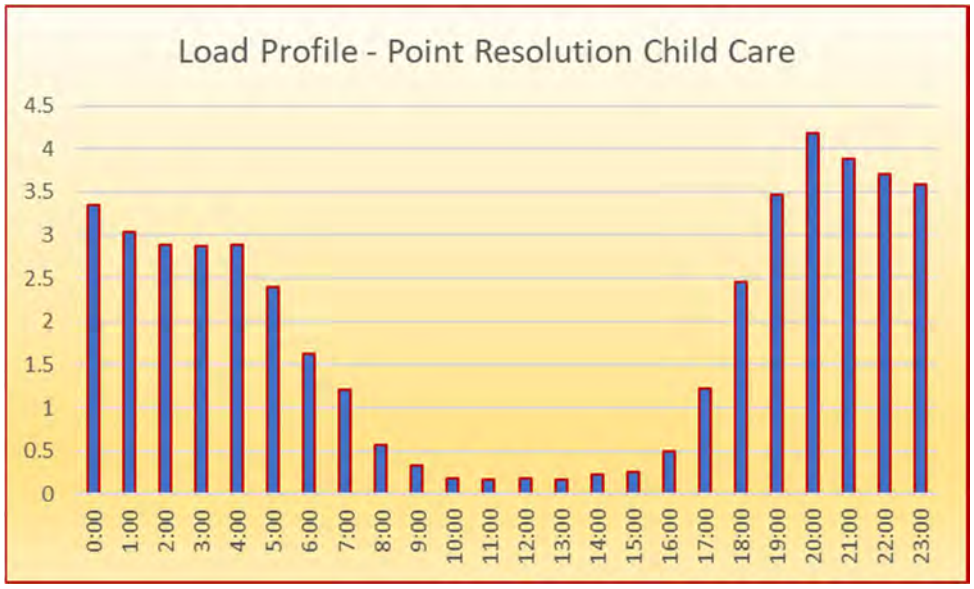


Figure 28 Average Daily Load profile for Point Resolution Child Care

The Child Care load profile in Figure 28, was developed from the 30-minute interval consumption data for the period from 29 February 2022 to 1 March 2024. The power to this site is being supplied from the Nedlands Bowling Club via a 16mm2 underground cable and the electricity meter for this Centre is located in the Switchboard of this Club house (Figure 29).

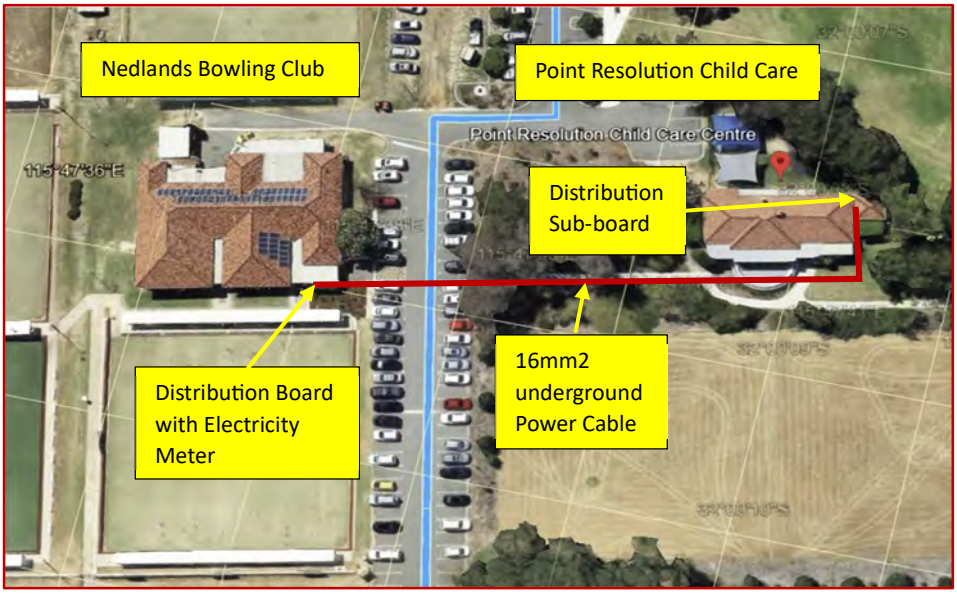


Figure 29 Average Daily Load profile for Point Resolution Child Care

This club has a solar system (size is unknown but is possibly 15kW to 20 kW) with 56 panels and based on the above load profile, it is also supplying the Child Care Centre

The daily Grid consumption, averaged over one year, by this Child Care Centre is 45.3kWh but during the solar irradiation period of between 8:00am to 4:00pm, only 2.21kWh is consumed. Depending on what tariff this Centre is on, the monthly cost for energy consumed during this period would be between $16 to $24. Therefore, by installing a solar system specifically for Child Care Centre, would not provide any meaningful energy reductions or provide any economic benefit.

9.2 Switchboard Accommodation for Inverters AC Isolator

Figure 30 Switchboard located in switch room of the building

The switchboard and meter are located in a separate switch room at the Dalkeith Nedlands Bowling Club. Currently there is no requirement for increasing the solar capacity at either Point Resolution Child Care or this Bowling Club.

10 Nedlands Cottage

10.1 Load Profile of this site

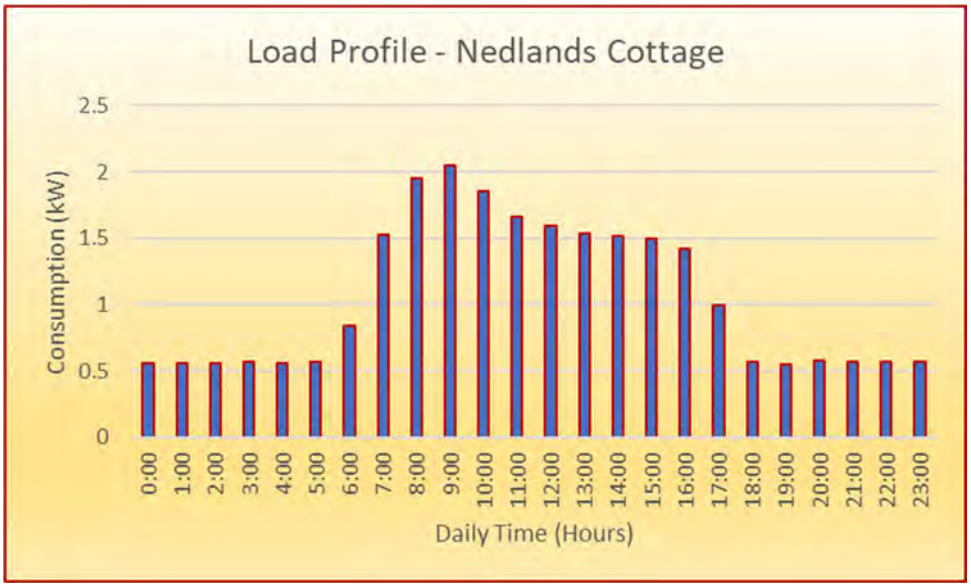


Figure 31 Average Daily Load profile for Nedlands Cottage

The load profile for this Library shown in Figure 31, was developed from the 30-minute interval meter data for the period from 29 February 2022 to 28 February 2024.

This site does not have any solar systems in place. The load profile for this site shows that the daily consumption when averaged over a whole year is 25.2kWh and 56% (14.12kWh) is consumed during the daylight hours of 8:00am and 4:00pm, which is the solar irradiation period.

Starting at 7:00am, the consumption is 3 times that of the night time load and at 9:00am it is 4 times. This consumption is maximum from 8:00am to 10.00am and as the day progresses, the consumption returns to similar levels as of 7:00am until about 4:00pm. By 6:00pm consumption and for the next 12 hours consumption is minimal.

10.2 Proposed Solar System for the Cottage

10.2.1 System Configuration and Performance

Figure 32 Panel Layout on the roof of the Nedlands Cottage

The roof of this cottage has sufficient space on the North, East and West facing roof spaces to accommodate 16 panels each rated at 415W (6.64kW) and which can be coupled to a three phase, 5kW size inverter. This size system will generate 19 71kWh per day of which 9.41kWh would be consumed by the load and the balance (10.3kWh) is exported. In this situation, Western Power will accept exported energy from systems that are 5kW or less. The 'Feed-in tariff for exported energy is 2.25c/kWh.

The daytime energy consumption during the solar generation period of 8:00am to 4:00pm is 14.12kWh and 9.41kWh of solar generated energy would be consumed by the load during this time period. Thus, this site's solar system will only ever consume 66% of the load and can never satisfy the requirements of meeting at least 80% of daytime load requirements even if a larger system were to be installed. The majority of the extra generation would be exported and very little would be consumed by the load because the generation output will exceed the capacity of the load.

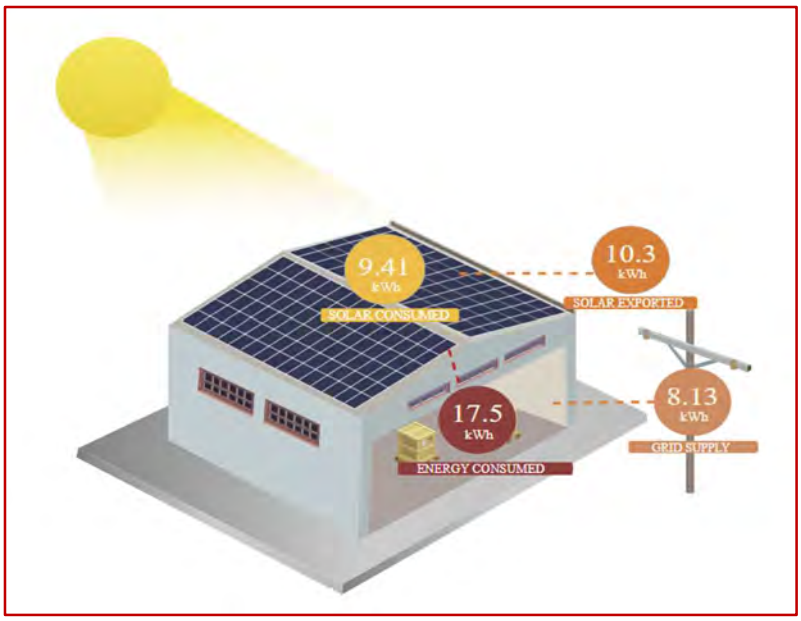


Figure 33 Average Daily Energy Production with 5kW of Inverter and 16 solar Panels

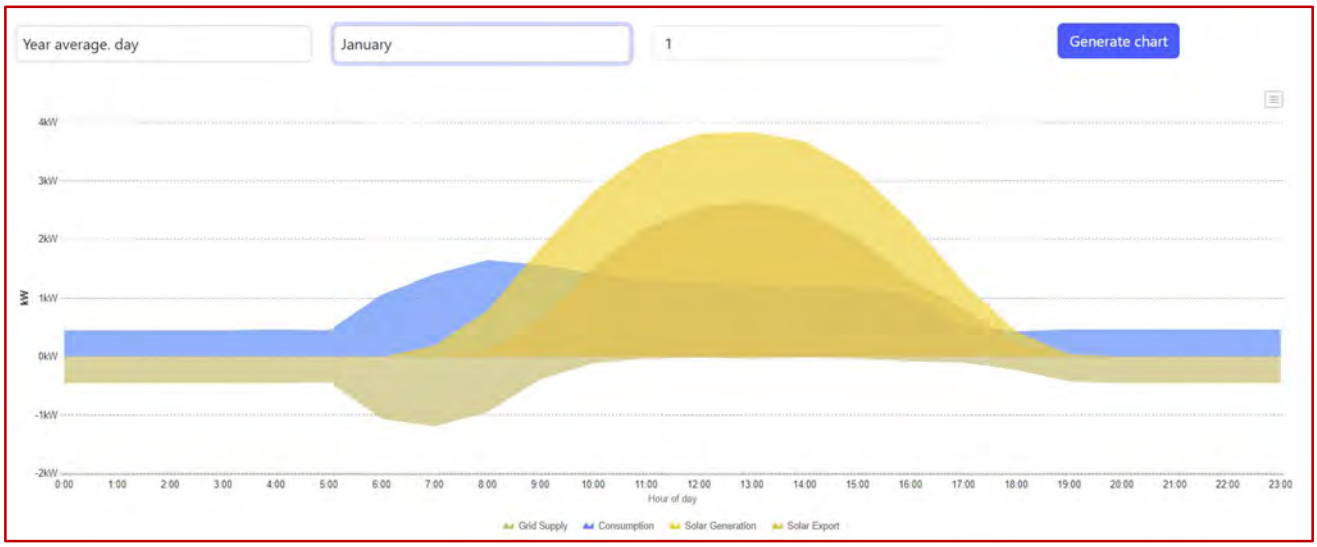


Figure 34 Daily Performance Averaged over one Year

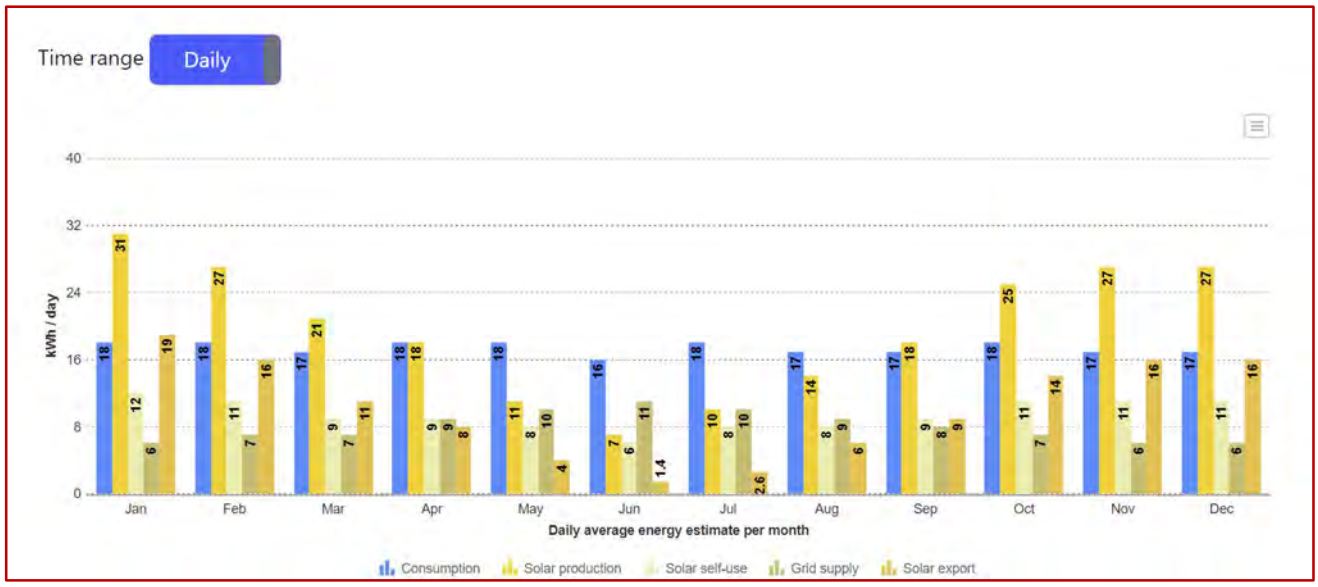


Figure 35 Consumption vs Production by Month

10.2.2 System Pricing

Retail price ex GST	$5,897
Retail price inc. GST	$6,486
STC Incentives	-$2,576.64 (for 64 STC)
Total GST	$ 589.68
Estimated Price (Inc GST)	$3,910

10.2.3 System Estimated Payback Period

This site is on Business Anytime Synergy Tariff and is paying a fixed rate of 30.7 c/kWh and a daily supply charge of 197.2 cents/day. Based on this, the payback period for this system would be **2 years and 8 months.**

10.2.4 System Lifetime Carbon Savings

CO_2e 82 tonnes

10.3 Switch Board Accommodation for Inverter AC Isolator

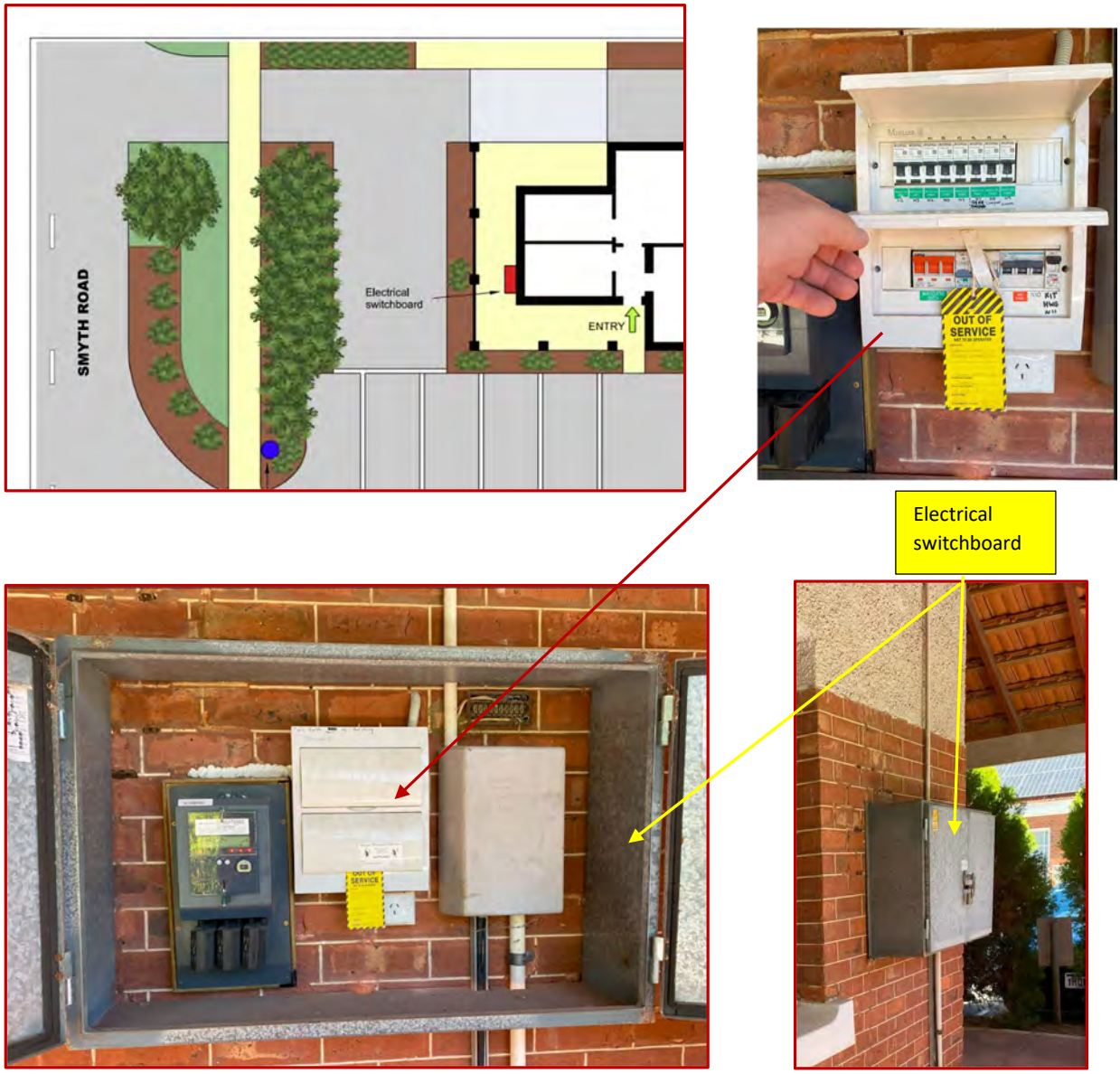


Figure 36 Switchboard Locations and Switchboard

An AC Isolator can be accommodated in this switchboard.

11 Positive Ageing Dalkeith

11.1 Load Profile of this Site

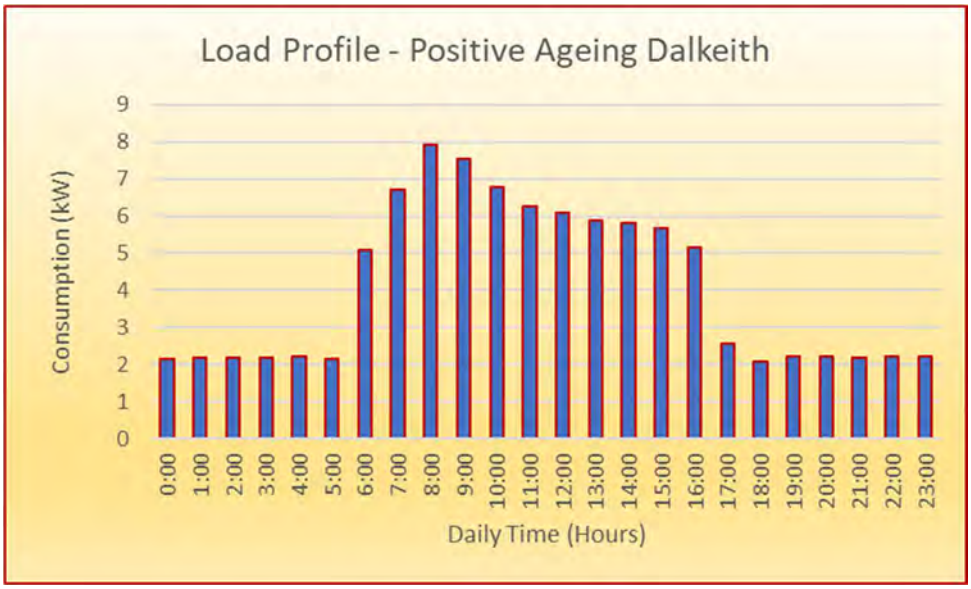


Figure 37 Average Daily Load Profile for Positive Ageing Dalkeith

The roof of this Facility has sufficient space on the front gabled roof which is of tin construction. It was determined that a 19.95kW of solar panels would be needed to offset 80% of the daytime energy consumption from the Grid. This required a total of 45 x 440W panels where 20 could be fitted on the west facing roof and 25 on the east facing roof. This was fortunate that this space was available because a very expansive roof area that could have accommodated a significantly larger number of panels, appears, when observed from the ground, to be clad with asbestos sheeting. If this is the case, then it is unlikely that permission would be granted to install panels on this part of the roof.

Modelling was done using 19.95kW of solar panels coupled to a 3 phase, 15kW inverter. The total daily energy consumption of this site, based on average over one year, is 98kWh. The energy consumption during the solar irradiation period (8:00am to 4:pm) is 57kWh. The proposed system will generate a total of 82.3kW of which 49.7 kWh will be consumed by the load and the balance will be exported (wasted). Western Power will not allow more than 1.5kW of export from systems greater than 5kW.

With the proposed system, the load will consume 49.7kWh of the generated solar energy, which means that 87% of the daytime load is supplied from solar generation.

11.2 Proposed Solar System for Positive Ageing Dalkeith

11.2.1 System Configuration and Performance

Figure 38 Panel Layout on the roof of the Positive Ageing Dalkeith

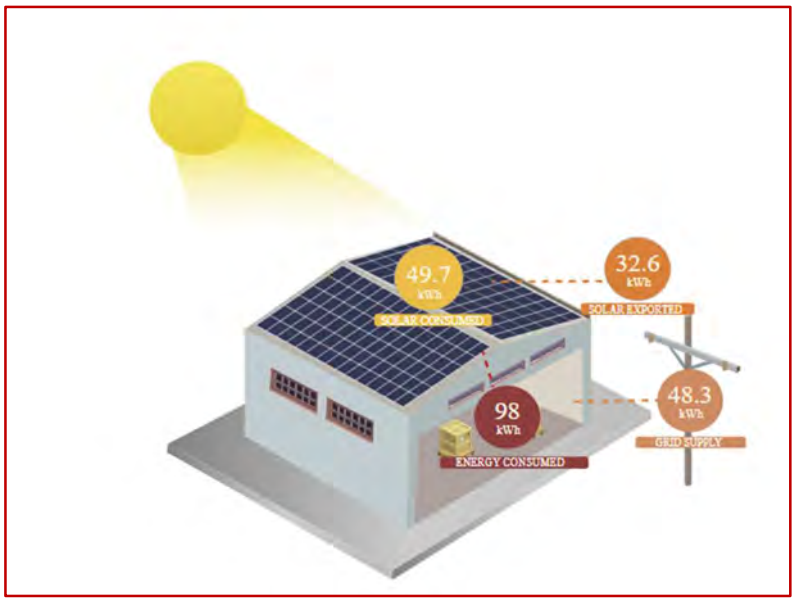


Figure 39 Average Daily Energy Production with 15kW of Inverter and 45 solar Panels

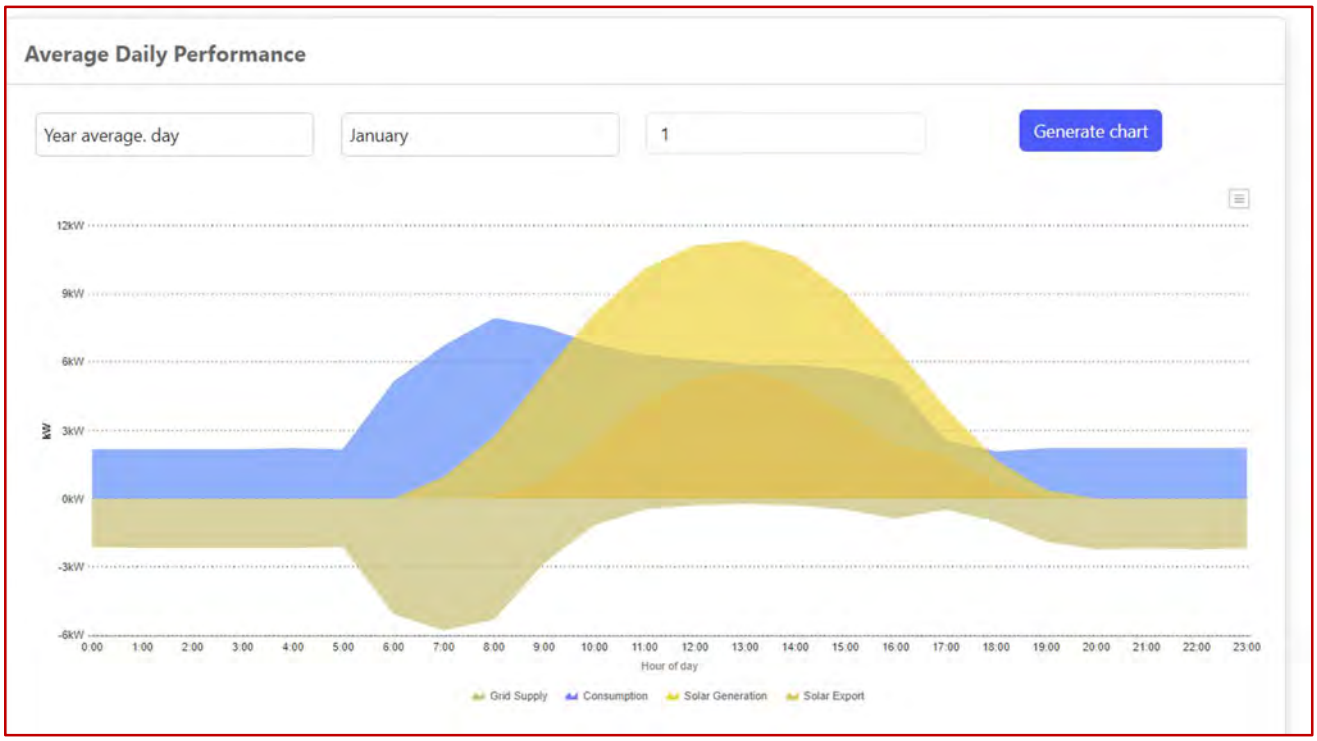


Figure 40 Daily Performance Averaged over one Year

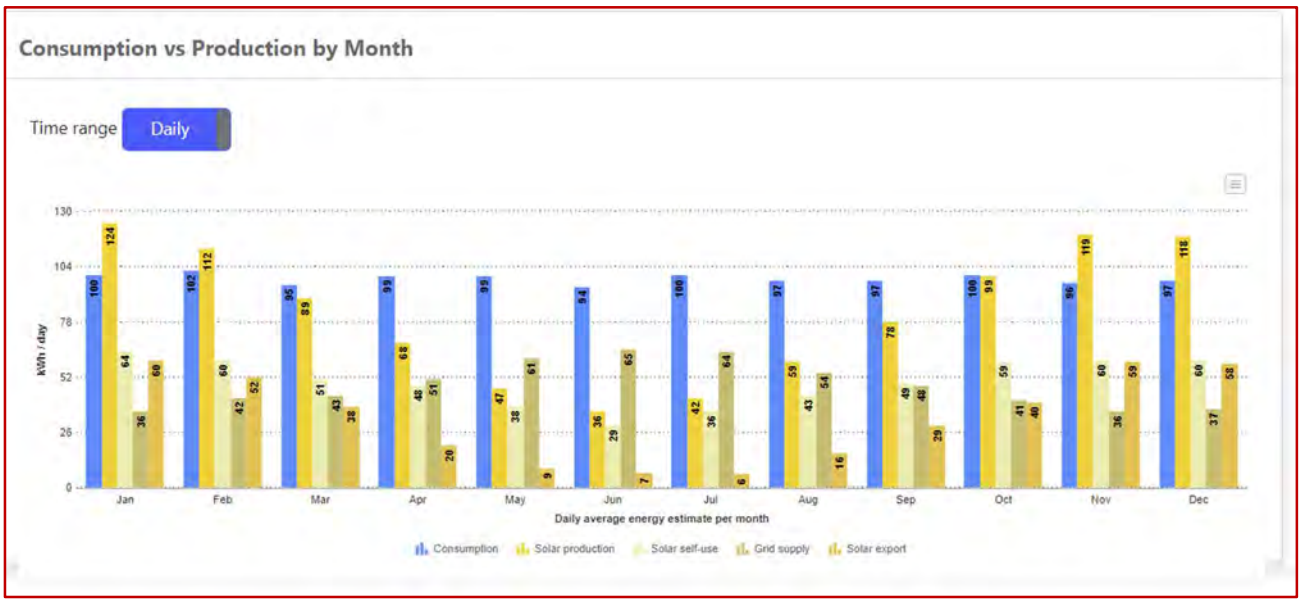


Figure 41 Consumption vs Production by Month

11.2.2 System Pricing

Retail price ex GST	$ 22,389
Retail price inc. GST	$ 24,628
STC Incentives	-$ 7,689.66 (for 191 STC)

Total GST	$ 2,239
Estimated Price (Inc GST)	$16,938

11.2.3 System Estimated Payback Period

The type of energy contract with Synergy for this site is not known but this site is paying the equivalent of a fixed rate of 30.1.c/kWh. The payback period for this system would be **2 years and 8 months.**

11.2.4 System Lifetime Carbon Savings

CO_2e 363 tonnes

11.3 Switchboard location for AC isolator

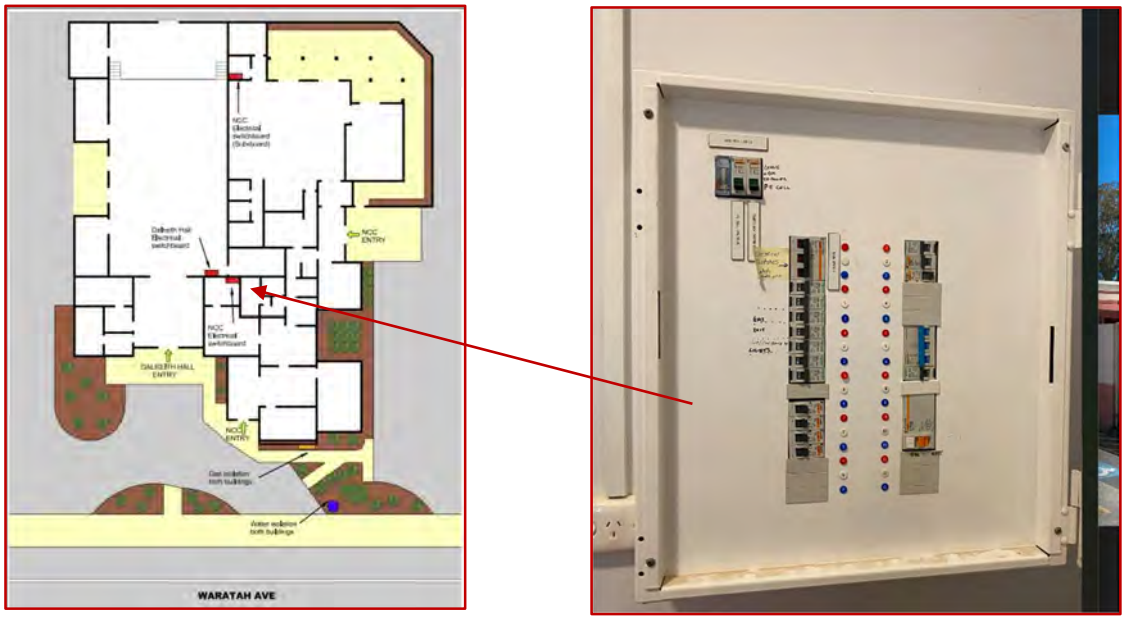


Figure 42 Switchboard location within the Building

The pictured switchboard is probably the most suitable for accommodating the AC Isolator and located in the site layout as indicated by the arrow.

12 Mt Claremont Library

12.1 Load Profile of this Site

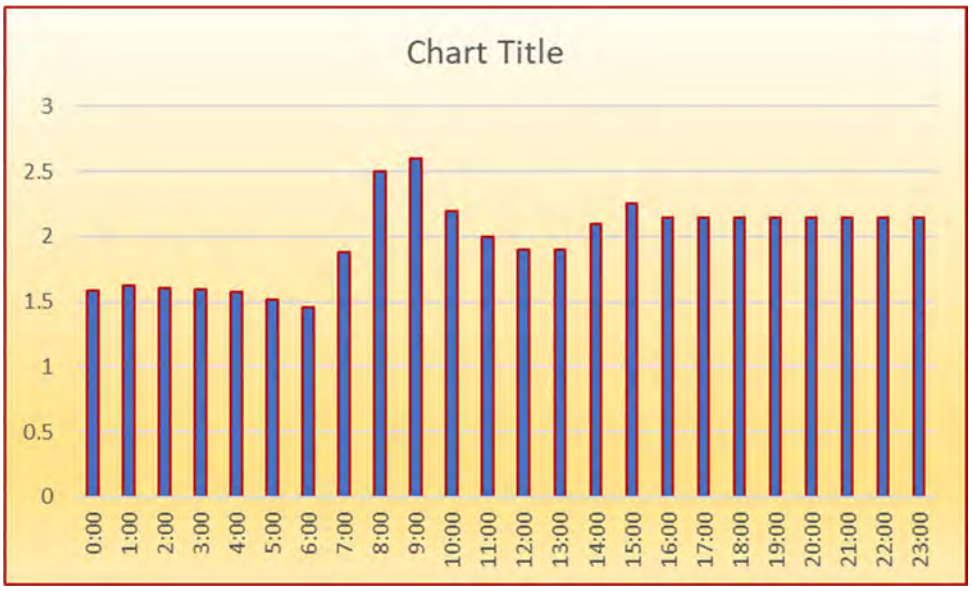


Figure 43 Average Daily Load profile for Mt Claremont Community Centre

The daily consumption of 47kWh, averaged over a whole year, was obtained for this Library, from bi-monthly consumption data. However, this data does not contain the information that enables the construction of the load profile for this site. Therefore, this had to be derived firstly using the profile of the Nedland Library, which is considered typical of all libraries and then modifying it to take into account the estimated 8.1kWh of solar energy offset from the Mt Claremont's existing solar system. The resultant load profile is shown in Figure 43 above.

The estimated consumption during the daylight hours of 8:00am and 4:00pm is 19.6kWh which is 41.7% of the daily total. This consumption is not particularly high and because of the solar system, the variation in consumption between night and day is minimal. The largest consumption occurs between the hours 8:00am & 9:0am and after three in the afternoon to midnight

12.2 Proposed Solar System for the Mt Claremont Library

12.2.1 System Configuration and Performance

Figure 44 shows the installation of 15 x 440W solar panels that can generate up to 6.65kW of solar energy. These would be connected to a single phase 5kW inverter with optimisers. Figure 45 shows this system is capable of generating a total of 27.4 kWh per day but only 16.7kWh of this will be consumed by the load during the solar generation hours. The remainder (10.7kWh) would be exported (wasted). As the daylight load requirements at this site are 19.6kWh and as solar can only meet 16.6kWh of this requirement, it means that 85% of the load is supplied from solar.

Figure 44 Panel Layout for 6.65kW system for the Mt Claremont Library

The existing solar system at this site has inverter with greater capacity (2.8kW) than what the panels can deliver (1.9kW) and adding more panels to this inverter is not warranted because it most likely the inverter warranty has expired. It was considered more prudent to propose adding a 5kW inverter with 6.65kW of panels and leaving the existing system in service for as long as possible. This site will derive maximum benefit by running the two systems in parallel and allowing the load to achieve an 85% consumption of daytime solar generation.

Figure 45 shows the solar production of the 5kW solar system of which 61% of the total output is consumed by the load.

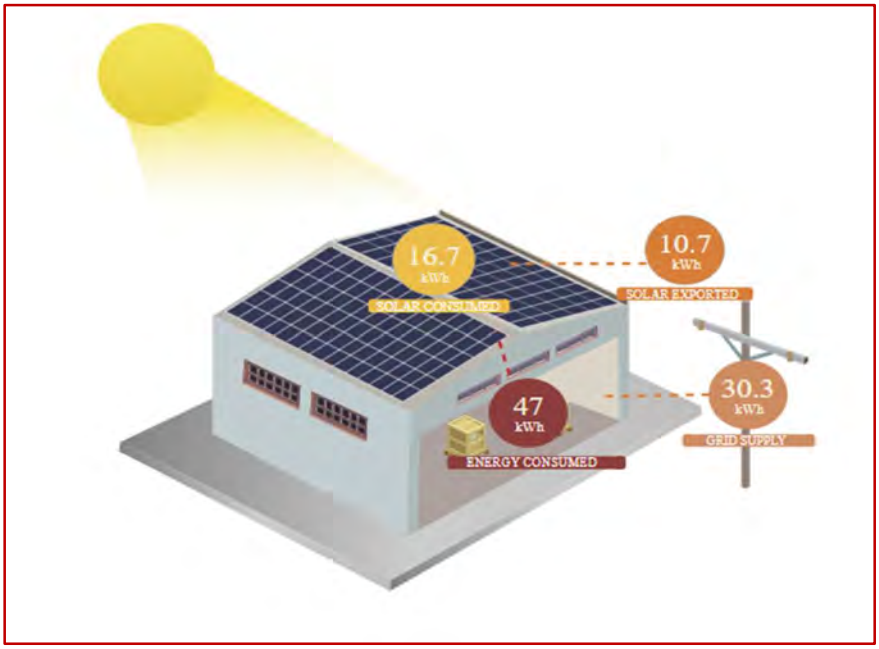


Figure 45 Average Daily Energy Production with 5kW of Inverter and 15 solar Panels

12.2.2 Performance of Solar system with 5kW Inverter

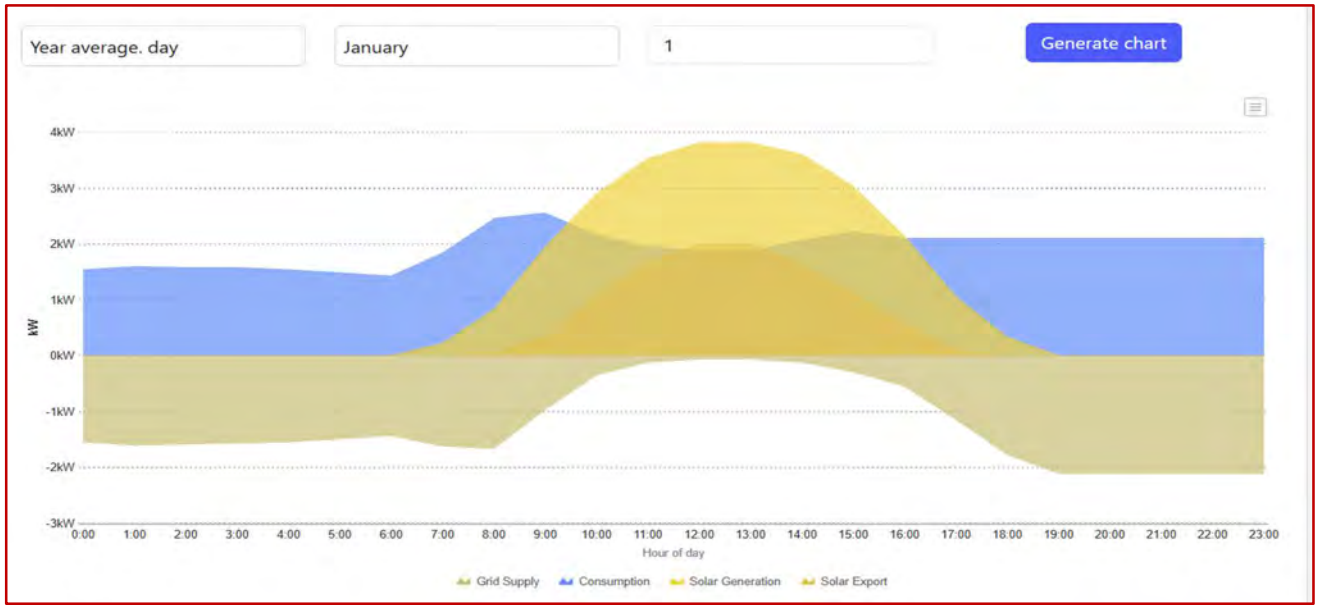


Figure 46 Daily Performance of 6.65kW System Averaged over one Year

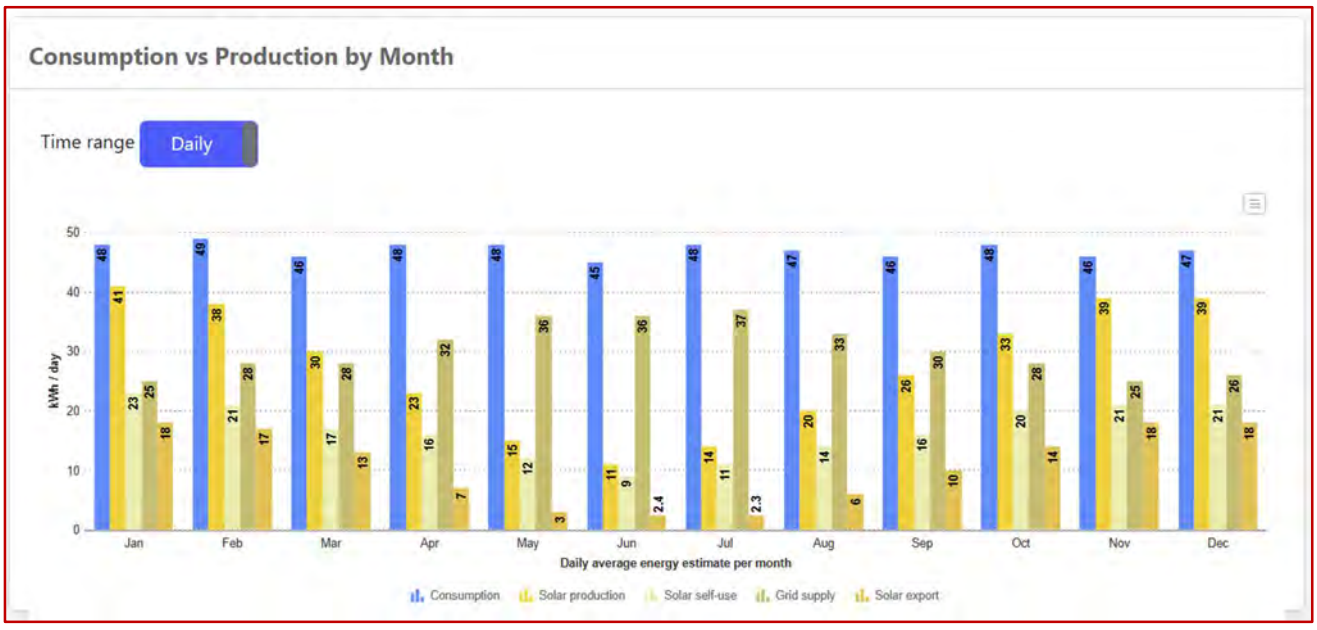


Figure 47 Daily Performance of 6.65kW System Averaged over one Year

12.2.3 System Pricing for 5kW System

Retail price ex GST	$ 9,234
Retail price inc. GST	$10,157
STC Incentives	-$ 2,536.38 (for 63 STC)
Total GST	$ 923

Estimated Price (Inc GST) $ 7,621

12.2.4 System Estimated Payback Period

The Mt Claremont Library is not list as being on a "bundled Contract" and so it has been assumed that it is on the Synergy Flat rate Tariff of 30.9 cents/kWh Based on this unit cost, the payback period for this installation is estimated to be **3 years and 5 months.**

12.2.5 System Lifetime Carbon Savings

CO_2e 119 tonnes

12.3 Switchboard location for AC isolator

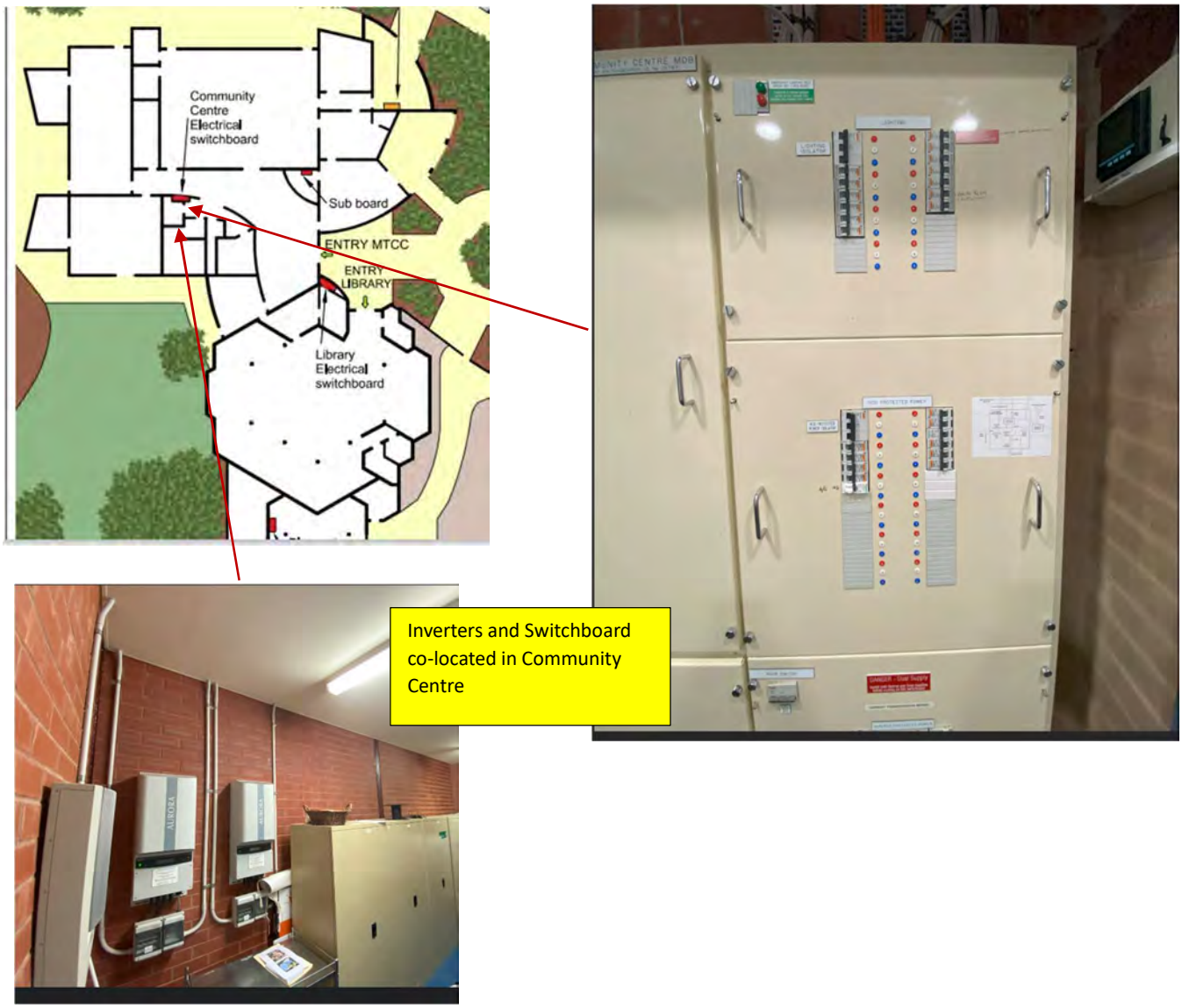


Figure 48 Inverters & Switchboard location within the Community Centre

13 Summary of Loads, Consumption and Economic Benefits

Facility	Total Daily Load.	Energy Unit Cost	Yearly Energy Costs	Yearly Solar Saving	Daytime Consumption. By new solar		CO_2 Lifetime offsets
	(kWh)	(c/kWh)	($)	($)	(kWh)	(%)	(Tonnes)
Nedlands Library	210	25.5	19,545	8,972	96.4	84	610
Administration	197	24.3	17,472	8,656	97.6	90	612
Carrington Depot	189.6	22.6	15,640	5,279	64	84	308
Positive Aging	98	30.7	10,981	6262	57	87	363
Tresillian Arts Centre	68.7	30.7	7,698	2,913	26	91	280
Mt Claremont Library	47	30.9	5,300	2,211	19.6	85	119
PRCC	45.3	N/A	N/A	N/A	N/A	N/A	N/A
Cottage	25.2	30.7	2,823	1,580	14.1	80	82
Totals	**880.8**	**27.9 (Ave)**	**79,639**	**35, 873**	**374.7**	**-**	**2,374**

Table 1 Summary of Savings

Facility	Solar Panel Capacity (kW)	Inverter size (kW)	System Cost ($)	Payback Period
Administration	33.00 (+6.65 existg)	30	36,593	4 years 7 months
Carrington Depot	15.40	12	18,856	4 years 1 month
Tresillian arts Centre	13.20	10	16,587	3 years 6 months
Nedlands Library	33.00	25	28,675	2 years 9 months
Cottage	6.64	5	3,910	2 years 8 months
Positive Aging	19.95	15	16,939	2 years 8 months
Mt Claremont Library	6.65	5	6,967	3 years 5 months
PRCC	N/A	N/A	N/A	N/A
Totals	**127.9**	**102**	**128,527**	

Table 2 System Sizes, Costs and Payback Period

Table 1 and Table 2 show that for a total outlay of $128.5k for new solar PV systems, yearly energy costs of $79.6k will reduce by $35.9k (45.1% saving). Energy consumption reduces by 42.5%

14 Conclusions

With the proposed sizing of the solar installations, all systems would supply between 80% to 91% of the daytime load. The systems supplying the largest percentage of this load, also have a large export component which effectively is wasted energy as Western Power will not permit exporting to the Grid more than 1.5kW. This excess energy warrants considering the opportunity for introducing of battery storage,

The payback periods varied considerably and this is largely dependent on the unit cost of energy, the size of the system and the presence of existing solar. The cost of energy has the largest impact where the lower the cost, the longer the payback period. Two sites have payback periods greater than four years, two greater than three years and for the remaining three it is between 2 years and 8 months to 2 years and 9 months.

A review of the sites with existing solar, identified that most of these, although approaching end of service life can be integrated into the new proposed systems. Only the inverter (5kW SoFar) installed in 2010/11 at the Administration Building is recommended for removal and connection of the existing panels on to one of the proposed 10kW inverters. The intention was to add 33kW of new panels and then augmenting them with 6.6kW of existing panels. At end of service life, the existing panels can be easily replaced with new large capacity panels for minimal capital outlay.

For the above installation, modelling was carried out without including the existing panels to see how much the new system alone would be contributing to the daytime load consumption. It was found that this would supply 90% of the daytime load.

For all sites, any solar augmentation should be done with solar systems not exceeding 30kW. This avoids some of the high costs and fees that don't add any value or direct benefits to offset these costs and is an expense that is not required when installing the smaller systems.

The Point Resolution Child Care was the only site where solar augmentation would not be of benefit. It is being supplied and metered via an underground power cable from the adjoining Nedlands Dalkeith Bowling Club, which also has solar power. The 30-minute consumption data for the Child Care Centre, revealed that the daytime electricity consumption from the Grid was very small, suggesting that solar at the Club is meeting most of the daytime energy requirements for both properties.

So far, there had been sufficient roof space available to install the required number panels needed to achieve the criterion of supplying 80% daytime consumption with solar.

Most sites have sufficient space and accommodation for installing new inverters and space in switchboards for mounting switches and circuit breakers for these solar systems. However, there were others that would require further detailed assessment and investigation and may require finding alternative locations. Tresillian Community Centre was notable as the switchboard was very crowded and would either require modification or installation of a new switchboard.

By installing the proposed solar systems, it was found that for investment of $128,527:

1. Grid consumption reduces by 42.5%
2. Energy costs decease by 45.1%
3. Carbon Lifetime offsets 2,374 tonnes
4. Small Technology Certificates (STCs) amount to $49,732

15 Recommendations

1. Where practical, endeavour to keep the total inverter capacity of a site at no more than 30kW to avoid having to install a Grid Protection System or paying “Enquiry and Application” fees where these are not required for the smaller systems.

2. Use same brand inverters for all installations and those which have inbuilt metering for controlling export and providing performance data from a common platform. This will facilitate data management and reconciliation of consumption and costs.

3. Bulk purchasing system components could result in favourable price reductions.

4. The Administration Building is the only site that warrants replacing the existing inverter. At all other sites, the existing solar systems can operate in parallel with the proposed systems.

5. Use Optimisers where shading or mismatched panels are to be used on the same inverter

6. The Point Resolution Child Care Centre does not warrant the installation of a separate solar system as the existing solar at the Nedlands Dalkeith Bowling Club meets nearly all the daytime load requirements.

7. Assess the viability of introducing battery storage for those sites with excess export that is being curtailed due to insufficient mid noon load to absorb excess solar generation.

8. Allow between 250mm to 300mm spacing between every second row of solar panels to facilitate ready access for future inspection, maintenance and repair work

9. Some of the switchboard will require upgrading or replacement to accommodate the new systems circuit breakers and isolators. Some repositioning of existing inverters may be necessary to accommodate the new inverters.

19.5 CPS27.05.24 Underground Power – Consideration of Results from Consultation and Next Steps

Meeting & Date	Council Meeting – 28 May 2024
Applicant	City of Nedlands
Employee Disclosure under section 5.70 Local Government Act 1995	Nil.
Report Author	Michael Cole
Acting CEO	Matthew Macpherson
Attachments	1. Nedlands Underground Power Survey – April 2024

Purpose

To present to Council the results obtained from the landowner's survey regarding the costs related to the installation of Underground Power in the Nedlands North and Nedlands West areas. This report provides an overview and analysis of the feedback received from landowners during the consultation process and outlines next steps should Council agree to proceed.

Recommendation

Council:

1. **Receives the results of the survey of landowners in Nedlands North (Floreat) and Nedlands West (Mt Claremont).**

2. **Agrees to proceed with underground power in the Nedlands North (Floreat) and Nedlands West (Mt Claremont) project areas and:**

    a. **Authorises the Chief Executive Officer and Mayor to sign the co funding agreements with Western Power on completion of negotiations.**

    b. **Notes service charges for Nedlands North (Floreat) will be included in the 2025/2026 Draft Annual Budget, after the estimated completion of the project in that area with Nedlands West (Mt Claremont) in subsequent years after the completion of the project in that area.**

    c. **Notes proposed borrowings will be listed for consideration in the 2024/2025 Draft Annual Budget.**

    d. **Notes additional Project Management resources will be listed for consideration in the 2024/2025 Draft Annual Budget.**

Voting Requirement

Simple Majority.

Background

The City of Nedlands commenced the installation of underground power in its local government area in 1997 and since then, 78% of the City's residences have been converted to underground power through the delivery of five staged projects. However, the City still has 1,701 residences in Nedlands North (Floreat), Nedlands West (Mt Claremont) and Hollywood East that are connected to overhead power.

Underground power is specified in the City of Nedlands Council Plan 2023-33 with Council having passed a resolution for all Underground Power to be completed by June 2026.

The City engaged the services of Whitney Consulting to prepare the business case and ACIL ALLEN Consulting to prepare the Cost Benefit Analysis. The business case identified the numerous benefits underground power brings to a range of stakeholder groups.

Benefits to Property Owners (ratepayers)

- Increased property valuations (research reflects that higher value properties benefit more than properties with lower starting values), as an outcome of
- Improved visual amenity values
- Safer local communities due to the installation of new, more energy efficient street lighting
- Improved reliability of the electricity network
- Improved quality of the electricity supply
- Other benefits, such as reduced short term vegetation management costs

Benefits to Western Power
- Avoiding costly and complex pole replacement
- Reduced operating and maintenance costs
- Reduced costs associated with power interruptions

Benefits to Local Governments
- Reduced short term maintenance of streetscapes and verges (tree lopping costs for trees under overhead power lines)

Benefits to the Wider Community
- Improved reliability of electricity supply during severe weather events
- Improved amenity to non-residents
- Health and safety benefits – reduced electrical contact injuries, reduced motor vehicle and power pole collisions
- Reduced environmental impact – reduction in use of herbicides (weed control) and pesticides (termite control) around wooden power poles
- Improved street lighting – when an area is converted to underground power, new streetlights are designed and installed to meet Australian Standards. These new

streetlights have more efficient fixtures and optimized spacing, which delivers brighter and more evenly lit streets, providing up to 15% more efficient street lighting. This may also enhance the local security of an area

In March 2023 Council considered the business case and agreed to consult with the wider community. In July 2023, Council considered a report on the results of community engagement on underground power and resolved as follows:

"That Council:

1. receives the results of the community engagement for underground power for the remaining 1,701 properties in Nedlands North, Nedlands West and Hollywood East that are connected to overhead power;
2. authorises the CEO to enter into an agreement with Western Power to progress the City of Nedlands underground power project to procurement stage for all three projects;
3. notes the CEO will present a further report to Council once Western Power has provided the cost estimates within 10% accuracy; and
4. requests the Mayor and CEO to actively explore additional sources of funding for the project to reduce the financial burden on the City and the residents."

Western Power completed their procurement process and provided updated costings for Nedlands North and Nedlands West. Hollywood East is yet to be provided as the final design may need to be changed once the impacts on the design of new Hesperia Development are concluded.

In previous discussions with Western Power, it was envisaged that Hollywood East would commence construction once Nedlands North and Nedlands West were completed. Accordingly, Western Power have indicated a preference to call for tenders in late 2026 when the Hollywood East project is closer to commencement ensuring costings are reflective of market conditions at that time.

Given the increase in costs, Council resolved in February 2024 to:

- consult with affected property owners in Nedlands North (Floreat) and Nedlands West (Mt Claremont) on the increased costs of undergrounding power to their properties; and
- requests to Acting Chief Executive Officer report back to Council with the outcomes of the consultation.

In addition to the above, the Mayor and A/Chief Executive Officer met with senior Western Power representatives to discuss options and costings of the projects.

Discussion

The City engaged Data Analysis Australia Pty Ltd to engage with the affected landowners and the results of the survey are included in Attachment 1.

In summary:

- 52.7 % of affected landowners responded
- 65.6% in support of the projects,
- 58.4% willing to pay
- 42% are willing to pay upfront.

The response rate was higher for these two project areas than the previous survey in 2023 when only 35% responded.

Table 2 from the report provides a breakdown of the source of responses with highe4st responses coming from email invitations.

Table 2. Response by mode of survey.

Area	Email Invitation	QR Code	Reply Paid Survey
Nedlands North	68/141 (48.2%)	41/141 (29.1%)	32/141 (22.7%)
Nedlands West	147/333 (44.1%)	88/333 (26.4%)	98/333 (29.4%)
Total	**215/474 (45.4%)**	**129/474 (27.2%)**	**130/474 (27.4%)**

Table 3 from the report is the general response statistics.

Table 3. General response statistics.

Area	Supports the Initiative	Willing to Pay for Underground Power	Willing to Pay Upfront	Is a Residential Property
Nedlands North	90/141 (63.8%)	76/141 (53.9%)	65/141 (46.1%)	135/141 (95.7%)
Nedlands West	221/333 (66.4%)	201/333 (60.4%)	134/333 (40.2%)	323/333 (97%)
Total	**311/474 (65.6%)**	**277/474 (58.4%)**	**199/474 (42%)**	**458/474 (96.6%)**

Tables 4, 5, 6 and 7 from the report are the responses to the survey questions.

Table 4. Survey question 1.

Are you generally supportive of the Council's strategic initiative to complete the underground power project in your area?				
Area	Yes	No	Unsure	No Response
Nedlands North	90/141 (63.8%)	43/141 (30.5%)	7/141 (5%)	1/141 (0.7%)
Nedlands West	221/333 (66.4%)	76/333 (22.8%)	34/333 (10.2%)	2/333 (0.6%)
Total	**311/474 (65.6%)**	**119/474 (25.1%)**	**41/474 (8.6%)**	**3/474 (0.6%)**

Table 5. Survey question 2.

The cost of installing underground power in Nedlands (North/West) would be split evenly between Council and property owners in your area. Property owners would pay an estimated $7,800 to $11,150 / $5,450 to $9,500 (North/West). Discounts may be available for concession holders and the cost may be higher for business properties and lower for units within multiple unit developments. Given the choice, which of the following options would you prefer?			
Area	Option 1: I would prefer to pay this amount to get underground power in my area.	Option 2: I would prefer not to pay this amount, and keep the existing overhead power.	No Response
Nedlands North	76/141 (53.9%)	64/141 (45.4%)	1/141 (0.7%)
Nedlands West	201/333 (60.4%)	126/333 (37.8%)	6/333 (1.8%)
Total	**277/474 (58.4%)**	**190/474 (40.1%)**	**7/474 (1.5%)**

Table 6. Survey question 3.

If the underground power project does proceed, which is your preferred payment option?			
Area	Option 1: I would like to pay my contribution upfront.	Option 2: I would like the amount included in my rates over a 4-year term, with the understanding that interest will apply.	No Response
Nedlands North	65/141 (46.1%)	66/141 (46.8%)	10/141 (7.1%)
Nedlands West	134/333 (40.2%)	179/333 (53.8%)	20/333 (6%)
Total	**199/474 (42%)**	**245/474 (51.7%)**	**30/474 (6.3%)**

Table 7. Survey question 4.

Is this property a business or residential premises?				
Area	Business	Residential	Other	No Response
Nedlands North	2/141 (1.4%)	135/141 (95.7%)	0/141 (0%)	4/141 (2.8%)
Nedlands West	1/333 (0.3%)	323/333 (97%)	7/333 (2.1%)	2/333 (0.6%)
Total	**3/474 (0.6%)**	**458/474 (96.6%)**	**7/474 (1.5%)**	**6/474 (1.3%)**

Written feedback was broken into three categories:

1. those opposing the initiative,
2. those conditionally supporting but preferring not to proceed financially, and
3. those in support and willing to proceed with financial contributions.

A common thread across all three categories was the concern about the high cost of the project and the inequality in cost distribution.

Not in support – 25.1%

Among those not in support, the significant cost and cost-of-living crisis with many preferring the City focus on other initiatives such as parks, playgrounds, footpaths, and maintenance of trees.

Some residents suggested that underground power be put on hold for a “couple of years” until the cost-of-living crisis has improved. Others suggested a longer payment period (ie 6 to 8 years) or capping the total cost to landowners.

In support but preferring not to proceed or pay 8.65%

This group were concerned about the significant expense and stating with very few tangible benefits. Several requested all residents be treated equally and for those with high transmission lines remaining after the project is completed to pay significantly less than what is proposed. Many suggested that if the project were to proceed, payment should be made after project completion.

In support of the initiative and willing to proceed with a financial contribution 56.5%

More than half of residents are in support of the initiative and would prefer to proceed. The general sentiment is that they have waited far too long for underground power to be completed in their area, leading to significantly increased burden of costs to residents, with neighbouring areas paying far less for underground power.

Many also cited the cost-of-living crisis and the poor timing of the projects. Some believed the Council should lobby the State Government or Western Power to subsidise the cost to landowners. Many referred to residents of Nedlands being treated equally as previous areas had paid far less. Another suggestion was aligning the cost to property values.

Consultation

In addition, the survey of affected landowners, the Mayor and A/Chief Executive Officer met with senior officials from Western Power.

The City was advised that Nedlands North and Nedlands West are listed at the back end of their 10-year plan for replacement of the existing overhead network, ie 2034. Hollywood East is ranked lower and not in their 10-year plan.

Western Power's contribution to the current projects is based on the remaining useful life of the network. When the network is due for replacement, local governments for that area are approached to determine whether the overhead network is to be replaced with an overhead network or if the local government will contribute to undergrounding the network.

While it is difficult to provide a solid estimate 10 years out, on current costings, replacing an overhead network with an overhead network is 60% to 70% cheaper than replacing with an underground network. Western Power's contribution to the capital cost of undergrounding would be capped at the equivalent overhead replacement cost.

Based on the remaining useful life of the overhead network in Nedlands North and Nedlands West, Western Power are proposing to contribute only 45% of the capital cost. Based on the above information, in approx 10 years Western Power would more than likely contribute between 60% and 70% of this cost.

The capital cost, being the replacement of the overhead wires, is $22.5m for the two project areas. Western Power's contribution is $9.8m. Assuming a 60% to 70% contribution if these projects were at the end of their useful lives, Western Power's contribution would be $13.5m to $15.8m, resulting in a significant reduction in City and landowner contributions.

For Nedlands North (Floreat), the standard cost for landowners would be reduced by between $2,000 and $3,300 per property.

For Nedlands West (Mt Claremont), the standard cost for landowners would be reduced by between $1,500 and $2,500 per property.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2022-33 vision and desired outcomes as follows:

Vision **Sustainable and responsible for a bright future**

Pillar **Place**
Outcome 7. Attractive and welcoming places.

Pillar **Performance**
Outcome 11. Effective leadership and governance.

Budget/Financial Implications

The revised estimates from Western Power for Nedlands North (Floreat) and Nedlands West (Mt Claremont) will require the City to contribute $7.0m, which is an additional $1.8m over the amount indicated in the business case.

With approx. $3.0m in the Underground power reserve, the Council would be required to contribute an additional $4.0m to the project. Such a contribution could not be achieved without a significant allocation from rates each year.

The business case identified the significant impact the three underground power projects will have on the Draft Long-Term Financial Plan 2023-2038. The Long-term Financial Plan will need to be updated depending on the final decision by Council on whether to proceed with Underground Power at this time.

At present, the net cashflow impact on the City is a reduction of available funding of approximately $4 million for Road Infrastructure Renewals in the first 4 years of the Plan. It is worth noting here that the City currently has an estimated infrastructure backlog of $43 million.

Legislative and Policy Implications

Local Government Act 1995 Section 6.38 (1)

Local Government (Financial Management Regulations 1996 Reg 54(c)

Underground Power Policy

Decision Implications

Should Council agree to proceed, the Chief Executive Officer and Mayor with be authorised to sign the final co-funding agreements with Western power once negotiations are completed.

A communications plan to inform landowners and the wider community is being developed to deliver key messages and project updates.

However, given current financial constraints on the City, the Council may wish to defer commencement of projects until sufficient funds are accumulated in the Underground Power Reserve to fund the City's portion of these projects.

Council may also consider deferring further consideration of underground power until the network reaches the end of its useful life in which case a great contribution from Western Power is expected. This may be not less than 10 years away.

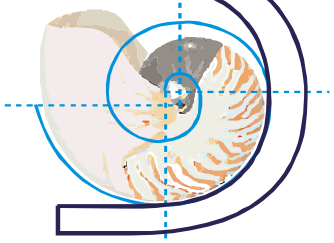
Conclusion

Summarise the report and what you are recommending.

Further Information

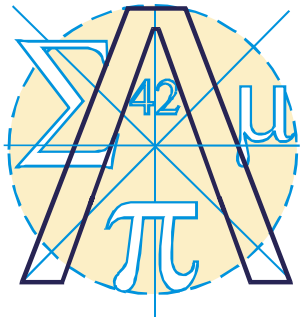
N/A.

DATA



STATISTICS

ANALYSIS



MATHEMATICS

AUSTRALIA

INFORMATION

S T R A T E G I C
I N F O R M A T I O N
C O N S U L T A N T S

Nedlands Underground Power Survey

April 2024

Project: NEDLANDS/2

Nedlands Underground Power Survey

April 2024

Client: City of Nedlands

Project: NEDLANDS/2

Consultants: Anna Hayes
Dr Alyce Russell

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Executive Summary

The City of Nedlands engaged Data Analysis Australia to conduct a comprehensive survey to assess local ratepayers' attitudes towards the Underground Power Project and its proposed funding model. The survey, distributed via mail with two online response option, targeted directly affected ratepayers.

The current survey was based on the 2023 City of Nedlands Underground Power Survey ("the 2023 Survey"), which was conducted by Data Analysis Australia, and includes updated costings by Western Power as well as only focusing on the Nedlands North and Nedlands West localities.

This survey was conducted across March and April 2024, and generated 474 responses in total (141 from Nedlands North and 333 from Nedlands West), a high response rate for such a survey (53%).

The survey results showed robust support for the project generally, with two-thirds of respondents supporting the initiative.

Overall, and despite the need to contribute financially to the power being undergrounded, there remains strong support by those in the affected area for the undergrounding to proceed, with 57% preferring this option. It should be noted that this is less than the 70% reported in the 2023 Survey.

The free text responses for this survey show that a substantial number of ratepayers believe the project is well overdue and should proceed with no further delays. However, there is also strong sentiment from other ratepayers who are strongly opposed to the proposal due to the need to pay additional fees during the current cost-of-living crisis.

Despite the high levels of support, there are significant concerns regarding the cost and perceived inequities in the cost distribution. The respondents highlighted a call for greater transparency and fairer cost-sharing. There is also concern regarding high voltage transmission lines that will not be undergrounded, and ratepayers incurring costs in the affected areas when they already have underground power. Whether in support of the initiative or not, a significant number of respondents indicated that more should be done to lobby the Government of Western Australia or Western Power to contribute towards the project.

In conclusion, the findings demonstrate an endorsement for the Underground Power Project in these affected City of Nedlands areas. However, this endorsement is not without a significant proportion of detractors and there are strong concerns regarding the cost implications. It should be noted that significantly less ratepayers are in favour of the initiative since the 2023 Survey, and delay plus the rise in costs has been a major factor in this shift. There will be a combination of ratepayers who will be pleased with the decision and those who will not. This will be an important issue for the City to manage.

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1. Introduction

The City of Nedlands appointed Data Analysis Australia to facilitate a comprehensive community engagement survey to gauge objective community sentiment regarding the proposal to complete the final stage of the Underground Power Program. The survey took place inclusive of 8th of March and 5th of April 2024.

The project's core objective was to engage with the ratepayers within the two affected areas. Many ratepayers completed the City of Nedlands Underground Power Survey in 2023 ("the 2023 Survey"). For the current survey, the City of Nedlands wished to ask the same questions as they now have more precise costings from Western Power.

Throughout the project, Data Analysis Australia maintained a robust and collaborative relationship with the City of Nedlands and the survey was fine-tuned to be as unbiased and informative as possible. At all stages, Data Analysis Australia had the final say on the overall methodology, questionnaire wording and information shared in the frequently asked questions (FAQs) to maintain the independence and integrity of the survey.

The survey was conducted across specific locales within the City of Nedlands. These areas are termed by the City as Nedlands North (Floreat) and Nedlands West (Mount Claremont) and are displayed in Figure 1. All properties within these areas were included in the survey.

Figure 1. The two affected areas: Nedlands North (Floreat) in red and Nedlands West (Mount Claremont) in blue.

2. Methodology

The survey methodology was based on the 2023 Survey conducted by Data Analysis Australia. The current survey included updated costings by Western Power and was restricted to the Nedlands North and Nedlands West areas (Figure 1). All comparisons to the 2023 Survey will only consider the results from the Nedlands North and Nedlands West areas.

The execution of the survey comprised several key stages. Initially, questions were jointly developed by the City of Nedlands and Data Analysis Australia. The developed questions underwent a stringent review process to ensure they were unbiased and suitable for the demographic in question, whilst reflecting the precise options that the Council wished to survey.

The principal target audience was identified as ratepayers within the City of Nedlands, specifically those residing in the Nedlands North and Nedlands West regions. These ratepayers are directly affected by the Underground Power Project and thus were the core focus of the survey. Every affected ratepayer was surveyed[1], encompassing a total of 899 properties across the regions of Nedlands North and Nedlands West.

The questionnaires were dispatched via mail, with the option to respond online or by returning the printed survey form by reply-paid mail. To maximise the response rate and ensure respondents could make an informed decision, information about the project's potential impact on the ratepayers was also included by way of a cover letter from the Council CEO and a link to the FAQs (accessible online).

The questionnaires were also sent via email to those ratepayers with email addresses recorded by the City of Nedlands. This was a new approach applied to this survey which aimed at maximising response rates. This included sending email reminders ten days and three days before survey closure to those yet to respond. These recipients could choose to respond through the email link, respond online via a QR code and unique token, or by reply-paid mail of the hard copy.

Responses were collected and documented using a unique identifier token system. Each survey included a unique token, facilitating the submission of responses while ensuring data accuracy. Each token allowed one response. Data Analysis Australia created and hosted the online survey within its own system, and received and entered the data from all hard copy returns.

The collected data underwent a series of analytical processes. Primarily, bar plots were created, showing the proportion of people in the designated areas who held specific attitudes towards the Underground Power Project and the proposed funding scheme.

Throughout the process, stringent measures were in place to maintain the confidentiality of the respondents. Data Analysis Australia independently managed

[1] A small number of premises were deemed out of scope, these being any properties owned by Department of Housing, Department of Education, Department of Health, City of Nedlands, Defence Housing Authority, and Lisle Aged Care. The City of Nedlands will be undertaking consultation with these groups separately to this survey.

the data collection and analysis, sharing only aggregated data with the City of Nedlands.

2.1 Response Rates

Table 1shows that response rates were relatively uniform between the two affected areas, with an overall response rate of 53%, which was excellent considering the small turnaround time from survey inception to completion. Whilst higher response rates are always targeted, the overall response rate is high for a survey of this nature and the results should be considered statistically valid. Notably, these two areas had a combined response rate of 35% in the 2023 Survey.

Table 1. Response rate to survey.

Area	Number of Responses	Number of Samples	Response Rate %
Nedlands North	141	265	53.2
Nedlands West	333	634	52.5
Total	**474**	**899**	**52.7**

Ratepayers had three different options for responding to this survey; email invitation link with unique token automatically included, reply-paid hard copy surveys, or QR code with unique tokens to access the online survey. Email invitations were a new addition for this scope of work, compared with the 2023 Survey, and allowed ratepayers to respond sooner as well as be reminded during the survey period, see Figure 2. Almost half of the responses were received via the email invitation link. See Table 2 for a breakdown of responses by method.

Table 2. Response by mode of survey.

Area	Email Invitation	QR Code	Reply Paid Survey
Nedlands North	68/141 (48.2%)	41/141 (29.1%)	32/141 (22.7%)
Nedlands West	147/333 (44.1%)	88/333 (26.4%)	98/333 (29.4%)
Total	**215/474 (45.4%)**	**129/474 (27.2%)**	**130/474 (27.4%)**

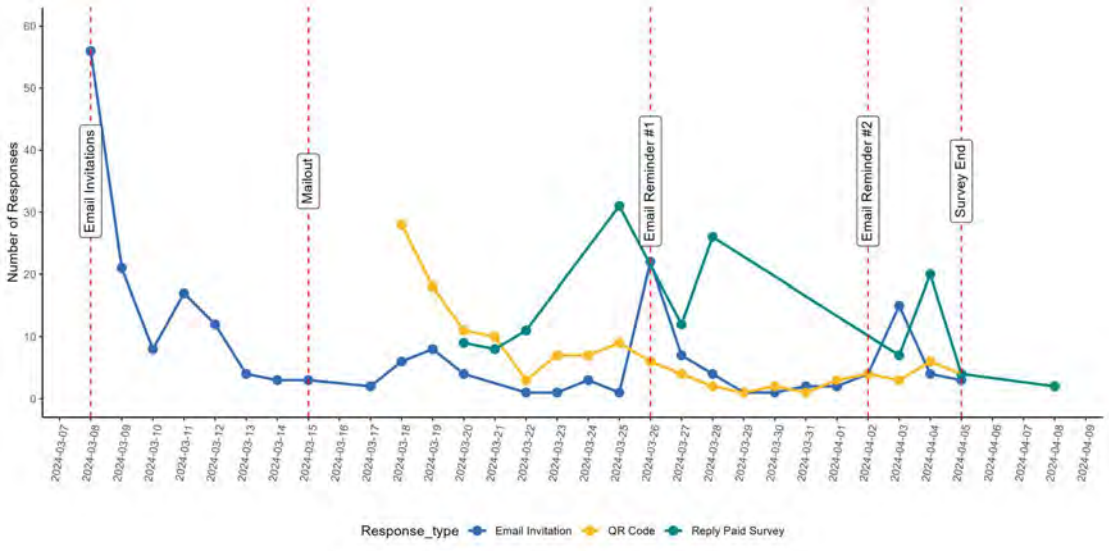

Figure 2. Summary of response mode counts by date.

3. Results and Key Findings

3.1 General Support of the Initiative

The overall results, segmented by region, indicate strong general support for the Underground Power Project across the surveyed areas (Figure 3). In total, there were 474 respondents[2] from the affected regions, with 66% in support of the initiative. This is less than the 73% reported for the two affected areas in the 2023 Survey.

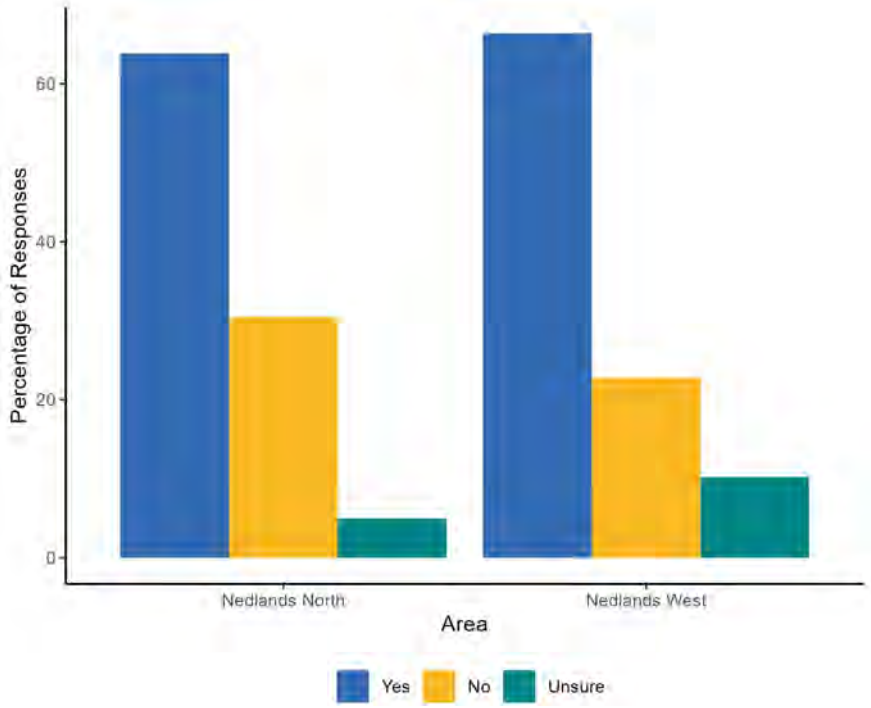

Figure 3. Support for strategic initiative by area.

[2] Three ratepayers who did not respond to the question in the physical questionnaire have been excluded.

3.2 Support to Proceed with the Initiative

After eliciting ratepayers' general support for the scheme, they were asked whether they supported the details more specifically.

The affected ratepayers were informed that the cost of installing the underground power in their area would be split evenly between Council and ratepayers, with an estimated $5,450 to $9,500 per property in Nedlands North and $7,800 to $11,150 per property in Nedlands West. They were then asked which of the following two options they would prefer, if given the choice:

1. Pay this amount to get underground power in their area; or
2. Not pay this amount and keep the existing overhead power.

Overall, and despite the need to contribute financially to their power being undergrounded, there was still strong support by those in the affected areas for the undergrounding to proceed (see Figure 4), with 58% of the respondents preferring this option. Notably, this is less than the 67% identified for the two affected areas in the 2023 Survey and 40% of responding ratepayers were not supportive of paying for the initiative, an increase from 30% in the 2023 Survey.

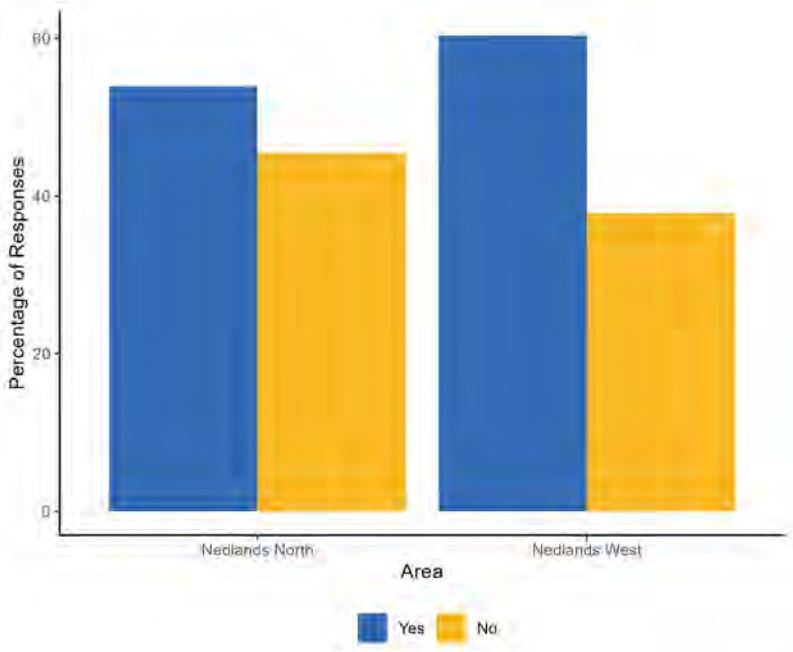

Figure 4. Preference to proceed with the undergrounding of power and pay the required amount.

3.2.1 Preferred Payment Terms

Respondents were also asked whether they would prefer to pay the cost of the underground power over a period of four years (with interest) or upfront (see Figure 5). Overall, 42% of respondents would prefer to pay upfront, while 52% would prefer to pay over a four-year term. This was approximately 51% and 42%, respectively, for the two affected areas in the 2023 Survey. The remainder gave no response.

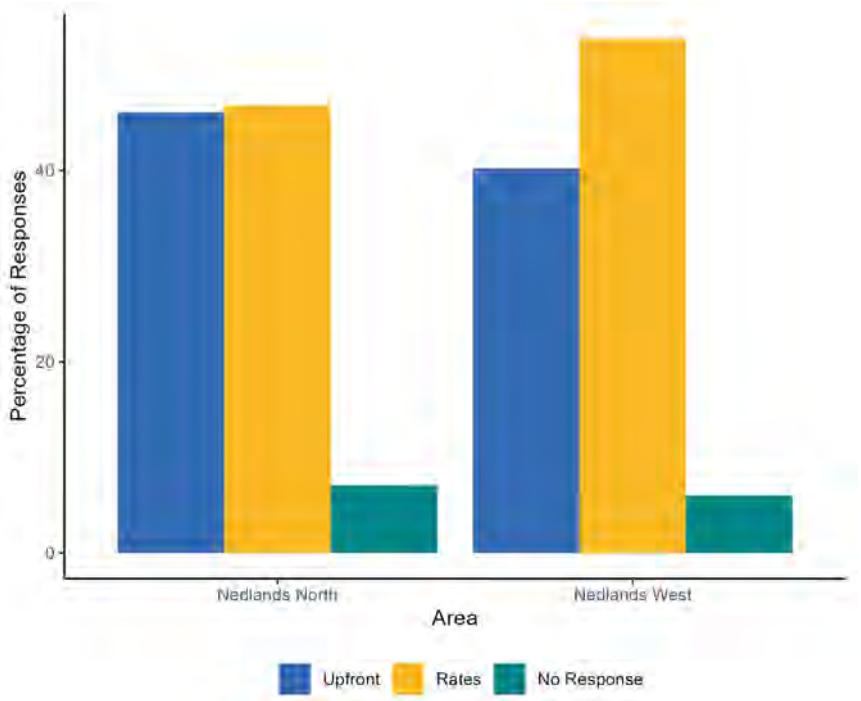

Figure 5. Preferred funding model my area.

3.2.2 Business Premises

Business premises ratepayers were considered an important group in the survey and were included in the same way as residential ratepayers. The questionnaire asked respondents to select whether they were business or residential premises to allow for separate analysis. Due to small numbers of business respondents (three commercial property owner responses in the survey), a separate analysis was not appropriate.

Overall, the responses were consistent with residential properties. Two of the three responding commercial properties were in support of the initiative, and both were willing to pay over the proposed four-year period. The other business was against the initiative.

As referenced in Section 2**Error! Reference source not found.**, properties owned by Department of Housing, Department of Education, Department of Health, City of Nedlands and Lisle Aged Care were deemed out of scope for the survey and were not included. The City of Nedlands will be undertaking consultation with these groups separately to this survey.

3.2.3 Tabulated Summary of Responses

Table 3 summarises the findings for each of the questions discussed in the preceding sections. For full copies of all questions, please see Appendix A.

Table 3. General response statistics.

Area	Supports the Initiative	Willing to Pay for Underground Power	Willing to Pay Upfront	Is a Residential Property
Nedlands North	90/141 (63.8%)	76/141 (53.9%)	65/141 (46.1%)	135/141 (95.7%)
Nedlands West	221/333 (66.4%)	201/333 (60.4%)	134/333 (40.2%)	323/333 (97%)
Total	**311/474 (65.6%)**	**277/474 (58.4%)**	**199/474 (42%)**	**458/474 (96.6%)**

4. Written Feedback Summary

The consultation feedback on the proposed Underground Power Project reveals a spectrum of resident perspectives, grouped into three categories: those opposing the initiative, those conditionally supporting but preferring not to proceed financially, and those in support and willing to proceed with financial contributions. A common thread across these categories is the concern about the high cost of the project and the perceived inequality in cost distribution. This is particularly pertinent for residents with fixed or limited incomes and those who have already paid for underground connections. However, there are several ratepayers who expressed sentiments that they have been promised the undergrounding of power in their area for many years, and it 'just needs to happen now'.

Economic factors have heightened these concerns, leading to suggestions for deferral of the project until a more stable economic climate emerges. Another widely echoed sentiment is the call for greater transparency and more detailed communication about the project. Despite these shared concerns, a significant number of residents are in favour of the project due to its perceived benefits for safety, aesthetics, and the local tree population. However, they too demand more clarity about the project's financial aspects and criticise the council's previous handling of similar projects.

4.1 Not in support of the initiative (119/474, 25.1%)

A quarter of respondents do not support this initiative. The majority voice concerns about the significant cost, especially during a cost-of-living crisis. Many cannot afford for this initiative to go ahead due to their essential costs, including those who are pensioners, single income earners, or have significant costs due to dependents (children or caring for someone with a disability). Other residents cite a preference for the City of Nedlands to focus on other Council initiatives, such as parks, playgrounds, footpaths to more streets, and maintenance of trees.

There was a recurring sentiment that the costs of underground power should lay with the Council, Government of Western Australian, or Western Power. Moreover, residents expressed scepticism about the projected benefits, such as increased property values and aesthetic enhancements. The perceived lack of direct and tangible benefits is a significant factor contributing to their opposition.

Another point of contention is the perceived inequality in cost distribution, leading residents to demand a fairer burden sharing among all ratepayers. Many ratepayers

cite already having paid the costs for underground power or a green dome installation in recent years. Additionally, residents who live on streets that will not receive underground power strongly oppose having to pay for the initiative as "there is no benefit" to them.

If the underground power initiative does go ahead, some residents have asked to put it on hold for a couple more years, until the cost-of-living crisis has improved. Additionally, it has been suggested that the payment period should be longer (i.e. 6 – 8 years) or that the total cost to ratepayers should be capped (i.e. $3,000). Many residents also disagree with having to pay interest over the payment period. Clarity on timing of payments has been requested as well, particularly those stating that payment should be made once the job has been completed.

4.2 In support of the initiative, but would prefer not to proceed or pay the required financial contribution (41/474, 8.6%)

There is a small group of residents (9%) who are supportive of the initiative, but are concerned about the significant expense, stating that there are very few tangible benefits, especially during a cost-of-living crisis. The capital cost to ratepayers is substantial and may be difficult for households to budget, particularly considering the proposed funding arrangement. Moreover, several residents are pensioners, single-income earners, or have dependents with high costs.

Several respondents requested that costs be treated equally across the City of Nedlands as previous areas have paid far less for underground power and should be contributing to completing the initiative across the Council area. Those living on streets that will retain overhead power lines request paying a substantially reduced rate, if at all.

As the utility's provider, Western Power will receive benefit from decreased costs to maintenance. Therefore, many suggest Western Power, who are government funded, or the Government of Western Australia should contribute towards the costs of the underground power initiative.

If the initiative does go ahead, many suggest that payment should be made following completion, otherwise it is unfair to residents who pay and then sell their property before the underground power is finished.

4.3 In support of the initiative and would prefer to proceed, with the understanding that there would be an accompanying financial contribution (268/474, 56.5%)

More than half of residents are in support of the initiative and would prefer to proceed. The general sentiment is that they have waited far too long for underground power to be completed in their area, leading to significantly increased burden of costs to residents, with neighbouring areas paying far less for underground power. Many have cited the cost-of-living crisis and poor timing for this initiative, particularly for pensioners, single-income earners, and those with high costs dependents. Moreover,

some residents believe the Council should lobby the Government of Western Australia or Western Power to subsidise the cost to ratepayers.

As with above, there are several respondents requesting that costs be treated equally across the City of Nedlands as previous areas have paid far less. Also, it has been suggested that costs be divided more closely to property value, with strata and units sharing the total costs to the whole property, and those living on streets that will retain overhead power lines paying a reduced rate.

An understanding of timing of the underground power initiative would be beneficial for some residents so they may plan the building or selling of properties. An understanding of the calculated interest rate would be beneficial for several residents as well. Many also state that the costs incurred by residents for tree pruning are expected to be revised if underground power is installed.

Appendix A. Survey Questions and Results

Table 4. Survey question 1.

Are you generally supportive of the Council's strategic initiative to complete the underground power project in your area?				
Area	Yes	No	Unsure	No Response
Nedlands North	90/141 (63.8%)	43/141 (30.5%)	7/141 (5%)	1/141 (0.7%)
Nedlands West	221/333 (66.4%)	76/333 (22.8%)	34/333 (10.2%)	2/333 (0.6%)
Total	**311/474 (65.6%)**	**119/474 (25.1%)**	**41/474 (8.6%)**	**3/474 (0.6%)**

Table 5. Survey question 2.

The cost of installing underground power in Nedlands (North/West) would be split evenly between Council and property owners in your area. Property owners would pay an estimated $7,800 to $11,150 / $5,450 to $9,500 (North/West). Discounts may be available for concession holders and the cost may be higher for business properties and lower for units within multiple unit developments. Given the choice, which of the following options would you prefer?			
Area	Option 1: I would prefer to pay this amount to get underground power in my area.	Option 2: I would prefer not to pay this amount, and keep the existing overhead power.	No Response
Nedlands North	76/141 (53.9%)	64/141 (45.4%)	1/141 (0.7%)
Nedlands West	201/333 (60.4%)	126/333 (37.8%)	6/333 (1.8%)
Total	**277/474 (58.4%)**	**190/474 (40.1%)**	**7/474 (1.5%)**

Table 6. Survey question 3.

If the underground power project does proceed, which is your preferred payment option?			
Area	Option 1: I would like to pay my contribution upfront.	Option 2: I would like the amount included in my rates over a 4-year term, with the understanding that interest will apply.	No Response
Nedlands North	65/141 (46.1%)	66/141 (46.8%)	10/141 (7.1%)
Nedlands West	134/333 (40.2%)	179/333 (53.8%)	20/333 (6%)
Total	**199/474 (42%)**	**245/474 (51.7%)**	**30/474 (6.3%)**

Table 7. Survey question 4.

Is this property a business or residential premises?				
Area	Business	Residential	Other	No Response
Nedlands North	2/141 (1.4%)	135/141 (95.7%)	0/141 (0%)	4/141 (2.8%)
Nedlands West	1/333 (0.3%)	323/333 (97%)	7/333 (2.1%)	2/333 (0.6%)
Total	**3/474 (0.6%)**	**458/474 (96.6%)**	**7/474 (1.5%)**	**6/474 (1.3%)**

Data Analysis Australia – About Us

Helping organisations make great decisions and new discoveries by making data meaningful

This has been Data Analysis Australia's express purpose since we were founded in 1988.

We achieve this through our diverse and evolving skill sets covering all areas of statistical and data science analysis. Setting us apart is our focus on generating meaningful **insights from data**, working with clients from all sectors and industries to solve their real problems.

Data Analysis Australia's services and principal areas of expertise include:

- **Survey sampling**, questionnaire design, weighting, standard errors, analysis and review.
- E**valuations** of programs and pilot trials**.**
- **Modelling** of industrial, mining and business processes.
- **Business analysis** and evidence based decision making.
- **Forecasting**, of people, workforces, building, energy and asset needs.
- **Data analysis**, to understand true relationships and insights from data.
- **Statistical modelling**, including regression, time series analysis, classification and clustering analysis.
- **Experimental design** and analysis.
- **Reviews** of statistical papers and methodologies.
- **Expert witness** and legal work.
- **Dashboards** and interactive tools.
- **Big data** management and analysis**.**

Having worked with hundreds of government and private clients locally, nationally and internationally, Data Analysis Australia has built a reputation of trust and delivery in all that we do.

Website: www.daa.com.au
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Underground Power Communication and Engagement

Rate Rise Message

The City of Nedlands implemented a rate increase in (insert date) specifically aimed at funding the development of an underground power reserve. This strategic decision was made to improve the reliability and safety of the city's power supply.

Despite the rate increase, there remains a significant gap between the funds already reserved and the total amount required to complete the underground power project. This indicates that the initial rate increase was necessary but not sufficient to cover the entire cost of the project.

To address the funding shortfall, the City plans to allocate a portion of any future rate increases to further build the reserve for the underground power project. This approach allows us to continue to progress toward infrastructure improvement.

The investment in underground power infrastructure is anticipated to yield long-term benefits, including enhanced reliability of power supply, reduced maintenance costs, and fewer disruptions due to adverse weather conditions. These improvements are expected to enhance the overall quality of life and safety for the residents of City of Nedlands.

The City of Nedlands is committed to maintaining transparency about the financing and progress of the underground power reserve project. Updates will be provided to residents to keep them informed about how their rates are being used to fund critical infrastructure improvements.

Notes

- The above message can be tailored depending on the project commencing or being delayed.
- A Project Manager and part time Communications Advisor will be appointed by CoN as part of the UP Project.
- The communications plan will be enhanced with timings and further detail if the project commences.

Action	Description	Stakeholder	Responsibility
Media and social media	Proactive – media/photo opportunities to highlight works. Potential for Minister for Energy involvement with CoN and WP Announcement of co-funding agreement, construction start, project updates	ALL	CoN and WP
Develop project materials including factsheets, key message documents, FAQs	Messaging will be updated on a regular basis for use by: - WP - Mayor and Councillors - Customer Service (both WP and CoN) - Media - Project Team	ALL	WP Community Engagement (CE) – approved by the project team and shared with CoN
Website	Update the CoN website page with latest information, facts, key contacts FAQs etc. Update the WP website to include specific project details	ALL ALL	WP to provide content as required WP CE
Stakeholder engagement (non resident)	Engage with community groups, businesses, or other impacted stakeholders	Key stakeholders	CoN
Minister's Office	Community engagement overview and key messages for Minister's Office. Update on milestones. Media opportunities	Minister	WP Government Relations
Project announcement to direct and impacted property owners	Announcement to property owners and occupiers - Project, stages, and timeline - Feedback mechanism - Onsite signage	Property owners and occupiers	CoN
Specific engagement for properties impacted by primary equipment sites	Consider options to minimise impact (screening, artwork) Install signage with QR code where primary equipment will be placed.	Property owners and occupiers near primary	CoN

	Fact sheets and FAQs specific to primary equipment sites	equipment sites	
Specific information to properties near transmission lines	Ensure information is available to these properties reminding them that the transmission lines are staying	Property owners and occupiers along transmission line routes	CoN
Community meetings	Optional community meetings may be considered if there are significant issues, updates or changes to the project	Property owners and occupiers	CoN with WP support
Project fact sheet / brochure pre-construction	Underground Power Project: A guide to what's happening in your area – factsheet is available	ALL	WP with CoN review
Stage updates	To be delivered prior to works to all impacted properties, include: - Images, timing, description, and map for site works - Enquiries / feedback options	Property owners and occupiers Tailored responses to business	WP and construction contractor
Project closeout letter and underground power safety fact sheet	Complete the project and ensure property owners and occupiers understand the safety around the infrastructure	Property owners and occupiers	WP
Feedback mechanism during project	- Online form - Dedicated call line for UP enquiries - CRM system	ALL	CoN with WP
Individual responses to individual queries	Project team to respond using agreed messaging. Create a UP database/register	ALL	CoN with the support of WP

20. Reports by the Chief Executive Officer

20.1 CEO13.05.24 Outstanding Council Resolutions

Meeting & Date	Council Meeting – 28 May 2024
Applicant	City of Nedlands
Employee Disclosure under section 5.70 Local Government Act 1995	No officer involved in the preparation of this report has a declarable interest.
Report Author	Libby Kania – Coordinator Governance and Risk
Director/CEO	Tony Free – Acting CEO
Attachments	1. Register of Outstanding Council Resolutions

Purpose

For Council to consider the Register of Outstanding Council Resolutions (OCR) and the actions taken by Administration in progressing these items.

Recommendation

That Council receives the Register of Outstanding Council Resolutions dated May 2024.

Voting Requirement

Simple Majority.

Background

Council has requested that all Outstanding Council Resolutions be tabled on a monthly basis at the OCM.

Discussion

Attached to the Council report is the register of OCRs for Council's noting and consideration.

The report has been updated by officers when required.

Information will be periodically provided to Councillors on previous resolutions of Council that:

(i) have been completed since the last update and
(ii) have not yet been fully implemented. Reasons for any delays or unforeseen challenges are included.

Councillors are able to seek an update on any particular project or resolution outside of the reporting period, by contacting the CEO directly for information or by referring to the information on the Councillor portal.

Consultation

Nil.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2022-23 vision and desired outcomes as follows:

Vision **Sustainable and responsible for a bright future**

Pillar Performance
Outcome 11. Effective leadership and governance.

Budget/Financial Implications

Nil.

Legislative and Policy Implications

Local Government Act 1995.

Decision Implications

Councillors have oversight of the implementation of previous Council decisions, through access to the Register and the Councillor portal. Information on decisions may be provided through the CEO Weekly update, and direct request to the CEO. The City may include the register on the website to provide transparency to the community, although the community is able to access the document through the Council agenda.

Conclusion

That the Council receives the Register of Outstanding Council Resolutions for noting.

Further Information

Nil.

20.2 CEO15.05.24 City of Nedlands Dogs Local Law 2023 – Undertaking to Joint Standing Committee on Delegated Legislation

Meeting & Date	Council Meeting – 28 May 2024
Applicant	City of Nedlands
Employee Disclosure under section 5.70 Local Government Act 1995	Nil.
Report Author	Libby Kania – Coordinator Governance and Risk
Director	Tony Free – Acting Chief Executive Officer
Attachments	1. City of Nedlands Dogs Local Law 2023.

Purpose

The purpose of this report is for Council to consider the undertaking required to be made to the Joint Standing Committee on Delegated Legislation (the Committee) in regards to the City of Nedlands Dogs Local Law 2023 (the Local Law).

Recommendation

That Council resolves to undertake to the Joint Standing Committee on Delegated Legislation that –

1. **When the local law is next reviewed –**
    a. **Insert a full stop at the end of clause 2.2(1)(c).**
    b. **In clause 5.1 delete the reference to clause 5.3 and replace it with clause 5.4.**
2. **Not enforce the local law to the contrary before it is amended in accordance with undertaking 1.**
3. **Ensure all consequential amendments arising from the undertakings will be made.**
4. **Where the local law is made publicly available by the City, whether in hard copy or electronic form, ensure that it is accompanied by a copy of the undertaking.**

Voting Requirement

Simple Majority.

Background

The City of Nedlands resolved to make the Local Law on 12 December 2023. The Local Law was gazetted on 20 February 2024. In accordance with s. 3.12(7) of the *Local Government Act 1995*, a copy of the Local Law was sent for scrutiny to the Joint Standing Committee on Delegated Legislation. The Committee has considered the Local Law and determined that minor amendments are required. The Committee has requested that the Council provide an undertaking that these amendments will be made when the local law is next amended or reviewed.

Discussion

The Joint Standing Committee on Delegated Legislation is the body responsible for the scrutiny of all delegated legislation made by local government. It is able to disallow a local law and require amendment be made to a local law where it is deemed appropriate. Should a local government fail to make an undertaking in accordance with the recommendation made by the Joint Standing Committee on Delegated Legislation, the local law may be disallowed.

The amendments required to be made to the local law are minor and deal with correcting any ambiguity within the local law.

Amendment 1 deals with the insertion of a full stop at the end of clause 2.2(1)(c).

Amendment 2 clause 5.1 in the definition of infringement notice delete the reference to clause 5.3 and replace it with a reference to clause 5.4. Clause 5.3 deals with modified penalties and clause 5.4 deals with the issue of infringement notices.

Consultation

Nil.

Strategic Implications

This item is strategically aligned to the City of Nedlands Council Plan 2023-33 vision and desired outcomes as follows:

Vision **Sustainable and responsible for a bright future**

Pillar Performance
Outcome 11. Effective leadership and governance.

Budget/Financial Implications

There are no budget implications to make the undertaking should Council wait until the next local law review.

Legislative and Policy Implications

Section 3.12(7) of the *Local Government Act 1995*.

Decision Implications

The Council is required to make the undertaking to ensure that the Local Law is compliant.

Conclusion

Council is required to adopt the undertaking requested by the Joint Standing Committee on Delegated Legislation and the Mayor is required to advise the Committee of the Council's decision.

Further Information

Nil.

Local Government Act 1995

Dog Act 1976

CITY OF NEDLANDS
DOGS LOCAL LAW 2023

Local Government Act 1995
Dog Act 1976

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Local Government Act 1995
Dog Act 1976

CITY OF NEDLANDS

DOGS LOCAL LAW 2023

Under the powers conferred by the *Local Government Act 1995*, the *Dog Act 1976* and under all other powers enabling it, the Council of the City of Nedlands resolved on 12 December 2023 to make the following local law.

PART 1 - PRELIMINARY

1.1 Citation

This local law may be cited as the *City of Nedlands Dogs Local Law 2023.*

1.2 Repeal

The *City of Nedlands Dogs Local Law 2012* published in the *Government Gazette* on 11 October 2012 and amended in the *Government Gazette* on 5 July 2013 is repealed.

1.3 Definitions

In this local law unless the context otherwise requires -

Act means the *Dog Act 1976*;

authorised person means a person authorised by the local government to perform all or any of the functions conferred on an authorised person under this local law;

CEO means the Chief Executive Officer of the local government;

district means the district of the local government;

local government means the City of Nedlands;

local planning scheme means a local planning scheme made by the local government under the *Planning and Development Act 2005;*

Regulations means the *Dog Regulations 2013*;

Schedule means a schedule in this local law; and

thoroughfare has the meaning given to it in section 1.4 of the *Local Government Act 1995.*

1.4 Application

This local law applies throughout the district

PART 2 - REQUIREMENTS AND LIMITATIONS ON THE KEEPING OF DOGS

2.1 Dogs to be confined

(1) An occupier of premises on which a dog is kept must -

(a) cause a portion of the premises on which the dog is kept to be fenced in a manner capable of confining the dog;

(b) ensure the fence used to confine the dog and every gate or door in the fence is of a type, height and construction which having regard to the breed, age, size and physical condition of the dog is capable of preventing the dog at all times from passing over, under or through it;

(c) ensure that every gate or door in the fence is kept closed at all times when the dog is on the premises (unless the gate is temporarily opened in a manner that ensures that the dog remains confined) and is fitted with a proper latch or other means of fastening it;

(d) maintain the fence and all gates and doors in the fence in good order and condition; and

(e) where no part of the premises consists of open space, yard or garden or there is no open space or garden or yard of which the occupier has exclusive use or occupation, ensure that other means exist on the premises (other than the tethering of the dog) for effectively confining the dog within the premises.

(2) Where an occupier fails to comply with subclause (1), he or she commits an offence.

(3) Notwithstanding subclauses (1) and (2), the confinement of dangerous dogs is dealt with in the Act and Regulations.

2.2 Limitation on the number of dogs

(1) This clause does not apply to premises which have been -

(a) licensed under Part 3 as an approved kennel establishment;

(b) granted an exemption under section 26(3) of the Act; or

(c) established as a veterinary hospital or a veterinary clinic.

(2) The limit on the number of dogs which may be kept on any premises is, for the purpose of section 26(4) of the Act is two (2) dogs over the age of 3 months and the young of those dogs under that age unless—

(a) the premises are on land situated within a part of the district where kennels are permissible under a Local Planning Scheme of the City; and

(b) the premises are licensed as an approved kennel establishment.

PART 3 - APPROVED KENNEL ESTABLISHMENTS

3.1 Interpretation

In this Part and in Schedule 2 -

licence means a licence to keep an approved kennel establishment on premises;

licensee means the holder of a licence;

premises, in addition to the meaning given to it in section 3 of the Act, means the premises described in the application for a licence; and

transferee means a person who applies for the transfer of a licence to her or him under clause 3.14.

3.2 Application for licence for approved kennel establishment

An application for a licence must be made in the form of that in Schedule 1, and must be lodged with the local government together with –

(a) evidence of planning approval obtained from the local government:
(b) plans and specifications of the kennel establishment, including a site plan;
(c) copies of the notices to be given under clause 3.3;
(d) written evidence that either the applicant or another person who will have the charge of the dogs, will reside on the premises or, in the opinion of the local government, sufficiently close to the premises so as to control the dogs and so as to ensure their health and welfare;
(e) a written acknowledgement that the applicant has read and agrees to comply with any code of practice relating to the keeping of dogs nominated by the local government; and
(f) the fee for the application for a licence referred to in clause 3.10.

3.3 Notice of proposed use

(1) An applicant for a licence must give notice of the proposed use of the premises as an approved kennel establishment after the application for a licence has been lodged –
  (a) once in a newspaper circulating in the district; and
  (b) to the owners and occupiers of any premises adjoining the premises.

(2) The notices in subclause (1) must specify that -
  (a) any written submissions as to the proposed use are to be lodged with the CEO within 14 days of the date the notice is given; and
  (b) the application and plans and specifications may be inspected at the offices of the local government.

(3) Where –
  (a) the notices given under subclause (1) do not clearly identify the premises; or
  (b) a notice given under subclause (1)(a) is of a size or in a location in the newspaper which, in the opinion of the local government, would fail to serve the purpose of notifying persons of the proposed use of the premises,

then the local government may refuse to determine the application for a licence until the notices or notice, as the case may be, is given in accordance with its directions.

3.4 Exemption from notice requirements

(1) Where an application for a licence is made in respect of premises on which an approved kennel establishment is either a -

(a) permitted use; or

(b) use which the local government may approve subject to compliance with specified notice requirements,

under a local planning scheme, then the requirements of clauses 3.2(c), 3.3 and 3.5(c) do not apply in respect of the application for a licence.

(2) The local government may require advertising of an application as part of the planning process.

3.5 When application can be determined

An application for a licence is not to be determined by the local government until –

(a) planning approval has been given by the local government;

(b) the applicant has complied with clause 3.2;

(c) the applicant submits proof that the notices referred to in clause 3.3(1) have been given in accordance with that clause; and

(d) the local government has considered any written submissions received within the time specified in clause 3.3(2)(a) on the proposed use of the premises.

3.6 Determination of application

In determining an application for a licence, the local government is to have regard to –

(a) the matters referred to in clause 3.7;

(b) any written submissions received within the time specified in clause 3.3(2)(a) on the proposed use of the premises;

(c) any economic or social benefits which may be derived by any person in the district if the application for a licence is approved;

(d) the effect which the approved kennel establishment may have on the environment or amenity of the neighbourhood;

(e) whether the approved kennel establishment will create a nuisance for the owners and occupiers of adjoining premises; and

(f) whether or not the imposition of and compliance with appropriate conditions of a licence will mitigate any adverse effects of the approved kennel establishment identified in the preceding paragraphs.

3.7 Where application cannot be approved

The local government cannot approve an application for a licence where -

(a) an approved kennel establishment cannot be permitted by the local government on the premises under a local planning scheme unless prior valid planning approval has been issued by the local government and the application for a licence is consistent with that approval; or

(b) an applicant for a licence or another person who will have the charge of the dogs will not reside on the premises, or, in the opinion of the local government, sufficiently close to the premises so as to control the dogs and so as to ensure their health and welfare.

3.8 Conditions of approval

(1) The local government may approve an application for a licence subject to the conditions contained in Schedule 2 and to such other conditions as the local government considers appropriate.

(2) In respect of a particular application for a licence, the local government may vary any of the conditions contained in Schedule 2.

3.9 Compliance with conditions of approval

Penalties applicable where a licensee does not comply with the conditions of a licence are contained in the Act and Regulations.

3.10 Fees

(1) On lodging an application for a licence, the applicant is to pay a fee to the local government.

(2) On the issue or renewal of a licence, the licensee is to pay a fee to the local government.

(3) On lodging an application for the transfer of a valid licence, the transferee is to pay a fee to the local government.

(4) The fees referred to in subclauses (1) to (3) are to be imposed and determined by the local government under sections 6.15 to 6.19 of the *Local Government Act 1995*.

3.11 Form of licence

The licence is to be in the form determined by the local government and is to be issued to the licensee.

3.12 Period of licence

(1) The period of effect of a licence is set out in section 27(5) of the Act.

(2) A licence is to be renewed if the fee referred to in clause 3.10(2) is paid to the local government prior to the expiry of the licence.

(3) On the renewal of a licence the conditions of the licence at the time of its renewal continue to have effect.

3.13 Variation or cancellation of licence

(1) The local government may vary the conditions of a licence.

(2) The local government may cancel a licence –

(a) on the request of the licensee;
(b) following a breach of the Act, the Regulations or this local law; or
(c) if the licensee is not a fit and proper person.

(3) The date a licence is cancelled is to be, in the case of –

(a) paragraph (a) of subclause (2), the date requested by the licensee; or
(b) paragraphs (b) and (c) of subclause (2), the date determined under section 27(6) of the Act.

3.14 Transfer

(1) An application for the transfer of a valid licence from the licensee to another person must be-

(a) made in the form determined by the local government;
(b) made by the transferee;
(c) made with the written consent of the licensee; and
(d) lodged with the local government together with –

(i) written evidence that a person will reside at or within reasonably close proximity to the premises the subject of the licence; and
(ii) the fee for the application for the transfer of a licence referred to in clause 3.10(3)

(2) The local government is not to determine an application for the transfer of a valid licence until the transferee has complied with subclause (1).

(3) The local government may approve, whether or not subject to such conditions as it considers appropriate, or refuse to approve an application for the transfer of a valid licence.

(4) Where the local government approves an application for the transfer of a valid licence, then on the date of approval, unless otherwise specified in the notice issued under clause 3.15(b), the transferee becomes the licensee of the licence for the purposes of this local law.

3.15 Notification

The local government is to give written notice to -

(a) an applicant for a licence of the local government's decision on her or his application;
(b) a transferee of the local government's decision on her or his application for the transfer of a valid licence;
(c) a licensee of any variation made under clause 3.13(1);
(d) a licensee when her or his licence is due for renewal and the manner in which it may be renewed;
(e) a licensee when her or his licence is renewed;
(f) a licensee of the cancellation of a licence under clause 3.13(2)(a); and
(g) a licensee of the cancellation of a licence under paragraphs (b) or (c) of clause 3.13(2), which notice is to be given in accordance with section 27(6) of the Act.

3.16 Inspection of kennel

With the consent of the occupier, an authorised person may inspect an approved kennel establishment at any time.

PART 4 - MISCELLANEOUS

4.1 Offence to excrete

(1) A dog must not excrete on –
(a) any thoroughfare, any dog exercise area or other public place; or
(b) any land which is not a public place without the consent of the occupier.

(2) Subject to subclause (3), if a dog excretes contrary to subclause (1), every person liable for the control of the dog at that time commits an offence.

(3) The person liable for the control of the dog does not commit an offence against subclause (2) if any excreta is removed immediately by that person.

PART 5 - ENFORCEMENT

5.1 Interpretation

In this Part -

infringement notice means the notice referred to in clause 5.3; and

notice of withdrawal means the notice referred to in clause 5.7(1).

5.2 Offences and general penalty

(1) A person who fails to do anything required or directed to be done under this local law, or who does anything which under this local law that person is prohibited from doing, commits an offence.

(2) A person who commits an offence under this local law is liable, on conviction, to a penalty not less than $500 and not exceeding $5,000, and if the offence is of a continuing nature, to an additional penalty not exceeding $500 for each day or part of a day during which the offence has continued.

5.3 Modified penalties

The offences contained in Schedule 3 are offences in relation to which a modified penalty may be imposed.

5.4 Issue of infringement notice

Where an authorised person has reason to believe that a person has committed an offence in respect of which a modified penalty may be imposed, he or she may issue to that person a notice in the form of Form 8 of the First Schedule of the Regulations.

5.5 Failure to pay modified penalty

Where a person who has received an infringement notice fails to pay the modified penalty within the time specified in the notice, or within such further time as may in any particular case be allowed by the CEO, he or she is deemed to have declined to have the offence dealt with by way of a modified penalty.

5.6 Payment of modified penalty

A person who has received an infringement notice may, within the time specified in that notice or within such further time as may in any particular case be allowed by the CEO, send or deliver to the local government the amount of the penalty, with or without a reply as to the circumstances giving rise to the offence, and the local government may appropriate that amount in satisfaction of the penalty and issue an acknowledgment.

5.7 Withdrawal of infringement notice

(1) Whether or not the modified penalty has been paid, an authorised person may withdraw an infringement notice by sending a notice in the form of Form 9 of the First Schedule of the Regulations.

(2) A person authorised to issue an infringement notice under clause 5.4 cannot sign or send a notice of withdrawal.

SCHEDULE 1 - APPLICATION FOR A LICENCE FOR AN APPROVED KENNEL ESTABLISHMENT

(clause 3.2)

DOGS LOCAL LAW 2023

I/we (full name) .....

of (postal address) .....

(telephone number) .....

(facsimile number) .....

(E-mail address) .....

Apply for a licence for an approved kennel establishment at (address of premises) .....

.....

For (number and breed of dogs) .....

* (insert name of person) ..... will be residing at the premises on and from (insert date) .....

* (insert name of person) ..... will be residing (sufficiently close to the premises so as to control the dogs and so as to ensure their health and welfare) at ..... (insert address of residence) on and from ..... (insert date).

Attached are -

(a) a site plan of the premises showing the location of the kennels and yards and all other buildings and structures and fences;
(b) plans and specifications of the kennel establishment;
(c) copy of notice of proposed use to appear in newspaper;
(d) copy of notice of proposed use to be given to adjoining premises;
(e) written evidence that a person will reside -
  (i) at the premises; or
  (ii) sufficiently close to the premises so as to control the dogs and so as to ensure their health and welfare; and
(f) if the person in item (e) is not the applicant, written evidence that the person is a person in charge of the dogs.

I confirm that I have read and agree to comply with the Code of Practice known as ....., in the keeping of dogs at the proposed kennel establishment.

Signature of applicant .....

Date .....

* delete where inapplicable.

Note: a licence if issued will have effect for a period of 12 months – section 27.5 of the Dog Act.

OFFICE USE ONLY

Application fee paid on *[insert date]*.

SCHEDULE 2 - CONDITIONS OF A LICENCE FOR AN APPROVED KENNEL ESTABLISHMENT

(clause 3.8(1))

An application for a licence for an approved kennel establishment may be approved subject to the following conditions -

(a) each kennel, unless it is fully enclosed, must have a yard attached to it;

(b) each kennel and each yard must be at a distance of not less than -

(i) 25m from the front boundary of the premises and 5m from any other boundary of the premises;
(ii) 10m from any dwelling; and
(iii) 25m from any church, school room, hall, factory, dairy or premises where food is manufactured, prepared, packed or stored for human consumption;

(c) each yard for a kennel must be kept securely fenced with a fence constructed of link mesh or netting or other materials approved by the local government;

(d) the minimum floor area for each kennel must be calculated at 2.5 times the length of the breed of dog (when it is fully grown), squared, times the number of dogs to be housed in the kennel and the length of the dog is to be determined by measuring from the base of the tail to the front of its shoulder;

(e) the floor area of the yard attached to any kennel or group of kennels must be at least twice the floor area of the kennel or group of kennels to which it is attached;

(f) the upper surface of the kennel floor must be –

(i) at least 100mm above the surface of the surrounding ground;
(ii) smooth so as to facilitate cleaning;
(iii) rigid;
(iv) durable;
(v) slip resistant;
(vi) resistant to corrosion;
(vii) non-toxic;
(viii) impervious;
(ix) free from cracks, crevices and other defects; and
(x) finished to a surface having a fall of not less than 1 in 100 to a spoon drain which in turn must lead to a suitably sized diameter sewerage pipe which must be properly laid, ventilated and trapped in accordance with the health requirements of the local government;

(g) all kennel floor washings must pass through the drain in item (f)(x) and must be piped to approved apparatus for the treatment of sewage in accordance with the health requirements of the local government;

(h) the kennel floor must have a durable upstand rising 75mm above the floor level from the junction of the floor and external and internal walls, or internal walls must be so constructed as to have a minimum clearance of 50mm from the underside of the bottom plate to the floor;

(i) where a yard is to be floored, the floor must be constructed in the same manner as the floor of any kennel;

(j) from the floor, the lowest internal height of a kennel must be, whichever is the lesser of -

(i) 2m; or
(ii) 4 times the height of the breed of dog in the kennel, when it is fully grown, measured from the floor to the uppermost tip of its shoulders while in a stationary upright position;

(k) the walls of each kennel must be constructed of concrete, brick, stone or framing sheeted internally and externally with good quality new zincalume or new pre-finished colour coated steel sheeting or new fibrous cement sheeting or other durable material approved by the local government;

(l) all external surfaces of each kennel must be kept in good condition;

(m) the roof of each kennel must be constructed of impervious material;

(n) all kennels and yards and drinking vessels must be maintained in a clean condition and must be cleaned and disinfected when so ordered by an authorised person;

(o) all refuse, faeces and food waste must be disposed of daily into the approved apparatus for the treatment of sewage;

(p) noise, odours, fleas, flies and other vectors of disease must be effectively controlled;

(q) suitable water must be available at the kennel via a properly supported standpipe and tap; and

(r) the licensee or the person nominated in the application for a licence, must, in accordance with the application for the licence, continue to reside -

(i) at the premises; or
(ii) in the opinion of the local government, sufficiently close to the premises so as to control the dogs, and to ensure their health and welfare.

SCHEDULE 3 - OFFENCES IN RESPECT OF WHICH MODIFIED PENALTY APPLIES
(clause 5.3)

Offence	Nature of offence	Modified penalty $
2.1	Failing to provide means for effectively confining a dog	200
4.1(2)	Dog excreting in prohibited place	200

Dated 13 February 2024

The Common Seal of the City of Nedlands was affixed by authority of a resolution of the Council in the presence of –

Fiona Argyle
Mayor

No 1028

Tony Free
Acting Chief Executive Officer

21. Council Members Notice of Motions of Which Previous Notice Has Been Given

These items will be dealt with at the Ordinary Council Meeting.

22. Urgent Business Approved By the Presiding Member or By Decision

These items will be dealt with at the Ordinary Council Meeting.

23. Confidential Items

There are confidential items at distribution of this agenda.

24. Declaration of Closure

There being no further business, the Presiding Member will declare the meeting closed.