

BUSINESS CASE

UNDERGROUND POWER PROGRAM



City of Nedlands



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EXECUTIVE SUMMARY

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, Nedlands West and Hollywood East that are connected to overhead power.

Underground power is specified in the City's Strategic Community Plan (2018-2028) as one of eight strategic priorities, with Council having passed a resolution for all Underground Power to be completed by June 2026¹.

Underground power delivers numerous benefits 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 street lights are designed and installed to meet Australian Standards. These new street lights 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.

However, the undergrounding of power also comes at a significant financial cost to the City and affected residents.

¹ https://yourvoice.nedlands.wa.gov.au/underground-power/news_feed/update-on-underground-power

City staff have worked with Western Power since late 2020 to investigate and design a final underground power project to connect all remaining City of Nedlands' residences to underground power (the project).

The latest project cost estimates indicate the required contribution from the City to complete this underground power project is \$19,038,101 (exclusive of the \$940,500 for the design phase that has already been funded by the City). In addition, the City would also need to employ a dedicated delivery Project Manager for the life of the project, at an additional cost to the City.

The City has \$4 million to allocate to the project through an Underground Power reserves account but would need to secure the remaining amount through future earnings and borrowings. Doing so comes with a number of implications, which need to be considered before the City commits to such a large budget expense. Implications and required considerations include:

1. Asset ownership – by completing this project, the City will be investing in assets they do not own. Power infrastructure ownership will be maintained by Western Power.
2. Other city assets – to complete this project, the City will need to utilise funds which would normally be used to maintain City assets. This presents a risk to those assets.
3. Ability to secure borrowings – based on the amount of funding required, the City of Nedlands is expected to reach their borrowing capacity in the 2025/26 financial year. It is therefore possible that the WA Treasury Corporation (WATC) and other lenders may not approve that year's loan amount. If that occurred, the project may need to be cancelled or postponed partway through, at significant financial loss and reputational damage to the City of Nedlands.
4. Opportunity cost – through funding the underground power project, the City will likely be unable to fund any other projects for a number of years, due to a lack of funds and borrowing capacity.
5. Impost on ratepayers. Under the City's Underground Power Policy, up to 50% of the City's contribution is recoverable from ratepayers. However, the City would initially pay the full amount, with householder contribution being repaid by affected residents through service charges raised as part of their annual rates notices. The City of Nedlands Finance team have undertaken modelling and based on the latest estimates, the resident's share for each property with existing overhead power would be approximately:
 1. Nedlands North - \$6,569,68
 2. Nedlands West - \$5,771.74
 3. Hollywood East - \$5,712,27

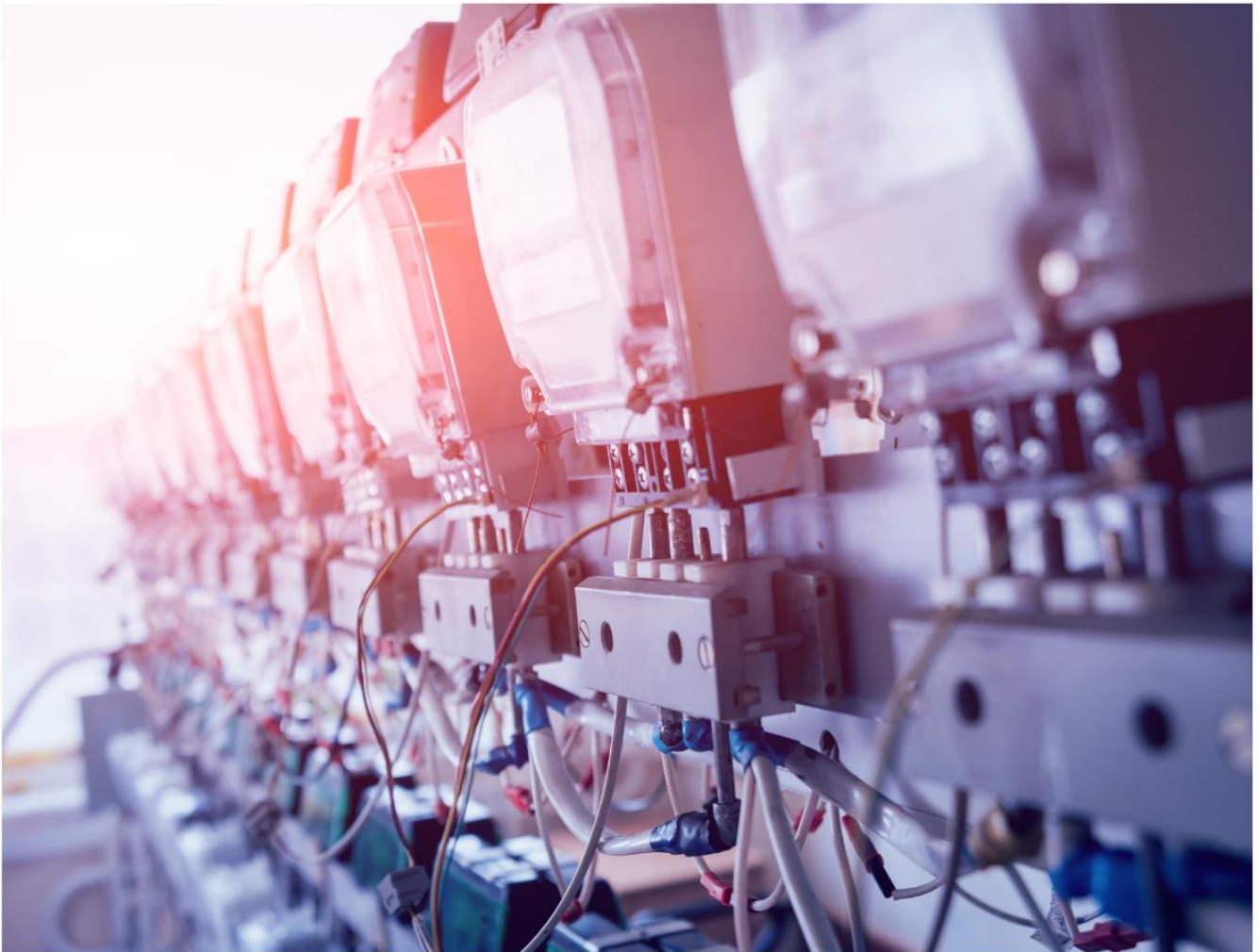
An independent cost benefit analysis of this project completed by ACIL Allen in 2023 found there is a significant benefit for the ratepayers receiving underground power, well in excess of the financial and other costs they incur as a collective. However, the City of Nedlands and non-affected ratepayers are left with meeting the net economic and social cost of the program. The CBA identifies that the City of Nedlands and its ratepayers realise a substantial economic and social loss, with a Benefit Cost Ratio of 0.43. This means for every \$1 of resources the City is contributing to the project, it – and non-benefitting ratepayers – realise just \$0.43 of benefits. By contrast, ratepayers receiving underground power realise a Benefit Cost Ratio of 7.53, on account of higher property values.

As part of its CBA, ACIL Allen sought to replicate the City's financial modelling of the project. ACIL Allen's analysis confirmed the net financial cost to the City of Nedlands of its central case scenario (completing the project within four years, borrowing funds for four years, and recovering a portion of costs from affected ratepayers over four years) \$10.93 million – including the \$4 million proposed to be funded via City of Nedlands cash reserves. The financial cost of other options (borrowing over seven years and borrowing over ten years) results in a larger financial impact of \$11.65 million and \$12.41 million respectively, due to the increase in interest expenses owing to longer termed loans.

The City considered a number of options in the development of this project. The options were required to align to the agreed planning principles for the City, as well as suiting community needs. Each option comes with a number of benefits, costs and implications, which are discussed in great detail in the Options Assessment section of this business case.

The project has been included in Western Power's current program of works, with the first stage of the project to be commenced in the 2023/24 financial year (pending City of Nedlands approval).

In order to progress this project into the implementation stage, Council needs to give the direction to proceed to community consultation with the residents in the affected area. Following this, the City will provide Western Power with approval to proceed to a construction Request for Quotation process.



PROJECT SCOPE AND EVALUATION

2.1 PROJECT NEEDS ASSESSMENT

2.1.1 BACKGROUND

The City of Nedlands (the City) is a medium-sized local government within the Perth metropolitan area of Western Australia. It hosts a population of more than 22,000 people living in around 8,400 dwellings². The local government area (LGA) covers the suburbs of Dalkeith, Floreat, Karrakatta, Mount Claremont, Nedlands, Shenton Park and Swanbourne and was established in 1893, making it one of the earliest established areas in Perth.

The City's population has been maintained at a similar level over the past 20 years, with just incremental increases. The residents tend to be well educated and actively engaged in education, with an estimated 56% of residents involved in part-time or full-time education at a secondary or tertiary institution at the time of the 2021 Census, which is 11.5% higher than the national average of 44.5%. The percentage of the population with a Bachelor's Degree or higher is almost 30% higher than the Australian average, at 56.2%, which demonstrates the high education level of City of Nedlands residents³.

This education level is reflected in the socio-economic status of the LGA, with the median income in the City of Nedlands close to double that of average households across Western Australia⁴. Property prices are close to \$2,000,000 for houses and \$600,000 for units, well above WA's typical LGA average prices of approximately \$510,000 for houses and \$324,000 for units⁵.

As a "western suburbs" LGA generally populated by educated and affluent residents, there is a noteworthy degree of expectation regarding the utilities and facilities available in the area, and the standard of upkeep of City assets. The list of assets and services that are required to be administered and maintained by the City includes (but is not limited to) roads, paths, verges, drainage, community services, parks, and recreation centres. As one of the oldest listed LGAs in Western Australia, this area includes at least 21 heritage-listed properties such as Mattie Furphy House in Swanbourne, Graylands Hospital in Mount Claremont, and Peace Memorial Rose Garden in the suburb of Nedlands. Similarly, access to these and other unique features of the LGA is expected to be maintained to a high standard to preserve the aesthetic, functional and residency value of the area.

Asset management (including maintenance) of City assets such as roads and municipal buildings is first and foremost funded by rates, although the City may have access to additional cash through loan arrangements (with interest payable) if necessary. Careful consideration and prudent expenditure are paramount to Council operations, most particularly during times (such as now) when a rate freeze is in place⁶ and the cost of goods (including construction materials), labour, and

² From 2021 Census data at <https://abs.gov.au/census/find-census-data/quickstats/2021/LGA56580>.

³ From 2021 Census data at <https://abs.gov.au/census/find-census-data/quickstats/2021/LGA56580>.

⁴ From Census data for August 2021 at [https://www.abs.gov.au/statistics/labour/earnings-and-working-conditions/employee-earnings/latest-release#:~:text=\(%25%20change%20p.a.\)&text=In%20August%202022%2C%20median%20weekly,women%20working%20full%2Dtime%20increased.](https://www.abs.gov.au/statistics/labour/earnings-and-working-conditions/employee-earnings/latest-release#:~:text=(%25%20change%20p.a.)&text=In%20August%202022%2C%20median%20weekly,women%20working%20full%2Dtime%20increased.)

⁵ From <https://www.htag.com.au/wa/wa307-city-of-nedlands/> and <https://www.htag.com.au/wa/>.

⁶ From <https://www.perthnow.com.au/local-news/perthnow-western-suburbs/nedlands-plans-freeze-on-rates-instead-of-modest-increase-c-7340059>

goods is increasing. In the City's 2023-2025 Asset Management Plan – Parks, the City's financial position is described as,

“asset rich, and cash poor... liquid assets are significantly tied to the provision and ongoing operation of assets.”

This is a bold and limiting statement in regard to the City's available finances, which deserves due consideration when making investment decisions, such as required by this project.

Western Australia's State Underground Power Program (SUPP)

In 1992, the Western Australian Planning Commission (WAPC) implemented a policy which required that all new developments in the South-West Interconnected System (SWIS) be connected to the network using underground power⁷.

In 1994, Perth experienced one of its most serious weather events in recorded history. During the 23rd and 24th of May, land gales of up to 140kmph reached Perth, Mandurah, and WA's south-west, damaging approximately 600 houses over the course of 12 hours. The Insurance Council of Australia valued the recorded damage at a cost of approximately \$34m⁸, which in today's terms would be indexed at close to \$70m⁹; the estimated normalised cost¹⁰ of this event is even higher, cited as approximately \$187m when valued in 2011.

Aside from the houses which were damaged, costs accrued from extensive damage to the power network and the subsequent period for which many homeowners were without power. At one stage, approximately one third of Perth was without power, and restoration works continued for almost a week after the event.¹¹ In a later report, it was determined that an estimated 80% of the power failure was due to overhead lines being damaged by trees and falling branches. As a direct result, the State government introduced the State Underground Power Program (SUPP) in 1996. This program's stated aim was to transform the state's existing overhead power network to an underground network over time.

Following this, a further major weather event occurred in 2010. During the afternoon on March 22nd, severe storms bringing hail at record levels moved through the Perth metro area and WA's south-west. The rapid onset and force of this event impacted on bus, train and air transport services, with the worst of the reported damage following a path between Osborne Park and Crawley – including almost the entire City of Nedlands. The hail was so prolific and so large that it damaged schools and hospitals, shattered residential windows and car windshields, and blocked drains and gutters, which exacerbated flooding. Extensive damage to public and private property resulted in the declaration of an “insurance catastrophe”¹², as well as record levels of power outages: more than 150,000 properties were without power as a direct result of the storm and 300 hazard incidents were reported.¹³

With this event came renewed interest in undergrounding Perth's power network, resulting in an inquiry into the cost and benefits of the SUPP being referred to the WA State Treasurer in April 2010. Relevant findings of this report are included in *Section 2.1.1 Project Benefits*.

⁷ From the Economic Regulation Authority Western Australia's "Inquiry into State Underground Power Program Cost Benefit Study: Final Report"

⁸ From the Australian Disaster Resilience Knowledge Hub, managed by the Australian Institute for Disaster Resilience on behalf of the Australian Government. <https://knowledge.aidr.org.au/resources/severe-storm-perth-mandurah-and-south-west-coast-1994/#:-:text=On%2023%20and%2024%20May,with%20different%20levels%20of%20severity.>

⁹ Calculated using the RBA's Inflation Calculator at <https://www.rba.gov.au/calculator/> for value of \$34m in 1994 adjusted to an equivalent value in 2022.

¹⁰ "Normalised losses are estimates of the cost if historic events were to impact current societal and demographic conditions ...". From Bouwer, L. M. (2019). Observed. In R. Mechler, L.M. Bouwer, Th. Schinko, S. Surmiski, & J. Linnerooth-Bayer (Eds.), *Loss and damage from climate change* (pp. 63–82).

¹¹ Hansard, Legislative Assembly, Wednesday 20 February 2002, p7739 and Bureau of Meteorology, Weather Hazards affecting the Perth area (<http://www.bom.gov.au/wa/sevwx/perth/index.shtml>).

¹² From <https://www.abc.net.au/news/2010-03-23/perth-counts-cost-of-freak-storm/376316>

¹³ From the Australian Disaster Resilience Knowledge Hub, managed by the Australian Institute for Disaster Resilience on behalf of the Australian Government. <https://knowledge.aidr.org.au/resources/storm-severe-storm-perth-western-australia-2010/>

Since inception, the SUPP program has completed at least 100 projects, converting more than 100,000 properties which, combined with the new build, property division and subdivision requirements, has placed more than 65% of the Perth metropolitan area's electrical network underground.¹⁴ However, there are still approximately 370,000 homes in Perth that have overhead powerlines.

The SUPP was managed by the then Public Utilities Office (PUO) within the Department of Finance and sought to improve reliability/security of electricity supply, reduce maintenance costs for Western Power, enhance streetscapes / street amenity and improve streetlighting /community safety. The program required a shared funding contribution arrangement of 25% from the State Government, 25% from Western Power and 50% from landowners. Proposals were compiled by local governments following the announcement of funding rounds, which were assessed against a set of guidelines prepared and released by the PUO. Assessment criteria included factors as follows:

- Regional preference.
- Heritage, tourism, and geographical significance.
- Project budget.
- Funding capacity of the local government and landowners.
- Community support and commitment
- Power system criteria

City of Nedlands Underground Power projects – SUPP proposals

The progress of previous Underground Power projects for the City of Nedlands commenced in 1997 when Council adopted a draft Policy on Underground Power Council Schemes. In doing so, it also authorised the City making a submission to the Office of Energy and Western Power on the basis of a 50% funding contribution.

The State Government announced in January 1998 that the State Underground Power Program would continue after the pilot projects had been completed, but with new guidelines for applications for funding. The guidelines outlined the levels of funding available and the process for prioritising and implementing projects. Proposals would be accepted for major residential projects and localised enhancement projects. The State Government, including Western Power, offered to share funding equally with local authorities, the government would contribute 50% of costs and local authorities would contribute the other 50%.

The City of Nedlands sought to engage with the SUPP, and engaged the services of P&B Engineering in 1997 as a consultant who could suitably interpret and advise on Western Power's preliminary design plans for local above-ground transmission lines. With the consultant's assistance, the City of Nedlands successfully secured SUPP funding and delivered underground power projects to a total of 3400 lots in three stages between 1998 and 2006. In each stage, funding was shared between landowners (50%), and State Government/Western Power (50%). The City of Nedlands did not contribute any funding towards these SUPP underground power projects.

Ratepayers were charged their share by way of service charge. The service charge for each scheme was as follows:

- Stage 1: \$ 2,250 1998
- Stage 2: \$ 2,450 2002
- Stage 3: \$ 2,915 2006

¹⁴ As at November 2022. From: <https://www.wa.gov.au/government/document-collections/state-underground-power-program-2022-23>

Note: There were concessions for multiple dwellings, and commercial properties were charged based on their estimated usage. Property owners were given the option to pay by instalments. Payment by instalments attracted additional interest charges. This applied to all 3 stages.

- Owners of properties in Stage 1 were given a range of payment options stretching up to 10 years.
- Owners of properties in Stages 2 and 3 were given only 4 years to pay their contributions. Those in Stage 2 (West Nedlands) completed their payments in the 2007/08 financial year. Those in Scheme 3 completed their payments in 2009/10.

In 2012, Western Power advised the City of Nedlands that it was not a priority for them to fund underground power projects in the remaining areas of the City because the overhead lines there were already robust and reliable. As such, the City of Nedlands did not receive any funding through the SUPP Program in Rounds 4 or 5.

However, due to the importance of completing underground power in the LGA, on 28 July 2015 Council directed City staff to investigate the feasibility of completing underground power within the City through borrowings and resident contributions, in order to complete the undergrounding of power to the remaining 2400 lots in the City of Nedlands.

In December 2015, the State Government announced Round 6 of the SUPP with new guidelines. Instead of assessing reliability, Western Power now assessed network risk according to the New Facilities Investment Test. The score for this criterion accounted for 50% of the weighting. The other 50% was accounted for by the contribution the LGA was willing to make (25%) and community support for the project (25%).

Western Power gave each LGA a map showing the relative condition (risk assessment) of their overhead network in individual suburbs within their LGA. This was to help each LGA decide which areas within their boundaries they should put forth for the program, based on which areas had assets with the highest risk.

Council submitted three proposals to Round 6 of the SUPP (for the remaining areas of the City):

- Nedlands North (Floreat)
- Nedlands West (Mt Claremont)
- Hollywood East

Despite the City offering to contribute 66% of the cost (4/9ths landowners and 2/9ths Council)¹⁵, the State Government informed the City in January 2017 that it was not successful in securing funding in SUPP Round 6. The reason was that there was a low network risk in those areas because the aerial network was well maintained.

At the time, the City expressed disappointment that the scoring criteria weighted the additional Local Government contribution much less than the network risk. However, based on the results, it seemed unlikely that the City of Nedlands would be successful in future SUPP rounds.

City of Nedlands Underground Power Projects – self-funded

HOLLYWOOD WEST

The City was approached by Western Power in 2016 to be part of a potential underground power project in the Hollywood area. The project included placing the high and low voltage distribution and house connections underground for approximately 600 properties in the Hollywood West area, replacing transformers and pillars and upgraded street lighting to meet Australian Standard specifications (AS1158).

¹⁵ City of Nedlands Council Minutes 26.4.2016

At the Ordinary Council Meeting of Tuesday 20 December 2016, Council accepted a quote from Western Power to complete the detailed design for the Hollywood Underground Power Project (HUPP), and requested City staff to commence a consultation process with the property owners within the HUPP, to be completed by March 2017.

Results of the consultation process were presented to Council at its meeting on 26 April 2017. One of the issues during the consultation was the high number of landowners from the Hollywood Ward outside the project area who expressed disappointment that they were not included despite it being called the Hollywood Underground Power Project. To address this in part, the project was renamed to align with Western Power's project title, and it became the Nedlands (West Hollywood) Underground Power Project.

The City received the final detailed design estimate on 23 May 2017, and Council accepted the proposal. As the project was initiated by the City and outside the State's funding for the SUPP program, the funding provided by Western Power represented only the Net Benefit for Western Power (20%). Following consultation with Councillors, it was decided that the remaining costs, inclusive of the design costs, would be shared equally between the participant landowners and the City.

As such, the contributions to the project were as follows:

- Western Power 20%
- Nedlands (West Hollywood) Underground Power Project ratepayers - 40%
- City of Nedlands - 40%

The individual residential contributions ranged from \$1,386.91 to \$5,977.12 and the commercial contributions ranged from \$1,226.45 to \$21,418.45.

Discounts were offered based on property type, existing underground infrastructure and the pensioner status of the owner. Payments were paid by lump sum or over periods of up to 10 years with interest charged on outstanding amounts.

The project was completed on Tuesday 29 January 2019. It came in on budget and slightly ahead of schedule.

CLAREMONT TRIANGLE AND ALFRED ROAD

Neighbouring LGA, the Town of Claremont, was successful in progressing a customer-funded underground power project in parts of Claremont. The 'Claremont project' was bound to the north by Alfred Road, and to the east by a small triangle of residential properties in Nedlands known as the Claremont Triangle.

During the design of the project, the Town of Claremont and its project partners did not recognise that there were properties within the City of Nedlands that received their power from the aerial network in Claremont.

At a City of Nedlands Council Meeting on 14 November 2017, Council requested City staff conduct community consultation with the landowners within these areas (Claremont Triangle and Alfred Road) to ascertain their level of support to fund underground power to the precinct.

At a Council Meeting on 27 March 2018, Council resolved to advise the Town of Claremont and Western Power that the City would progress with the extension projects to the Town of Claremont Underground Power Project known as Alfred Road and Claremont Triangle. It comprised of a total of 157 properties/dwellings from the City of Nedlands.

The project was managed and delivered by the Town of Claremont, with the City of Nedlands involved as a project partner.

The average contribution per residence was \$2,803.71.

Current Underground Power Project

Over these five past underground power projects (three SUPP funded and two without State Government support), approximately 4157 residences have been converted from overhead to underground power in the City since 1998. This leaves 1,701 residences in the City (~22%) that still have overhead power. These residences were not given priority in the SUPP program and the two subsequent stages because, at the time of consideration, they were in better condition than other areas.

At a Council meeting on 26 February 2019, a motion was carried that Council consider in the forthcoming 2019/20 budget deliberations that \$250,000 be assigned to the preparation of detailed design for the delivery of underground power to the remaining lots across the City.

Stated justification for this was:

1. A detailed design provides a costing for underground power that is +/- 10%. In the past paying less money to Western Power to obtain a cost estimate of +/- 50% has created wildly varying estimates that have proven to be much higher than the final cost of West Hollywood.
2. Information obtained from Western Power via the Hon Bill Marmion's questions in Parliament indicates that Western Power will need to reinforce or replace 138 poles across the City by 2026. This could cost Western Power about \$1.141m. Given the benefits to West Hollywood residents and the City in terms of cost reductions by 'upgrading' a planned project in West Hollywood to replace 84 poles with underground power, it would be beneficial to discuss these plans with Western Power with a view to 'upgrading' this work to underground power.
3. Landowner support for underground power is high as reflected in the 72% in West Hollywood who elected to pay for the cost upfront when it was anticipated that only 25% would.
4. The West Hollywood Underground Power Project delivered through a new approach by Western Power to funding projects outside of SUPP was successful. It came in under budget, was delivered on time and has been transformative of the streetscapes in West Hollywood.
5. Ratepayers raised questions at the 2018 Annual Elector's meeting about the Council's ambitious target to complete underground power by 2030 and whether this really reflected it being the number one priority for Council as stated in the recent Annual Report of the time.
6. If, and when another Round of the State Underground Power Program (SUPP) is announced having a detailed design ready to go if Nedlands secures funding, allows the City to go ahead of schedule of others that do not have a detailed design. This occurred with the Town of Cambridge's successful bid for SUPP Round 6 funding. Being ready with a detailed design is very important because the last time the City secured funding in SUPP (which was Round 3) there was a 2-3-year delay in actual delivery of the project as there was no detailed design. This increased initial cost estimates provided to residents during the consultation on SUPP causing them to challenge the validity of paying the higher price in 2006 with a petition of 228 signatures.

The Community was notified through Your Voice (online platform for community engagement) in January 2020 that the City was progressing with the detailed designs for the 3 remaining areas for the installation of underground power.

At an Ordinary Council Meeting on 28 July 2020, Council:

- Approved an increase in the operations budget from \$180,000 to \$983,260 to fund the detailed design, project planning and contract documentation with a hold point prior to contract advertising for underground power in Nedlands East (Hollywood East), Nedlands North (Floreat) and Nedlands West (Mt Claremont);
- Approved the CEO to authorise Western Power to proceed with the detailed design, project planning and contract documentation for the Nedlands East (Hollywood East), Nedlands

North (Floreat) and Nedlands West (Mt Claremont) underground power projects, with the additional funds required to come from the operational surplus, to be reviewed at the mid-year review, with the balance from the Underground Power Reserve Fund if required.

Design works by Western Power commenced in late 2020 and were complete in early 2022. There were significant delays due to Western Power resourcing issues.

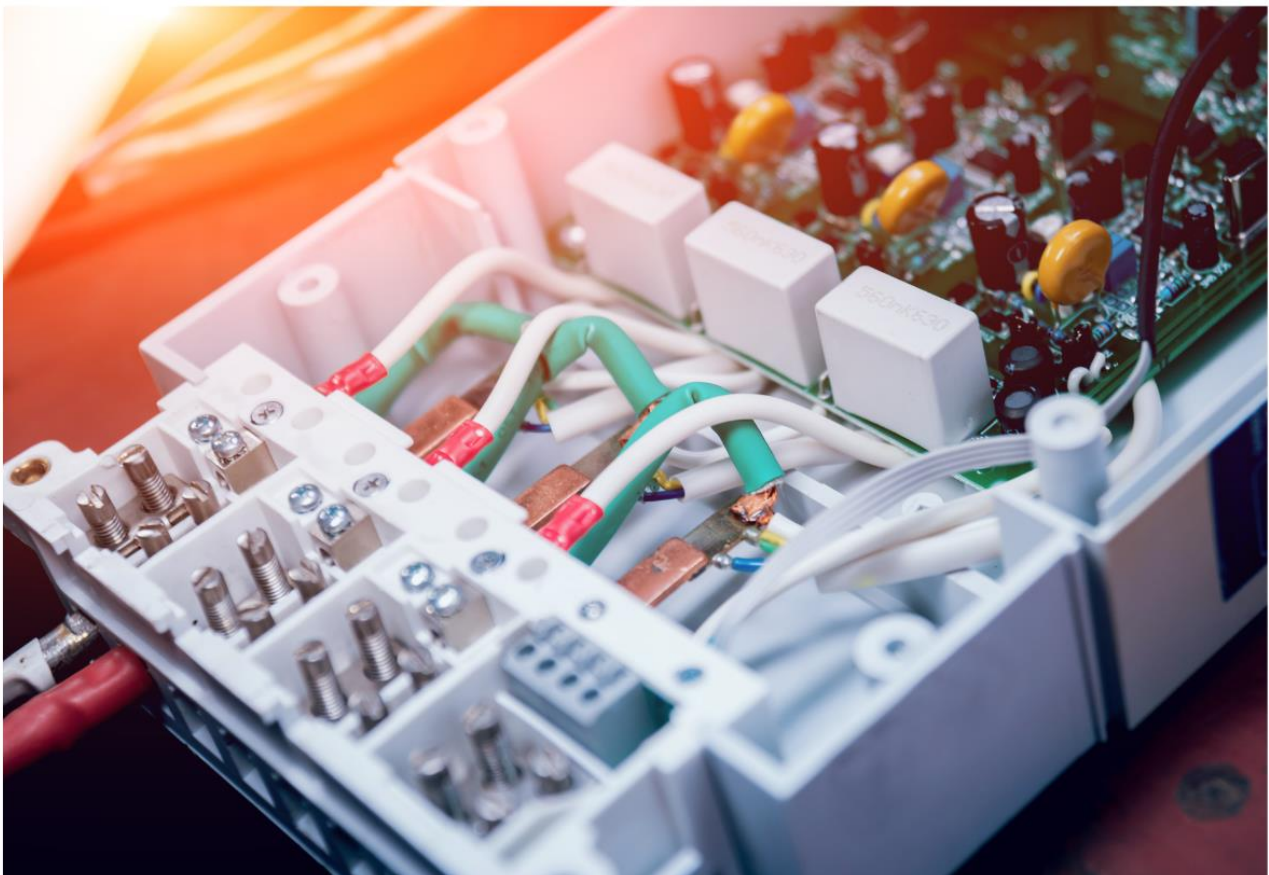
Preliminary primary equipment sites have been identified. These sites have been chosen to allow the power network within the project areas to function correctly, and to keep costs as low as possible. The Primary equipment locations will be subject to Community Consultation with adjacent and nearby properties. The final location may change based on the outcome of this consultation and detailed construction planning.

At a Council Meeting in September 2022 Council requested that when the Long Term Financial Plan is presented to council for adoption, it includes the most financially desirable model to fund the remaining components of the Underground Power Project taking into consideration:

1. Survey feedback
2. Debt servicing
3. Borrowing capacity
4. Reserve balances
5. Asset rationalisation

The City's draft Long Term Financial Plan has been updated in accordance with this direction.

The project now requires final approval from Council to proceed. When approval is granted, Western Power will provide an updated cost estimate to a 10% accuracy after the completion of a Request for Quotation process.



2.1.2 NEEDS ANALYSIS

The need for this project is centred around:

- Reliability of power supply.
- Safety of residents, visitors and workers.
- The aesthetic and environmental value of removing overhead power lines.
- The increased value of properties in areas with underground power.
- The inequity across the City of Nedlands in relation to underground power and the commitment by Councilors to rectify this.

Power Supply Quality and Reliability

The SUPP was created in 1996 in direct response to extreme weather events causing major safety and reliability issues, particularly in relation to the Perth metropolitan overhead power supply network. Despite the best efforts of Western Power to deliver remedial works as needed during and after these events, unpredictable and extreme weather can have a devastating effect on residents and enterprises. Any interruption to essential services, such as power supply, can be distressing for those affected and have significant economic impacts. Extended power outages can also cause secondary impacts, such as loss of food and fresh water supply.

Underground power benefits residents in a number of ways, including a more reliable supply of electricity services due to fewer outages, and better quality of electricity (reduction in lights flickering and electrical appliances being damaged by any fluctuations in the electricity supply).

The Inquiry into State Underground Power Program Cost Benefit Study Final Report, completed for the Economic Regulation Authority (ERAWA) in 2011 (the final report), summarises the impact underground power has on the electrical system in an area,

“Underground power results in more reliable electricity services due to fewer outages during normal weather and severe weather events, such as the storms that hit Perth in March 2010. There are qualitative benefits to the wider community to the extent that there is a reduction in secondary impacts (such as loss of fresh water supply and fresh food) from long power outages caused by severe weather events.

There are improvements in the quality of electricity supply when power cables are placed underground. While some of the benefits to ratepayers associated with an improvement in the quality of electricity supplied are captured in higher house prices, the benefits to Western Power and the wider community cannot be quantified.”¹⁶

However, it must be noted that overhead power can also deliver reliable and safe electricity. In the final report mentioned above, the Economic Regulation Authority states that,

“retrospective undergrounding of power is not an essential service, in that a well-maintained overhead network can deliver reliable and safe electricity. It is therefore important that any SUPP projects that do proceed have benefits that exceed their costs.”¹⁷

As a result, the SUPP program utilised an assessment process to determine whether an underground project would have the required benefits to make the project worthwhile. The SUPP stated that, where existing overhead power networks are still in suitable condition and not exceeding their expected lifespan (which is 40-50 years, similar to those of new underground

¹⁶ Page x, ERAWA's Final Report on the Inquiry into State Underground Power Program Cost Benefit Study.

¹⁷ Page xii ERAWA's Final Report on the Inquiry into State Underground Power Program Cost Benefit Study.

networks¹⁸), the project would need to meet additional conditions to warrant delivery. It is noted that the overhead power network that is the subject of this project is in good condition.

Western Power data demonstrates that the current system is already highly reliable and stable, with the network having an average uptime of 99.991% in 2021/22 in the areas covered by this project¹⁹. As a result, the Cost Benefit Analysis report completed for this project states that there is limited or no system reliability/quality benefit observable from this project due to undergrounding the power.

As a whole though, it is known that underground power systems are more reliable than overhead power systems during weather and other events. Independent consultancy Halcrow Pacific Pty Ltd completed a Technical Assessment as part of the SUPP Cost Benefit Study in 2011. This report summarised the differences in reliability of underground power versus overhead power, stating,

“underground systems are more reliable but overhead systems are more maintainable.”²⁰

The reason for underground systems being harder to maintain being that it can be more difficult to find faults and undertake repairs on underground cables. The final report demonstrates this reliability with the following reliability measures recorded for underground power projects completed in Victoria Park South and Wembley Downs:

Reliability measure	Victoria Park South	Wembley Downs
SAIDI (duration of interruption in minutes per connection per year)		
Prior to undergrounding	231	63
After undergrounding	5	20
SAIFI (frequency of interruption per connection per year)		
Prior to undergrounding	2.85	0.62
After undergrounding	0.03	0.09
CAIDI (duration in minutes per interruption)		
Prior to undergrounding	81	102
After undergrounding	146	217

As can be seen, interruptions in supply decreased significantly after power was undergrounded but when an interruption occurred, it took longer to resolve. However, the final report also notes that the benefits to customers, such as reduced SAIDI and SAIFI, are likely to reduce over time due to age and use, reducing overall reliability²¹.

¹⁸ Page 18 ERAWA's Final Report on the Inquiry into State Underground Power Program Cost Benefit Study.

¹⁹ Western Power. 2022. *Western Power Annual Reliability and Power Quality Report 2022*. Accessed online at <http://www.westernpower.com.au>

²⁰ Page 17 Halcrow Pacific Pty Ltd's Technical Assessment as part of the SUPP Cost Benefit Study.

²¹ Page 39, ERAWA's Final Report on the Inquiry into State Underground Power Program Cost Benefit Study.

Given the quality of the current overhead power system and the general benefits of undergrounding power, it is therefore considered that this project is not essential from a reliability and quality of supply perspective, however, it will enhance both the reliability and quality, especially during weather events.

Safety Benefits

Completion of this underground power project will increase the safety of residents and visitors to the City. The removal of overhead power lines removes many of the safety issues experienced during historical storm events. Although there are still components of the network remaining above ground after undergrounding, these are significantly fewer in number and smaller in size, which reduces the risks associated with falling trees and other debris landing on electrical assets during weather events.

In addition, these safety benefits will also be delivered during other high-risk events, such as bushfires. As part of the 2010 Victorian Bushfire Royal Commission's Final Report, it was recommended that all single-wire earth return (SWER) cables and 22kV distribution feeders be progressively replaced with aerial bundled cable, underground systems or other risk-reducing infrastructure.²²

The Inquiry into State Underground Power Program Cost Benefit Study Final Report, (the final report), summarises the potential safety benefits of underground power on an area, stating,

"There is likely to be a reduction in accidental live-wire contact, which can occur when electricity workers or members of the general public come into contact with overhead cables. It is believed that there is less chance of live-wire contact when cables are placed underground, although there is a potential for people to dig into the underground cables, which offsets some of the benefits." And

"Safer street lighting for residents, as the new street lights that are installed are brighter and placed closer together."²³

Whilst the City of Nedlands is already a very low physical crime (ie theft, assault, property damage) jurisdiction amongst Perth suburbs²⁴ and the frequency of accidental live-wire contact is unknown, though expected to be very rare, improving the safety of residents and visitors must be considered an important need for this project.

However, it must be noted that, when overhead electrical poles are removed, they are replaced with new street lighting (hence the safer street lighting benefit). Newly installed lighting infrastructure must be installed closer to roadside curbs than overhead power poles, which could increase the risk of a vehicle collision. These poles do feature a collapsible design which is intended to reduce the likelihood of injury and/or fatality in the event of a collision, however it is questionable as to whether this benefit is enough to offset the increased risk.

ERAWA's final report detailed the following key findings in relation to enhanced safety from undergrounding power:

- Any reductions in electrical contact injuries resulting from retrospective undergrounding of power may be partly offset by injuries from people digging into the underground cables. There is no data available to establish any rate of reduction in electrical contact injuries as a result of undergrounding power.
- For the purposes of assessing the impact of power pole removal on vehicle accidents, sample data relating to 38 suburbs was provided for the 2006-2010 period. Western Power

²² 2009 Victorian Bushfires Royal Commission, July 2010, Final Report Recommendations.

²³ Page viii ERAWA's Final Report on the Inquiry into State Underground Power Program Cost Benefit Study.

²⁴ Western Australian Police. 2022. *Crime Statistics, City of Nedlands 2022-23*. Accessed online at <http://www.police.wa.gov.au/>

provided data on the number of overhead assets, and the Office of Road Safety (ORS) provided data on the frequency, location and type of accident in the Perth metropolitan area. Modelling created from this information indicated that, in order to reduce the likely incidence of accidents where hospitalisation is required by one in a single year, 20,446 overhead connections would need to be converted to underground connections per annum. Given this project will only convert 1701 residences, it can be assumed that no accidents will be reduced due to this project.

As such, it must be assumed that the increased safety benefits as a result of this project will be predominantly limited to better street lighting and will be minimal.

Aesthetic, Environmental and Economic Need

A key need for this project from a community perspective is the aesthetic look of the existing overhead power lines. There are both aesthetic and environmental improvements which come with removing the overhead power system and replacing it with underground power. These include:

- removal of unsightly power poles and lines in such an affluent LGA as the City of Nedlands
- the removal of chemically-treated power poles which are known to leech into the soil
- decreased use of chemicals used for weed control by Western Power
- the replacement of the poles with more efficient lighting and urban greenery which may attract an increased number of local birds, insects and other native fauna to the area

These benefits are summarised in the final report for ERAWA as:

“Improved amenity value (the visual amenity and streetscapes of suburbs are improved when the poles and wires associated with overhead power are removed and more trees can be planted)”

“One of the key benefits of undergrounding existing overhead power lines is the improved aesthetics, through the removal of poles and wires and the planting of more trees which improves the visual amenity and streetscapes of suburbs. While the benefits to ratepayers have been quantified through higher property prices, there is a component of this benefit which is of value to the wider community as well (when they visit areas that have underground power).”

“Undergrounding existing overhead power cables also has a positive effect on the environment, for example through a reduction in the amount of pesticide and herbicide used to protect the power poles and maintain the verges.”²⁵

These factors (along with other benefits mentioned such as safety) will improve the aesthetics of the area overall and will have a positive impact on property values in areas which have transitioned to underground power.

As part of the final report, ERAWA engaged Marsden Jacob Associates (MJA) to examine Perth property prices in suburbs that have participated in the SUPP as well as the suburbs that are still serviced largely by overhead power lines.

“MJA’s analysis shows that the installation of retrospective underground power has had a positive and significant effect on property prices, which has on average been greater than the cost of installing underground power. However, the extent to which property prices have increased depended on the value of the property, with higher

²⁵ Page x ERAWA’s Final Report on the Inquiry into State Underground Power Program Cost Benefit Study.

value properties benefiting more from underground power than lower value properties.”²⁶

Given the higher than average property prices in the City of Nedlands, it can therefore be assumed that this project will result in an increase in property prices that outweighs the cost of the project.

MJA’s analysis indicated that the increased property prices have ranged from \$4,840 (for house prices between \$300,000 and \$499,999) to \$29,590 (for house prices greater than \$700,000) – note this is 2010 house values.²⁷

These issues are explored further in the Impact Analysis section of the Business Case, and in the ACIL Allen CBA Report (Attachment 1).



Council Commitments

This increased value of houses in areas with underground power, in combination with the improved network capability of new power infrastructure, has resulted in unequal access to services/infrastructure within the City of Nedlands between the 78% of residences which have underground power and the 1,701 properties which do not.

The Hollywood Underground Power Action Group (HUPAG) is an enthusiastic group of locals keen to see underground power finished across the City of Nedlands, particularly the Hollywood Ward, formed in early 2016. HUPAG wrote a position paper titled “Completion of Underground Power in the City of Nedlands” in October 2016. It states.

“We believe it is self-evident that:

- CoN ratepayers not connected to underground power have an equal right to this 21st century service as previously established within the city south of Stirling Highway.
- After 15 years since the commencement of underground power in CoN, unconnected residents increasingly feel underprivileged by the CoN failures to finalise the program.
- Fundamental fairness demands that individual ratepayer outlays for forthcoming undergrounding be 50% of the cost per lot of underground power at current costs.
- In the absence of State Government funding the CoN has to arrange and raise the funding required to complete the works via a landowner/Council funded scheme²⁸.

As a result, Councillors have committed to rectify this inequity, with several past and present City of Nedlands elected members stating on the public record, that they have stood for election to Council based on a political platform which included pushing for the balance of the City of Nedlands district to complete the retrospective undergrounding of power programs ASAP. As a result, numerous Council meeting minutes and other public documents over the past few years have demonstrated that the City is planning to deliver this project. As such, delivering on commitments made by Councillors and Council is also considered a reason that this project is needed.

²⁶ Page viii ERAWA’s Final Report on the Inquiry into State Underground Power Program Cost Benefit Study.

²⁷ Page ix ERAWA’s Final Report on the Inquiry into State Underground Power Program Cost Benefit Study.

²⁸ https://73c398fb-ac40-47db-8ad4-274b2126c443.filesusr.com/ugd/359eb4_4a8f2aed17394be38f210f2ad5d8d23a.pdf

2.2 PROJECT DESCRIPTION

As noted, there are 1,701 residences in the City of Nedlands (approximately 22% of total) without underground power.

This project will install underground power to these residences in 3 stages over a 4-year period, as indicated in *Section 3.1 Project Timeframes and Key Milestones*, and as shown on the maps below (Figures 1, 2 and 3).

- Stage 1 construction: Nedlands North – 273 properties (Floreat)
- Stage 2 construction: Nedlands West – 650 properties (Mt Claremont)
- Stage 3 construction: Hollywood East – 778 properties (Hollywood)

Undertaking the works in this order has been identified as likely to result in the highest Western Power contribution (net benefit), as it would avoid having to commence replacement of ageing assets in Hollywood East as part of ongoing maintenance²⁹.

Western Power have confirmed that this project has been included in the current program of works, with the first project to be commenced in the 2023/24 financial year (pending City of Nedlands approval).

The City and Western Power completed the design phase of the three project areas in early 2022, at a cost to the City of \$940,500. Preliminary primary equipment sites (the locations for transformers and switchgear units) have been identified by considering both the engineering requirements and minimising the impact on surrounding residents. These sites have been chosen to allow the power network within the project areas to function correctly, and to keep costs as low as possible. The primary equipment will be located where possible in public open space, and not on residential verges to maintain amenity.

The primary equipment locations will be subject to community consultation with adjacent and nearby properties. The final location may change based on the outcome of this consultation and detailed construction planning.

The Western Power website explains the process for getting power underground, as follows³⁰:

- Installing new underground power cables in the road reserve under verges
- Installing connection pillars (green dome/box), usually at the front corner of a property and the adjacent property
- Installing transformers and switchgear units to manage the distribution of power throughout the area. These are located in parks and public open spaces, or sometimes along property side verges
- Installing an underground connection from the connection pillar to the meter box at each property
- Changing each property over to the new underground system once it's complete and is live, and removing the old overhead conductors
- Designing and installing a new LED streetlight system that meets the latest Australian Standards
- Removing existing wood poles and overhead powerlines (excluding transmission poles and wires)

Following this project, the power infrastructure ownership will be maintained by Western Power. The ownership and management of the streetlight network is unknown and will be discussed

²⁹ City of Nedlands Technical Services Report, July 2020

³⁰ <https://www.westernpower.com.au/faqs/underground-power/underground-power/what-s-involved-in-undergrounding-power/>

between the City and Western Power. Western Power have retained ownership of the light poles in all other areas of the City that have underground power, the City of Nedlands Council Policy on Underground Power says, "the City will seek to install, own and manage the street light network and update to the latest lighting technologies including smart control".

The City of Nedlands Administration has developed the financial funding model which determines the delivery and timing of this project (as outlined in this business case). In order to progress this project into the implementation stage, Council needs to provide final approval.

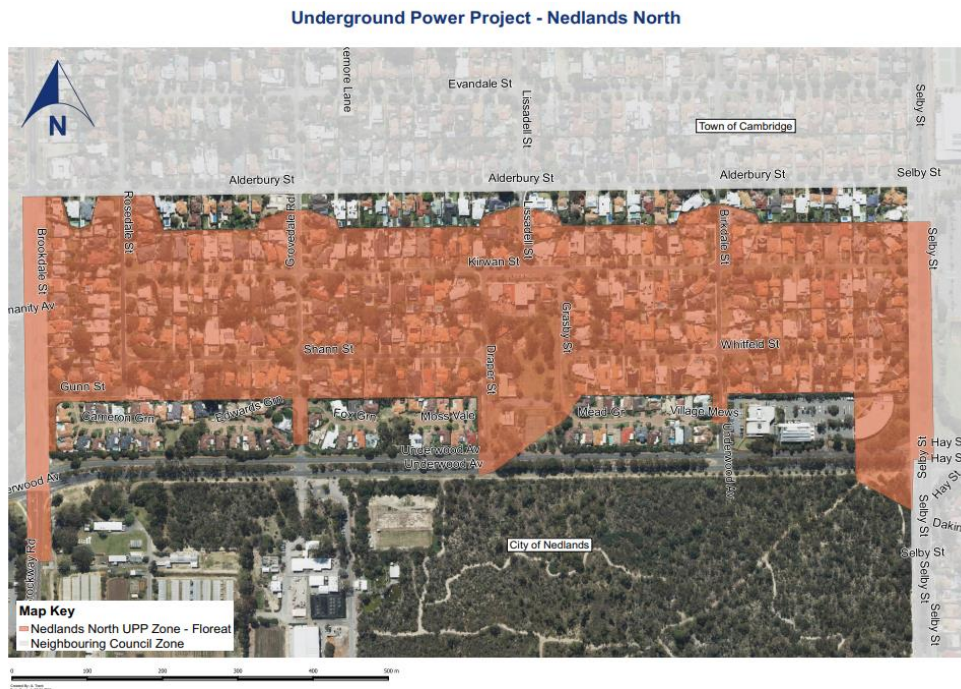


FIGURE 1 UNDERGROUND POWER PROJECT - NEDLANDS NORTH

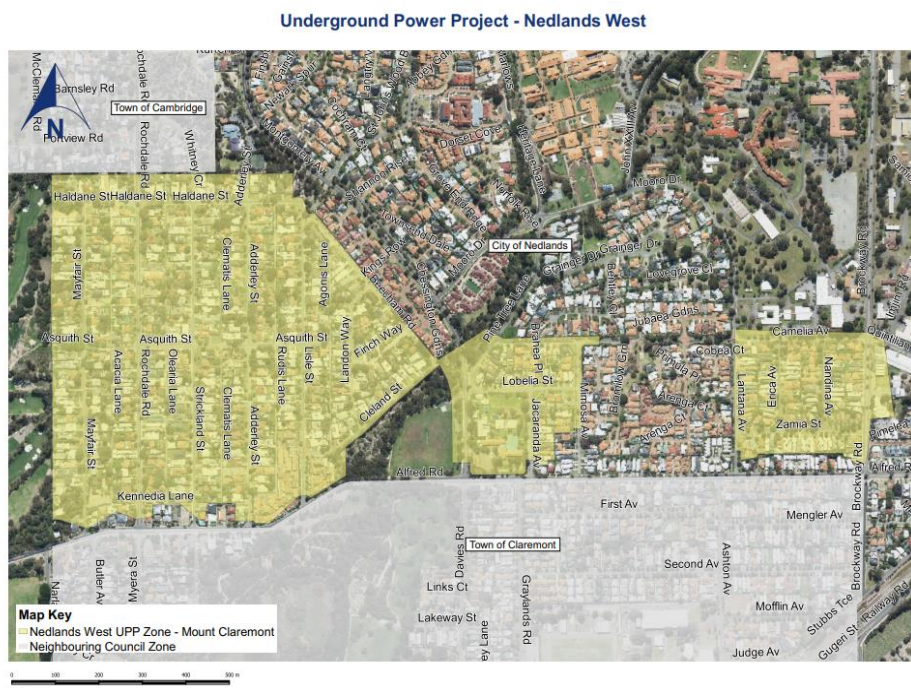


FIGURE 2 UNDERGROUND POWER PROJECT - NEDLANDS WEST

Underground Power Project - Hollywood East



FIGURE 3 UNDERGROUND POWER PROJECT - HOLLYWOOD EAST

2.2.1 PROJECT BENEFITS, COSTS AND IMPLICATIONS

Underground power delivers a number of benefits to residents, local governments, Western Power and the wider community. However, it also comes at a considerable financial cost, and the opportunity cost of spending funds on underground power at the expense of other assets needs to be considered.

In 2011, the Economic Regulation Authority (ERAWA) was engaged by the WA State Treasurer to undertake an inquiry into the overall costs and benefits of the State Underground Power Program (SUPP) – this resulted in the final report that has been mentioned in this business case. Although dated, findings from this inquiry identified the following benefits and costs of retrospective underground power projects that are still relevant today.

Benefits

- Benefits to Property Owners (ratepayers)
 - Increased property valuations (research reflects that higher value properties benefit more than properties with lower starting values) as a result 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
 - 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 street lights are designed and installed to meet Australian Standards. These new street lights 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 addition to the general benefits of underground power that this project will deliver, there are also some benefits specific to the City of Nedlands.

As a well-established LGA with residents who have higher formal education and wealth than the state average and tend to be well informed, the community demand a high level of service from the City of Nedlands. As such, local political campaigns and election commitments are considered to be very important to residents and elected councillors. Some elected representatives have made a commitment that the final underground power project for the City of Nedlands will be completed, based on feedback from local residents. Acting on these commitments will deliver on promises made to the community and, as such, is considered to be a project benefit.

In addition, this project will complete the final undergrounding of power in the City, meaning that no further such projects will be required in the future and the entire local government area will have underground power connected – another benefit of this project that is specific to the City of Nedlands.



Costs

The ERAWA final report identified the two types of costs associated with retrospective underground power projects as follow:

- The upfront costs of removing overhead distribution infrastructure and all of the direct costs to place the infrastructure overhead, including,
 - Removal of existing overhead infrastructure (poles, cables etc)
 - Boring and trenching
 - Installation (labour and materials)
 - Service connections to residences
 - Reinstatement of lawns, footpaths etc
 - Installation of new streetlights
 - Transformers and other underground power related infrastructure
- The indirect costs of any negative effects when the infrastructure is placed underground, such as,
 - Costs associated with soil erosion when overhead distribution infrastructure is removed and replaced with underground power
 - Costs associated with the increased exposure to dig-ins when cables placed underground
 - Although it may be more difficult to find faults and undertake repairs on underground cables and affected customers are likely to face longer supply interruption times, this is expected to be offset by lower maintenance requirements

In addition to the upfront costs of removing overhead distribution infrastructure and all of the indirect costs associated with placing the infrastructure underground, this project would also require the City to fund:

- Additional human resources – the City will need to employ a Full Time Project Manager for 4 years, at a cost of \$100,000 per year in remuneration, plus a car and associated on costs
- Additional costs to the City with respect to raising and servicing new loans/borrowing costs
- Potential future increases in roads and drainage maintenance costs and sweeping associated with leaf litter from trees growing bigger canopies

The latest project cost estimates indicate the required contribution from the City of Nedlands to complete this underground power project is \$19,038,101 (exclusive of the \$940,500 for the design

phase that has already been funded by the City). This is a significant financial undertaking, which will have implications on other areas of the City's responsibilities.

Implications

Although this project will deliver a number of benefits, as detailed, there are also implications that need to be considered before the City commits to completing the project.

1. Asset Ownership

It is noted that, by completing this project, the City of Nedlands will be investing in assets that they do not own. Power infrastructure ownership is maintained by Western Power, which will be a key recipient of benefits from the project through lowered operational costs, emergency response management, complaints handling and verge maintenance requirements. The opportunity cost of the City spending money on assets that are not owned by them and are not their core business, at the expense of funding other City assets, should be considered.

2. Roads Maintenance

In allocating the City of Nedlands' funding contribution for this project, the City's Long Term Financial Plan has utilised funding from the Roads Capex Renewals to fund this Underground Power project. As such, the Plan clearly shows there will need to be a significant reduction on funds spent on roads over the next 3 years.

The current capital works budget indicates that \$5.8 million is needed to fund road maintenance each year. However, if the underground power project proceeds, the Long Term Financial Plan can only allocate the following capital expenditure to roads over the next 3 years:

- 2023/24 - \$2,428,175
- 2024/25 - \$3,271,891
- 2025/26 - \$5,421,890

Removing maintenance funding from roads in order to fund this underground power project will result in the degradation of the roads in the City and create a backlog of required works on road renewal.

In assessing whether this is an acceptable implication or not, it is noted that the City of Nedlands Asset Management Plan – roads, 2023-25 states,

“the principal road asset types of pavements, surface, kerb, and subgrade are overwhelmingly in average or better condition based on the 2021 surface condition survey”, and that “there are no road asset risks identified as high or extreme at this time.”

However, it also states that 30% of the road network was constructed prior to the keeping of good asset records and has unknown characteristics, that older roads were built for lighter vehicles and that unknown and older pavements may be subject to rapid change if exposed to heavy traffic.

As such, the impact of such a significant reduction in spending on road maintenance is unknown and comes with the following risks, which could have a significant financial and reputational impact on the City of Nedlands:

- Asset failure causing loss of service
- Public safety – minor or major accident, up to and including death
- Public liability claims
- Not continuing road maintenance could cause major damage to roads which would require increased expenditure to fix in the long term

Additionally, it is noted that a reduction in roads maintenance spending is contrary to one of the key strategic priorities outlined in the City's 2019-2029 Asset Management Strategy, which is to "Maintain investment in roads, footpaths, cycleways and drainage".

3. Other City Assets

While the draft Long Term Financial Plan indicates that roads renewal will be the only budget line item that suffers from reduced funding as a result of completing this Underground Power project, the alternative would be to spread the impact of reduced funding across a variety of different assets. This would lessen the impact and risk related to roads maintenance but will result in impacts on other City assets.

The current draft Long Term Financial Plan has capacity to maintain and renew existing infrastructure. However, several proposed projects under investigation are not yet included:

- Drainage Upgrades
- Laneway upgrades
- Riverwall/foreshore management
- Community facilities upgrades (some with CSRFF matching grant funds), including Hollywood Bowling Club, Lawler Park (Hackett Hall) and Melvista

As a key role of local government, the City of Nedlands is required to ensure that sufficient funds are allocated for the operation, maintenance and refurbishment/replacement of all its existing assets. The main asset-based services the City is expected to provide include:

- Transport (roads, car parks, paths, bridges, drainage)
- Property services (drainage, civil earthworks/retaining, service corridors, etc)
- Civic Buildings (City administration building, depot, major and minor buildings)
- Recreation Facilities (aquatic centres, sporting facilities, open space, etc.)
- Community/Cultural services (community centres, social/aged care, heritage sites, etc.)
- Security services (fences, lights, cameras, signs, etc.)
- Environmental protection (trees, vegetation, waste management, conservation, etc)

The asset renewal funding ratio – which indicates whether the local government has the financial capacity to fund asset renewal as required – can be a key benchmark used by State Government and other funding bodies when assessing requests for grant funding.

The City's Long Term Financial Plan says that the target range for the asset renewal funding ratio is between 75-95%. By funding underground power, the asset renewal funding ratio will fall to 63.41% in 2023-24, with an improvement in 2024-25 to 73.82%, which is still below the minimum standard.

Being below the benchmark will likely raise concerns regarding the City's ability to maintain its assets amongst lending bodies. As such, the City should be prepared not to receive grant funding for projects to build new or refurbished assets over the short term while their asset renewal ratio is low.

Additionally, a review of the City of Nedlands Asset Management Plans reveals that (with the exception of roads, which have already been discussed) there are some identified issues with regards to some other asset areas, as follows:

- The City of Nedlands Asset Management Plan (buildings) identified the following issues and potential consequences:
 - Issue: lack of comprehensive structural inspections.
Consequence: without structural inspections and data, unseen issues such as rust in structural elements, wood rot, faulty wiring and similar will not be identified. There is a possibility of catastrophic failure in extreme circumstances.
 - Issue: Dalkeith Hall's age and need for substantive renewal.

Consequence: the Hall requires substantive work but value for money needs to be assessed.

- Issue: Ownership and management issues.

Consequence: there are some identified buildings on public land nominated as being privately owned, funded and managed. This is unusual and may have hidden risks and liabilities.

- The City of Nedlands Asset Management Plan (drainage) identified that drainage standard of service is less than expectations with possible consequences including potential complaints, damages, claims and similar. Noteworthy here is the fact that, without overhead power, trees will be able to grow bigger canopies and some species will drop more leaves, which may affect sub surface road drainage efficiencies. As such, it is not recommended that the City reduce funding on an asset which is already sub-standard, especially when the money is being redirected towards a project which may further compromise said asset.

Further consideration of the upgrade of these facilities would need to be deferred until more funding became available and/or the City had sufficient borrowing capacity.

The draft Long Term Financial Plan indicates that the City currently has an infrastructure backlog of \$43 million that could benefit from those funds. The table below, 'All assets Capital Investment Need' - which includes the backlog of asset renewal required - has been smoothed to remove large year to year spikes. The backlog has been spread over years 2022-2031, with the figures in the table being the sum of the smoothed backlog and the renewal that would otherwise be required in that year.

Of the \$14M the plan states was required in 2022, only \$5.2M of renewal was funded and is currently being delivered by the City. As such, the current backlog will be increased by a nearly \$9 million carryover to the 2023/24 financial year, without the added impact of funding the underground power project.

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
All assets Capital Investment Need (M)	\$14.32	\$12.04	\$18.09	\$16.93	\$16.94	\$19.35	\$20.58	\$16.7	\$17.38	\$12.00

If this project progresses, it will add further to the backlog. As such the implications of completing this project on other City assets therefore needs to be considered.

4. Ability To Secure Funding

The City has approximately \$4M set aside for this project in a reserve account. As such, the City would need to borrow the remaining amount in order to pay its share of project costs.

Based on the Council resolution to complete all 3 stages of this project in 4 years, the City's Manager of Financial Services worked with the WA Treasury Corporation (WATC) to estimate the borrowing capacity of the City to determine if they will be able to borrow the required funds for the project.

Under the Council's current Underground Power Policy, up to 50% of the City's contribution is recoverable from ratepayers. However, it is assumed that the City would initially pay for the household contribution (which is consistent with how Western Power expects the undergrounding

of power scheme to operate) and this would be repaid by affected residents through service charges raised as part of their annual rates notice.

As such, the City would need to secure 6 loans to cover the 3 stages of the project – 3 loans to cover their share of the project costs (for stages 1, 2 and 3), and 3 loans to temporarily pay for the contribution of the affected residents, as follows:

- Stage 1 Loan 1: \$691,757 in 2023/24 to cover the City's portion of this stage.
- Stage 1 Loan 2: \$807,084 in 2024/25 to cover the ratepayer portion of this stage, which would be paid back by UGP service charges raised.
- Stage 2 Loan 3: \$2,078,859 in 2024/25 to cover the City's portion of this stage.
- Stage 2 Loan 4: \$1,406,863 in 2025/26 to cover the ratepayer portion of this stage, which would be paid back by UGP service charges raised.
- Stage 3 Loan 5: \$2,784,435 in 2025/26 to cover the City's portion of this stage.
- Stage 3 Loan 6: \$1,666,555 in 2026/27 to cover the ratepayer portion of this stage, which would be paid back by UGP service charges raised.

Figures from the City's Draft Long Term Financial Plan (Attachment 1) were entered into WATC's Indicative Additional Debt Capacity Calculator. The calculations show that, in addition to the loans raised for the Underground Power projects, the City would have the capacity to borrow:

- \$5,281,018 in the 2023/24 financial year
- \$2,260,726 in the 2024/25 financial year

In the 2025/26 financial year, the City reaches borrowing capacity. This means that WATC may not approve the 2025/26 year requested loan amount of \$4.115M as this loan amount would put the City at capacity. If this happened, the project may need to be cancelled or postponed leading to financial loss related to having started but not completed the project and very high levels of community dissatisfaction.

However, it must be noted that the City's Debt Service Coverage Ratio (DSCR) is 4.5X in 2025/26 when the minimum target is 3.0X. The DSCR is the measurement of a local government's ability to produce enough cash to cover its debt payments. The higher the ratio is, the easier it is for a local government to obtain a loan. The Local Government Operational Guidelines Financial Ratios (Number 18 – June 2013) says that "a basic standard is achieved if the ratio is greater than or equal to two. An advanced standard is achieved if the ratio is greater than five".³¹ As such, the chances of being unable to obtain a loan with the City having such a high DSCR are lessened.

As loans are paid down over time, borrowing capacity returns in 2026/27, with the City able to borrow \$832,245.

5. Cost Uncertainty

The latest formal cost estimate from Western Power (WP) states the project total cost is \$28.7M including both WP net benefit amount and the City's contribution. Should Council decide to proceed with this project, Western Power will provide an updated cost estimate to a 10% accuracy after the completion of a Request for Quotation process.

Even if the City is successful in obtaining loans to pay for their share of these works, there is the risk of rapidly increasing costs due to supply cost rises for transport and materials, as well as increasing rates and scarcity of labour. There will also be subsequent interest payable on all loan amounts, which is likely to throw the City's budget further into challenging territory.

³¹ https://www.dlgsc.wa.gov.au/docs/default-source/local-government/operational-guidelines/operational-guideline-18-financial-ratios.pdf?sfvrsn=2d69f3d9_1

If the project runs over budget, the City would need to find the additional money by increasing borrowings (which, as noted above, may not be possible), or by increasing the amount that affected residents and taxpayers need to pay, which would lead to high ratepayer dissatisfaction.

6. Ongoing Post-Project Implications

The City's draft Long Term Financial Plan, 2023-38, states the finances of the City are impacted heavily in the initial years by the implementation of underground power, resulting in the variations in the initial years of the plan as shows in the chart below.

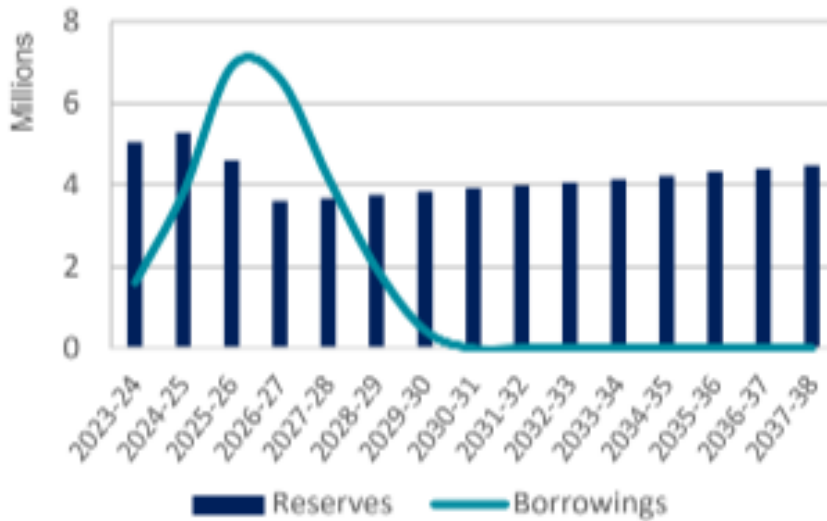


FIGURE 4 - FORECAST BORROWINGS AND CASH RESERVES (SOURCE: LONG TERM FINANCIAL PLAN)

Borrowing and reserves will be used to pay for the 3 phases of this underground power project (as indicated above) in 2023/24, 2024/25 and 2025/26 with service charges utilised to repay the borrowings in the 6 years following the start of the works being undertaken.

By funding the underground power project, the City will have limited capacity for borrowing money to fund other projects in the next few years. Figure 5 below indicates that the City's borrowing capacity grows towards the middle of the plan, in line with the repayment of the planned borrowings.

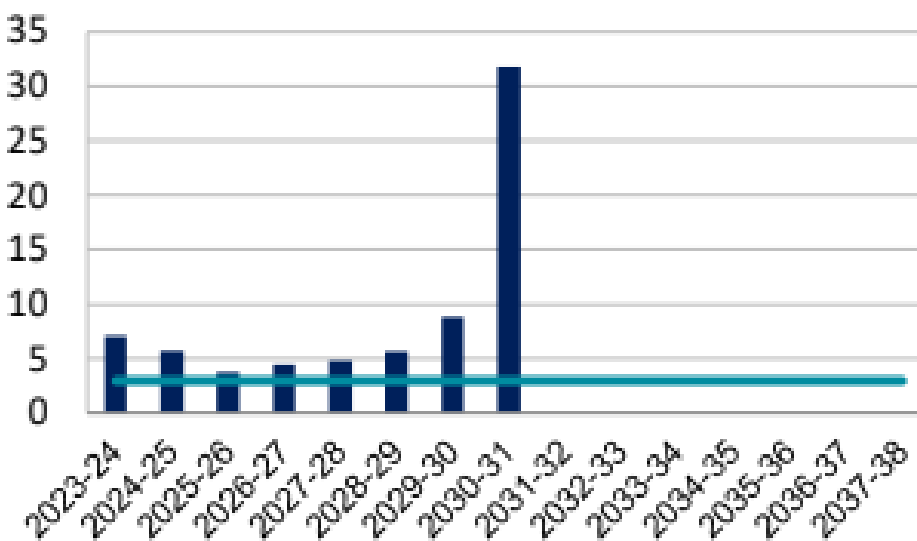


FIGURE 5 DEBT SERVICE COVER RATIO (SOURCE: LONG TERM FINANCIAL PLAN)

As such, although there are a number of benefits to this project, the costs and implications must also be considered. An independent Cost Benefit Analysis of this project has been undertaken and

is attached (Attachment 1). Refer to *Section 2.6 Economic and Financial Analysis/Cost Benefit analysis* for a summary of the CBA and further details on the quantified benefits and costs of this project.

7. Impost on Ratepayers

Under the City's Underground Power Policy, up to 50% of the City's contribution is recoverable from ratepayers. However, the City would initially pay the full amount, with householder contribution being repaid by affected residents through service charges raised as part of their annual rates notices. The City of Nedlands Finance team have undertaken modelling and based on the latest estimates, the resident's share for each property with existing overhead power would be approximately:

4. Nedlands North - \$6,569,68
5. Nedlands West - \$5,771.74
6. Hollywood East - \$5,712,27

Community consultation undertaken by the City in 2017 prior to its last underground power project indicated around 30% of ratepayers were unwilling to pay and the current fiscal climate is such that cost of living pressures are high, it is expected that there will be significant dissatisfaction amongst some of the affected ratepayers at this extra cost.



2.3 POLICY AND STRATEGIC FRAMEWORK

This project is aligned to a number of the City's and WA State Government policies and strategies.

City of Nedlands Community Strategic Plan 2018-2028

On 22 May 2018, the City of Nedlands' Council approved the Strategic Community Plan, which is described as "a long-term plan where Council has considered its vision, values, aspirations and priorities while also considering the challenge of balancing community aspirations, service delivery levels, priorities and affordability." This Strategic Community Plan builds on the previous plan and progresses the City towards "Our Vision 2030" outcomes.

A number of the "Our Vision 2030" outcomes resulted in the identification of ideas and strategic actions which are directly or indirectly related to a transition to underground power, including:

- "retain our green, leafy, tree-lined streets and gardens;
- manage environment – (underground power, street trees, seats, water fountains) to facilitate walking; and
- feeling safe on the streets with lots of people about."

This is reflected in the Community Strategic Plan, which includes "underground power" as one of eight items specified as part of "Council's overall strategic priorities".

There is no question that transitioning the remaining 22% of properties to underground power is in direct alignment with the specific outcomes identified by council planning documents.

City of Nedlands Underground Power Policy

The City's Underground Power Policy, amended on 26 June 2018, includes the following statements:

1. The Council supports the undergrounding of overhead power distribution that currently exists within the City of Nedlands and will both advocate to the State Government at every opportunity to achieve this and partner with relevant agencies on the planning and delivery of underground power;
2. The City will identify strategies for the funding of the underground power installation which minimise the cost to the City and property owners;
3. The City will develop a program to deliver the undergrounding of power to areas where overhead power currently exists in the shortest possible timeframe; and
4. The Council supports a method of equally distributing the costs for underground power projects as follows:
 - a) State Underground Power Project (50%) funded by State/City and 50% funded by property owner; or
 - b) Local Government client funded underground power project funded by Western Power, the City and property owners with negotiated contributions.
5. The method of distributing the contribution by the property owner is included in the Underground Power Procedure.
6. The City will seek to install, own and manage the street light network and update to the latest lighting technologies including smart control.

Western Power / WA State Government

Western Power is a Western Australian State Government owned corporation responsible for building, maintaining and operating the state's electricity network. This project is heavily aligned to Western Power's Corporate Strategy 2021 – 2031. Their Corporate Strategy Action "Optimising our

transition to the modular grid” includes partnering with local governments to underground power under the action “Underground meshed urban areas through financial partnerships with local communities”.

In a demonstration of its commitment to increase underground power in WA, in November 2022, the State Government launched the latest in its underground power programs, the Targeted Underground Power Program (TUPP).

The four-year program will initially focus on the Town of Victoria Park, City of Vincent, City of Stirling, City of Bayswater, Town of Bassendean, City of Swan, Shire of Mundaring, City of Canning, City of Fremantle, City of Melville, City of Rockingham and City of Mandurah.

The TUPP is funded by Western Power and relevant local government authorities; with the State Government's tiered funding based on socio-economic indicators. Areas are selected based on which areas have the highest density of aging overhead assets. Given the age of the City of Nedlands assets, it has not been selected as a priority at this time.

2.4 STAKEHOLDER ENGAGEMENT AND CONSULTATION

The City of Nedlands has consulted with Council and Western Power on the specifics of this project and has consulted broadly with the Nedlands community on underground power over the years. For example, the community was notified through Your Voice (the City's online community engagement hub) in January 2020 that the City was progressing with the detailed designs for the 3 remaining areas for the installation of underground power.

If the City progresses this project, further consultation with the residents in the affected areas will take place. This engagement will include:

- Communicating why Underground Power is needed
- Ensuring the community understands the benefits, costs, risks and implications of the Underground Power Project
- Gaging community awareness of the project
- Gaging community willingness to go ahead with the project
- Confirming the amount residents would be required to pay
- Establish how residents are willing to pay
- Outlining expected timeline for completing the project
- Advantages/disadvantages of running the 3 project areas concurrently

The Economic Regulation Authority WA (ERA) 2011 inquiry final report states that there was a clear trend that ratepayers in higher property value areas were more willing to pay for undergrounding of power. This is to be expected given owners of higher value properties benefit more in post installation property value increases than owners of lower value properties.

Hence, ratepayer political support for the undergrounding of power in the City is anticipated to be high. The Nedlands community was first consulted about underground power in 1998. A survey questionnaire was hand delivered to all residential properties and businesses within the City during January 1998. 1757 (25%) of residents/businesses responded, with 1503 (85%) in favour of underground power. Of the 254 objections, most related to cost, enquiries about transmission lines, objection to paying towards upgrading Western Power infrastructure, that they were too old to gain benefit from it, that there was already existing underground power in the street or that more information was required before making a decision.

In April and May 2014 an extensive public consultation was undertaken. Key outcomes of the consultation were:

- Total number of surveys released: 2,595

- Total number of responses: 1,062
- Response rate = 41%
- 53% of 1036 respondents felt underground power was quite important or extremely important
- 76% of 613 respondents felt that underground power would improve amenity
- 62% of 750 respondents said they would not be willing to pay the full cost (\$17,000)
- On payment options, 251 responses were received indicating that 11% would prefer to pay through deferral (on sale of property), 58% would prefer to pay in installments and 31% would prefer to pay in one payment

The community was consulted again in 2017 when residents in the following 2 areas were surveyed:

- Claremont Triangle Underground Power Project
- West Hollywood Underground Power Project

The Claremont Triangle survey returned 26 responses. There was a big variation in how important respondents believed underground power to be, ranging from not important (11 responses) to very important (7 responses). With regards to paying for the installation, 11 respondents preferred instalments over a 10-year period, 9 respondents preferred one upfront payment, and 9 respondents said they were not willing to pay at all.

With regards to the West Hollywood Underground Power Project consultation, the City commenced the detailed design consultation on 15 June 2017. The survey provided a detailed design cost estimate contribution for each landowner in accordance with the cost distribution established in the City of Nedlands Underground Power Policy. The survey form simply provided a "support" or "do not support" option for the proposed project.

There were 593 letters distributed, 283 were returned representing 47.7% of the West Hollywood Underground Power Project landowners. The project was supported by 67.9% of respondents.

An online survey was also provided via Your Voice (the City's online engagement platform) for the Hollywood area. The survey returned 197 responses with large variation in how important residents believed underground power to be, as follows:

- Not important at all (67 respondents)
- Quite important (55)
- Extremely important (38)
- Not very important (15)

With regards to paying for the installation, the preferences were:

- Instalments over 10 years (61 respondents)
- Unwilling to pay (55)
- Instalments over 5 years (38)
- One upfront payment (25)

It is noted that this project will require a significant contribution from affected ratepayers of around \$6,000. Given the community consultation in 2017 indicated around 30% of ratepayers were unwilling to pay and the current fiscal climate is such that cost of living pressures are high, it is expected that there will be significant dissatisfaction amongst some of the affected ratepayers at this extra cost.

The City of Nedlands has been in regular contact with Western Power regarding this project. Western Power engaged Alliance Power & Data Pty Ltd (APD) to complete the design of this project in early 2022. Western Power has clarified that the three stages of this project have been included in Western Power's current program of works.

Once the City of Nedlands provides Western Power with approval to proceed, Western Power will carry out a construction RFQ which will provide confirmation of budget (to 10% accuracy) and timings in conjunction with the construction contractor.

2.5 PROJECT DELIVERABLES

The outputs and outcomes of this project are detailed in the tables below.

	Outputs	Performance Measure	Performance Measure method
1	Underground Power Project delivered to remaining 1,701 properties in City of Nedlands	Completed in accordance with the timeframes, budget and project description identified in this business case.	Practical completion certificate Photos

TABLE 1 - OUTPUTS

	Outcomes	Performance Measure	Performance Measure method
1	Increased reliability and quality of the electrical network	Number and duration of power outages	Feedback from affected residents/surveys Western Power data on power outages
2	Increased property values	Average house price of properties in the upgrade areas	REIWA average house price data
3	Improved visual amenity values	Community and visitor satisfaction with the visual outcome of the project	Photos Feedback from affected residents/surveys
4	Reduced short term maintenance of streetscapes and verges	Decrease short-term cost of maintenance of streetscapes and verges	City of Nedlands financial data
5	Improved street lighting	Street lighting coverage and LUX level	Lighting consultant audit

TABLE 2 - OUTCOMES

2.6 ECONOMIC AND FINANCIAL ANALYSIS/ COST BENEFIT ANALYSIS

The City of Nedlands engaged independent economics advisory firm ACIL Allen to undertake a Cost Benefit Analysis (CBA) of the proposed project. A CBA is commonly used to measure the impact of policy or infrastructure, by quantifying the extent to which a particular intervention changes measurable outcomes. It places a dollar value on a stream of benefits and costs which are forecast to occur as a result of the investment.

A detailed overview of the CBA, discussion of the approach and methodology, and a comprehensive description of inputs, assumptions and outputs, is provided in Attachment 3. A summary of the approach and methodology and presentation of the results is provided in the remainder of this section.

The CBA is based on the assessment of benefits and costs as they relate to individual constituencies / stakeholder groups relevant to the investment proposal. These are:

- Ratepayers receiving underground power (Residents)
- The City of Nedlands and non-recipient ratepayers (Nedlands / The City)
- Western Power, and the State more broadly (Western Power)

There are seven costs and five benefits quantified within the CBA framework. These are summarised below, alongside details of how they map to the three constituencies introduced above:

Costs		
Name	Description	Who is impacted
Upfront investment costs	The gross payments required to be made by Nedlands to Western Power	Nedlands
Cost of capital	Measured as the interest expense on borrowings	Nedlands
Project manager expenditure	PM spend in each year the program is being rolled out	Nedlands
Opportunity cost of foregone capital works	Measured as an upfront additional charge equal to the rate of opportunity cost multiplied by the net long run cost of the program to the City	Nedlands
Upfront investment costs	The share of program costs met by Western Power, charged up front	Western Power
Service charges payable	The resident contributions to fund part of the City's share of the program cost	Residents
Additional rates burden	A reallocation of the long run rates burden payable by residents receiving underground power due to property value uplift	Residents

Benefits		
Name	Description	Who is impacted
Service charges received	The resident contributions to fund part of the City's share of the program	Nedlands
Avoided tree-trimming cost	Avoided annual tree maintenance expenditure due to removal of tree risk around powerlines	Nedlands
Property value uplift	The increase in property values owing to visual amenity, service continuity, and other factors	Residents
Avoided replacement and maintenance cost for power infrastructure	Set at the share of program costs met by Western Power, given this is how they determine their willingness to pay	Western Power
Avoided road safety crashes	Reduction in the societal cost / burden of vehicle-power pole accidents	Western Power (State at large)

Other benefits and costs described earlier in the business case are either too small to reliably quantify given the scope of the program (ie 1701 properties) or are generally unquantifiable benefits/costs. Further commentary on this issue is provided in Attachment 3.

It is important to note ACIL Allen has adapted the approaches and methodologies of past underground power CBA reports to the City of Nedlands' current project. The single largest benefit is in relation to property value uplifts. In a traditional CBA, property values are not considered a genuine benefit, as in a classical framework the uplift in value can only be realised in the event a transaction occurs. When this transaction occurs, the seller may monetise their asset for a higher value than prior to the change, but this comes at a direct cost to the buyer of the asset – netting out the gain across society.

However, given the frame of reference for this CBA is to assess **how benefits and costs map to particular constituencies**, this value has been retained. If the CBA were to examine the State-wide, societal net benefit / cost of the program, property value uplift would be removed in favour of an alternative approach to monetizing visual amenity.

A summary of the results for individual constituency groups is provided below.

Recipients Of Underground Power

Overall, the CBA finds the recipients of underground power realise a present value (at 7% discount rate) of benefits of \$74.28 million, against a present value of costs of \$9.87 million in real 2023 dollar terms. This results in a net benefit of \$64.41 million in present value terms, and a Benefit Cost Ratio of 7.53. This suggests for every \$1 of economic and social cost incurred by the recipients of underground power, they realise a return of \$7.53. A summary of the costs and benefits is provided below.

Residents	
Cost	
Investment cost	(\$8.35)
Additional rates burden shared	(\$1.51)
Total costs	(\$9.87)
Benefit	
Property value uplift	\$74.28
Total benefits	\$74.28
Net	
Net benefit / (cost)	\$64.41
BCR	7.53

Western Power / State

Western Power / the State at large realise a present value (at 7% discount rate) of benefits of \$13.43 million, against a present value of costs of \$12.87 million in real 2023 dollar terms. This results in a net benefit of \$0.56 million in present value terms, and a Benefit Cost Ratio of 1.04. This suggests for every \$1 of economic and social cost incurred by the recipients of underground power, they realise a return of \$1.04. A summary of the costs and benefits is provided below.

Western Power / State	
Cost	
Investment cost	(\$12.87)
Total costs	(\$12.87)
Benefits	
Avoided replacement and maintenance	\$12.87
Avoided road safety crashes	\$0.56
Total benefits	\$13.43
Net	
Net benefit / (cost)	\$0.56
BCR	1.04

City Of Nedlands / Non-Recipient Ratepayers

The CBA finds the City of Nedlands / non-recipient ratepayers realise a present value (at 7% discount rate) of benefits of \$8.70 million, against a present value of costs of \$20.23 million in real 2023 dollar terms. This results in a net cost of \$11.52 million in present value terms, and a Benefit Cost Ratio of 0.43. This suggests for every \$1 of economic and social cost incurred by the recipients of underground power, they realise a loss of \$0.57. A summary of the costs and benefits is provided below.

Nedlands	
Cost	
Investment capital cost	(\$18.72)
Investment interest cost	(\$0.81)
Project manager	(\$0.37)
Opportunity cost of foregone long term financial c	(\$0.32)
Total costs	(\$20.23)
Benefit	
Payments from residents	\$8.35
Avoided tree trimming costs	\$0.35
Total benefits	\$8.70
Net	
Net benefit / (cost)	(\$11.52)
BCR	0.43

Implications of the CBA

Overall, the quantitative CBA suggests the recipients of investment flowing from the underground power program realise substantial benefits in the form of improvements to the value of their property. This comes at a relatively modest cost all things being equal, due to the financial contributions made by Western Power and the City of Nedlands. It is important to point out that these ratepayers will wear a modest increase in the share of the City's Required Rates Yield in the medium term due to the reallocation of relative property values to them, all things being equal.

Western Power achieves a broadly balanced outcome, on account of the structure of its willingness to pay. According to information made available by Western Power, the value of its financial contribution to any power undergrounding project is based exclusively on its internal valuation of the financial benefit it can realise. Through this policy Western Power does not realise material net gains, but also does not realise losses, and caps its financial contribution.

As a result, the City of Nedlands carries a significant share of both the financial, and economic and social, costs flowing from the program. A decision to progress the project as it is currently constructed, and with the current funding mix, results in non-recipient ratepayers shouldering a substantial burden in order for a cohort of residents to realise significant gains.

While there are intertemporal equity considerations at play – many residents have enjoyed the gains associated with underground power for some time, likely at the cost of the City and other ratepayers – the size of the disparity between financial cost shares and economic and social benefits suggests there may be merit in exploring alternative options to ease the burden on City ratepayers.



2.7 ASSESSMENT OF OPTIONS

The City of Nedlands considered a number of options in the development of this project. The options needed to align to the agreed planning principles for the City, as well as suiting community needs. Some, but not all of the options are detailed below.

Option 1 – Do Nothing

This option involves making the decision not to undertake the project at this time and to leave the overhead power system in situ. This option is contrary to commitments made to the community by Council and will not deliver any of the benefits detailed in this business case – nor will it require the cost outlay, acceptance of risk and implications that are detailed in this document. Taking no action has the following implications:

- Affordability - no cost outlay, sunken cost of \$940,500 for project design works, more money available for City assets.
- Political - failure of the City to deliver the goal of Underground Power may lead to high ratepayer dissatisfaction. No political risk due to ratepayers being asked to fund part of the project.
- Level of financial risk to the City – Low.
- None of the implications related to road maintenance, other city assets and opportunity cost.

Option 2 – Postpone The Underground Power Project

With nearly 80% of residences in the City having underground power, it would be expected that the remaining residences will eventually receive underground power. As such, the question is less about "should we do this project?" than "when should we do this project?"

If the City chooses not to go ahead with this project now, it does not mean that the 3 identified project areas will never receive underground power. The future options for undergrounding power in the project areas are as follows:

- Apply for future rounds of SUPP
- Apply for the Targeted Underground Power Program (TUPP)
- Carry out Option 3, 4 or 5, but in the future.

SUPP – The three project areas have been unsuccessful in receiving funding through this program in the past therefore it is unlikely that they will receive future funding through SUPP (especially given the program will conclude in 2024, to be replaced by TUPP).

The homes in Hollywood East, Nedlands North and Nedlands West were not given priority in the SUPP program as, at the time of consideration, they were in better condition than other areas.

TUPP – key features of the TUPP program include prioritising project areas with a high density of aging overhead assets. This program includes a State Government contribution to support project in lower socio-economic project areas.

With these guidelines in mind, it seems unlikely that the City of Nedlands would be successful in receiving funding through TUPP in the near future. However, when the existing overhead power assets age, it is expected the City will become a priority. The concern here is that, as the assets age the reliability of supply and safety risk will increase and, by the time the City is a priority, TUPP may have ceased and City ratepayers would likely be highly dissatisfied with the quality of their power supply.

Option 2 has the following implications:

- Affordability – no cost outlay, more money available for City assets. However, the City has already outlaid a substantial amount of money (\$940,500) for the design phase of this project. If the City postpones the project, the designs will become out of date and this money will be wasted as a re-design will need to occur prior to project delivery. It is noted, however, that these are sunk costs and there is no extra cost outlay for this option. It must also be noted though, that if the City decides to postpone this project, there will likely be increases in material costs and other contractor costs in the future, which may result in an increased financial impost of doing the project at a later date.
- Political – failure of the City to deliver the goal of underground power in the near future may lead to high ratepayer dissatisfaction. No political risk due to ratepayers being asked to fund part of the project.
- Level of financial risk to the City – Low.
- None of the implications related to road maintenance, other city assets and opportunity cost – until the decision is made to complete the project.

Option 3 – Complete The Project As Per This Business Case

This option will complete the project in 3 stages over 4 years with service charges to ratepayers over 4 years, as described in *Section 2.2 Project Description*. All benefits and costs of this option are as per this business case.

This option will have the following implications:

- Affordability - high impact on City cashflows and reduced borrowing capacity, lost opportunities to fund other projects. The City will need to employ 1FTE Project Manager.

Costs associated with this would be \$100,000 per year in remuneration, plus a vehicle and associated on costs over a 4-year period.

- Political - High ratepayer satisfaction with project delivered in a short timeframe. Likely to be high dissatisfaction from some ratepayers given their requirement to contribute financially to the project.
- Level of financial risk to the City – high.
 - This option comes with a high risk because City borrowing capacity may be reached and funding commitments for future stages may not be able to be funded through borrowing by the City.
 - Service charges repayments by ratepayers may not be achieved given the current economy and a possibly future worsening economy.
 - It is expected that City cashflows will be impacted.
 - Likely that the City will be required to reject or postpone other projects while this project is funded/repaid.

Option 4 – Complete The Project Over 7 Years

An alternative option to complete the project with less risk to the City would be to stagger the commencement of each project over a longer period of time, commencing with Nedlands North (Floreat). The timeframe can be either 7 years (this option) or 10 years (Option 5 below). The risk of these options is the continued escalation of price of delivering underground power in those remaining project areas.

Option 4 will complete the project in 3 stages over 7 years, with service charges to ratepayers over 7 years. The benefits of this option are as per this business case, with the costs likely being higher due to cost escalation and project manager costs.

This option will have the following implications:

- Affordability - reduced impact (though still a considerable impact) on City cashflows and less impact on borrowing capacity as loan debt raised over 7 years and paid down over 7 years. The cost of this option overall is expected to be higher than Option 3 due to project cost increases and future inflation. Additionally, if this option is chosen, the City would need to employ project managers to carry out each stage separately. This would be inefficient and costly, as it is not expected that the same project manager would be able to be employed for each stage, thus requiring onboarding, training and knowledge transfer for each new stage.
- Political - Moderate ratepayer satisfaction/dissatisfaction as project delivery over 7 years, which may be slower than residents would like. However, if residents know their stage is programmed and coming, they may be willing to wait for delivery. Possible dissatisfaction in the project area that is delivered last. The longer time to repay costs will lessen ratepayer dissatisfaction at having to contribute financially (especially given current cost of living pressures).
- Level of financial risk – moderate.
 - More conservative assumptions – all loans being over 7 years lowers the risk – borrowing capacity improved as longer timeframe to pay down loan debt before raising more loan debt for next stage. Reduced risk of reaching borrowing capacity and funding commitments not able to be funded by the City.
 - Service charges repayment assumptions over 7 years is more conservative (therefore less risk of not being achieved)
 - Reduced risk to City cashflows due to longer timeframe for funding/loans.
- Implications relating to road maintenance, other City assets and opportunity cost may still be experienced but will be lessened due to improved cashflow.

Option 5 – Complete the project over 10 years

This option will complete the project in 3 stages over 10 years, with service charges to ratepayers over 10 years. The benefits of this option are as per this business case, with the costs likely being higher due to cost escalation and project manager costs.

This option will have the following implications:

- Affordability - reduced impact on City cashflows and less impact on borrowing capacity as loan debt raised over 10 years and paid down over 10 years. The cost of this option overall is expected to be higher than Option 3 due to project cost increases and future inflation. Additionally, if this option is chosen, the City would need to employ project managers to carry out each stage separately. This would be inefficient and costly, as it is not expected that the same project manager would be able to be employed for each stage, thus requiring onboarding, training and knowledge transfer for each new stage.
- Political - high ratepayer dissatisfaction as project delivery over 10 years is too long. It is expected that residents would like stages delivered and programmed sooner - waiting for up to 10 years for delivery of stage 3 is likely to result in dissatisfaction. The longer time to repay costs will lessen ratepayer dissatisfaction at having to contribute financially but this will possibly be mitigated by not receiving the benefits for such a long time.
- Level of financial risk – moderate
 - Most conservative assumptions - all loans being granted over 10 years comes with lower risk as borrowing capacity is improved with the longer timeframe to pay down loan debt before raising more loan debt for next stage.
 - Reduced risk of reaching borrowing capacity and funding commitments not able to be funded by the City.
 - Service charges repayment assumptions over 10 years more conservative (therefore less risk of not being achieved)
 - Reduced risk to City cashflows due to longer timeframe for funding/loans.
- Implications relating to road maintenance, other City assets and opportunity cost may still be experienced but will be significantly lessened due to improved cashflow.



The options considered in the development of this project are summarised in the table below.

Option	Benefits	Implications/risks	Cost
1. Do Nothing	<ul style="list-style-type: none"> No cost outlay Low financial risk No impost on ratepayers 	High ratepayer dissatisfaction	\$0.
2. Postponement of planned project	<ul style="list-style-type: none"> No cost outlay Low financial risk No impost on ratepayers Chance for City to apply for future stages of TUPP, which would significantly decrease financial outlay from City and residents 	<ul style="list-style-type: none"> High ratepayer dissatisfaction Risk that City will not receive additional funding through TUPP 	<ul style="list-style-type: none"> Sunken cost of \$940,500 \$0 now Potential loss of up to \$940,500 outlaid for design Probable significant increase in cost
3. Fund project over 4 years	<ul style="list-style-type: none"> All project benefits as per business case High ratepayer satisfaction Project completed quickly City of Nedlands engage PM ongoing for a 4 year period 	<ul style="list-style-type: none"> High cost High risk in terms of borrowings/loans and City cashflow Lost opportunity to spend money on other projects Ratepayer dissatisfaction at high cost to them 	\$19,978,601 (inc \$940,500 already spent) plus \$400,000 for PM.
4. Fund the project over 7 years	<ul style="list-style-type: none"> All project benefits as per business case Reduced risk to City cashflows Less impact on borrowing capacity Service charges repayments have less impact on ratepayers 	<ul style="list-style-type: none"> Increased costs and inefficiency associated with employment of PM over longer period Increased costs due to cost escalation 	Higher than Option 3
5. Fund the project over 10 years	<ul style="list-style-type: none"> All project benefits as per business case Reduced risk to City cashflows Less impact on borrowing capacity Service charges repayments have less impact on ratepayers 	<ul style="list-style-type: none"> Increased cost and inefficiency associated with employment of PM over longer period Increased costs due to cost escalation High ratepayer dissatisfaction at project timeframe 	Higher than Option 3 and 4

TABLE 3 – OPTIONS ASSESSMENT

2.8 FUNDING STRATEGY

The total cost of this project is \$28,727,374. Western Power is offering a Net Benefit discount which accounts for approximately 30% of total project costs.

This brings the total cost of this project, payable by the City to \$19,978,601 (this includes \$940,500 in design costs, which have already been paid by the City). The remaining \$19,038,101 is intended to be funded through contributions (reserves) and borrowings from the City of Nedlands and residents in the affected areas.

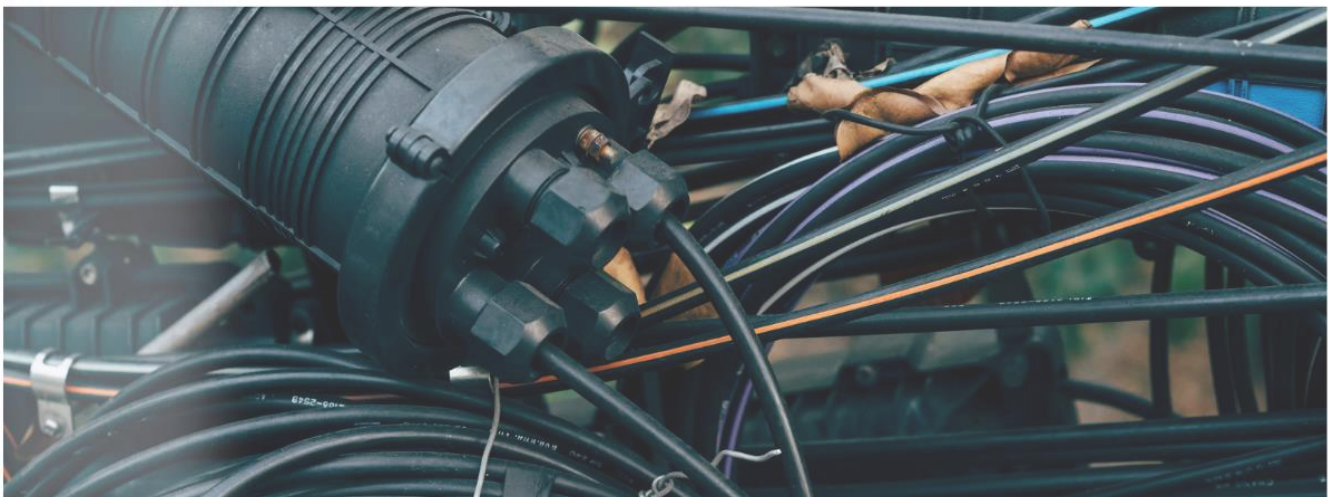
The current balance in the City's Underground Power Reserve is \$4 million, leaving \$15,038,101 to be funded from future earnings or loans.

Under the Council's current Underground Power Policy, up to 50% of the City's contribution is recoverable from ratepayers. However, it is assumed the City will initially pay for the household contribution (which is consistent with how Western Power expects the undergrounding of power scheme to operate) and this would be repaid by affected residents through service charges raised as part of their annual rates notice.

Given ratepayers can repay the debt over a period of up to 10 years, it is recommended that ratepayer contributions be funded via separate loans. As such, the City would take out 6 loans to cover the outstanding balance of this project – 3 loans to cover the City's share of the project costs (for stages 1, 2 and 3), and 3 loans to pay for the contribution of the affected residents, as follows:

- Stage 1 Loan 1: \$691,757 in 2023/24 to cover the City's portion of this stage.
- Stage 1 Loan 2: \$807,084 in 2024/25 to cover the ratepayer portion of this stage, which would be paid back by service charges raised.
- Stage 2 Loan 3: \$2,078,859 in 2024/25 to cover the City's portion of this stage.
- Stage 2 Loan 4: \$1,406,863 in 2025/26 to cover the ratepayer portion of this stage, which would be paid back by service charges raised.
- Stage 3 Loan 5: \$2,784,435 in 2025/26 to cover the City's portion of this stage.
- Stage 3 Loan 6: \$1,666,555 in 2026/27 to cover the ratepayer portion of this stage, which would be paid back by service charges raised.

The City's Manager of Financial Services worked with the WA Treasury Corporation (WATC) to estimate the borrowing capacity of the City to determine if they would be able to borrow the required funds for this project. Details of this consultation are outlined in the Implications section (Point 4 Ability to Secure Loan) of *Section 2.2.2 Project Benefits, Costs and Implications*.



2.8.1 PROJECT BUDGET

Western Power has provided a project estimate for the works at a 30% accuracy, based on current market conditions and recent projects. A breakdown of the latest formal project cost estimate is shown in the table below.

	Capex	WP Net Benefit/contribution	LGA to fund Capex	Opex	Design Costs (already paid)	LGA Total Funding (Capex + Opex + design)
Hollywood East	\$13,166,764	\$6,333,189	\$6,833,575	\$1,663,295	\$391,422	\$8,888,292
Nedlands North	\$5,538,880	\$2,637,168	\$2,901,712	\$481,802	\$203,527	\$3,587,041
Nedlands West	\$10,021,730	\$3,904,338	\$6,117,392	\$1,040,325	\$345,551	\$7,503,268
TOTAL	\$28,727,374	\$12,874,696	\$15,852,678	\$3,185,422	\$940,500	\$19,978,601

TABLE 4 - PROJECT COST ESTIMATE

The Capex portion of the project is the construction of the Western Power network and assets. This involves the transformers, interface to existing network and underground cabling in the streets to the green "domes". The Opex portion is the new underground connections from the green domes to the properties. That portion of the network is not a Western Power asset so is generally funded by the Council and property owner.

Should Council decide to proceed with the project, Western Power will provide an updated cost estimate to a 10% accuracy after the completion of a Request for Quotation process. This process can only commence after Council provides this direction. However, it is likely that the updated cost estimate will result in a significant increase of around \$8 million, which is expected to increase the City's funding by around \$6 million (inclusive of ratepayer contribution).

2.8.2 RESIDENT CONTRIBUTION

The 3 project areas have the following numbers of properties within their boundaries:

1. Nedlands North - 157 allotments with 273 properties in total (259 residential, 14 commercial).
2. Nedlands West - 339 allotments with 650 properties in total (637 residential, 9 commercial, 4 government).
3. Hollywood East - 542 allotments with 778 properties in total (750 residential, 1 residential/commercial, 22 commercial, 5 government).

A cost allocation per property will require a Council decision as this cost would depend on how the City chooses to fund the projects. A further breakdown of the probable cost split is shown in Table 5 below using Project cost/number of properties and then a 50:50 split between the City and property owner. This table does not take into consideration properties which already have an underground connection from an existing dome and the meter box.

Project Name	Total LGA Contribution (Capex + Opex + design)	Number of properties	Contribution per property	50:50 share
Nedlands North	\$3,587,041	273	\$13,139.34	\$6,569.68
Nedlands West	\$7,503,268	650	\$11,543.49	\$5,771.74
Hollywood East	\$8,888,292	778	\$11,424.54	\$5,712.27

TABLE 5 COST SPLIT BETWEEN LGA AND PROPERTY OWNER

Note: The figures detailed are indicative only. A considerable amount of work is required to determine the final costs charged to residents to take into consideration a range of discounts offered to individual properties, e.g. already have a connection, proximity of transmission lines.

Preliminary analysis indicates that discounts due to proximity to remaining transmission lines or Primary Equipment sites will affect each project as follows:

1. Nedlands North – approx. 10% of properties
2. Nedlands West – approx. 19% of properties
3. Hollywood East – approx. 4% of properties

It is assumed that the City would initially pay for the household contribution, which is consistent with how Western Power expects the undergrounding of power scheme to operate and would require the City to coordinate payment from the households.

The simplest way to manage these payments is through giving each affected property a service charge as part of their annual rates notices equal to their repayment. This then becomes a mandatory payment.

Service charges received are credited to a Reserve Account and all loan repayments are made from the Reserve Account. If the scheme is managed in such a way that gives ratepayers the option to pay in full, or when the property is sold, such payments can be held in the Reserve Account and drawn down as required. Interest can be earned on the Reserve Account. Where payments are made in full they may assist in carrying any costs to carry the debt and recoup it each year.

It is noted that, until affected ratepayer engagement occurs as part of the project delivery, it is unknown what level of dissatisfaction is likely to occur among residents who will receive this additional charge on their rates.

2.8.3 SUSTAINABILITY AND ONGOING VIABILITY

This project will deliver ongoing benefits to Western Power in the form of reduced operating and maintenance costs and reduced costs associated with power interruptions.

It will also lead to reduced short term maintenance costs for the City of Nedlands, as well as reduced power costs due to the installation of the latest lighting technologies including smart control.

There is expected to be a reduction in funds spent by the City of Nedlands on street/powerline pruning from \$70,000 per year to \$40,000 per year.

However, there will be increased expenditure of \$7,000 on sweeping and \$2000 on drainage cleaning works. This is due to the fact that, with the removal of power lines, trees will be able to grow bigger canopies, some of which will drop more leaves. This will increase leaf litter on roads and affect sub surface road drainage efficiencies (e.g. road drainage grates may become fully or partially blocked more often by more leaves during rain events).

The City is also expected to see minor annual savings through a reduction in power costs from the installation of a new LED streetlight system that meets the latest Australian Standards. However, the savings amounts are unknown.

As such, there are estimated to be minimal savings for the City of Nedlands, which will likely be mitigated by the loan repayment costs in the short term.

2.9 RISK ANALYSIS

The below risk matrix has been used to assess the risks associated with this project.

	CONSEQUENCE				
LIKELIHOOD	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Extreme (5)
Rare (1)	Low	Low	Low	Low	Low
Unlikely (2)	Low	Low	Low	Medium	Medium
Possible (3)	Low	Low	Medium	Medium	Medium
Likely (4)	Low	Medium	Medium	High	High
Almost certain (5)	Low	Medium	Medium	High	Extreme

Risk	Likelihood	Consequence	Risk Score	Mitigation
Unable to secure loans	Possible	Extreme	Medium	<ul style="list-style-type: none"> Maintain open communication with lending bodies. Project may need to be re-scoped to be delivered over longer timeframe. Cancellation or postponement of the Underground power project leading to reduction in service levels and community dissatisfaction

Risk	Likelihood	Consequence	Risk Score	Mitigation
Budget increases with updated cost estimate	Almost Certain	Major	High	<ul style="list-style-type: none"> City need to increase borrowings Affected residents and taxpayers need to pay more than expected Cancellation or postponement of the Underground power project leading to reduction in service levels and community dissatisfaction
Cost overruns	Possible	Major	Medium	<ul style="list-style-type: none"> Seek additional funding/borrowing options from Shire Council Leave longer gaps between the 3 stages Western Power to provide more updated cost estimated with 10% accuracy once project is approved by Council
Delays in project commencement	Possible	Minor	Low	<ul style="list-style-type: none"> The 3 project areas have been included in Western Power's current program of works Finalise planning and ensure Western Power receive approval to proceed ASAP
Significant delays due to weather	Possible	Minor	Low	<ul style="list-style-type: none"> Ensure sufficient contingency in construction schedule Schedule external works during spring/summer period Ensure all insurances are kept up to date
Public matters liability	Unlikely	Moderate	Low	<ul style="list-style-type: none"> Ensure all insurances are kept up to date Ensure OSH practices are followed
Quality of roads and/or other City assets deteriorates as a result of reduced funding	Likely	Moderate	Medium	<ul style="list-style-type: none"> Ensure ongoing inspection of City assets that lose funding Open communication with the community to mitigate their dissatisfaction with quality of City assets

TABLE 6 – RISK ASSESSMENT

IMPLEMENTATION STRATEGY

3.1 PROJECT TIMEFRAME AND KEY MILESTONES

This project has been included in Western Power's current program of works, with the first project to be commenced in the 2023/24 financial year (pending City of Nedlands approval). Further delays to the planning phase however may mean that other projects being progressed by Western Power would become ready for delivery and therefore supplant this project, which may impact the delivery timeframes.

The below timeframes are based on Council agreeing to proceed with the project at the March 2023 Council meeting.

Main Activities / Milestone	Milestone Date
Project Approval	March Council Meeting, 2023
Community consultation starts	1 April 2023
Community consultation ends	30 April 2023
Western Power (WP) commence RFQ process	1 June 2023
WP RFQ process finishes	30 September 2023
Relocation works contract (RWC)	1 October 2023
Present RWC to Council and execute RWC	1 December 2023
Engagement of Construction contractor	15 December 2023
Preplanning state	1 January 2024
Stage 1 construction starts (Floreat)	1 April 2024
Preplanning stage 2 (Mt Claremont) and close out of stage 1 - 12 weeks	30 September 2024
Stage 2 (Mt Claremont) construction	1 October 2024
Preplanning Stage 3 (Hollywood East) and closeout of Stage 2 - 12 weeks	8 July 2025
Stage 3 construction	9 July 2025
Close out Stage 3	2 September 2026
Project Completion	28 October 2026

TABLE 7 - KEY MILESTONES

3.2 PROJECT MANAGEMENT

The City will employ a dedicated full-time Project Manager (PM) to manage this project. This position will be filled by a PM with experience in planning or delivering an underground power project. Costs associated with employing a full-time PM include \$100,000 per year in remuneration, plus a vehicle and associated on costs.

The City will advertise the position of Underground Power Project Manager on its website, with applications to be received online via the City's recruitment portal. The most competitive candidates who demonstrate they meet the requirements of the role will be shortlisted for an interview, before the successful candidate is chosen.

The City will allocate overall oversight of the Project to senior officers at the City of Nedlands, with a Project Director and Project Sponsor proposed.

The management team will be responsible for liaising with Western Power and affected residents, managing the planning, construction and delivery of this project to time, to standard and within budget. The management team will report monthly to Council throughout this project.

The City's Project Management department has recent history in delivering Public Infrastructure works up to \$2.5M (Swanbourne Surf Club Upgrade - \$2.5M, Waratah Av rehabilitation - \$1.5M) with individual project members having extensive experience in Civil and Building works.

3.3 PROJECT DELIVERY

In order to progress this project, Council needs to give the direction to proceed to community consultation. This engagement, which will be carried out with residents in the affected areas, will include:

- Communicating why Underground Power is needed
- Ensuring the community understands the benefits, costs, risks and implications of the Underground Power Project
- Gaging community awareness of the project
- Gaging community willingness to go ahead with the project
- Confirming the approximate amount residents would be required to pay
- Establish how residents are willing to pay
- Outlining expected timeline for completing the project
- Advantages/disadvantages of running the 3 project areas concurrently

Following positive community consultation, the City will provide Western Power with approval to proceed to a construction RFQ, following which Western Power will provide confirmation of timings in conjunction with the construction contractor.

Western Power has confirmed that this project to deliver underground power to the remaining 1,701 residences in the City of Nedlands over 3 stages - has been included in its current program of works, with the first project to be commenced in the 2023/24 financial year (pending City of Nedlands' approval).

However, delays to the planning phase may mean that other projects being progressed by Western Power would become ready for delivery and therefore move in front of the Nedlands projects, which may impact the delivery timeframes.

SUPPORTING DOCUMENTS

The below supporting documents are attached to this business case.

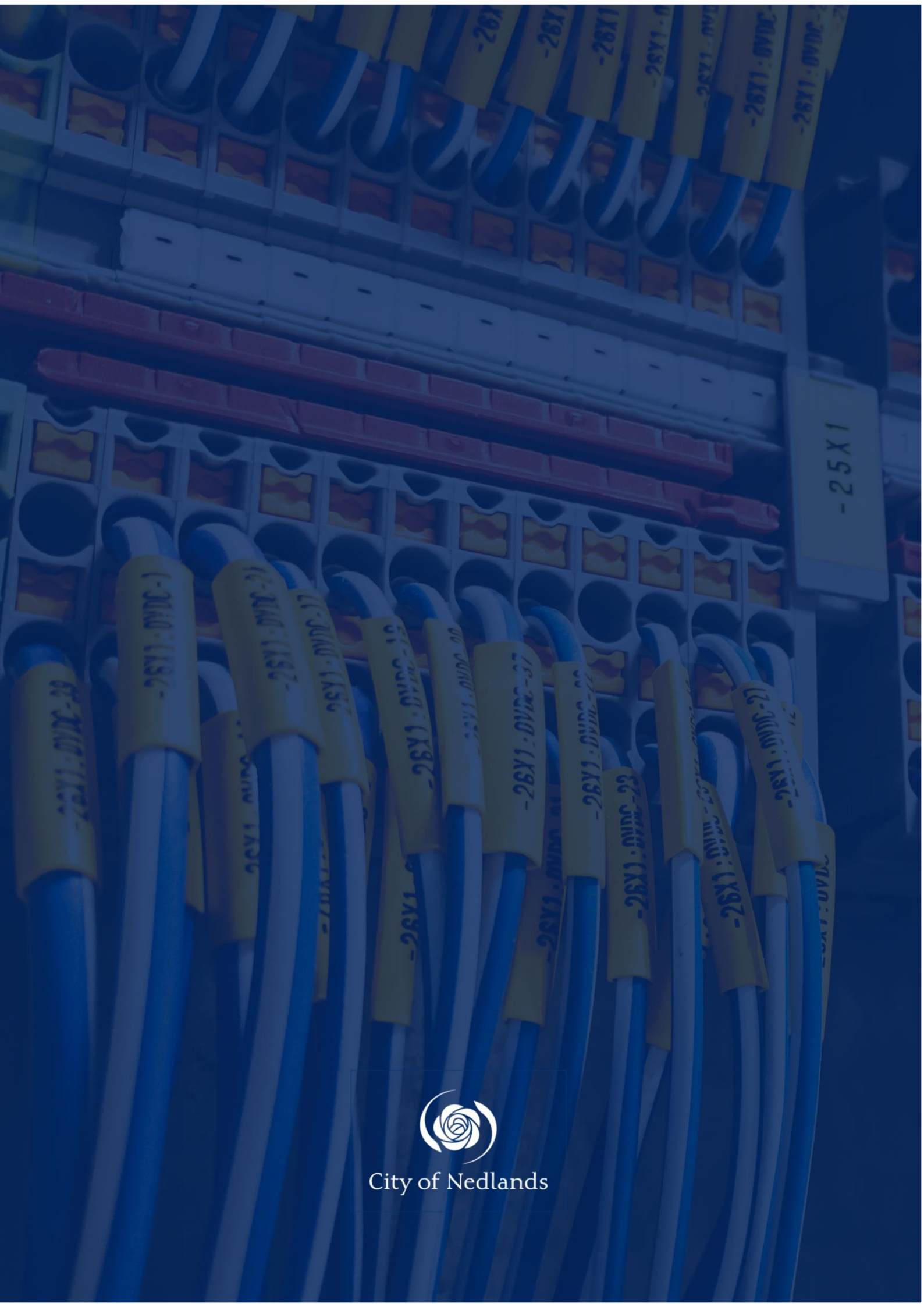
- Attachment 1: Cost Benefit Analysis





City of Nedlands

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