



























ACIL Allen have also addressed a list of qualitative costs and benefits that may arise as a result of the UGP project. These have previously been identified by ERAWA's *Inquiry into State Underground Power Program Cost Benefit Study 2011* and have been reassessed by ACIL Allen according to their knowledge of this UGP project relevant to the City of Nedlands. These benefits and costs are either too small to reliably quantify given the scope of the program (ie 1,701 properties) or are generally unquantifiable.

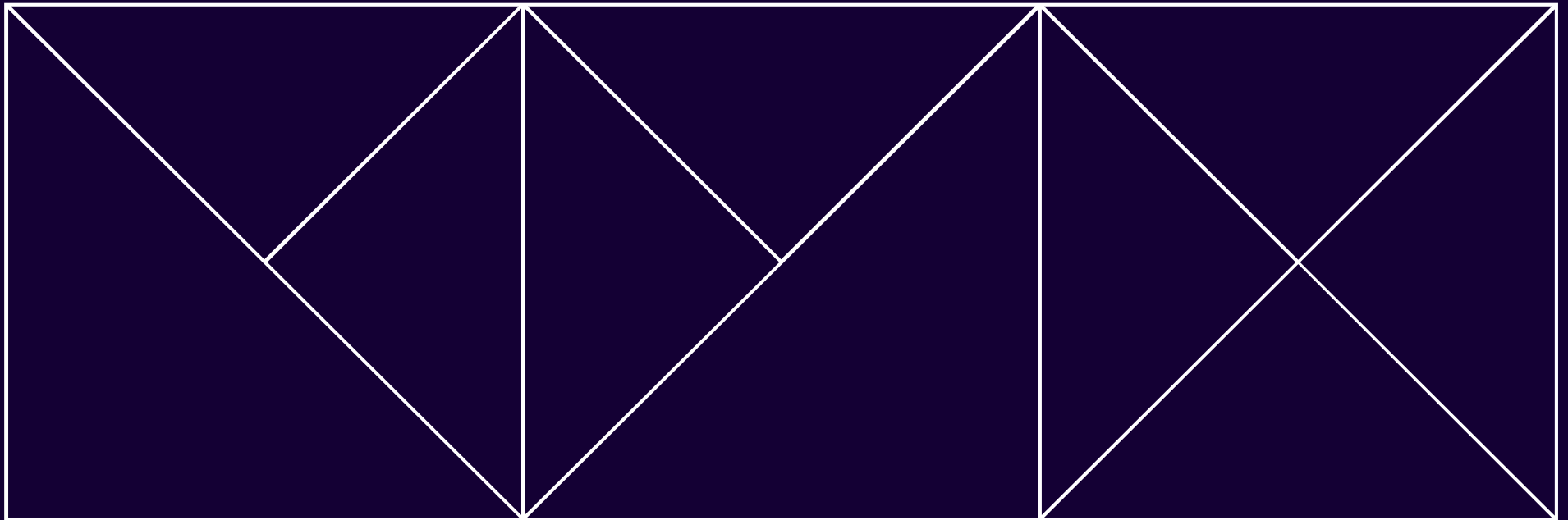
**Table 6: List of non quantified costs**

Qualitative cost	Commentary	ACIL Allen assessment
Soil erosion	"Soil erosion when overhead distribution infrastructure is removed and replaced with underground power." (ERA).	Too small to reliably quantify given the scope of the program and difficult to quantify.
Increased exposure to dig-ins	"The increased exposure to dig-ins when cables are placed underground, but these costs are likely to be at least partially offset by the reduced electrical contact injuries associated with overhead power systems." (ERA).	This cost is addressed by Western Power's net financial impact assessment (ie is accounted for)
Longer repair times	Damage to underground power lines can take longer to repair as a fault must be located before digging up to work on restoring power (various).	Too small to reliably quantify given the scope of the program and difficult to quantify.

**Table 7: List of non quantified benefits**

Qualitative benefit	ERAWA commentary	ACIL Allen assessment
Increase in the reliability of electricity services	"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."	Western Power's reliability in the Inner City region was assessed as 99.991% in FY22. The impacts on overall network supply would be too small to identify. Impacts on residents are accounted for in property values.
Improvements in the quality of electricity supply	"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." (ERA).	ACIL Allen agrees with the ERA's assessment.
Positive effects on the environment	"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." (ERA).	Too small to reliably quantify given the scope of the program and difficult to quantify.
Reduction in accidental live-wire contact	"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." (ERA).	ACIL Allen agree with ERAWA's assessment. Too small to reliably quantify given the scope of the program and difficult to quantify.
Improved visual amenity	"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)." (ERA).	This benefit is likely to be captured in the uplift in property values. Too small to reliably quantify given the scope of the program and difficult to quantify.

# Modelling inputs and assumptions



In order to complete the Cost Benefit Analysis, ACIL Allen developed a range of inputs and assumptions. The overarching inputs and assumptions and key inputs and assumptions used to populate the Cost Benefit Analysis framework's costs are presented below.

**Table 7: Overarching inputs and assumptions**

Assumption	Value	Source and discussion
Reporting type	Financial year	ACIL Allen to align with State Budget cycles and State Government statutory reporting cycle.
Modelling type	Nominal terms	ACIL Allen, to align with contemporary practice and requirement to consider a 7.00% discount rate.
Modelling period	30 years	ACIL Allen
Discount rate	4.50%	Department of Treasury, in line with business case assessment requirements.

**Table 8: Inputs and assumptions for quantified costs**

Assumption	Value	Source and discussion
UGP properties – Hollywood East	778	City of Nedlands, installation from Oct-2025 to Nov-2026
UGP properties – Nedlands North	273	City of Nedlands, installation from Jan-2024 to Jul-2024
UGP properties – Hollywood West	650	City of Nedlands, installation from Oct-2024 to July-2025
Total cost – Hollywood East	\$15.22m	City of Nedlands, includes capital, operational, and design costs
Total cost – Nedlands North	\$6.22m	City of Nedlands, includes capital, operational, and design costs
Total cost – Hollywood West	\$11.41m	City of Nedlands, includes capital, operational, and design costs
Total cost	\$32.85m	Sum of above
Western Power capital contribution	\$12.87m	City of Nedlands
Total City of Nedlands cost	\$19.98m	City of Nedlands
City of Nedlands loan terms	4 years, 4.50%	City of Nedlands, P&I loan term WATC
Opportunity cost	4.40%	As per business case assessment requirements.
Project manager costs	\$100,000 pa over 4 years	City of Nedlands, ACIL Allen

In order to complete the Cost Benefit Analysis, ACIL Allen developed a range of inputs and assumptions. The key inputs and assumptions used to populate the Cost Benefit Analysis framework to assess the quantifiable benefits are presented below.

**Table 9: Inputs and assumptions for quantified benefits**

Assumption	Value	Source and discussion
Tree trimming saving per property	\$18.59 pa	ACIL Allen, present value terms (2023), adapted from ERAWA, Inquiry into State Underground Power Program Cost Benefit Study 2011, indexed annual tree pruning cost of \$13.35 per lot to 2023 dollars (ABS Cat. 6401.0).
Avoided car crash savings, per property	\$29.77 pa	ACIL Allen, present value terms (2023), adapted from ERAWA, Inquiry into State Underground Power Program Cost Benefit Study 2011, page ix Avoided Vehicle Collisions with Power Poles, \$13.0 million (2010 value) over 15 years indexed (ABS Cat. 6401.0 CPI Australia) to 2023 dollars using the cost saving per property per year value.
Avoided replacement and maintenance	\$12.87m	Western Power, via City of Nedlands
Property valuation uplift	3.50%	ERAWA, Inquiry into State Underground Power Program Cost Benefit Study 2011, Table 5.8 Variability in the Value of Underground Power by House Price, indexed house values to 2023 values applied to percentage of mean sale price. City of Nedlands sales price data.
Median property sales price – Hollywood East	\$1.41m	City of Nedlands
Median property sales price – Nedlands North	\$1.48m	City of Nedlands
Median property sales price – Hollywood West	\$1.35m	City of Nedlands
Payments from residents	50%	50% of the capital costs for the UGP project is funded by City of Nedlands residents over a four year period



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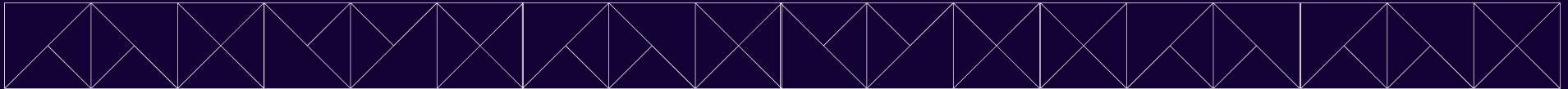
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