Street Lighting Procurement

Recommendations

That the Board:

i. Approves stage 1 of an accelerated street lighting renewals of 40,000 70w High Pressure Sodium (HPS) replacing them with Light Emitting Diode luminaires (LED) over a period of 5 years and installation of a Tele-Management System (TMS) at a total additional capital cost of $22m.

ii. Delegates authority to the Chief Executive to approve the Procurement Plan for new street light maintenance and renewals contracts (which incorporates stage 1 of the accelerated renewals) to replace the existing nine legacy contracts. The total estimated contract value over the term (4 years + 1 year + 1 year) and including the proposed additional capital cost is $104.4m.

iii. Notes that the stage 1 programme will be funded from AT's reduced current capital envelope or from a separate operating offset funding agreement with NZTA.

iv. Notes anticipated net savings in energy and maintenance arising from stage 1 of the LED replacement programme of $36m over 20 years.

v. Notes that the technology for conversion of the remaining 64,000 higher powered luminaires isn't yet sufficiently mature to make accelerated conversion commercially viable, but it is anticipated that it may be in 2 to 3 years.

Executive summary

Auckland Transport (AT) is responsible for approximately 108,000 street lights and amenity lights. Approximately 44,000 are 70w HPS lights on 'P' category roads (pedestrian predominant) with the remaining 64,000 higher wattage HPS lights on 'V' category roads (vehicle predominant).

LED technology for the 70w HPS luminaires is now sufficiently mature that an accelerated renewals programme across the network is commercially viable. This is not yet the case for higher powered luminaires. Over the next 2 to 3 years the cost of these higher power luminaires is expected to decrease and the efficiency increased to make it commercially attractive to replace these remaining 64,000 luminaires.

Replacement is therefore proposed in two stages, with 70w HPS luminaires replaced in stage one and the balance assessed for replacement in a subsequent programme (stage two). Stage one additional capital costs are $22m over 5 years (at approximately 20% p.a.); this will supplement the current $14m p.a. street lighting renewals and maintenance budget. This accelerated programme will result in energy and maintenance savings giving an 8 year pay back and total cost of ownership savings exceeding $36m over a 20 year period. The future implementation of stage two is anticipated to produce further savings when the technology is sufficiently mature and costs have decreased.

Strategic context

Energy Resilience and Low Carbon Action Plan

The proposed replacement of existing HPS street lights with energy efficient LED street lights supports Auckland Council's objective of reducing energy use and carbon emissions by 40% by 2040. The Energy Resilience and Low Carbon Action Plan is structured around five areas of transformation including the way we use and generate energy. The initiatives identified in the section "Managing energy demand" include "Establishing a plan to deploy modern energy efficient technology for street lighting to improve energy efficient outcomes".

Operational Costs

The proposed replacement programme will also contribute to the Board's sustainable funding theme by reducing long term operating costs. The energy and maintenance savings over the 20 year life will be $36m.

Above Ground Assets

With an increasing number of power and telecommunications services being undergrounded, AT is a significant owner of assets that remain above ground in the road corridor. These assets provide a platform for a range of functions including street/pedestrian/feature lighting, banners, CCTV, wireless telecommunications technology, traffic signals, signage, pedestrian signals, etc. Strategically, streetlights are an asset which are likely to have increasing future value to AT and others.

Background

AT spends $28m p.a. to operate and maintain our 108,000 street lights; this budget is 50% subsidised by NZTA. Energy costs account for approximately $14m p.a. of the total with the balance being maintenance and renewals. The underlying load growth on the street light network is circa 2.5% per annum due mainly to new subdivisions. The resulting increase in electricity and maintenances costs is over $500k p.a.

There are currently nine legacy street light maintenance and renewals contracts across the region. All are past their end dates and must be retendered in some form. It is considered that the existing contracts are expensive due to the increasing cost adjustment index applied to scheduled contract rates. While we expect better rates in the new contracts there have been significant increases in the number of street lights on the network in recent years which will offset some the savings expected from more competitive rates.

Over recent years LED technology has matured such that it has been trialled and introduced in a number of cities worldwide to provide more energy efficient street and amenity lighting.

LED technology has a number of benefits over the older HPS technology:

- A 50% reduction in energy use and corresponding energy costs.
- Reduced maintenance due to more reliable luminaires and longer lamp life. Note: Current HPS lamps are changed every 4 to 5 years whereas the design life of an LED is 20 years with an expected life of up to 25 years.
- The LED's have a white light which is internationally recognised as providing a safer environment for pedestrians and vehicles at lower electricity use.
- Less light spill and road surface glare.

Combining the replacement programme with the installation of a TMS on each retrofit luminaire provides further benefits:

- Allows central control of each light on the network; studies estimate that a further energy saving up to 15% can be achieved through better control of light levels on the network through a central management system.
- The system will manage lights on and off, control light levels at times of low traffic and pedestrian use to more appropriate levels.
- The system will also accurately record actual energy use at each light point and report daily for lights that have not switched on or lights that remain on after sunrise (day burners). This allows real time control and monitoring of the network.
- The system negates the need for night patrols of the network and provides an enhanced customer service as lights out, lights on, will be evident immediately. This has potential to reduce the 750 street light related calls per month to AT's call centre.

Attachment 1 provides a graph to illustrate the relative street lighting budget forecast for the existing network (do nothing) and the true cost of LED replacement including a TMS. A graph is also provided to illustrate the forecast whole of life savings over 20 years.

Issues and options

Procurement model and contract form

AT proposes to replace the existing HPS street lights with energy efficient LED street lights and to install a TMS to achieve an estimated 65% reduction in energy use. Evaluation of the potential procurement approaches was undertaken by PwC against a number of objectives / criteria. The evaluation also reviewed overseas experience with alternative and PPP models. The models, described in further detail in Attachment 2, were ranked in the following order of preference against the qualitative evaluation criteria:

Rank	Model	Assessment
1	Design, Construct, Maintain (DCM)	DCM allows the combination of maintenance and replacement to be optimised by the contractor, with AT retaining the benefits associated with AT owning the asset. The replacement programme is however subject to annual budgeting reviews and which may introduce uncertainty into the investment timeline.
2	Design then Construct (DC) with separate maintenance contracts (status quo)	As per DCM, but without the potential benefits of optimising the maintenance and replacement programme works.
3	Public-Private Partnership (PPP) [Design, Build, Finance, Operate]	PPP is ranked low in the analysis largely because the increased level (and related cost) of effort and specification, combined with the higher cost of private finance, often means that PPPs only provide value for money in projects approaching $100m or greater in size.
4	Privatisation	Privatisation is ranked lowest here as it requires some level of regulation to ensure lighting performance over the long term and to address various other issues related to lack of competition. It also relinquishes control of an asset with potential future importance.

PwC concluded that DCM is the preferred procurement approach. Key aspects of the proposed contract under this model are:

- Two contracts are proposed, one north and the other south of the Harbour Bridge and Whau Local Board boundary. This recognises some differences in the configuration of the electrical supply either side of the boundary. It also serves to maintain competition in the market. Attachment 3 shows the recommended contract areas.
- Contract duration of 4 years (plus a 1+1 year RoR) to align with the conclusion of the 70w replacement programme and the likely maturity of higher wattage LEDs.
- AT specifies the LED luminaire to be used during each of the contract years, and negotiates the price for these directly with the supplier. This ensures that bulk pricing discounts are achieved despite the installation contract being split in two. Annual price negotiation preserves competition while allowing AT to take advantage of further advances in technology and/or price reduction.
- Contracted installation and maintenance costs.

This is a significant contract; it is anticipated the procurement and contract negotiation process will take until April 2015 to conclude. In the interim it is intended to commence the replacement and convert approximately 4,000 luminaires by obtaining competitive quotes from existing maintenance suppliers.

Collaboration with other Agencies

A number of councils are at similar points in their establishment of an LED replacement programme. Most notably New Plymouth District Council is being asked to consider a programme to replace all 8000 luminaires. A number of councils have expressed interest in collaborating with AT in the annual negotiation of LED luminaires; these agencies already use AT's approved list of luminaires when specifying approved fittings. Subject to timing of approvals AT intends to work closely with these other agencies in order to maximise commercial leverage.

The luminaires on the state highway network however are generally higher power, i.e. their replacement will likely be more commercially viable in 2-3 years' time. We are, however, working with NZTA on our programme.

Funding

This proposal occurs at a time when we are facing significant reductions in our capital programme. Operating expenditure will also be constrained. Given this project has a positive future cash flow, and given the small annual investment it is recommended that this proposal proceed. We are also speaking to NZTA about the potential that they provide funding and receive repayments from the annual operating subsidy.

Next steps

1) Finalise EOI and RFP and issue to market;
2) Obtain NZTA approval for the contracts and accelerated renewal programme.

Document ownership

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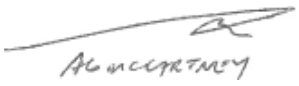
	Tony McCartney **Group Manager Road Corridor**	
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