

**ITEM 13. TENDER - ENERGY EFFICIENT LED LIGHTING RETROFIT**

**FILE NO: S082889**

**TENDER NO: 1211**

**SUMMARY**

As part of the City's Sustainable Sydney 2030 vision to achieve a 70% reduction in greenhouse gas emissions by 2030 the City plans to undertake a lighting retrofit with light emitting diodes (LED) across the public domain lighting network.

The opportunity exists to reduce greenhouse gas emissions within the City of Sydney by an estimated 2,852 tonnes per year through the use of more efficient lighting on the City's streets and other open space areas. This equates to a reduction of 40% in existing electricity consumption and greenhouse gas emissions from the City of Sydney Council's lighting portfolio.

Around 31% of the emissions generated by City of Sydney operations are from public domain lighting (both City owned and Ausgrid owned lights), making it potentially one of the most effective areas to achieve energy and emissions reductions.

Since 2009, the City has been trialling energy efficient light emitting diode technology in Alexandria Park, Kings Cross, Martin Place, George Street and Circular Quay.

The City also joined London, New York and Hong Kong in an international trial of energy efficient, smarter street lighting. By installing the new lights with light controls, they will not only use less energy, but give the City the technology to remotely monitor the light emitting diodes operation and energy use and in some instances maintain design illumination levels and further reduce electricity consumption throughout the life of the light emitting diodes. Light controls will also allow light levels to be adjusted remotely to suit local conditions.

The trial produced high-quality light and recorded electricity savings on average of 40% compared to conventional lights.

The results of the trial, and the research, demonstrated that significant reductions in electricity use, and therefore greenhouse gas emissions, could be achieved. A survey was carried out in early 2011, at two of the trial locations, with more than 90 per cent of those surveyed saying the new lighting was appealing and three-quarters saying it improved visibility.

Tenders were called for a lighting retrofit of the City of Sydney Council's 8,559 public domain lights, with energy efficient light emitting diodes based on an output performance specification with minimum requirements to reduce electricity consumption and greenhouse gas emissions by 40%. However, not all public domain lights can be replaced by energy efficient light emitting diodes at the current time. Nearly 20% of public domain lighting is fluorescent or compact fluorescent luminaires, many of which are located on walls, underpasses, etc, for which there is no ready energy efficient light emitting diode replacement.

The tender did not include the remaining 12,400 lights in the City which are owned by Ausgrid (formerly Energy Australia).

This report recommends that Council reject all tenders, as recommended by the Tender Evaluation Panel and as set out in Confidential Attachment A.

The response received to Council's tender process demonstrated that the City's desired environmental outcomes are achievable and can be exceeded, although the upfront capital costs in the technically compliant tenders are higher than expected. Areas of price, warranty, design, and non-compliance with the tender specifications are also of concern and require further negotiation and resolution.

## **RECOMMENDATION**

It is resolved that:

- (A) Council reject all tenders for the retrofit of the City of Sydney's public domain lighting, with energy efficient light emitting diodes (LEDs) for the reasons set out in confidential Attachment A to the subject report;
- (B) Council not invite fresh tenders or applications as it is considered that inviting fresh tenders or applications would not attract additional suitable contractors over and above those that have responded to this tender;
- (C) Council enter into negotiations with companies that are suitably qualified and demonstrate a capability to provide the tendered services;
- (D) at the conclusion of negotiations, a report be submitted to Council with further recommendations; and
- (E) Tender Evaluation Summary, Attachment A and the Risk Management Plan, Attachment B to the subject report, remain confidential in accordance with Section 10A(2)(d) of the Local Government Act 1993.

## **ATTACHMENTS**

**Attachment A:** Tender Evaluation Summary (Confidential)

**Attachment B** Risk Management Plan (Confidential)

## **BACKGROUND**

1. The City of Sydney has one of the largest public lighting portfolios in New South Wales with approximately 21,000 street and park lights across the City's Local Government Area (LGA). Approximately 12,400 lights are owned and maintained by Ausgrid and 8,559 by the City. This project deals with the lights owned and maintained by the City.
2. As part of the City's Sustainable Sydney 2030 vision to achieve a 70% reduction in greenhouse gas emissions by 2030, the City plans to undertake a lighting retrofit with light emitting diodes (LED) across the public domain lighting network. The specified targets are a reduction in electricity consumption and greenhouse gas emissions by a minimum of 40% from City of Sydney Council's lighting portfolio.
3. Since 2009, the City has been trialling light emitting diode technology in specific areas of Alexandria Park, Kings Cross, Martin Place, George Street and Circular Quay. Energy savings of over 40% were achieved in 14 of the 16 locations retrofitted with light emitting diode luminaires. Two sites did not produce the target reductions due to inaccurate oversizing of the replacement luminaires by the light emitting diode suppliers.
4. To better understand this new and rapidly evolving technology, the City commenced Stage 2 of the trial by installing additional lights with lighting controls, to provide the City with the technology to remotely monitor the light emitting diode operation and electricity use.
5. The lighting controls also allow the light emitting diodes to be adjusted to save electricity where lighting levels were found to be in excess of those required by the relevant standards. In some instances the lighting controls were able to maintain design lighting levels and further reduce electricity consumption in addition to the smart control functions.
6. The City has for some time has been advocating for Ausgrid to adopt a policy of introducing light emitting diode lighting to its standard range of luminaires to reduce the overall electricity consumption and greenhouse gas emissions across the LGA.
7. Ausgrid has recently evaluated several light emitting diode luminaires and announced they are soon to begin their own light emitting diode lighting trial in low level lighting residential areas.

## **ENVIRONMENT/SOCIAL/ECONOMIC**

### **Environmental considerations**

#### Lower greenhouse gas emissions

8. Around 31% of the City's emissions are from public domain lighting (both City owned and Ausgrid owned lights), making it one of the primary areas to achieve energy and emissions reductions for the City's own buildings and operations.
9. The minimum project requirement is a reduction in electricity consumption and greenhouse gas emissions by at least 40%.

10. The City's public domain lighting total annual energy usage is approximately 6,660,000kWh/year, resulting in 7,130 tonnes of carbon dioxide emissions per year (TCO<sub>2e</sub>/year). This is based on hours and load of each individual lamp type authorised for use in public domain lighting and is set by the Australian Energy Market Operator (AEMO).
11. This is the baseline position by which performance of the light emitting diode lights needs to be measured.
12. Using the specified minimum 40% reduction in greenhouse gas emissions, the replacement of lights in the City's 8,559 public domain lighting portfolio across the LGA will lead to emissions saving of at least 2,852 TCO<sub>2e</sub>/year.

#### Mercury free lighting

13. Metal halide, mercury vapour, high pressure sodium and fluorescent lamps all contain small amounts of mercury in varying content. Mercury is a heavy metal which can cause serious health problems. Light emitting diodes have the advantage of being mercury free and makes spent street and park lights more easily recycled or safe for disposal.

#### **Social considerations**

##### Improved safety from better lighting

14. Light emitting diode lights offer the benefit of more natural colour rendering that can help improve safety and security. The availability of different 'colour temperatures' of light emitting diode light (eg, cool, neutral, warm white) can give the City the option to change the colour temperature to the specific street light application. These alternatives are not available with traditional lighting technology.

##### Reduced light pollution

15. Reduced light pollution is made possible by the ability to precisely control light direction through light emitting diode placement. Light emitting diodes provide an even light distribution and this helps reduce glare.

##### Lighting controls

16. Lighting controls have been trialled to confirm their compatibility with the light emitting diode technology. Lighting controls will provide the City with the technology to monitor light emitting diode operation and electricity use remotely. They will also permit the adjustment (or dimming) of lighting. However, this capability would only be used to save electricity where lighting levels were found to be in excess of those required by the relevant standards. Some lighting controls are able to limit inrush currents and maintain design illuminations levels and further reduce electricity consumption throughout the lifetime of the light emitting diodes even without utilising the smart control functions. All City lights will need to comply with all relevant Australian standards.

**Economic considerations**

Reduced energy consumption costs

17. Current estimated electricity usage is 6,660,000kWh/year. This is the baseline position by which electricity consumption of the light emitting diode lights can be compared. The baseline cost of electricity for 2010/11 was \$681,625.

Energy consumption / cost

<b>Variable</b>	<b>Energy Consumption (kWh/year)</b>	<b>Energy Cost (\$/year)</b>
Baseline	6,660,000	681,625
40% reduction	3,996,000	408,975

Maintenance

18. Light emitting diodes should last longer than traditional forms of lighting and this significantly lengthens the replacement cycle compared with traditional lights. This has the flow on impact of less fuel usage by maintenance crews and reduces the burden on the waste stream.

Aesthetics

19. Aesthetics are an important feature of the proposed range of luminaires. The luminaires should be contemporary, elegant, robust and consistent in use of colour, finish, form and detailing to match the surrounding streets, parks or plazas. This element has been included in the tender evaluation.

**PRICE ON CARBON**

20. Since the request for tender, the Australian Government has announced a price on carbon of \$23/tonne beginning on 1 July 2012. The price will rise 2.5% p.a. plus the underlying rate of inflation during a three year fixed price period until 1 July 2015. The carbon price mechanism will then transition to an emissions trading scheme where the price will be determined by the market. Although it is not known what the exact implications of a price on carbon to the City would be, the Energy Efficient LED Lighting Retrofit project would reduce the City's exposure to a price on carbon. For example, the specified minimum reduction in greenhouse gas emissions from this project would equate to an avoidance of a price on carbon of at least \$65,596 at 40% savings at 2012 carbon prices.

**REDUCTION IN GREENHOUSE GAS EMISSIONS**

21. The City of Sydney has a target to reduce overall emissions by 20% by 2012/13 based on 2006 levels. The Energy Efficient LED Lighting Retrofit project has the potential to reduce emissions from between 6.8% to potentially 13% by 2013/14. If successful this will enable the Council to exceed its interim 20% target.

**INVITATION TO TENDER**

22. In March 2011, a Request for Tender invited submissions from suitably qualified organisations for the design, supply, installation and commissioning of an energy efficient light emitting diode retrofit of the City's 8, 559 luminaires in the public domain.

23. The tender was advertised in The Sydney Morning Herald and The Daily Telegraph on Tuesday 26 March 2011 and closed on Tuesday 3 May 2011.

**TENDER SUBMISSIONS**

24. Twelve submissions were received from the following organisations:

- Aldridge Traffic Systems
- Citelum Australia
- Dialight ILS Australia
- G & B Services (NSW)
- GE – UGL Joint Venture
- Kinetic Power Services
- Light Culture Australia
- John Moss Electrical
- Philips Electronics Australia
- Poles and Underground
- Sylvania Lighting Australasia
- Wilken Electrical Services.

**TENDER EVALUATION**

25. All members of the Tender Evaluation Panel have signed Pecuniary Interest Declarations. No pecuniary interests were noted.
26. The relative ranking of tenders as determined from the total weighted score is provided in the Confidential Tender Evaluation Summary – see Attachment A.
27. All submissions were assessed in accordance with the approved evaluation criteria being:
- (a) tendered price;
  - (b) key personnel;
  - (c) proposed program;
  - (d) methodology for installation and recycling process for obsolete luminaires;
  - (e) luminaire aesthetics;
  - (f) energy and emission savings and conformance with specification;
  - (g) warranties / lamp life;

- (h) insurances
  - (i) Occupational Health and Safety systems; and
  - (j) financial and commercial trading integrity/insurances.
28. An analysis of all tendered Schedule of Rates was undertaken for each Principal Activity – see Attachment A.
29. The principal contract requirements of the energy efficient light emitting diode lighting retrofit of the City's public domain lighting luminaires are:
- (a) reduction in electricity consumption and greenhouse gas emissions by a minimum of 40%;
  - (b) provision of works for the City in accordance with the Occupational Health and Safety Act 2000;
  - (c) providing works and services in accordance with all relevant City standards and requirements;
  - (d) providing professional design services to ensure existing lighting levels are maintained and with consideration of all stakeholder requirements;
  - (e) maintenance of material supplied throughout the guaranteed warranty period;
  - (f) recycling of the old lamps/luminaires to comply with City requirements and methodology submitted with tender; and
  - (g) completion of works within submitted program and requirements of the specification.

#### **PERFORMANCE MEASUREMENT**

30. The City will ensure that all Service Providers meet the required performance standards by:
- (a) complying with the scope of work, which clearly states the level of service required by the City;
  - (b) monitoring the works undertaken by the Service Providers to ensure the technical standards specified in the Contract are met;
  - (c) completing all work instructions within the allocated timeframe, in accordance with the General Conditions of Contract; and
  - (d) appointing a dedicated Project Manager who will be responsible for managing the contract and ensuring the delivery of all aspects of the contract.
31. Service Providers will have their performance assessed against the following key performance indicators:
- (a) reduction in electricity consumption and greenhouse gas emissions;
  - (b) lamp life;

- (c) warranty;
  - (d) compliance with specifications and standard of work;
  - (e) contract administration;
  - (f) Occupational Health and Safety performance;
  - (g) environmental performance; and
  - (h) traffic management.
32. A number of the tenders are able to achieve the City's minimum 40% electricity consumption and greenhouse gas emissions savings.

### **FINANCIAL IMPLICATIONS**

33. Funds are allocated within the Capital Works Program of the City's Long Term Financial Plan for this project.
34. The technically conforming tenders received all include higher upfront capital costs than expected, costs that may not be fully offset by financial savings within the lifecycle of this asset. As such it is considered prudent to enter into negotiations to try and improve the financial outcome of this tender for council.
35. There are sufficient funds in the 2011/12 capital works project to undertake the initial year's works. The adequacy of the overall funding will need to be reassessed when the proposed negotiations are finalised.

### **RELEVANT LEGISLATION**

36. The tendering and evaluation processes have been conducted in accordance with the Local Government Act 1993, the Local Government (General) Regulation 2005 and the City's Contracts Policy.
37. Information provided by Tenderers, which is commercial-in-confidence, has been protected and will not be disclosed in accordance with section 10A(2)(d) of the Local Government Act 1993. A consistent standard for all tenderers has been used in assessing any request for confidentiality by a tenderer.

### **RISK MANAGEMENT**

38. A Risk Management Plan has been developed to ensure all risks have been identified and considered in terms of high, medium and low risks to the City and a matrix is attached as Confidential Attachment B.

### **PUBLIC CONSULTATION**

39. No specific public consultation was undertaken with respect to this tender. However, this tender has been developed in direct response to the 70% reduction in greenhouse gas emissions target in Sustainable Sydney 2030 for the City's own buildings and operations as a 'show by doing' project. Sustainable Sydney 2030 was subject to the most extensive public consultation ever undertaken by Council.

40. A survey of 84 people was carried out in early 2011, at two of the trial locations, with more than 90 per cent of those surveyed saying the new lighting was appealing and three-quarters saying it improved visibility. The main reasons in support of the new lighting were:
- (a) light was brighter;
  - (b) improved visibility;
  - (c) used less energy and environmentally friendly; and
  - (d) light was more natural.
41. If the tender is approved, the rollout of the lighting retrofit will involve:
- (a) community information on the implementation program and the benefits that the program will provided to the community; and
  - (b) appropriate site management, site signage, preparation and implementation of traffic management plans, in accordance with the job specific specifications.

**GARRY HARDING**

Director City Operations

George Angelis, Manager City Infrastructure and Traffic Operations

Paul Gowans, Senior Contracts Coordinator – Street Furniture and Lighting

Allan Jones MBE, Chief Development Officer, Energy & Climate Change Chief Executive Officer