LED Street Lights Acquisition Project – to April 2017

Prepared by Street Light Team
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This presentation will look at:
• Drivers for LED Street lighting
• Ipswich City Council context for LED Street lighting
• Achievements to date
• Challenges
• IPWEA’s Roadmap & Model Specifications – in preparation
Why LED Street lights?

Don’t assume all Councils have same drivers & could include;
- A proven technology with promises of > life & <maintenance
- $ - 70% increase from the Tariff 71 days in 2007
- Improved public lighting outcomes
- Greenhouse Gas reduction
- Promise of Smart City management functions

Ipswich is a proven early adopter
Drivers for Digital Change

- Demise of Traditional Industries
- Population Growth
- Changing Demographics
- Globalisation
- Climate Change
- Technology
- Natural Disasters

Commenced in 1994 with Ipswich Global Info-Links
Ipswich City Council context

• Proof of concept from 2016
  – 2,615 LEDs – all good – **no more trials**
  – maintenance & fault reporting systems in park setting – some lessons

• Total approx. 23,000
  – Currently costing $4 mill
  – Using old technology
  – Rate 3 Street lights
    • Number 325
    • few are LED

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Council commitment to LED

November 2016 Council resolved that

• all newly installed public lighting would be LED
• street lights to become Rate 3
• Planning scheme amendments
• A major change in procedures & some cultural change
Future-proofed decisions for LED Street lights

- Smart City technology is evolving rapidly
- Many of our developers interested in this aspect of community development
- ICC has defined
  - Extent of ownership
  - Level and type of technology
  - Engineering requirements to conform with standards
- Our team has a clear view that we provide the physical architecture for Smart City roll out
  - ICC’s timing
  - ICC’s choice for open source data platforms

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Design defined in Planning Scheme

**Ipswich Planning Scheme**

**Planning Scheme Policy 3—General Works, Part 1—Roadworks**

**Division 3 — Electrical Reticulation and Street Lighting**

1.3.1 **Design Criteria**

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<thead>
<tr>
<th>Criteria</th>
<th>Performance</th>
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<tr>
<td>Material</td>
<td>No polycarbonate elements unless</td>
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<td>specified</td>
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Design defined through Standard Drawings

• Standard drawings – a set as a WIP
  – Objective to produce project specific documentation that will allow RPEQ sign off. Including;
    • Nominal wiring layout with P.O.S.
    • Details of internal pole wiring
    • Nominal trench details
• Nominal wiring layout with P.O.S. noted:

Energex

ICC

Work in progress

RATE 3 STREET LIGHT CONNECTION FOR A TWO POLE INSTALLATION
• Detail of pole internal wiring:

RATE 3 STREET LIGHT CONNECTION FOR A TWO POLE INSTALLATION
• Nominal trench detail:
Design Outcomes

• Goal
  – consistent application of electrical details applied to all public lighting assets across the I.C.C. responsibilities

• Result
  – an optimised level of parts and materials on hand for servicing, maintenance and unexpected repairs.

• Binding on
  – Developers – contributed street lights & other public lighting
  – ICC constructed – all public lighting
Energy Queensland

- Have received design earlier in process – essential for
  - Network protection (electrical fuse size coordination)
  - Billing
- Field test equipment for electrical integrity
- Energise and place in to service
Reactive Maintenance

- Short to medium term focus is on reactive management
- Reported by public, staff & EQ
  - EQ first responder on all street lights in emergency situations
- KPIs – still under discussion
  - Light damaged and power still on – EQ < 4 hours
  - Faulty lamp replacement <???? hours from notification – ICC
  - Repair &/or replacement of pole & luminaire <4 weeks - ICC
Internal processes – Reactive Maintenance

• Serviced by
  – EQ – emergency only
  – Current accredited contractors - J P Richards & Stowe
  – Definitely **not** using this style of EWP!
Asset Management - Routine preparation stage

- **Australian standard & Industry advice**
  - External luminaire cleaning at 3-4 year cycles
  - LEDs should not require replacement for up to 10 years
  - Warranties are called in with <5 years service

- **Expanded database from Energy Queensland**

- **Process in place for As Cons to update database**

- **Full asset management system is not warranted at this point in the project – issue is being monitored**
Asset management – end of life

- Toxicity far lower than traditional lights
  - No phosphate salts (not a fluorescent based process of operation)
  - No mercury
- No reported issues noted from overseas with much bigger installations over several years – but
  - most LEDs contain some nickel and the colored LEDs also contain lead and arsenic
- To be monitored as poles and lights are damaged
- Components are & potentially re-cycleable;
  - Aluminium – luminaire
  - Glass - luminaire
  - Galvanized or painted Steel poles

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External Regulatory Environment

- The relevant standards are
  - AS 3000 Wiring
  - AS 1158 Public Lighting

- A complex legal framework surrounding street lights – local government not prevented from owning and operating street lights

- Future-proofed LED street lights only requiring a receptacle for a 7 pin NEMA plug.
  - immense flexibility in the technology which can be applied.
  - has not been approved by the National Energy Regulator for unmetered use
Smart City issues

- Existing Smart LED light management system is
  - limited to Queens Park & Providence
  - To be revived after assistance from ICT & Canadian software provider
  - Some sports fields
- Until NEMA plug approved - implementation of Smart City through unmetered street lights is not possible.
- Potential solution is a metered site.
Highlights

• Street lighting market operations inefficiencies
• Promotes an increasing body of knowledge
• Major barriers
• A welcome framework

But Smart Cities no closer without NEMA plugs!!!
• IPWEA noted problems with LED procurement
• strategy is to develop Specifications
• still under development

• More technical engineering specifications may not necessarily address all procurement problems.

• **ICC observation**
• Understand why your agency is doing/reforming/amending
• Then the good buying is easier
Questions ???