LEICHHARDT MUNICIPAL COUNCIL

MINUTES of the Environment and Recreation Committee of Leichhardt Municipal Council held in the Supper Room on 1 February 2012.

Present at the meeting: Cr Daniel Kogoy (Chair), Cr Vera Ann Hannaford, Cr Gordon Weiss, Gillian Leahy, Bronwen Campbell, Jane Mowbray, Steve Arnerich, David Lawrence, Francis Breen, Ian Poulton

Staff Present: Aaron Callaghan, Vince Cusumano, Jon Stiebel

Meeting Commenced: 6.30pm

ACKNOWLEDGEMENT OF COUNTRY:

Cr Kogoy performed acknowledgement of country in the capacity as Chairperson.

I acknowledge the Gadigal and Wangal people of the Eora nation on whose Country we are meeting today, and their elders past and present.

BUSINESS:

ITEM 1
APOLOGIES

ERC01/12 RECOMMENDED KOGOY/WEISS

That apologies be accepted for the non attendance of Cr Porteous, Cr Stamolis and Paul Geraghty.

ITEM 2
DECLARATION OF PECUNIARY INTEREST AND NON-PECUNIARY INTERESTS

Nil

ITEM 3
PRESENTATION – SYDNEY METROPOLITAN CATCHMENT MANAGEMENT AUTHORITY

ERC02/12 RECOMMENDED WEISS/KOGOY

That the presentation given by Peter Freewater from Sydney Metropolitan Catchment Management Authority regarding the Sydney Harbour Water Quality Improvement Plan be received and noted.
Attachment 1 – copy of presentation
ITEM 12  (Brought Forward)
SYDNEY HARBOUR WATER QUALITY IMPROVEMENT PROGRAM

ERC03/12  RECOMMENDED  LAWRENCE/LEAHY

That Council contribute $10,000/yr for three (3) years, and in-kind, to the development of a Water Quality Improvement Plan (WQIP) for Sydney Harbour Catchment commencing 2012/13 funded from Council’s Stormwater budget.

ITEM 4
VERBAL UPDATE – TREADING LIGHTLY LAUNCH AND FILM SCREENING OF THE HUNGRY TIDE

ERC04/12  RECOMMENDED  KOGOY/LAWRENCE

That the committee thank Laura Wynne for coordinating the successful Treading Lightly Launch and the film screening of The Hungry Tide.

ITEM 5
MINUTES OF THE PREVIOUS MEETING: 2 November 2011

ERC05/12  RECOMMENDED  MOWBRAY/LEAHY

That Council adopt the minutes of the Environment & Recreation Committee meeting held on 2 November 2011.

ITEM 6
SUMMARY OF RESOLUTIONS

ERC06/12  RECOMMENDED  LAWRENCE/BREEN

1. That the information in the Summary of Resolutions be received and noted.

2. That a report be brought back to the next committee meeting on progress with the sponsorship policy.

ITEM 7
CORRESPONDENCE
Nil

ITEM 8
REPORTS FROM THE COMMUNITY
Nil
ITEM 14 (Brought Forward)
PROPOSED EXPANSION OF WHITES CREEK COMMUNITY GARDEN

OFFICER RECOMMENDATION

1. That subject to the receipt of a Plan of Management for the proposed Community garden from the Friends of Whites Creek Valley Park and its adherence to Council’s Community Garden Policy Council publicly exhibit for a period of 28 days a proposed amendment to the Whites Creek Valley Park Plan of Management which supports the establishment of a community garden at Number 25 White Street, Lilyfield.

2. Council note that as part of the exhibition period the community is provided with a period of 42 days to provide written comment on the proposed amendment to the Whites Creek Valley Park Plan of Management and that submissions are reviewed by Council as part of the reporting process at the May 2012 Ordinary Meeting of Council.

3. A Community consultation meeting in relation to the proposed community garden is held on site at Whites Creek Valley Park during the exhibition period and that outcomes from this meeting are also reported back to Council as part of the reporting process.

ERC07/12 RECOMMENDED LEAHY/POULTON

1. That subject to the receipt of a Plan of Management for the proposed Community garden from the Friends of Whites Creek Valley Park and its adherence to Council’s Community Garden Policy Council publicly exhibit for a period of 28 days a proposed amendment to the Whites Creek Valley Park Plan of Management which supports the establishment of a community garden at Number 25 White Street, Lilyfield.

2. Council note that as part of the exhibition period the community is provided with a period of 42 days to provide written comment on the proposed amendment to the Whites Creek Valley Park Plan of Management and that submissions are reviewed by Council as part of the reporting process at the May 2012 Ordinary Meeting of Council.

3. A Community consultation meeting in relation to the proposed community garden is held on site at Whites Creek Valley Park during the exhibition period and that outcomes from this meeting are also reported back to Council as part of the reporting process.

4. That Council investigate the feasibility of retaining bricks from the demolition of neighbouring buildings for the construction of the community garden.
ITEM 9
CLIMATE CHANGE TASKFORCE MINUTES – 7 December 2011

ERC08/12 RECOMMENDED ARNERICH/WEISS

That the minutes of the Climate Change Taskforce meeting held on 7 December 2011 be noted. (Attachment 2)

ITEM 10
ENVIRONMENTAL EDUCATION BUDGET 2012/13

ERC09/12 RECOMMENDED ARNERICH/LAWRENCE

That a recurrent budget of $78,000 be allocated to the Environmental Education Program beginning in 2012/13 to maintain the program at current levels of activity.

ITEM 11
UPDATE ON OUTCOMES OF SUSTAINABLE BUSINESSES PROGRAM

ERC10/12 RECOMMENDED LAWRENCE/MOWBRAY

That the report be received and noted.

ITEM 13
WATER METERS IN MULTI-UNIT APARTMENTS

ERC11/12 RECOMMENDED ARNERICH/KOGOY

That the committee note and accept the report

ITEM 15
OTHER BUSINESS - Nil

ITEM 16
NEXT MEETING

The next meeting will be held on Wednesday, 4 April 2012 at 6:30pm.

Future Meetings for 2012:

4 April
6 June
1 August
3 October
5 December

Meeting closed at 8.30pm
The Sydney Harbour Catchment Water Quality Improvement Plan
Overview

- SMCMA
- Approach
- Scope of SHCWQIP
- Benefits to Council
- Progress
One of 13 CMAs across NSW based on river catchment areas

NRM issues for the catchment

Major project – address the ongoing health of Sydney Harbour and its catchment through the development of a Water Quality Improvement Plan
Encompasses the whole catchment & the Harbour

A coordinated management framework for local councils, state & Commonwealth agencies

Opportunity to implement critical aspects of “Our Harbour” Agreement adopted by majority of Sydney Harbour Councils
Objectives

- To develop a Water Quality Improvement Plan that will achieve an improvement in the water quality of Sydney Harbour and its catchments.
- To engage key land managers and other stakeholders in the project design and process to encourage ownership of the outcomes.
Making life easier for Council

- A variety of modelling tools
- Water Quality Decision Support System
- Training and technical support
- Project Coordination by the SMCMA
- Technical Reports
- DA Assessment
- Strategic Planning
Hydrologic Models are developed to estimate patterns of rainfall and runoff.

Pollutant Export Models estimate pollutant loads generated from each subcatchment and transported to receiving water.

Hydrodynamic Models simulate water movement and integrate with the pollutant export model to simulate the transport of pollutants through the estuary.

Ecological Response Models are used to estimate how current and future management action influence the ecology of the receiving waters.

Water Quality Decision Support System will be used to develop water quality targets and to evaluate stormwater improvement measures.

Catchment Water Quality Improvement Plan will provide an agreed plan of action to meet water quality targets.
Benefits to Council

1. Access to all the models:
   
a) will help councils decide what changes in land use and management of stormwater pollutants could be done to achieve sub-catchment benefits and will assist councils to determine the costs of these actions
Benefits to Council

1. Access to all the models:
   a) will assist councils to see how they will be benefiting/how they can benefit the Harbour and its tributaries
Benefits to Council

1. Access to all the models:

   a) illustrate issues to Senior Management, Councillors and wider community
Benefits to Council

1. Access to all the models:
   - determine impacts of large developments
   - identify contributions towards local water quality improvements

“SHCWQIP will assist with DAs”
Mark Evens (Holroyd)
Benefits to Council

1. Access to all the models:
   - will build staff capacity in running models and applying the model outputs
Benefits to Council

2. Access to a hydrologic model that can be used to model flood flows at a 20-50 ha sub-catchment scale
3. Access to the Pollutant Export Model

- estimates of total annual pollutant loads of sediment and nutrients
- load generation rates per hectare
- per major landuse class

Better strategic planning

“The Plan will make environmental planning easier and cheaper” Natalie Payne (Blacktown)
4. Access to an Ecological Response Model

- describe the overall impact on the estuary
- assist councils to see how they can influence and improve water quality in the estuary/harbour
5. **Access to a Water Quality Decision Support System to describe**

- The DSS will provide a means to identify actions for Stormwater Management Plans or similar plans or verify existing actions
- Provides a transparent process for decision making

“Our Council has developed a waste water plan and WSUD plan which requires 50% pollution reduction. The DSS from the Botany Bay plan helps to determine where to achieve this reduction and we expect the same from the SHCWQIP”

Bhakti Devi (City of Sydney)
6. Information to assist grant submissions for water quality improvement works or as part of s94 plans or similar contributory plans

The WQIP will be a valuable reference in planning policies, budget proposals and external funding applications

“The information produced will be important for DAs and a justification for development controls”

Ezaz Bizwas (Burwood)
7. An opportunity to contribute to the strategic management of Sydney Harbour and catchments and to see how each Council fits into the overall management strategy

“Parramatta Council felt it was responsible for the harbour because it starts at Parramatta and our LGA is a big contributor to stormwater”

Paul Hackney (Parramatta)
8. The WQIP will be a valuable reference in planning policies, budget proposals and external funding applications.

“The information produced will be important for DAs and a justification for development controls”

Ezaz Bizwas (Burwood)
9. Economies of scale offered through coordinated activities

- Eg Flood models can cost hundreds of thousands of dollars per Council

SMCMA will provide coordination and facilitation services

“Access to resources at a low cost and the coordination from the SMCMA”
Petrina Nelson (Canada Bay)
10. Community recognition

- part of an innovative project for the iconic Sydney Harbour
- opportunities for community engagement
- strength in numbers in terms of knowledge and also encouraging the involvement of federal and state government agencies
11. Participation in this project is likely to attract further funding to undertake onground works
## Progress

<table>
<thead>
<tr>
<th>Key Activity</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Case</td>
<td>A Business Case detailing the project objectives, anticipated outcomes and benefits to Local Councils has been developed to assist the process of securing Local Government support</td>
</tr>
<tr>
<td>Data Compilation &amp; Review Study</td>
<td>Completed – Water Research Laboratory UNSW</td>
</tr>
<tr>
<td>Software Review Study</td>
<td>Completed – Catchment Simulation Solutions</td>
</tr>
</tbody>
</table>
## Progress

<table>
<thead>
<tr>
<th>Key Activity</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Strategy</td>
<td>Development of strategy underway – important to keep multiple partners informed</td>
</tr>
<tr>
<td>Catchment Delineation</td>
<td>Completed – SMCMA</td>
</tr>
<tr>
<td>Build and Calibrate Hydrologic Catchment Model</td>
<td>RAFT-XP Model construction underway</td>
</tr>
<tr>
<td>Build and Calibrate Pollutant Export Model</td>
<td>Pollutant Export Model completed for the Upper Parramatta River – Catchment Simulation Solutions Lower Parramatta to be completed by March 2012</td>
</tr>
<tr>
<td>Key Activity</td>
<td>Status</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Develop and Calibrate Ecological Response Model</td>
<td>• SMCMA is working with Cardno to further develop their existing hydrodynamic Delft3D Model of Sydney Harbour.</td>
</tr>
<tr>
<td></td>
<td>• SMCMA will be seeking advice from government and industry experts on developing an Ecological Response Model.</td>
</tr>
<tr>
<td></td>
<td>• Pilot testing of a suitable ERM will be undertaken in 2012</td>
</tr>
<tr>
<td>Partnerships with Councils</td>
<td>• Letter sent to Mayors and cc’d to Sydney Harbour Councils inviting funding partnership</td>
</tr>
<tr>
<td></td>
<td>• MoU between councils and the SMCMA and the Business Case has also been sent</td>
</tr>
<tr>
<td>Key Activity</td>
<td>Status</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Partnerships/grants from State Government             | • Office of Environment and Heritage has provided initial funding for the Ecological Response Model and Parramatta River water quality monitoring stations  
• Negotiations underway with Sydney Water and NSW Maritime for funding  
• Sydney Water has provided information on previous modelling projects and water quality monitoring data  
• Discussions to be held with OE&H regarding inkind support for field data collection.  
• Partnerships are also being pursued with other state agencies. |
| Other Partnerships                                     | Linking this project with the Sydney Institute of Marine Science’s project for Sydney Harbour |
Conclusion

- The SMCMA is committed to working with councils throughout this project to ensure the best outcome for all partners.

- Council’s involvement in this high-profile project will demonstrate its commitment and leadership in improving the ecological integrity of its waterways and acknowledgement of the community values placed upon the iconic Sydney Harbour and Catchments.
Minutes of the Climate Change Taskforce of Leichhardt Municipal Council held in the Supper Room on 7 December 2011.

Present at the commencement of the meeting:

Councillors: Gordon Weiss (Acting Chair)

Staff: David Marshall, Peter Gainsford, Peter Cormican, Jon Stiebel, Guido den Teuling, Laura Wynne

Community: Stephen Arnerich, Marghanita DaCruz, Francis Breen, Paul Geraghty

Damien Kenny (Steensen Varming), Chris Arkins (Steensen Varming), David Collins (Cundall)

Meeting Commenced: 6:30pm

ACKNOWLEDGEMENT OF COUNTRY:

Cr Weiss performed acknowledgement of country in the capacity as acting chair.

I acknowledge the Gadigal and Wangal people of the Eora nation on whose Country we are meeting today, and their elders past and present.

BUSINESS

ITEM 1
APOLOGIES

Recommended Weiss/Arnerich

That apologies be accepted for the non attendance of Cr Rochelle Porteous, Cr Daniel Kogoy, Peter Conroy and Richard Dudley Smith.

ITEM 2
DECLARATION OF PECUNIARY AND NON-PECUNIARY INTERESTS - Nil

ITEM 3
MINUTES FROM PREVIOUS MEETING: 5 October 2011

Recommended Arnerich/Weiss

That the minutes of the Climate Change Taskforce meeting held on 5 October 2011 be accepted.
ITEM 4
MATTERS ARISING FROM PREVIOUS MEETING - Nil

ITEM 5
SUMMARY OF RESOLUTIONS

Recommended Arnerich/Weiss

That the information in the summary of resolutions be received and noted.

ITEM 6
FORUMS PROGRAM 2012

Recommended Breen/Geraghty

1. That the following forums are held in 2012:
   - Sustainable Urbanism: Designing urban environments for a changing future (May 2012)
   - Sustainable Food: Food security in our cities (November 2012)

ITEM 7
CLIMATE CHANGE STRATEGY: ENERGY SAVINGS ACTIONS

Officer Recommendation

1. That the committee notes and receives the energy savings actions in this report.

2. That the Energy Savings Actions in the report are incorporated into the Leichhardt Climate Change Strategy.

Recommended Weiss/Arnerich

1. That the committee notes and receives the energy savings actions in this report.

2. That the Energy Savings Actions in the report are incorporated into the Leichhardt Climate Change Strategy.

3. That the media officer be involved in promoting the Energy Savings Actions projects.

Attachment 1 – copy of presentation

ITEM 8
VERBAL UPDATE - COGENERATION

Recommended Weiss/Arnerich

That the verbal update/presentation regarding LPAC Cogeneration Proposal – Concept Design be received and noted.
ITEM 9  
ENERGY SAVINGS INITIATIVES ANNANDALE NEIGHBOURHOOD CENTRE

Officer Recommendation

That the committee notes and supports the energy savings actions for the Annandale Neighbourhood Centre.

Recommended Arnerich/Da Cruz

1. That a report be brought back to the committee on how the Annandale Neighbourhood Centre could be used as a demonstration site for energy efficient lighting technologies.

2. That the Summary/Conclusions (point 5 4th paragraph) of the report be amended

From

The Annandale Child Care Centre currently consumes 27,000kWh of electricity per annum. It is recommended that the following initiatives be implemented within the site:

- Install occupancy sensors to the downstairs office lighting circuit;
- Replace the T8 luminaires throughout the building with T5 fluorescent luminaires;
- Replace electric storage hot water unit with heat pump type unit; and
- Install time-clock control units to all the multi-split air conditioning units.

The combined initiatives have the potential to save 2,890 kg CO2-e of greenhouse gas emissions per annum. The total implementation cost of the projects is approximately $6,130.00 and has the ability to save $815.00 per annum, leading to a simple payback of 7.5 years.

In addition to these future works a 2.16 Kw PV system consisting of 12 panels has recently been installed at the centre.

To read

The Annandale Neighbourhood Centre currently consumes 27MWh of electricity per annum.

The audit recommends the following initiatives:

- Replace T8 Lighting with T5 Luminaires (Main Centre Building)
- Labelling of lighting and heater fans within upstairs kitchen (Main Centre Building)
- Install time clock controls to the Zip boiling hot water unit. (Kitchen)
- ReplaceWall heaters with inverter split air conditioners (Back Hall)
- Install a 2kW PV system to the roof top
Replace electric storage hot water unit with heat pump type unit (Back Hall)

The combined initiatives have the potential to save 9,800 kg CO\textsubscript{2 \text{-eq}} of greenhouse gas emissions per annum. The total implementation cost of the projects is approximately $25,900.00 and has the ability to save $2,630 per annum, leading to a payback of 7 years.

ITEM 10
CORPORATE RENEWABLE ENERGY SYSTEMS

Officer Recommendation

1. That council receive and note the corporate PV systems opportunities review.

2. That where energy savings projects are competing for the same budget, council adopts the Energy Savings Actions hierarchy in this report so that the most effective actions are implemented.

Recommended Arnerich/Weiss

1. That Council receive and note the corporate PV systems opportunities review.

2. That where energy savings projects are competing for the same budget, Council adopts the Energy Savings Actions hierarchy in this report so that the most effective actions are implemented.

3. That the Climate Change Taskforce remains committed to implementing PV projects.

ITEM 11
STREET LIGHTING AND CORPORATE CARBON FOOTPRINT

Recommended Da Cruz/Geraghty

That emissions from street lighting be excluded from the Leichhardt Council corporate carbon footprint due to Council having no operational control of the service.

ITEM 12
PROPOSED ADOPTION BY AUSGRID OF INTELLIGENT POWER SUPPLIES IN HIGH PRESSURE SODIUM LIGHTING ON MAIN ROADS

Recommended Geraghty/Weiss

That the Committee endorses Council’s acceptance of the offer to adopt intelligent power supplies in main road lighting.
ITEM 13
OTHER BUSINESS – Nil

ITEM 14
NEXT MEETING

The next meeting of the Climate Change Taskforce will be held on 7 March 2012.

MEETINGS FOR 2012

7 March
2 May
4 July
5 September
7 November

The meeting closed at 8.45pm
Energy Management Hierarchy

1. Avoid Consumption
2. Implement Energy Efficiency
3. Investigate Onsite Energy Generation
4. Purchase GreenPower or Offset
## Work packages

<table>
<thead>
<tr>
<th>PROJECT</th>
<th># of Projects</th>
<th>Projects</th>
<th>Cost</th>
<th>Tonnes CO₂ P/A</th>
<th>Cost Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATIONS</td>
<td>13</td>
<td>Light switch labeling, time clock controls to boiling water units, equipment consolidation and after hour's energy consumption investigations.</td>
<td>$32,540</td>
<td>172.5</td>
<td>$0.0/kg CO₂</td>
</tr>
<tr>
<td>ELECTRICAL INITIATIVES</td>
<td>23</td>
<td>Installation of occupancy sensors, lighting replacements, lighting circuit rewiring and daylight sensors</td>
<td>$41,210</td>
<td>25.26</td>
<td>$1.6/kg CO₂</td>
</tr>
<tr>
<td>MECHANICAL INITIATIVES</td>
<td>17</td>
<td>Heater replacements, temperature controls, time clock controls, unit replacements and install dampers to vary airflow</td>
<td>$521,271</td>
<td>103.08</td>
<td>$3.1/kg CO₂</td>
</tr>
<tr>
<td>HYDRAULICS INITIATIVES</td>
<td>5</td>
<td>Time clock controls to hot water units and DHW unit replacement</td>
<td>$6,890</td>
<td>8.3</td>
<td>$1.0/kg CO₂</td>
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<tr>
<td>IPAC UPGRADE INCLUDING COGENERATION SYSTEM</td>
<td>1</td>
<td>Installation of a 65kW-e, 120kW-t electrically load cogeneration system including the replacement of existing heat pumps for the outdoor and indoor pools and installation of a new outdoor pool cover</td>
<td>$1,082,500</td>
<td>1.270</td>
<td>$0.85/kg CO₂</td>
</tr>
</tbody>
</table>

Project figures are approximate and subject to change with quotations.
Budget

<table>
<thead>
<tr>
<th>Description</th>
<th>2011/12</th>
<th>2012/13</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL FUNDING REQUIRED</td>
<td>$1,456,211</td>
<td></td>
</tr>
<tr>
<td>FUNDING AVAILABLE IN NEXT 18 MONTHS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMC Sustainability Reserve (unallocated 2010/11)</td>
<td>53,000</td>
<td></td>
</tr>
<tr>
<td>LMC Sustainability Reserve (new allocation)</td>
<td>345,000</td>
<td>350,000</td>
</tr>
<tr>
<td>WASIP carryover funding from 2010/11 for energy efficient AHU for old indoor pool</td>
<td>121,000</td>
<td></td>
</tr>
<tr>
<td>WASIP Funding 2012/13 - for LPAC Cogen</td>
<td></td>
<td>100,000</td>
</tr>
<tr>
<td>Cogen Budget 2011/12</td>
<td>600,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,119,000</td>
<td>450,000</td>
</tr>
<tr>
<td>TOTAL FUNDING AVAILABLE TO ACHIEVE EMP IN NEXT 18 MONTHS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1,569,000</td>
<td></td>
</tr>
</tbody>
</table>

*Project figures are approximate and subject to change with quotations*
## PV projects

<table>
<thead>
<tr>
<th>SITE</th>
<th>NUMBER OF PANEL</th>
<th>PV SYSTEM SIZE KW</th>
<th>ELECTRICITY GENERATION POTENTIAL KWH</th>
<th>CAPITAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leichhardt Park Aquatic Centre</td>
<td>65</td>
<td>13</td>
<td>26,500</td>
<td>$72,000</td>
</tr>
<tr>
<td>Leichhardt Oval #1 - Small Grandstand Roof</td>
<td>112</td>
<td>22.4</td>
<td>43,000</td>
<td>$112,000</td>
</tr>
<tr>
<td>Balmain Library/Town Hall Roof</td>
<td>18</td>
<td>3.6</td>
<td>7,100</td>
<td>$22,000</td>
</tr>
<tr>
<td>Balmain Depot Workshop Roof</td>
<td>105</td>
<td>21.0</td>
<td>37,000</td>
<td>$105,000</td>
</tr>
<tr>
<td>Leichhardt Children’s Centre - Small Pitched Roof</td>
<td>5</td>
<td>1.0</td>
<td>2,000</td>
<td>$6,000</td>
</tr>
<tr>
<td>Leichhardt Children’s Centre - Flat Roof</td>
<td>15</td>
<td>3.0</td>
<td>5,500</td>
<td>$18,000</td>
</tr>
<tr>
<td></td>
<td>320</td>
<td>64</td>
<td>121,100 kWh</td>
<td>$335,000.00</td>
</tr>
</tbody>
</table>
LPAC Cogeneration Proposal
Concept Design
LPAC Cogeneration Proposal

Client Brief

• Feasibility study of cogeneration plant
  (examine viability of cogeneration onsite)

• Lifecycle analysis of costs based on;
  • Capital infrastructure costs
  • Annual operational costs
  • Maintenance costs

• Compare carbon emissions of cogeneration and boiler plant to existing heat pumps
**LPAC Cogeneration Proposal**

**What is Cogeneration?**

- Cogeneration is the simultaneous generation of electricity and heat from natural gas. The most common systems either use;
  - Micro turbine **Proposed**
  - Reciprocating engine

### Pros

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Pros</strong></td>
<td></td>
<td><strong>Cons</strong></td>
</tr>
<tr>
<td></td>
<td>Low emissions</td>
<td>Lower modulation ability</td>
</tr>
<tr>
<td></td>
<td>No lubricating oil needed</td>
<td>Lower part load electrical efficiency</td>
</tr>
<tr>
<td></td>
<td>No coolant needed</td>
<td></td>
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</tbody>
</table>

### Cons

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Pros</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Higher electrical efficiency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Many existing installations</td>
</tr>
</tbody>
</table>

### Benefits

- Onsite energy generation avoids distribution losses and grid loading
- Single fuel source providing electricity and heating
- Reduces principal greenhouse gas emissions
- Peak energy load shedding
LPAC Cogeneration Proposal
Cogeneration System

Proposed: 2 C30 Micro turbines, totalling

• 60kWp Electrical Output
• 120kWp Heat Output
• Up to 85% net efficiency

• High Power to weight ratio
• High overall efficiencies
• Low emissions of NOx, CO2 and CO
• 1 Moving part
• Low maintenance costs
LPAC Cogeneration Proposal
Proposed system concept

Heat output requirement for the outdoor pools met by boilers and micro turbines.

High efficiency heat pump serves the indoor pools, with heat recovered from the relief air.

No trench work required from plant room to indoor pools.
LPAC Cogeneration Proposal
Proposed system concept - Features

New plant room of 150m²

Two 400kW Boilers

Two 30kWe Micro turbines

Future space for addition of third turbine

Thermal energy storage to;

• Smooth out load profile
• Reduce turbine and boiler stop/start
• Improved plant part load performance

Pool heating via heat exchangers, instead of existing direct coupling to prolong plant equipment life
LPAC Cogeneration Proposal

Expected costing for proposed plant

Capital infrastructure costs: $1,082,500

Annual operational costs:
- $23,207 (purchased electricity for chiller)
- $156,876 (gas for boilers and turbines)
- -$60,500 (onsite generated electricity)

Net ($ - pa): $119,583

7 Years payback period.

Based on 5% - pa escalation of utilities (Gas and Electricity)
LPAC Cogeneration Proposal
Expected Performance

Carbon emissions generated: 914 (Boiler & Turbine gas)

Carbon emissions offset: -510 (generated electricity)

Net: 404 tonnes – pa

• Net reduction of 1,270 tonnes – pa

⇒ 352 cars off the road per year

Expected annual energy consumption:

193,388 (electricity)

+ 1,433,276 (boiler gas)

+ 1,642,730 (turbine gas)

- 476,392 (generated electricity)

Net: 2,793,002 kWh - pa

*When considering energy consumed at the power station.

(primary energy input).
LPAC Cogeneration Proposal

Next stages

• Acceptance and Approval by Leichhardt Council
• Brief and appointment of remaining team. (Structural, Mechanical, Hydraulic and Architectural)
• Design Documentation
• Tender package
LPAC Cogeneration Proposal
Programme and staging

- Decommission first outdoor heat pump
- Plant room construction
  - Installation and commission plant equipment
  - Decommission and remove remaining heat pumps
- Completion by June 2012
LPAC Cogeneration Proposal
Cogeneration proposal

thank you