Council acknowledges the Australian Government’s funding of the above project and thanks the government for its support.
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1. PROJECT SUMMARY

Somerset Regional Council was successful in applying for a $90,000 grant from the Australian Government to enable the installation of heating pumps at Lowood swimming pool to increase the period of operation of this community facility.

Whilst this project used commercially available “tried and proven” energy efficient pool heating technology (heat pumps and thermal covers) it has significantly increased the functionality of the public pool with reduced ongoing energy costs. It has also served as a demonstration project regarding the use of thermal blankets for the surrounding growing residential district.¹

2. PROJECT BACKGROUND

Public bathing for the people of Lowood was originally provided through informal facilities in the Brisbane River until 1980, when a public Swimming Pool was installed by the then Esk Shire. Since that time the township has seen extensive urban settlement and the demand on public recreation facilities has increased dramatically. This increased demand coupled with much of the infrastructure associated with the original pool reaching the end of their life cycle has seen Somerset Regional Council recognise the need for a significant refurbishment of the Lowood Pool. The Lowood pool was not operated beyond mid-April even with former gas heating functionality.

In 2008 Somerset Regional Council resolved to commence preliminary work towards the enhancement of the Lowood Swimming Pool. In 2010 a more comprehensive assessment of the works needed to upgrade the pool was considered by Council, which led to the preparation of the Lowood Pool Master Plan in 2012. A key component of the Master Plan was the proposed installation of energy efficient year round heating to replace the failed gas heating system already in place.

Since receipt of the Master Plan, Somerset Regional Council has been actively seeking various grants for various aspects of the Master Plan, including the installation of energy efficient pool heating upgrading valued at $135,000. In 2013, Somerset Regional Council received $90,000 under the Community Energy Efficiency Program that enabled the project to go ahead. The installation of thermal pool blankets was also included as part of the project.

The Somerset region median weekly household income was $928 in 2011, compared to an average Australian median weekly household of $1,234, with Lowood Township experiencing considerable social engagement problems. As such the location of the Lowood swimming pool significantly benefits low socio-economic or disadvantaged groups as well as being a focal point for community activity.

3. PROJECT DESCRIPTION

When first installed the Lowood Swimming Pool included a gas powered heat pump, following years of service this pump was found to be high maintenance and energy

¹ The views expressed herein are not necessarily the views of the Commonwealth of Australia, and the Commonwealth does not accept responsibility for any information or advice contained herein.
inefficient. A preliminary review of available heating facilities indicated that electric heat pumps offered potential long term energy savings and four Accent 50kwh commercial grade heat pumps and associated heaters were installed by contractors on behalf of Council at the swimming pool during 2013.

Prior to installation of heat pumps Leisure Engineering Pty Ltd was engaged to assess and model alternate heating options and recommended the installation of a new electrical heat pump/thermal blanket system (extract of modelling Attachment 1).

The heat pumps were supplied by Australian Energy Systems Pty Ltd, an Australian owned and operated business. The Accent Pool Heat Pumps can heat water to 45C at a rate of 2.8L/s.

Thermal pool blankets were also installed to maximise heat retention and energy efficiency.

Technical specifications of heat pumps and thermal blanket can be found in Appendix 2

4. PROJECT CHALLENGES

Inadequate electricity supply to the swimming pool, identified during the life of the project, necessitated an upgrade of supply prior to the installation of heat pumps. This caused minor delays, which had no impact on the overall timeline of the project. Installation errors caused further delays to the commissioning of the heat pumps. The installation errors did not pose any human risk or impact on the project budget as it was rectified by the contractor’s at their expense.
5. PROJECT OUTCOMES

The project objectives as set out in the approved project plan were to:

- Install year round heating using heat pump technology and the use of pool thermal blankets on mobile rollers at Lowood swimming pool.

- Operate the new heating system for less than $45,000 per annum in 2013 dollars. (Preliminary consumption figures for 3 months following installation of new pumps indicate an annual operation cost of approx $18,000pa)

- Demonstrate the effectiveness of heat pumps and thermal blankets over other forms of electrical or gas heating for residences considering

An aim of the CEEP is to demonstrate and encourage the adoption of improved energy management practices within councils, organisations and the broader community.

The Lowood swimming pool is a high profile facility in a rapidly growing location and presents a prime opportunity to promote energy efficient pool heating technology to the local community as large numbers of new homes and residential swimming pools are built in the local area. Since the installation of new heat pumps the Lowood pool has extended its operations right through to the end of May an additional month and a half of operations during which time an additional 1200 people were able to visit the facility.

The project clearly met the both project and CEEP objectives. Somerset Regional Council is a low socio-economic area and the project has led to an increase in the energy efficiency of a council owned non-residential facility. The objects of the project have been effectively communicated locally and this will in time encourage the adoption of improved energy management practices within councils, organisations and the broader community.

6. COMMUNICATION ACTIVITIES

Communication with the community was undertaken at key opportunities during the course of the project and included numerous media articles in the local papers, utilisation of Councils regular newsletter to residents, social media dialogue and through signage erected on site.

Media articles appeared in the Gatton Star (dist 20,076) and Queensland Times (8,470), whilst Council’s quarterly newsletter is delivered to 9,000 households across the Somerset region. Council also received numerous positive messages about the project via its Facebook page.

The target audience for these articles were pool patrons and people passing the centrally located swimming pool who are home owners contemplating installing a heated residential swimming pool.

Somerset Region was the third fastest growing local government area in Queensland in 2012/2013 at a growth rate of 3.21% (source Australian Bureau of Statistics Regional Population Growth, Australia, 2012-13).

As an indicator of the number of new homes likely to be built in the area, Somerset Regional Council approved a 1,330 lot residential development between Lowood and Fernvale in
January 2012. A large number of other approvals have been given.

The key messages to be communicated were:

1. Pool heat pump technology offers potential significant cash savings in pool operating costs versus gas or traditional pool heating methods employing electricity of gas combustion. Potential savings of $45,000 pa anticipated from modelled operating costs of over $95,000 using gas heating.

2. A pool fitted with thermal blankets can use up to 30% less heat energy than if covers are not used.

3. Using the latest energy efficient technology can save householders financially and have a positive effect on climate change.

4. Funding acknowledgement

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**Cash splashed at community pool**

The Lowood Community Swimming Pool has received a variety of upgrades including a new energy-efficient heating system thanks to funding from the Federal Government. Installation of an electric heat pump and thermal blankets will allow the facility to use up to 28% less energy overall.

---

**Energy boost for Lowood pool**

The Lowood Community Swimming Pool has received upgrades including an energy efficient heating system thanks to funding from the Federal Government. Installation of an electric heat pump will now allow for heating up to 28 degrees.

Pool thermal blankets will, when combined with the heat pump, provide a 30% overall energy saving. The heating system costs around $135,000, of which $90,000 will be funded through the Australian Government's Community Energy Efficiency Program.

Somerset Regional Council Mayor Graeme Lehmann said the council was delighted to provide a better facility to residents. “Council is very appreciative of the grant awarded by the Federal Government. It is because of this grant that we are able to provide these improved facilities to Somerset residents,” Cr Lehmann said.
7. PROJECT BUDGET

This project was achieved for significantly less than anticipated as the supply and installation of the new heat pumps cost significantly less than anticipated. The budget projections and actuals are outlined below:

<table>
<thead>
<tr>
<th></th>
<th>Budget – funding agreement</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somerset Regional Council</td>
<td>$ 45,000</td>
<td>$ 31,085.16</td>
</tr>
<tr>
<td>Australian Government</td>
<td>$ 90,000</td>
<td>$ 62,170.33</td>
</tr>
<tr>
<td>Total cost</td>
<td>$135,000</td>
<td>$ 93,255.49</td>
</tr>
</tbody>
</table>

Actual expenditure included:
- Supply & Install 4 x 50kwh Accent Air heaters: $59,990
- Plumbing upgrades: $3,321.49
- Crane Hire: $1,498
- Boost Pump and controller: $1,800
- 3x25mx6m Thermotech Blanket: $20,346
- 3x rollers: $5,400
- Installation of blankets: $900.00

8. CONCLUSION

Council has been able to significantly increase the functionality and operating period for this public pool whilst still providing less overall energy consumption than had it maintained existing systems. Council thanks the Australian Government for supporting this worthwhile project.
9. APPENDICIES

Appendix 1 Energy calculations

Leisure Engineering modelling estimated that refurbished gas heaters (which would run 18hr/day) would consume the following (refer Attachment 1)

<table>
<thead>
<tr>
<th></th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>Total for 3 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modelling of gas heating kWh</td>
<td>14,355</td>
<td>17,993</td>
<td>22,652</td>
<td>55,000</td>
</tr>
<tr>
<td>Actual electricity/energy consumption kWh</td>
<td>10,005 (QEnergy invoice 531504)</td>
<td>6,557 (QEnergy invoice 523124)</td>
<td>16,562</td>
<td></td>
</tr>
<tr>
<td>Energy Saving kWh</td>
<td></td>
<td></td>
<td></td>
<td>38,438</td>
</tr>
</tbody>
</table>

New heat pumps were commissioned on 27/2/14.

Appendix 2  Project Energy Efficiency Improvement

<table>
<thead>
<tr>
<th>PROJECT TITLE</th>
<th>Lowood Pool Heating</th>
<th>PROJECT ID</th>
<th>CEEP2005</th>
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<tbody>
<tr>
<td>FUNDING RECIPIENT</td>
<td>Somerset Regional Council</td>
<td></td>
<td>24 July 2014</td>
</tr>
<tr>
<td>DATE</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Building, Facility or Site**

**Name of Building, Facility or Site**
Lowood Public Swimming Pool

**Location (address)**
159 Main Street, Lowood

**Type of building, facility or site**
Swimming Pool

**Activity Type and Measure**
Installation of heat pumps and thermal blankets

**Energy Efficiency Estimate Method**
Projected energy modelling vs actual energy consumption.

**Baseline Energy Usage**
599.77 kWh/day

**Actual Energy Efficiency**
230.02 kWh/day

**Energy Efficiency Improvement**
Reduction 369.75 kWh/day

**Reporting Data (Measuring Energy Efficiency and Additional Data)**
Actual energy consumption over 3 months post installation of new pumps/blanket 26/2/14 – 8/5/14
16,562 kWh over 72 days = 230.02
Energy charges for same period
$3,444 or $47.83/day
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total attendance at centre over same period</strong></td>
<td>3,750</td>
</tr>
<tr>
<td><strong>Baseline Operating Costs</strong></td>
<td>$95,786 (Attachment 1)</td>
</tr>
<tr>
<td><strong>Actual Operating Costs</strong></td>
<td>$17,500 (based on actual consumption of $47.83/day averaged 3 months since commissioning)</td>
</tr>
<tr>
<td><strong>Estimated Cost Savings</strong></td>
<td>+$75,000 (based on 12 months operations. Council has not yet determined that if demand is sufficient for 12 months operations)</td>
</tr>
</tbody>
</table>

**Appendix 3  Technical Specifications**

Accent HWP50-3 Pool Heat Pump x 4  
Electrical Input 390-415 Volts/50Hz, 25.0 Amps per phase, 40 Amp circuit.  
Copeland Scroll Compressor 19.6 Amps FLA, 2/2,900 rpm.  
Heat Exchanger 2.8L/s flow rate, 45C max outlet water temp, 90 kPa design pressure  
General Info 40mm PVC inlet/outlet, 20mm drain, 1.2mm aluminium marine grade cabinet,  
1750x800x1015 LWH

Thermotech Foam Pool Blankets x3  
Size 25mx6m  
Reduces heat loss by up to 75% and evaporation by 97%  
Thermotech Pool Blankets are made from 3m thick, cross linked PE closed cell Polyolefin foam within a flame bonded woven PE called Canvaon.  
Thermotech Pool Blankets have a thermal resistance (R value) of 0.088,m2/K, and a weight of 500g/m2.

**Attachments**

1  Extract from Leisure Engineering Pty Ltd modelling  
2  QEnergy invoice 523124 (28/2/14 – 16/4/14)  
3  QEnergy invoice 531504 (17/4/14 – 8/5/14)  
4  Lowood Centre Attendances (Somerset Sport and Aquatic 2014)  
5  Declaration
DECLARATION

The Authorised Officer of the organisation makes the following declarations:

☐ I declare that I am authorised to submit this Final Report (including any attachments) on behalf of Somerset Regional Council (Name of organisation)

☐ I declare that the information provided in this Final Report is true and accurate.

☐ I understand, and acknowledge that giving false or misleading information in this Final Report is an offence under the Criminal Code Act 1995.

☐ I understand that final payment will only be made in accordance with the Funding Agreement including on satisfactory completion of Milestones.

Authorised Officer Signature: ........................................ Date: 15/09/14

Name: Christopher Payne
Position: A/Chief Executive Officer Organisation: Somerset Regional Council

Witness Signature: ........................................ Date: 15/09/14

Name: Geoffrey Smith
Position: Manager Finance Organisation: Somerset Regional Council

The use and disclosure of information provided in this Final Report is regulated by the relevant provisions and penalties of the Public Service Act 1999, the Privacy Act 1988, the Freedom of Information Act 1982, the Crimes Act 1914 and the general laws of the Commonwealth of Australia.

Information contained in the Final Report may be disclosed by the Department for purposes such as promoting the program and reporting on its operation and policy development. This information may also be used in answering questions in Parliament and its committees. In addition, the selected project information will be made publicly available. Public announcements may include the name of the grant recipient and of any project partners, title and description of the project and its outcomes; and amount of funding awarded.

When calling, please ask for Geoffrey Smith.

Yours sincerely,

[Signature]

Chief Executive Officer