RIVERINA HIGHLANDS BUILDING ENERGY EFFICIENCY PROJECT (RHBEESP) FINAL REPORT

“This activity received funding from the Australian Government”
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Executive Summary
The Riverina Highlands Building (RHB) is the main administrative building in Tumut, NSW - located in the western foothills of the Snowy Mountains. Owned by Tumut Shire Council (TSC), it houses the main administration activities as well as provides a base for State Government tenants such as Forest Corporation, Rural Fire Services and Correctional Services. It is also the regional Operations Centre during emergency periods.

The Riverina Highlands Building Energy Efficiency Project (RHBEEP) transformed an early 1980s building with high energy and maintenance requirements into an energy efficient facility that is a showpiece for the community and future generations. The project included lighting and insulation upgrades, sub-metering, metering optimisation and the retrofit of a Geoexchange heating and cooling system to replace the original air sourced central chiller and duct heaters.

The physical construct of the project was not without issues, when drilling the main bore holes for the Geothermal, the driller’s encountered greater than expected volumes of water. The test bore was at ~3 l/s and one section the rate of flow was at 14 l/s. However, from an energy efficiency perspective, this additional water flow provided a higher efficiency GHX as it transports heat to/away from the area rapidly.

To date, the RHBEEP has generated an energy reduction of 934,770 MJ (see Figure 1: Site Electricity consumption 13/14 and Figure 2: Winter load profile 12-14) pa which is more than half the original electricity consumption of the site. The annual savings are $174,320 ex GST pa. These savings include direct electricity cost reduction, which at Dec 2014 electricity prices were $94,320 ex GST pa. Additional financial benefits are a maintenance reduction of $50,000 pa (which was achieved in 2014 and is perpetuating) and opportunity to generate an additional $30,000 pa in increased tenancy income due to lower tenant electricity costs and improved office environment. Communication of the RHBEEP has created a change in culture at Council and in the broader community, where energy efficiency, resource management, energy reduction are commonly understood and actioned.
The RHBEEP illustrates the potential within local government to take the lead in their local community in the area of energy efficiency. The savings provided by the RHBEEP will provide Tumut Shire Council, more specifically the ratepayers, with additional funds that can be better used within the local community and no longer wasted on an inefficient building asset. The transformation of the RHB is a transformation that is available to the many pre-loved buildings across the country.
Project Objectives.
The key objectives of the RHBEEP (Riverina Highlands Energy Efficiency Project) were:
- Reduce energy expenditure,
- Reduce reliance on imported energy,
- Reduce GHG (Green House Gas) emission and,
- Improved understanding of energy efficiency and cost reduction strategies by Tumut community

The RHBEEP aimed to improve the energy efficiency of the Riverina Highlands Building (RHB) from its current 3 star NABERS energy rating to a 5.5 star energy rating by upgrading the lighting and HVAC (Heating Ventilation and Air Conditioning) systems and other minor projects.

Sub metering has been installed at the site to evaluate each activity’s achievement of energy saving objectives. Sub metering will enable direct billing of tenants for electricity consumption which is also expected to generate additional savings as tenants seek to reduce electricity costs and look for more efficient and conservative use of electricity to do so. Sub metering is utilised to collect energy baseline data to track more closely site energy consumption and enable accurate tenant apportioning of electricity costs and collection of appropriate costs. Our initial energy audit identified that the previous Net Lettable Area apportioning was resulting in TSC heavily subsidising electricity costs of other tenants.

The outcomes from the project include reduced energy expenditure, air pollution, GHG emissions, maintenance and operating costs and increased community awareness regarding energy efficiency and opportunities for savings.

The project was used as a case study to promote energy efficient activities to local residents, businesses and other local councils and provided an avenue to educate local services providers (such as electricians and air conditioning contractors) regarding energy efficient products and cost of installation.
Councils project’s activities intended to improve energy efficiency at Riverina Highlands Building at 76 Capper Street Tumut NSW.

Tumut Shire Council installed the following infrastructure/technology:

- Lighting upgrade
- HVAC/GSHP (Ground Source Heat Pump) system
- Sub metering
- Ceiling insulation

The mix of technologies was carefully selected to be complimentary and to ensure maximum energy efficiency.

Council was very specific in the type of technology selected for RHBEEP; Council conducted an energy audit that detailed areas that consumed the most electricity to the least electricity. Following this Council investigated, Co-generation as an option and the investigation clearly indicated that geothermal HVAC was the most efficient and effective for this building type and the geographic location of the building.
Council utilises a tender process for all major work and this was the process used for all RHBEEP project items. Minimal issues were encountered during the project, and they have been discussed in section “What difficulties did you have in managing the project page 39”. 
Project Demonstration and Communications Activities
Council undertook the following activities:

- RHB Upgraded lighting,
- HVAC/GSHP system installed
- Sub Metering
- Ceiling insulation

These activities highlighted the relevant energy efficiency actions and how effective these were. The lighting upgrade demonstrated how the reduction in lumens, the removal of bulbs, the correct time management of lighting and the correct placement of lights, can be effective in reducing energy consumption. The HVAC/GSHP demonstrated how new technologies, site design specific HVAC systems, and the programmed usage of the HVAC is effective in reducing energy consumption, whilst maintaining a comfortable and pleasant work environment. Sub metering another activity that Council undertook to identify action and thus reduce energy consumption at that site. The ceiling insulation effectively reduced the amount of energy that the HVAC consumed by providing a buffer from the extreme external conditions.

**Target and informing**

Council targeted the following to communicate and demonstrate activities:

- Community
- Building staff
- Tradespersons
- Industry

We used tools such as sharing of data, Websites, Newsletters, Facebook pages, Presentations, Trade forum, Awards and Media.
Figure 3 below shows our message, which we were targeting with the message, what tools we would use and what target we archived. Figure 4 below shows that TSC has achieved better than projected results and has used more tools that we committed to in the communication strategy. Council’s communication objective was to deliver a key message, such as “communicate intuitive to improve energy performance” to distinct divisions, Local industry, Tradespeople, Community and Building staff. We would use six tools being data sharing with SBRC, Website, Newsletters, Facebook, Presentation, and Trade Forum. TSC estimated the “energy performance” message would be delivered and achieve:

- Data sharing with SBRC - 50% Industry, and 50% Tradespeople,
- Website - 25% Industry, 25% Tradespeople, 25% Building staff, and 25% Community,
- Newsletters - 33% Tradespeople, 33% Building staff, and 33% Community,
- Trade Forum -100% Tradespeople,
- Presentation - 33% Industry, 33% Tradespeople, and 33% Community,
- Facebook - 50% Building staff, and 50% Community.

What Council actually achieved was well beyond the original estimation. The results show that more tools were used than we originally estimated to deliver to more division. TSC results show that the “energy performance” message delivered and achieved:

- Data sharing with SBRC – 75% Industry, 15% Tradespeople, 5% Building staff, and 5% Community,
- Website – 30% Industry, 20% Tradespeople, 25% Building staff, and 25% Community,
- Newsletters - 5% Industry, 25% Tradespeople, 35% Building staff, and 35% Community,
- Trade Forum - 25% Industry, 50% Tradespeople, 10% Building staff, and 15% Community,
- Presentation - 45% Industry, 15% Tradespeople, 25% Building staff, and 25% Community,
- Facebook - 5% Industry, 25% Tradespeople, 25% Building staff, and 45% Community,
- Media – 25% Industry, 25% Tradespeople, 25% Building staff, and 25% Community,
- Awards – 45% Industry, 5% Tradespeople, 20% Building staff, and 30% Community.
Figure 3: What we aimed to do.
Figure 4: What we did!
Educate

Tumut Shire Council developed a strategic communication plan and the plan exceeded our expectations. We used the TED Ex talk premise of a “message worth spreading”, when Council presented at the national Banksia Foundation awards on RHBEPP. When Council hosted the Trade Forum in 2014 we utilised the specialist consultants that were instrumental in the undertaking of the design and physical works of RHBEPP to provide presentation at the forum. The presentations were as follows:

- Energy Efficiency in buildings– by Emma Spinks CDE Energy “Emma will be discussing energy usage within the residential building sector concentrating on design essentials, retrofit/renovation essentials and strategies to minimize energy purchasing cost at all sites”.

- Geothermal energy sink? And RHBEPP project Yale Carden GeoExchange “Yale will present information on the Geothermal system at the Riverina Highlands Building and provide further details on geothermal for commercial and residential premises.”
Tumut Shire Council provided an Energy Usage Review (EUR), where residents could come to a specialist to have their energy bills interrupted and recommendations on how to reduce their cost and consumption and across the 14 sites participating a total annual estimated savings were $22,248 inc GST pa (average $1,589 pa/ per/site). The cost of implementing the recommendations required to achieve these savings was estimated at $26,728 inc GST (average $1,909 pa/ per/site) with an average payback period of 1.2 years.

EUR also educated the recipient on how to conserve energy, how to gain thermal efficiency in your house, what to look for that could be using energy and costing money.

One of the participants from Energy Usage Review stated the following:

“I thoroughly appreciate the energy use review with Emma Spinks which was conducted at the Sustainability Expo. Emma provided me with a detailed Energy Use Review statement from our discussions. This statement details Emma’s prioritised recommendations on how to reduce my household energy usage and more importantly - how to save money. Thank you for providing the opportunity to have my household energy usage reviewed and explained by such a knowledgeable person” (Perrin, 2014).
The project and energy efficiency

Tumut Shire Council continually implemented the Communication strategy throughout the life of the project. The table below details demonstrates communication activity and the benefit that it provided and Figure 5: RHBEFP Presentation timeline below details presentation or workshop undertaken for RHBEFP.

Table 1: Demonstration and Achievement

<table>
<thead>
<tr>
<th>Demonstration</th>
<th>Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presenting at the 31st NSW Environmental Education</td>
<td>Provided the opportunity to connect with a vast array of education professionals from NSW.</td>
</tr>
<tr>
<td>Sustainability Advantage Cluster group</td>
<td>The presentation provided the Office of Environment and Heritage with the opportunity to observe what the Energy Saver Program provided and see how this program was the catalyst for RHBEFP. Additional the presentation provided an example to other likeminded person, from private industry and government.</td>
</tr>
<tr>
<td>Tumut Shire Community, tour of RHBEFP and presentation</td>
<td>The tour and presentation was directed at community members, this event provided education on efficiency of various types, promoted Energy Efficiency strategies and validated the success of the RHBEFP.</td>
</tr>
<tr>
<td>Sustainable Living Festival</td>
<td>The festival provided the community with an opportunity to see local resources, products and meet business that are mindful and aligned with sustainability, energy efficiency and or resources management.</td>
</tr>
<tr>
<td>Mars Petcare National Management Team, Presentation on RHBEFP</td>
<td>The presentation was presented to the National team for Australia and New Zealand for Mars Pet Care an international company. The RHBEFP</td>
</tr>
<tr>
<td>Demonstration</td>
<td>Achievement</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Demonstration and project was hailed as extremely inspirational <em>per com</em> Harrison.</td>
<td>This presentation was delivered to a specialist professional industry. This provided an opportunity to be compared against other non-government project.</td>
</tr>
<tr>
<td>AIRAH Pre Loved Building Conference, GeoExchange presentation</td>
<td>This presentation provided a technical team from Mars Pet care with specific details on RHBEPP, so that the team could potentially undertake the same project at their site.</td>
</tr>
<tr>
<td>Mars Petcare, Comprehensive tour to project team</td>
<td>Banksia Foundation is a national award. The Ted x was presented to a national and international audience, the presentation details the RHBEPP.</td>
</tr>
<tr>
<td>Banksia Foundation Finalist Awards, Australia’s Sustainability Success Stories TedX</td>
<td>This presentation will deliver the outcomes of RHBEPP to an international and national audience.</td>
</tr>
<tr>
<td>Australian Energy Storage Conference presentation</td>
<td></td>
</tr>
</tbody>
</table>
Figure 5: RHBEFP Presentation timeline

- 2013 October - 31st NSW Environmental Education presentation
- 2014 March - Sustainability Advantage Cluster group RHBEFP presentation
- 2014 April - Tumut Shire Community, tour of RHBEFP and presentation
- 2014 April - Sustainable Living Festival
- 2014 August - Mars Petcare National Manager Team, Presentation on RHBEFP
- 2014 November - AIRAH Pre Loved Building Conference, GeoExchange presentation
- 2014 November - Mars Petcare, Comprehensive tour to project team
- 2014 November - Banksia Foundation Finalist Awards, Australia’s Sustainability Success Stories TedX
- 2015 Australian Energy Storage Conference presentation
Outcomes and benefits of the Project.
**Energy Efficiency outcomes:**


There has been other benefits to the project where Council has successfully increased tenancy income – due to improved office environment and reduce tenant electricity costs Council will be able to recover an additional $30,000 pa from tenants.

Additionally Council has reduced maintenance costs – In the first year of operation following project completion the sites HVAC maintenance costs have reduced from $50,000 pa to zero.
Ancillary benefits

Council has reduced an asset at risk of failing to operate and function, and to provide suitable office space to many, by improved their thermal efficiency, providing a work place that is pleasant to work in with excellent lighting levels and created a legacy that is growing energy efficient behaviour.

When Council undertook RHBEEP, we knew that RHB was an asset at risk of plant failure. The successful delivery of RHBEEP has provided Council with the capacity to undertake new initiatives such as the Energy Usage Review (EUR) at all Council owned buildings in the Shire. This review involved the detailed analysis of past electricity consumption and present energy purchasing arrangements and network tariff designation for 77 sites. The project will save on average $73,480 p/a.

The RHB was a thermally inefficient building, summers in the RHB were hot and uncomfortable, with the plant failing on a regular interval, and Winter was not much better with the program and capacity of the HVAC simply not meeting the building occupant’s requirements. The RHBEEP GSHP provides climatic conditions for all occupants that are consistent at extremely comfortable levels, whilst greatly reducing the running cost.

When Council liaised with the occupants they have generally noted that lighting levels have improved, and that there has been less eye strain for some occupants feeling that the new lighting levels have provided a reduction strain.

Council has increased their storage capacity in the plant room by approximately 500% from removing the old plant and installing the new plant.
TSC is continuing to design and construct projects that have the same objectives as RHBBEE. The RHBBEE has enabled and empowered early adapters and fostered positive environmentally sustainable changes in Council (See Table 2).

<table>
<thead>
<tr>
<th>Site</th>
<th>Energy Audit</th>
<th>Recycled water</th>
<th>Solar heating</th>
<th>Solar Panels</th>
<th>Total Energy Actions at Council</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adelong</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Batlow</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Brungle</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Talbingo</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Tumut</td>
<td>5</td>
<td>2</td>
<td></td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>9</strong></td>
<td><strong>4</strong></td>
<td><strong>2</strong></td>
<td><strong>13</strong></td>
<td><strong>28</strong></td>
</tr>
</tbody>
</table>

Table 2: Energy Actions at Council
Demonstration and communication outcomes

Council kept a log of all our interactions with the community, any potential impact was documented and Council took any opportunity have an impact on the community. This has been addressed in Figure 5: RHBEEP Presentation timeline, Figure 6: Written articles, Figure 7: Change in language, Table 1: Demonstration and Achievement, and Table 3: Awards for RHBEEP.
Community reach

Council has been extremely successful in delivering and conveying RHBEPP message;

- GeoExchange have supplied TSC data to University of Wollongong Sustainable Building Research Centre for future use,
- RHBEPP have been referenced in 32 web addresses (see Attachment A – Project Energy Efficiency
- Appendix B – Web sites).
- TSC have promoted the project through a community newsletter posted to 5500 households in the shire (See Figure 6: Written articles), TSC printed 600 Green Team Newsletter and handed out 570.
- RHBEPP has been finalist in five awards and won the division and category for one (See Table 3).
Table 3: Awards for RHBEFP

<table>
<thead>
<tr>
<th>Status</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finalist</td>
<td>5</td>
</tr>
<tr>
<td>Environmental</td>
<td>4</td>
</tr>
<tr>
<td>AIRIAH</td>
<td>1</td>
</tr>
<tr>
<td>Banksia Foundation</td>
<td>1</td>
</tr>
<tr>
<td>Green Globe</td>
<td>1</td>
</tr>
<tr>
<td>LGMA Excellence Awards</td>
<td>1</td>
</tr>
<tr>
<td>Governance</td>
<td>1</td>
</tr>
<tr>
<td>LG NSW AR Bluett memorial</td>
<td>1</td>
</tr>
<tr>
<td>Winner Division A and Overall Winner</td>
<td>1</td>
</tr>
<tr>
<td>Environmental</td>
<td>1</td>
</tr>
<tr>
<td>LG NSW</td>
<td>1</td>
</tr>
<tr>
<td>Grand Total</td>
<td>6</td>
</tr>
</tbody>
</table>
Feedback

Mars Petcare Nigel Harrison Supply Director of Mars Petcare Australia after attending a site visit, tour and presentation on the project stated

“Thank you for this and thank you to you and the team for the generosity you showed us in giving up your time to share your achievements. We all left on Friday inspired by the team’s enthusiasm and engagement in achieving a sustainable future. Well done.”

RHOBEEP has been promoted by CEFC as one of their premier projects. CEO Oliver Yates stated at the official opening of RHOBEEP that

“This project just highlights what action can be taken to reduce our Carbon footprint” (per com, 2014).

The panel of Judges from Banksia Foundation provided a summary of the key insights for RHOBEEP’s Award application stating the projects main strengths:

- “Local council leadership with potential to influence conservative community attitudes,
- The Communication Strategy and energy saving approach of this project is a great example of local authority leadership and innovation for a refurbishment project,
- A nicely balanced initiative Geothermal has been done before but not normal for a council,
- Thorough documentation,
- Very generous to be sharing the
Contributing to broader energy efficiency activities uptake would be very difficult to provide quantitative data, however Council can qualitative estimate that the RHBEEP has increased our local community perception and attitude towards energy efficiency. We have been contacted by several external agencies in relation to the GSHP HVAC. One of these external agencies such as Mars Petcare have had three onsite visits and GeoExchange Australia has been engaged to conduct preliminary test at their site for suitability.

GeoExchange Australia has promoted RHBEEP on several occasions and has presented a paper on the success of the RHBEEP at the AIRAH’s Preloved Buildings 2014 Conference, in Brisbane, on 28th of October 2014.
Energy Usage review

Council has been monitoring the local paper over the last three years, in order to gauge how and if we have made an impact on the local community we extracted the amount of times words that are directly related to the objectives of RHBEEP, occur in the local papers over the year. Clearly words that are part of RHBEEP objectives have increased, the use of the words “Energy Efficiency” have increased by 62%, “Energy Efficient” has increased by 50% “Reduce Energy” has increased by 200%, “RHBEEP” has increased by 29% and the use of “Save Energy” has increased by 200% in three years (See Figure 7).

![Figure 7: Change in language](image)
Local industry

Council has provided opportunities to the local industry. Local plumbers such as Craig Reed Plumbing worked on the install of the ground loop and now have the local skills to install this type of system.

The trade forum that was delivered to the local tradespeople has provided this industry with valuable information on energy efficiency and how they can operate to build infrastructure that is more sustainable and energy efficient.
Project benefits

Council continually strived to deliver the message of RHBEEP to educate and increase Energy Efficiency strategies in the community. Whilst it would be difficult to ascertain if TSC benefited low socio-economic or disadvantaged groups, Council can clearly say that the RHBEEP message and premises to educate and assist the greater community have indeed occurred. Generally speaking the shire community members are very aware that council has a “really energy efficient air conditioner and that is it run from the ground temperature” per com Jo Spicer, Tumut Shire Council community have embraced RHBEEP.
Budget
The project was achieved within budget and the nature of the technology didn’t create any budgetary issues.
The RHBEEP project achieved value for money, this project has delivered combined savings of $174,320 ex GST p/a at a total cost of $1.3 M dollars (see Table 4: Project budget). With a simple payback period of 7.6 years it would have been very difficult for TSC to commit to this project alone despite the significant economic benefit that it has created.

<table>
<thead>
<tr>
<th>Project category</th>
<th>CEEP eligible expenditure (ex GST) inc projected</th>
<th>CEEP budget (Project Plan) ex GST</th>
<th>spending variation (ex GST)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting</td>
<td>$205,569</td>
<td>$173,882</td>
<td>$31,687</td>
<td>18% over budget</td>
</tr>
<tr>
<td>HVAC</td>
<td>$935,866</td>
<td>$1,025,613</td>
<td>$-89,746</td>
<td>-9% under budget</td>
</tr>
<tr>
<td>Sub metering</td>
<td>$51,350</td>
<td>$29,256</td>
<td>$22,095</td>
<td>76% over budget</td>
</tr>
<tr>
<td>PFC</td>
<td>$0</td>
<td>$20,656</td>
<td>$-20,656</td>
<td>not undertaken</td>
</tr>
<tr>
<td>Project management &amp; administration</td>
<td>$105,725</td>
<td>$28,207</td>
<td>$-77,518</td>
<td>-275% these items previously included in works budgets (i.e. HVAC, lighting etc.)</td>
</tr>
<tr>
<td>Communications activities</td>
<td>$18,745</td>
<td>$38,728</td>
<td>$-19,983</td>
<td>-52% original budget included costs that were reallocated to administration (TSC staff payroll)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>$1,317,254</td>
<td>$1,316,341</td>
<td>$914</td>
<td>0%</td>
</tr>
<tr>
<td>CEEP grant</td>
<td>$877,561</td>
<td>$877,561</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSC contribution</td>
<td>$439,694</td>
<td>$438,780</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over budget</td>
<td>$914</td>
<td>0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Project budget

There was some variation to individual sub project costs from the originally budgeted breakdown, there were primarily due to initial incorporation of overhead (project management and administration) to sub projects. The overall project costing was impressively in line with the budgeted costs and was, overall, successfully delivered as projected.

As the project progressed it was identified that the previously anticipated saving through installation of Power Factor Correction equipment may not have been as large as projected due to electricity reductions being higher than anticipated which enabled the site to switch to a more cost effective tariff where PFC saving would be less relevant. The highest cost overrun was for lighting as tendered prices came in higher than anticipated possibly due to the rural location of the site and concurrent demand for electrical services at the time of works.
Project operation, mechanisms and processes.
Council managed the project internally and there external organisations involved.

The Project Team consists of:

**Project Director**
John Maxwell, Director
Engineering Services - Tumut Shire Council
BE, MBA

**Project Finance Officer (PFO)**
- Senior Management Finance authorisation
Allan Tonkin, Director
Corporate Services - Tumut Shire Council
BHA, GDipFinAcc, GDipCommLaw

**Project Manager (PM)** - whole project coordination budgeting
Garry Mayes, Building/Development Officer – Tumut Shire Council
MAIBS

**Project consultant** - Technical and administrative support
Emma Spinks, Director – CDE Energy
BE (Elec), MBA, MSc (Renewable Energy)

**Project Officer - Quality Manager**
Implementation of minor project,
Communications strategy
Implementation education & promotion
Jo Spicer, Environmental GIS Officer - Tumut Shire Council
BSc -Cert 4 Carbon Management

**Project Officer**
Brad Beed, BHrt – Tumut Shire Council

**Project Manager – HVAC Project Consultant**
Yale Carden, Director - GeoExchange Australia
MApPE, BAppSc, IGSHPA (member)
Council has been extremely fortunate to have selected internal and external team members, our team worked cohesively, fluently and openly. We were so fortunate to have staff that was adaptive and responded to the RHBEEP needs on a case by case basis. In per coms with GeoExchange Australia Mr Yale Carden, Yale has commended Council on the exceptional behaviour and work ethic that the team displayed.

Council made sure that there were enough resources for the RHBEEP to be successfully implemented. The RHBEEP was well planned and most variables were accounted for. Obviously there were some limitations on internal resources but nothing that impacted on the projects objectives.

Council is now much stronger and fit for the future; we have not only gained valuable assets and resources from this project but have created a change in culture for the staff at Council, community and industry. This project has been a landmark project in the eyes of Council and has put Council into a very solid state to ensure that we continue to reduce our energy consumption and increase our efficiency.

Council is extremely grateful and acknowledges that without CEEP, Council project may not have been achieved.
The physical construction of the project was not without issues, when drilling the main bore holes for the Geothermal, the driller’s encountered greater than expected volumes of water. The test bore was at ~3 l/s and one section the rate of flow was at 14 l/s. Even this drilling, from an energy efficiency perspective, this additional water flow provides a higher efficiency GHX as it transports heat to / away from the area rapidly.

RHBEERP was undertaken in the dead of winter and as you can image the Snowy Mt’s winters are bitterly cold, 50% of Council staff remained in the building at time of construction and worked with no building heating, but with small personal heater… and yes many thermal undergarments.
Council has gained valuable lessons from the RHBEFP. Council originally undertook the RHBEFP on a financial basis and could see the benefit that the project would have for the staff, community and businesses. Council learnt some valuable lessons from this project:

- Being a small rural Council doesn’t mean that you can’t think and act big to implement change into organisational culture to reduce energy consumption;
- Projects like the RHBEFP have the capacity to change staff, community and business perception on energy and cost, with these changes leading to tangible results;
- Projects such as the RHBEFP have flow on effects and have created a culture in the organisation that is now actively examining assets and the use of assets to reduce our carbon emission and associated costs.
Conclusion
The RHBEEP has achieved the desired objectives; we have installed infrastructure that is environmentally sensitive, energy efficient with an excellent life cycle. The RHBEEP has highlighted the importance of energy management and energy efficiency behaviour to the local community, state and federal organisations and some international audiences. And lastly the community have an asset that has left them a legacy that they can be proud of!
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
   Tumut Shire 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

☑ 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: 12/5/2015

Name: Allan Tonkin

Position: Director Corporate Services Organisation: Tumut Shire Council

Witness Signature: ........................................... Date: 12/5/2015

Name: Joanne Spicer

Position: Environmental Health Officer Organisation: Tumut Shire 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.
### Riverina Highlands Building Energy Efficiency Upgrade

**Funding Recipient:** Tumut Shire Council  
**Date:** 30-Apr-15

<table>
<thead>
<tr>
<th>Building, Facility or Site 1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name of building, Facility or Site 1</strong></td>
<td>Riverina Highlands Building</td>
</tr>
<tr>
<td><strong>Location (address)</strong></td>
<td>76 Capper St, Tumut NSW</td>
</tr>
<tr>
<td><strong>Type of building</strong></td>
<td>Local Council Administration</td>
</tr>
<tr>
<td><strong>Activity type and measure</strong></td>
<td>Energy Efficiency (HVAC, Lighting &amp; Submetering)</td>
</tr>
<tr>
<td><strong>Energy Efficiency Estimate method</strong></td>
<td>Analysis of electricity billing and metered data</td>
</tr>
<tr>
<td><strong>Baseline Energy Usage</strong></td>
<td>1,738,672 MJ</td>
</tr>
<tr>
<td><strong>Baseline energy efficiency</strong></td>
<td>747 MJ per m² floor area</td>
</tr>
<tr>
<td><strong>Energy Efficiency Improvement</strong></td>
<td>934,770 MJ electricity</td>
</tr>
</tbody>
</table>

**Reporting data**

- **Cost of Activity:** $1,317,254
- **Estimated cost savings:** $174,320
Appendix A – Project Energy Efficiency

Appendix B – Web sites

Hyperlink

Mel-Cutler-Associate-Director-CEFC.pdf
http://issuu.com/grazvanegmond/docs/2014_banksia_sustainability_awards
http://www.airah.org.au/imis15_prod/AIRAH/Events2/AIRAH_Conferences/AIRAH/Navigati-
on/Events2/AIRAHConferences/PreLoved_2014/Preloved_abstracts.aspx
http://www.airah.org.au/imis15_prod/Content_Files/EcoLibrium/2014/October14/10-14-
Eco-002.pdf
http://www.banksiafdn.com/the-awards/42-current-awards/252-2014-
finalists.html#innovator
http://www.cleanenergyfinancecorp.com.au/media/releases-and-
announcements/files/cefc-congratulates-tumut-on-impressive-energy-savings.aspx
awards-finalists-announced
tumut-nsw/
8&ved=0CCgQFjACOGg&url=http%3A%2F%2Ftarnswh.edu.au%2Fpluginfile.php%2F663%2Fmod_forum%2FAttachment%2F5081%2FDraft%2520NSW%2520Environmental%2520Education%2520Conference%25202013.pdf&ei=dhOrVMzDFMXwmAXvLYGIvWj4Ag&bvm=bfv.8200-
1339,d.GY
%20Press%20Release.pdf
costs/61730
http://www.tatimes.com.au/1m-for-air-conditioning/
http://www.theracplus.com/features/its-all-about-communication/8674117.article
http://www.slideshare.net/YaleCarden/small-council-big-vision-bigger-savings-airah-
preloved-builings-2014
costs/61730
after-upgrade/
https://plus.google.com/app/basic/10710264405558884472/posts?cbp=sj5vode66xxu&sview=28&cid=5&soc-app=115&soc-platform=1&spath=/app/basic/s/%2523geoexchangeaustralia/related?cbp=1qa4n1fepg2z4&sview=27&cid=5&soc-app=115&soc-platform=1&SPATH=/app/basic/s/%2523Nibe/related%26sparm=cbp%3D151i1hp0dr2y9%26sview%3D28%26cid%3D5%26soc-app%3D115%26soc-platform%3D1%26sro%3D%262523lollyslaundry,%262523aalborg%26sri%3D2%26spath%3D/app/basic/s/%2523aalborg/related%26sparm%3Dcbp%2523D1vh363hemp98f%2523sview%2523%2526cid%2526soc-app%2523%2526sri%2526spath%2523/app/basic/105538690324696705309/posts
https://plus.google.com/app/basic/s/%23geoexchangeaustralia/related?cbp=1qa4n1fepg2z4&sview=27&cid=5&soc-app=115&soc-platform=1&spath=/app/basic/s/%2523Nibe/related%26sparm=cbp%3D151i1hp0dr2y9%26sview%3D28%26cid%3D5%26soc-app%3D115%26soc-platform%3D1%26sro%3D%262523lollyslaundry,%262523aalborg%26sri%3D2%26spath%3D/app/basic/s/%2523aalborg/related%26sparm%3Dcbp%2523D1vh363hemp98f%2523sview%2523%2526cid%2526soc-app%2523%2526sri%2526spath%2523/app/basic/105538690324696705309/posts
https://www.facebook.com/TumutSustainableLiving/posts/229867660510586
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