CEEP 2180 Final Report

For

Cootamundra Ex-Serviceman’s and Citizens Memorial Club
Replacement of Air Conditioning and Lighting
Date issued: 16 June 2015

Australian Government
This activity received funding from the Australian Government.
COOTAMUNDRA EX-SERVICEMAN’S AND CITIZENS MEMORIAL CLUB
REPLACEMENT OF AIR CONDITIONING AND LIGHTING
Date Issued: 16 June 2015

TABLE OF CONTENTS

<table>
<thead>
<tr>
<th></th>
<th>SECTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EXECUTIVE SUMMARY</td>
<td>3</td>
</tr>
<tr>
<td>1.1</td>
<td>INTRODUCTION</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>PROJECT OBJECTIVES</td>
<td>3</td>
</tr>
<tr>
<td>2.1</td>
<td>AIR CONDITIONING PROJECT</td>
<td>3</td>
</tr>
<tr>
<td>2.2</td>
<td>LIGHTING UPGRADE</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>PROJECT ENERGY EFFICIENCY ACTIVITIES</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>PROJECT DEMONSTRATION AND COMMUNICATIONS ACTIVITIES</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>OUTCOMES AND BENEFITS OF THE PROJECT</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>BUDGET</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>PROJECT OPERATION, MECHANISMS AND PROCESSES</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>CONCLUSION</td>
<td>11</td>
</tr>
<tr>
<td>9</td>
<td>DECLARATION</td>
<td>12</td>
</tr>
<tr>
<td>10</td>
<td>APPENDIX A – M&amp;V REPORT</td>
<td>13</td>
</tr>
</tbody>
</table>
COOTAMUNDRA EX-SERVICEMAN’S AND CITIZENS MEMORIAL CLUB
REPLACEMENT OF AIR CONDITIONING AND LIGHTING
Date Issued: 16 June 2015

1 EXECUTIVE SUMMARY
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

1.1 Introduction
The Cootamundra Ex-Serviceman’s Club was successful in securing $117,967.00 from the Australian Government Community Energy Efficiency Programme (CEEP) on 20 August 2013. The Club committed to fund a further 50% to pay for the Energy Saving Activities at the Club. Total funding of $176,950.00 was made available to undertake the design, implementation and management of the installation of new air conditioning units and light emitting diode (LED) to the external facades and areas at the Club.

Savings resulting from these upgrades will be in the vicinity of $30,000 per annum. Please refer to Appendix A for further details on the M&V approach for this project.

The Club has implemented further sustainable measures such as the installation of solar panels for power generation and the upgraded the down lights and the internal fluorescent lighting over the previous six (6) years.

The Club provides a service to the local community including dining function rooms, gaming, bar, bowling and community hall. The Club is open daily between 10am to 10pm with extended hours to midnight on Friday and Saturday.

This project dates back to early 2013 when Haron Robson conducted an energy audit of the property identifying lighting and HVAC upgrade opportunities in-line with the CEEP R2 application process. The audit examined the existing energy profiles, consumption of energy consuming services and provided recommendations for upgrading inefficient equipment with energy efficient equipment in business case format. The Club was subsequently accepted into the CEEP program following the initial analysis.

The new air conditioning packaged units supplying the Sportsmen’s Lounge and Dancefloor areas with much better internal conditions and control while the new external lighting improves the buildings street appeal and increases safety for the patrons

Both projects reduce energy consumption considerably while improving the service to the community.

The upgrades weren’t without issue for example, the late delivery of the new A/C equipment and Todd Basham electrical transferring ownership of his business during the upgrade. Irrespective of these minor set-backs, the project team worked hard to maintain the schedule, budget and quality at all times.

The air conditioning upgrade project underwent commissioning in September 2014 and the lighting upgrades were fully commissioned in February 2015. The installations are running appropriately and the community has provided positive feedback.

2 PROJECT OBJECTIVES

2.1 Air Conditioning Project
The main project objective was to reduce energy consumption whilst not deterring from the clubs relaxed and friendly environment for patrons using the facilities. With new technology emerging each day, this has become feasible for the club whom have ultimately been successful in accomplishing their overall objective of patron comfort. The Club was proactive in their approach to communicating their energy upgrades with the community as this was a requirement under the CEEP objectives.

The upgrade of the air conditioning equipment was targeted as one of the projects due to the inefficient plant and lack of service provided by the installed equipment. Over a number of years the service had become problematic with electrical faults occurring resulting in one (1) of the units actually being isolated. This project benefitted the Club by bringing capital expenditure forward, while also meeting the Club’s strategy to be as sustainable as possible. The project incorporated the isolating of old equipment, removal of this equipment at roof-top level, installation of new ductwork connections and installation of new packaged air conditioning units at roof-top level. This utilised local business for skills, materials and crane hire.
The Club upgraded two (2) roof mounted package air conditioning units manufactured by York. The air conditioning units provide heating and cooling to the Sportsmen’s Lounge and Dancefloor areas and have witnessed breakdowns for a number of years. The air conditioning project included the replacement of the two (2) packaged units together with ancillary duct work at roof-top level only.

Illustration 1 - Air conditioning plant and equipment

The air conditioning project witnessed no delays to the installation of the equipment. The project was commissioned and handed over on Friday 5th September 2014.

2.2 Lighting Upgrade

The lighting upgrade incorporated façade and car parking lighting installations. Again, this equipment was inefficient, old and, in some situations, isolated to reduce energy consumption. The existing installations were incredibly energy inefficient compared to the new technology available.

Illustration 2 – Completed façade lighting

This project witnessed a number of set-back resulting in a delayed project program. The LED project included the installation of a number of outdoor specific light fittings. These proved to be a problem to source locally. The issue was that the local wholesale team did not have access to the product specified resulting a delay in the ordering of equipment for the project. In order to mitigate the risk of extra delays the Haron Robson team communicated with the manufacturer of the product and helped organise the direct delivery of the products to site. The Club subsequently provided the product to the electrician ‘free issue’ for installation.

A further delay on this project was due to the change in ownership of the Electrical Contractor. Todd Basham Electrical sold its business to Secure Techniques. This had the effect of delaying the flow of information relating to the programme and progressing the project. Cootamundra is a small regional town with limited electrical contractors so there was no cost effective option available to the Club. The management of product delivery was supported by Haron Robson to try to expedite the project; however, the change of ownership further delayed this project’s programme by around 3 weeks. To
further compound this delay the Christmas/Summer holidays took place; at which time the construction industry basically stops for a period of between 4 to 6 weeks in regional areas.

The Club decided to relocate the car park lighting causing further delays to the project. The existing lighting to the car park is mounted on the dance studio building, adjacent to the car park. In October 2014 the Board of Directors reviewed the use, condition and age of this structure and decided that the building may be demolished with the life span of the new lights. It was decided that the new lights would be positioned on the opposite side of the car park on 6 metre poles; removing the need to relocate the proposed lights in the short to medium term. This decision had the impact of delay due to the remodelling of the lighting to the area to comply with Australian Standards, organising of the 6 metre poles and the trenching of the car park to reticulate the power supplies to the 3 new poles. The icing on the cake was that an unknown gas supply was buried in the car park; before the trenches could be dug this gas pipe had to be identified / avoided. Hire of the equipment also coincided with the Christmas/Summer holiday period.

3 PROJECT ENERGY EFFICIENCY ACTIVITIES

The Club consumed 445,313.9 kWh of energy at a cost of $121,287 per annum and faced the unusual situation that the patrons had reduced, reducing income, with increases in energy costs. The Club commenced with an energy audit to establish an appreciation of how they could reduce their outgoings while improving their service provision to the community. A Level 2 energy audit was undertaken by Haron Robson, consulting engineers, in February 2013 which resulted in the recommendation to upgrade the lighting and air conditioning systems.

The business cases provided to support the recommendations by Haron Robson identified savings in the region of $22,600.00 per annum for the combined projects. The capital budget for the two projects was $134,651.00 resulting in a payback at just less than 6 years (5.95).

Energy efficient LED lighting was specified for use in the external areas and on the façades. These were selected based on computational modelling to ensure that the final effect was achieved (see illustration 1, below). The original 600W tungsten halogen luminaires were highly inefficient and the result of a 20 year old approach to design. The replacement lamps are 70W each and have better light output characteristics than the old technology, resulting in a well-lit façade and car park. Combine this with the 50,000 hours anticipated life expectancy for LED results in an overall far more sustainable solution.

Illustration 3 – Computational modelling

The air conditioning systems installed consisted of two (2) packaged air conditioning units manufactured by York.
4 PROJECT DEMONSTRATION AND COMMUNICATIONS ACTIVITIES

Communication relating to these projects has been provided via four approaches to the Community. A local newspaper press release took place, website information updates and internal TV screen promotions were undertaken by the Club Secretary, Greg Bruce.

The Club’s communications strategy aimed to highlight the projects’ energy saving activities while providing ongoing progress updates. Stakeholders this project targeted were the Club, members and patrons, workers and general community.

The Club supports local community organisations as a venue for community meetings for organisations including various sporting groups such as bowls and tennis in a low socioeconomic area.

In the Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Cootamundra is listed in an Index of Relative Socio-economic Advantage and Disadvantage for Disadvantaged Areas in NSW

By saving the club's annual energy bill with the proposed upgrades, the money saved can be reinvested back into the club to benefit its members and the local community availing of the venue.

With additional energy savings the Club will be able to continue their support to such organisations and the numerous sporting and community clubs that use the facility.

With increasing energy prices members of the club will benefit from a reduction in their energy bills through the awareness raised in communication planned by the Club in its communication strategy.

Project updates took the form of web based updates, Annual General Meeting (AGM) minutes, local media releases and Club membership updates.

The AGM in April 2014 highlighted what these projects were in the planning stages together with the anticipated results. Minutes were distributed to the members in attendance.

The upcoming AGM in April 2015 will communicate that the projects have been undertaken and the results realised. Again this information will be distributed to the members in attendance.

The TV screens internal to the Club run promotional information about many things. These screens were utilised to provide communication updates on the progress of the projects, show photographs of milestones such as cranage of the air conditioning units into position, switching on the lighting, etc.

The Club’s website was used to inform visitors that these projects were underway. The site was updated as the projects progressed and the current web page highlights the completed projects.

The local paper, Cootamundra Herald, ran a story on the Club’s energy efficiency programme. This article was published in February 2015. Clubs NSW, a state wide affiliation for Registered Clubs, also ran this story through their regular media release update released to the Club CEO, Senior Managers and the Directors of the Clubs in NSW. The Clubs NSW exposure highlights that regional clubs as well as large metropolitan establishments are actively seeking energy saving measures for their organisations.

The following illustrations provide an overview of some of the communications implemented:
COOTAMUNDRA EX-SERVICEMAN’S AND CITIZENS MEMORIAL CLUB
REPLACEMENT OF AIR CONDITIONING AND LIGHTING

Date Issued: 16 June 2015

RSL switching onto efficient energy

COOTAMUNDRA Ex Services Club have installed new air conditioning units and updated external lights to improve the energy efficiency of the club.

The Department of Industry and Science (DIS) provided funding support to replace inefficient air conditioners with modern units and external lighting with state of the art LED lighting.

The project has been in the making since early 2013, when a club representative attended a seminar that encouraged not for profit organisations to consider their energy consumption and look at ways to improve their efficiency.

Project manager Haron Robinson conducted a review of the club’s energy efficiency, recommending the changes.

Local electrician Todd Barham took on the electrical lighting project and Riverina industrial refrigeration and air conditioning company Weston & Weston looked after the air conditioning replacement.

Each air conditioning unit has two independent refrigeration circuits to provide flexibility and economy of two stage operation and increased energy efficiency.

The new units are expected to be more reliable and provide better internal environmental conditions during the summer months.

The expected efficiencies gained will be measured over the coming winter and submitted back to the DIS as part of the project implementation.

The club’s board of directors wishes to acknowledge the assistance of the DIS for their support in investing in the future of a small country town and assisting in bringing improved energy efficiencies to a local community club.

Illustration 4 - Local press release

Illustration 5 - Club promo screens
5 OUTCOMES AND BENEFITS OF THE PROJECT

Overall the project achieved the desired outcomes. A number of issues delayed project final delivery but did not hinder the overall intent of CEEP funding and reduction in energy consumption at the Club.

Savings resulting from these upgrades will be in the vicinity of $30,000 per annum. Please refer to Appendix A for further details on the M&V approach for this project.

With the exception of the project delays witnessed and mentioned previously no other obstacles were noted during the project. However, if the project was to be completed again, in hindsight, we would have performed a more detailed risk analysis which would likely have completely mitigated the project delays. Like most other projects, more time for planning would have provided the opportunity for us to perform a detailed risk analysis. Considering this, we believe the project has been successful in managing the expectations of the recipient in providing the new systems for little cost. Further, the basis of the CEEP program, in essence, is to reduce the demand on electrical network by providing incentives for energy upgrades to provide a cleaner, more sustainable environment for the local community and Australians nationwide.

In addition to the project's energy saving results a number of other benefits have been realised. LED has a longer life cycle resulting in reduced replacement over time, compared to the older technologies – it is anticipated that these luminaires will operate far in excess of 10 years, whereas the original technology would have failed within this time period.

Security to the rear car park areas has improved considerably with the installation of the new lights. The local community have commented that they feel much safer with the new lighting in these areas.

The air conditioning was witnessing regular maintenance / reactive repairs due to the age and operational condition of the equipment. The new equipment will not need this level of maintenance resulting in reduced costs for the Club.

The Sportsmen’s Lounge and Dancefloor areas had been a constant issue for the management team within the Club. The lack of cooling in very hot weather and the consistent need to reset ‘tripping’ power isolators resulted in lost time and customer complaints. The new installation has removed these complaints and provided a cool environment in the hot weather.

Linked to the external lighting the club management has received feedback about the building street appeal with the new lights providing a great first impression on approach at night. The lighting highlights the key aspects of the façades to provide patrons with focus points on approach.

The Club has a capital works programme and budget which incorporates planned projects for the site. Both the Air Conditioning and the lighting to the façade were on the project plan but well in the future.

The air conditioning project was planned for 2017/18. The CEEP funding involvement has meant that this project has been brought forward substantially to 2014/15; resulting in the reduced energy consumption, reduced capital expenditure for the Club and substantially improved services for the community.

The façade lighting was also in the capital expenditure plan for 2017/18. The CEEP funding has expedited this project by two (2) years increasing energy efficiencies, increasing the street appeal of the Club while reducing the Club expenditure.

The car park lighting was in the overall strategy plan but not really even considered within the budgets. The CEEP support has brought this project forward by at least five (5) years resulting in better energy efficiency, perceived security acceptance and customer feedback; highlighting that the community have a real appreciation for all of the work undertaken.
COOTAMUNDRA EX-SERVICEMAN’S AND CITIZENS MEMORIAL CLUB
REPLACEMENT OF AIR CONDITIONING AND LIGHTING
Date Issued: 16 June 2015

6 BUDGET

CEEP 2180 Project
Cootamundra Ex-Serviceman’s and Citizens Memorial Club

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Income (ex. GST)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dept of Industry &amp; Science</td>
<td>$116,563.70</td>
</tr>
<tr>
<td>Total</td>
<td>$116,563.70</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expenses</th>
<th>(inc. GST)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC upgrades</td>
<td>$82,189.80</td>
</tr>
<tr>
<td>Weston and Weston</td>
<td></td>
</tr>
<tr>
<td>Lighting upgrade project</td>
<td>$37,776.32</td>
</tr>
<tr>
<td>Secure Techniques</td>
<td></td>
</tr>
<tr>
<td>GE Lighting</td>
<td></td>
</tr>
<tr>
<td>The Lighting Group</td>
<td></td>
</tr>
<tr>
<td>Consultancy Support</td>
<td>$41,165.30</td>
</tr>
<tr>
<td>Haron Robson</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$161,131.42</td>
</tr>
</tbody>
</table>

Both projects were delivered within the budgets identified and agreed.

These projects provide value for money in a number of ways. The Club has been able to expedite these projects through securing the 66% grant funding for the projects. The local community feedback is excellent with the local Club leading the way in energy saving activities and the budget was met.
7 PROJECT OPERATION, MECHANISMS AND PROCESSES

Throughout this project the Club utilised the professional services of Haron Robson. Haron Robson provided technical support, CEEP funding support and project management support from inception through to completion. This external support was essential in the successful delivery of the projects.

The internal team at the Club do not have the technical skills or the time to work on a project of this nature. Their team ensured that the milestones were met; the communication was timely and ultimately supported the delivery of the projects on budget.

The Cootamundra Management team are adamant that any project of this complexity requires the expertise of companies such as Haron Robson to oversee and direct all stages. With the assistance of Haron Robson all details were discussed and guidance was provided to ensure all goals were met.

The Club is aware that their business is very different to the skills needed to undertake projects of this nature and consider professional assistance in any future projects to ensure that time constraints are adhered to and technicalities are dealt with.

The Cootamundra team required the assistance of Haron Robson in complying with the reporting on the various milestones in reporting on the CEPP funding. The assistance with guidance with the lighting design and lighting specifications was also appreciated.

Project of this nature are very beneficial to the Club and indirectly to the local community. They create employment and improve the technical ability of the local tradespeople that are involved in supplying items outside their normal routines. The local community are made aware of trends in energy efficiencies that can then translate into them adopting similar practices in their own business or home. It also gives the local community pride in the modern facilities that are provided in their own town.

Certain difficulties arose with this project namely the change of stakeholders. Communication proved difficult on some occasions as with the location of Cootamundra in relation to the location of Haron Robson.

Todd Basham sold his business halfway through the project which was a problem as he was not easily contactable during the period. This was obviously not anticipated and caused the project to lose traction. This was only a minor hiccup and after the company was sold the new owners were co-operative and helped push the project along to completion.
8 CONCLUSION

The project has been successful in completing energy efficient upgrades whilst managing the funding expectations of CEEP. Small delays in the project have still resulted in increased energy efficiency and have raised awareness throughout the community whom hopefully will take the initiative to implement energy savings of their own in their own home.

HVAC works were installed and commissioned as planned. Small delays in the lighting works have not made the project unsuccessful. The recipient and patrons are benefiting from the energy upgrades which have been supplied within the given budget.

HVAC and Lighting upgrades are providing the club with valuable energy savings, savings which can be used to invest in other projects. The Club has shown great commitment to the community by upgrading facilities to provide patrons with unchanged atmospheric conditions which was an internal requirement for the Club.

These upgrades will undoubtedly provide the Club with an appreciation of energy reduction measures moving forward as they will begin to identify then from the reduction in monthly billing cycles.

Cootamundra Ex-Serviceman’s and Citizens Memorial Club have provided the Community with a long lasting result which they can be proud of and one which hopefully can be become a benchmark for sustainability within New South Wales.
9 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 Cootamundra Ex-servicemen’s & Citizens’ Memorial Club Ltd.

☐ 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: 29/05/2015

Name: Greg Bruce

Position: Secretary/Manager... Organisation: Cootamundra Ex-servicemen’s & Citizens’ Memorial Club Ltd

Witness Signature: ___________________________ Date: 29/05/2015

Name: Pam Slavin

Position: Payroll Officer... Organisation: Cootamundra Ex-servicemen’s & Citizens’ Memorial Club Ltd

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.
10 APPENDIX A – M&V REPORT

The M&V report is attached with pages numbered separately.
Cootamundra Ex-Servicemens & Citizens Memorial Club

M&V Report

Date issued: 29 May 2015
Summary

Haron Robson Pty Ltd has implemented several energy efficiency measures with assistance of funding from the Community Energy Efficiency Program (CEEP) for Cootamundra Ex-Servicemen’s & Citizens Memorial Club Limited.

Verification of energy savings as a result of the following implementations (installation and commission of projects):

- HVAC: Load in units on Thurs 28th Aug 2014 and start units on Friday 5th Sep 2014.
- CAR PARK LIGHTING Start installation Tues 27th Jan 2015 and finish Friday 6th Feb 2015.

The post-implementation period starts in September 2014 and ends in April 2015. The baseline period used was from September 2012 until August 2013.

This has resulted in 22.2% reduction in total grid electricity consumption.

Eight months of actual data for grid purchased electricity, from September 2014 to April 2015, were used in this assessment. No estimates were used to complete a 12 month period post implementation.

For an accurate picture of savings post implementation, especially HVAC related, a twelve-month of actual data post implementation is usually required in such assessments as per Option C of IPMVP framework.

Baseline Period

The baseline period selected was September 2012 until August 2013.

Why did we not select the 12 months immediately prior to the completed implementation date of HVAC, i.e the baseline period September 2013 until August 2014?

It was judged this period, September 2013 until August 2014, was not a true reflection of energy consumption at the club when compared to September 2012 until August 2013.

Why? The data for the period September 2013 until August 2014 is skewed owing to the Club electing not maintain or replace HVAC and lighting equipment with the knowledge that the CEEP grant was secured. Documented examples of this were:

- The Club not replacing any “blown lamps” from high 600W external lighting to the façade of the club from the commencement of January 2014. Reducing 50% of external lighting to the façade. Effectively the Club was turning OFF these lights in the lead up to the lighting upgrade.
• The Club installing a solar PV system and turned ON from June 2013.
• The Club turning OFF ineffective HVAC equipment in the 12 months prior to the upgrade.

Haron Robson has reported previously that existing HVAC was turned OFF as it was non operable / defective at time of audit. Therefore operation required reduced electrical demand compared to if all HVAC equipment was turned ON, "working as installed". However, no data to quantify this only audit / condition reports. As a result when upgrade HVAC was installed and energy consumption restored, "so to speak", the energy savings achieved may been eroded by the gap in electricity consumption from turned OFF non operable / defective equipment.

Methodology

The assessment method for M&V Option C approach included:

a. Electricity meter & billing data analysis;
b. Traffic & occupancy data analysis
c. Meteorological data analysis
d. Normalisation
e. Calculation
f. Conclusion

Assumptions

Occupancy Data: It is estimated that there are approximately 1500 per week who use the bar/poker machine/bistro facilities. There would be a further 400 who attend meetings and seminars. Finally there would be an average 200 who go to functions per week. Therefore calculations have assumed 2100 per week or 109,200 visits per year for 2012 & 2013. Assumed 102,650 in 2014. Assume same 2014 occupancy data for 2015.

This is also estimated based on trade for 2013 was close to being the same as 2012 (bar trade up 1.3% and poker machine trade down .06%). Overall trade for 2014 was down 6% in bar trade and 6% in poker machine revenue compared to 2013.
Data Summary

Table 1: Summary of performance for Cootamundra Ex-Servicemen’s & Citizens Memorial Club Limited (based on 12 months)

<table>
<thead>
<tr>
<th>Sep12-Aug3</th>
<th>Baseline Sep13-Aug14</th>
<th>Post-implment Sep14-Apr15</th>
<th>YoBY change (%)</th>
<th>YoY change (%)</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>308,271</td>
<td>233,374</td>
<td>239,963</td>
<td>-22.2%</td>
<td>2.7%</td>
<td>MWh</td>
<td>Total grid electricity consumption</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>MWh</td>
<td>Total electricity generation (onsite)</td>
</tr>
<tr>
<td>109,200</td>
<td>102,650</td>
<td>102,650</td>
<td>-6.0%</td>
<td>0.0%</td>
<td>visits</td>
<td>occupancy (visits per year)</td>
</tr>
<tr>
<td>1,110</td>
<td>840</td>
<td>864</td>
<td>-22.2%</td>
<td>2.7%</td>
<td>GJ</td>
<td>Total purchased energy</td>
</tr>
<tr>
<td>267,579</td>
<td>202,569</td>
<td>208,288</td>
<td>-22.2%</td>
<td>2.7%</td>
<td>kg CO₂-e</td>
<td>GHG emissions</td>
</tr>
<tr>
<td>589</td>
<td>572</td>
<td>559</td>
<td>-5.1%</td>
<td>-2.3%</td>
<td>CDD</td>
<td>Cooling Degree Days*</td>
</tr>
<tr>
<td>1,186</td>
<td>1,173</td>
<td>1,086</td>
<td>-8.4%</td>
<td>-8.0%</td>
<td>HDD</td>
<td>Heating Degree Days*</td>
</tr>
<tr>
<td>2.5</td>
<td>2.0</td>
<td>2.0</td>
<td>-17.2%</td>
<td>2.7%</td>
<td>kg CO₂-e/visit</td>
<td>GHG emissions (inc. reductions) (GHG performance indicator)</td>
</tr>
<tr>
<td>10.2</td>
<td>8.2</td>
<td>8.4</td>
<td>-17.2%</td>
<td>2.7%</td>
<td>MJ/visit</td>
<td>Total energy per occupancy level (Energy performance indicator)</td>
</tr>
<tr>
<td>652.8</td>
<td>494.2</td>
<td>508.2</td>
<td>-22.2%</td>
<td>2.7%</td>
<td>GJ/m²</td>
<td>Total energy per meter square (Energy performance indicator)</td>
</tr>
</tbody>
</table>

*www.degreedays.net* Cootamundra Airport, NS, AU (148.04E, 34.63S);

Table 1. Summarises the data prior and post-implementation.

Figure 1 shows the yearly electricity consumption of the site in kWh/month. A significant drop can be observed between 2012 and 2013 data, yet for since September 2013 can be observed.

![Electricity consumption graph](image-url)
Figure 2 shows the electricity consumption (kWh) versus the cooling degree days (CDD) for Baseline, Post-HVAC and Lighting retrofits. A significant drop in electricity consumption can be observed between 2012 and 2013 data, yet it is hard to distinguish savings as a result of energy efficiencies implementations related to HVAC and Lighting post September 2014.
**Figure 3** shows the electricity consumption (kWh) versus the heating degree days (HDD) for 2012/13, 2013/14, and 2014/15 data. A slight drop in consumption is observed after the implementations.

Overall, Haron Robson concluded using the IPMVP framework Option C that there is insufficient actual data to conclude on savings percentage achieved from the energy efficiency measures implemented. For an accurate picture of savings post implementation, especially HVAC related, a twelve month of actual data post implantation is usually required in such assessments as per Option C of IPMVP framework.
## Energy Usage and Efficiency Improvement Report

<table>
<thead>
<tr>
<th>PROJECT TITLE</th>
<th>Replacement of Air Conditioning System and Lighting to Save Energy for the Club and the Community it Serves</th>
<th>PROJECT ID</th>
<th>CEEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUNDING RECIPIENT</td>
<td>Cootamundra Ex-servicemen’s &amp; Citizen’s Memorial Club</td>
<td>DATE</td>
<td>22/05/2015</td>
</tr>
</tbody>
</table>

### Building, Facility or Site 1

- **Name of Building, Facility or Site 1**: Cootamundra Ex-Servicemen’s & Citizen’s Memorial Club
- **Location (address)**: 299 Parker Street, Cootamundra NSW 2590
- **Type of building, facility or site**: Club – Building with standard hours; internal lighting, HVAC, general energy efficiency works

### Activity Type and Measure

- Upgrade of HVAC system & Lighting

### Energy Efficiency Estimate Method

- IPMVP framework Option C using MS Excel

### Baseline Energy Usage

- **308,271 MWh per annum**

### Baseline Energy Efficiency

- **494.2 MJ per m² per annum** (For an HVAC upgrade, occupancy is a significant parameter; if occupancy info is unavailable, suggest to substitute with turnover as measure of traffic)

### Energy Efficiency Improvement

- **246 GJ**

### Reporting Data (Measuring Energy Efficiency and Additional Data)

- A total floor area of 1700 m² and
- 3,300 members
- 5 full-time, 7 part-time & 7 casual staff
- Daily hours of operation:
  - Mo, Tu, Th: 10AM – 11PM (13 hours x3)
  - We, Sa: 10AM – 12MN (14 hours x2)
  - Fr: 10AM – 2AM (16 hours x1)
  - Su: 10AM – 10PM (12 hours x1)
  - Average = 13.6 hours/day
- Building construction: 1900s [estimated]
- Three-storey, solid brick, single-pane glazing, insulated ceiling

### Cost of Activity

- **$176,950**

### Cost Savings

- **$15,231** (HVAC energy); plus
- **$7,621** (Ext. Lighting energy) plus
- **$6,490** (Operations & Maintenance)