### Final Report

This document is to be used to guide the Final Report

<table>
<thead>
<tr>
<th>Recipient Name</th>
<th>Temora Aviation Museum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Title</td>
<td>Lighting Retrofit and Upgrade for Museum Public Exhibition Areas</td>
</tr>
<tr>
<td>Project ID</td>
<td>CEEP1071</td>
</tr>
<tr>
<td>Report completed by</td>
<td>Peter Harper</td>
</tr>
<tr>
<td>Position</td>
<td>Marketing Assistant</td>
</tr>
<tr>
<td>Final Report Date</td>
<td>13th March 2013</td>
</tr>
</tbody>
</table>

**Indicate if an external consultant has been contracted to provide the Final Report**

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Checklist**

<table>
<thead>
<tr>
<th>Final Report complete and declaration signed</th>
<th>Invoice for payment attached</th>
<th>Final Report attached if applicable</th>
<th>Submitted before date identified in Item 1 of Schedule 2 of the Funding Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 Temora Aviation Museum

(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 Milestone 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 this report.

Authorised Officer Signature: __________________________ Date: 13/03/13

Name: Kenneth Love

Position: Chief Executive Organisation: Temora Aviation Museum

Witness Signature: __________________________ Date: 13/03/13

Name: Peter Harper

Position: Marketing Assistant Organisation: Temora Aviation Museum

The use and disclosure of information provided in this application 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.

The information contained in this application will be regarded as private and confidential and will be treated as such by the Department. This is subject to the operational need to provide applications to assessors, and any statutory or legal requirements to provide information to the Commonwealth Parliament and other organisations, for audit, law enforcement, investigative or other legitimate governmental purpose.

As part of the assessment process for this application, the Department may need to consult with, and provide material from this application to, other government agencies or bodies, other organisations and/or relevant individuals, in order to substantiate any claims or statements made in this application, or to otherwise assist in the assessment of this application. If this occurs, the Department will endeavour to ensure that the parties who are consulted observe appropriate confidentiality provisions.

If this application is approved, the broad details of the application 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 successful applicant and of any project partners; title and description of the project and its intended outcomes; and amount of funding awarded.
FINAL REPORT TEMPLATE

The following should be used as a guide for those recipients that have not attached a separate Final Report. The Final report should meet the requirements as described in Item 3 of Schedule 4 of the Funding Agreement. Final Payment will not be made until the Department accepts the Final report. Please provide as much relevant detailed information as possible.

Section A. Discuss in detail the operation, mechanisms and processes employed to perform the Activity and achieve the Program Objectives.

By working closely with the Department of Climate Change and Energy Efficiency the Temora Aviation Museum has been able to deliver a successful project as detailed in the Funding Agreement Number CEEP1071 for the “Lighting Retrofit and Upgrade for Public Exhibition Areas”. This retrofit and upgrade has already proven itself effective by substantially reducing the overall energy consumption at the Museum and with further familiarization and training of its employees and volunteers, further reductions in energy consumption are anticipated. The project was managed by TAM in consultation with principal supplier “Barbizon”

Unlike the old lighting system, the new retrofit and upgrade allows for the entire lighting system to be switched off throughout the day when the Display Hangar is not occupied by visitors to the Museum. This means that during quiet periods or when visitors are viewing other exhibits within the facility the complex, the Display Hangar does not have to have the entire theatrical lighting system powered up seven hours a day seven days a week. The new LED technology in the light fixtures consumes less than 1/6th the power of the original fixtures, which combined with the capability to power off the entire lighting system at the press of a button means substantial energy savings for years to come. With only six months’ worth of documented energy bills collated since the system was commissioned during September of 2012 it would appear that the Museum is on track to achieve an estimated energy savings of 772.3 MJ per m2 (annum).

A large majority of the retrofit and upgrade was completed on time prior to the much anticipated visit by Australia’s Governor-General, Ms Quentin Bryce AC CVO. Ms Bryce visited Temora and the Museum during September 2012 and, it was only by close consultation between the Temora Aviation Museum and the Department of Climate Change that enabled this project to be completed on time and on budget.
Section B – Describe the Activities during the entire term

Extensive research and consultation with Philips Australia, Barbizon and other specialists allowed the Museum to make an informed decision about which product and system was to be most effective and efficient for this particular project. A special mention must be made to Paul Lewis who at the beginning of this project was employed by Philips Australia and during negotiations moved across to independent Philips supplier Barbizon, Paul was able to guide the Museum through the decision making process and provided invaluable insight. As a result not only has the Museum installed a very efficient lighting system but it is also a system which will showcase this historically significant collection of aircraft for many years.

Once the decision was made to utilise Philips fixtures, the ordering process was fast tracked by Paul Lewis of Barbizon as we believed it was imperative to have the entire system operational for the Governor-General’s visit. The Department of Climate Change and in particular Natalie Nelson and Craig Charlton were both instrumental in working closely with the Museum to ensure that this deadline was achieved.

Barbizon sub-contracted part of the installation to “Centre State Light and Sound” The Museum was satisfied with this arrangement as we have worked closely with Allen Brown from Centre State Light and Sound on other projects over the years, TAM’s regular electrical contractor was also utilised which meant that a safe and timely installation was achieved under the time constraints.

Once the initial installation was complete the Reporting of some of the Milestones was delayed slightly due to finding a suitable Independent Auditor which fitted within the Museum’s budget; the Museum requested an extension for this which was accepted by the Department.
Section C – Discuss in detail the conduct, benefits and outcomes of the Activity as a whole and the Activity’s results and findings

**BENEFITS**

- Significant reduction in Energy Consumption
- Large improvement in overall lighting levels
- Ability to power down the system when not required i.e. significantly decreased energy consumption
- Capability to have themed lighting for future functions in the Museum’s Display Hangar
- Automated system custom built for the Museum operating hours and one button operation ensures ease of use for the Museum’s ageing volunteer team.

**OUTCOMES**

- Aesthetically appealing enhancing the historically significant collection of aircraft for visitors to the Museum viewing the aircraft in the Museum’s Display Hangar
- Increased lighting levels in the Museum Gift Shop which creates an environment that has led to higher gift shop sales
- Increased lighting levels for all of the Museum exhibits allowing for higher quality photographic opportunities
Section D – Discuss how the Activity has provided reasonable opportunities for engaging local industry
[only include for projects with a grant of more than $1m]

N/A
Section E: Evaluate the Activity and include a detailed discussion as to whether the Program Objectives of the Activity were achieved, and if not, an explanation of why any Program Objectives were not met

**INCREASE ENERGY EFFICIENCY**

Although we have not yet seen a full 12 month’s worth of data from the Museum’s energy provider, it is already quite evident that the lighting retro-fit and upgrade has significantly reduced the overall energy consumption. Over time and with better practices, it is envisaged that the energy consumption will only continue to decrease as staff and volunteers become more familiar with the systems functions and capabilities.

**DEMONSTRATE AND ENCOURAGE THE ADOPTION OF IMPROVED ENERGY MANAGEMENT PRACTICES**

The original lighting system installed in the Museum’s display hangar was old technology and did not have the capability of being switched on and off throughout the day. This meant that once the theatrical lighting was powered up every morning it was then committed to run continuously for the entire day. This equated to 65 fixtures at 600 watts each (39,000 watts total) running for a minimum of seven hours a day seven days a week.

The Museum issued a press release to local and regional Media outlets outlining the project and its energy saving benefits. The local newspaper (The Temora Independent) ran an article which gave detailed information and highlighted the CEEP Program and the Museum's social media platforms were also utilised to inform its followers of the CEEP Program. In addition to this the Museum has a large newsletter subscription fan base of over 15,000 people, the retrofit and lighting upgrade activities were documented and included in a regular newsletter in late 2012.

Temora Shire Council’s Director of Environmental Services, Mr Kris Dunstan consulted with the Museum about the lighting retrofit and upgrade project undertaken at the Museum in an effort to gain some knowledge and a better understanding for potential projects within the Temora Shire Council and its facilities.
Section F: Include a statement as to whether the Activity was undertaken within Budget, and if it was not, an explanation of why the Budget was not met

Although all measures were taken to ensure that the project was kept within the allocated budget the tight deadline meant that some additional freight and contractor fees were incurred in an effort to have the project completed on time, in total the budget was only 2% or $3,972.37 over what was originally allocated.

<table>
<thead>
<tr>
<th>Description</th>
<th>Supplier</th>
<th>Budget</th>
<th>Actual</th>
<th>Difference</th>
<th>$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install and Supply Lighting</td>
<td>Barbizon</td>
<td>224,997.00</td>
<td>226,814.20</td>
<td>1,817.20</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Final Certification &amp; Audit</td>
<td>Thompsons Australia</td>
<td>2,000.00</td>
<td>1,500.00</td>
<td>-500.00</td>
<td>-25%</td>
<td></td>
</tr>
<tr>
<td>Energy Audit</td>
<td>Advanced Simplicity</td>
<td>3,000.00</td>
<td>3,000.00</td>
<td>0.00</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Expert Advice (Consultant)</td>
<td>Advanced Simplicity</td>
<td>626.00</td>
<td>625.00</td>
<td>-1.00</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Electrical Contractor</td>
<td>Dallas McKelvie</td>
<td>4,000.00</td>
<td>2,951.00</td>
<td>-1,049.00</td>
<td>-26%</td>
<td></td>
</tr>
<tr>
<td>Installation Contractor</td>
<td>Centrestate</td>
<td>-</td>
<td>3,100.00</td>
<td>3,100.00</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Freight</td>
<td>BSJB</td>
<td>-</td>
<td>800.00</td>
<td>800.00</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Incidentallys</td>
<td>Bank Fees, Interest et</td>
<td>-</td>
<td>-</td>
<td>194.83</td>
<td>-194.83</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>234,623.00</td>
<td>238,595.37</td>
<td>3,972.37</td>
<td>2%</td>
<td></td>
</tr>
</tbody>
</table>
Museum Display Hangar

Baseline Energy Usage: 95,299 kWh per annum
Baseline Energy Efficiency: 171 MJ per m² (annum)
Energy Efficiency Improvement: 22.9 MJ per m² (annum) (new usage amount)  
148.6 MJ per m² (annum) (saved amount)
Estimated Cost Savings: $22,175.42 per annum

Museum Entrance, Display Building and Engineering Mezzanine

Baseline Energy Usage: 66,489 kWh per annum
Baseline Energy Efficiency: 699 MJ per m² (annum)
Energy Efficiency Improvement: 76.2 MJ per m² (annum) (new usage amount)  
623.7 MJ per m² (annum) (saved amount)
Estimated Cost Savings: $15,907.82 per annum
Section H: Include a discussion of any other matters which the Department has notified the Recipient is required to be included in the Final Report

N/A
Section I: Include sufficient evidence including photographic evidence to verify completion

LIGHTING FIXTURES & CONTROL SYSTEM DELIVERED

JUST SOME OF THE LIGHTING FIXTURES ASSEMBLED READY FOR INSTALLATION