This activity received funding from the Australian Government as part of the Community Energy Efficiency Program.
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Introduction

The John James Foundation is a medical charity located in Deakin in the Australian Capital Territory. As a not-for-profit organisation, the Foundation uses the funds it earns from its land holdings to support volunteer medical programs and a range of educational activities, as well as providing charitable support, particularly to local, grassroots charities and organisations that have a close fit with the Foundation’s objectives.

The John James Foundation was successful in securing $502,567 from the Australian Government Community Energy Efficiency Program to design and construct a number of projects at 173 Strickland Crescent Deakin, ACT.

This project was intended to provide energy efficiency initiatives to reduce ongoing costs to the John James Foundation. The works are made up of four projects:

- Peter Yorke HVAC Upgrade
- Peter Yorke Metering
- Lighting Upgrades
- Main Hospital HVAC Upgrade

The above projects show how the John James Foundation is committed to energy efficiency and sustainability. Through long term objectives and continuous monitoring they are reducing their ongoing footprint.

The Project was completed late 2014. While a full 12 month operation will be necessary to properly evaluate the overall system performance. The new systems put in place have so far improved the operating efficiency and have to date been found to be performing better than planned.

“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.”
1.0 Project Background

As the former owners of the hospital business and current owners of the land and buildings that form the Healthcare Campus, the John James Foundation retains a special affinity for the Calvary John James Hospital in Deakin, ACT – the largest private hospital in Canberra.

The John James foundation set out to create a health care precinct that met the communities' needs by providing everything they require in a central location. By setting out to reduce the amount of energy the building used the foundation believed they could gain and maintain tenants.

The healthcare campus comprises a number of tenants:

<table>
<thead>
<tr>
<th>LOCATION</th>
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<tbody>
<tr>
<td>John James Healthcare Campus</td>
<td>Calvary John James Hospital</td>
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<tr>
<td></td>
<td>Capital Pathology</td>
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<tr>
<td></td>
<td>Canberra Bariatric</td>
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<td>ACT Neurospine Clinic</td>
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<td>Zouki Cafe</td>
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<td>Peter Yorke Building, Level 1</td>
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<td>Canberra Fertility Centre</td>
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<td>tm Physio</td>
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<td></td>
<td>Corporate Medical Options</td>
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<td></td>
<td>Capital Cosmetic and Laser Clinic</td>
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<td></td>
<td>Dr Safi Albekaa</td>
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<tr>
<td>Peter Yorke Building, Level 3</td>
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There were a number of objectives that the John James Foundation (JFF) set out to achieve which aligned with the CEEP objectives:

- Through the replacement of existing equipment, the Foundation sought to improve the amenities to the facilities, reduce energy consumption and reduce carbon consumption whilst communicating with users of the campus to increase their knowledge and perception of energy saving initiatives.

- The many benefits include:
  - Reducing Energy costs to the John James Foundation and its tenants enabling them to better service their patients;
  - Increase the projected lifespan of equipment as it is now operating more efficiently;
  - Reduce the carbon emissions being created;
  - Meet the current and future energy performance requirements for new buildings.

- Be able to closely monitor energy usage of the different services within the building
  - This will allow a comparison of ongoing energy consumption which will enable the Foundation to identify items of high energy use so which can then be effectively managed to reduce the energy consumption.

- Demonstrate & Communicate to the community that the John James Foundation is working towards a more sustainable future.
  - Communicate with Government and other similar organisations to demonstrate using the project as a benchmark for future projects;
  - The Foundation has undertaken a media campaign to communicate the measures carried out and the outcomes to date;
  - The campaign included:
    - Signage;
    - Newsletters;
    - Video; and
    - Articles on the JFF website.
2.0 Project Description

The whole project consists of four projects which complement each other to provide upgrade facilities areas of the campus:

- Peter Yorke Building HVAC Upgrade
- Peter Yorke Building Metering
- External Lighting Upgrades
- Main Building HVAC Upgrade

![Project location legend](image)

*Figure 1: Project location legend*
Peter Yorke Building HVAC Upgrade

This project involved the upgrade of a roof mounted boiler and associated pumps including the installation of energy meters to the Peter Yorke Building. The boiler services the common areas and all tenancies including specialist clinics such as a fertility clinic. As such, it was crucial that the transition between new and old equipment proceeded smoothly.

The existing boiler had been there since the building was built and was unsuitable for the operation of the Peter Yorke Building as it was oversized resulting in wasting energy and constant repair. This part of the project was designed by mechanical engineer (RWK Design & Consulting) to meet the ongoing and future requirements of the building and its tenants whilst reducing energy consumption.

The following energy efficient technologies were installed as part of the project:

- **MX660EXT - Modulex EXT Condensing Boiler 660kW**
  - Multi Burner Design, Natural Gas, Input 2,650 MJ/Hr. Fully Modulating 1:29 Ratio, Suitable for Indoor or Outdoor Installation, complete with Insulated Casing, pre-wired Controls, Safety Relief Valve and Flow switch.
  - The superior features of this appliance include:
    - Aluminium Alloy Construction
    - Extremely Quiet Operation <49dB
    - No Return Water Temperature Limitation

- Energy Meters to the roof top mechanical board

- New isolation valves on each of the floors so that individual floors can be turned off when not occupied

- New hot water generator

- New Hot water Pump

The combined new technologies will provide a greater capacity whilst using less energy. Installation of the isolation valves on each of the floors allows for flexibility and easy reduction in energy consumption as when any floor becomes unoccupied the heating can be turned off to that floor without disturbing the other tenants.

The following steps outline the sequence of events during this section of the project:

- Completion of design and documentation for the HVAC systems December 2013 - January 2014;
- Procurement, tender review and analysis - February 2014;
- Negotiations with contractor to ensure value for money - March 2014;
- Ordering all the lead time equipment - April 2014;
- Boiler replacement with new efficient equipment - May/June 2014;
- Replace existing pump with new energy efficient pump - May/June 2014;
- New energy sub-meters - May/June 2014;
- Modification to outside air system in accordance with design - May/June 2014;
- Installation of Condenser water pump, VSD and Package unit isolation valves - May/June 2014;
- Project Commissioning and Handover - May/June 2014;
- Ongoing testing and fine tuning - July 2014.

Seeking to further reduce and commit to the CEEP program, the Foundation undertake another initiative to reduce waste and recycle the de-commissioned boiler and pumps which were stripped for parts that can be used for future maintenance and repair for current equipment within the Calvary John James Hospital.
Peter Yorke Metering

A key component of the project was the installation of metering to the building which will provide the tools to monitor where energy is being used and wasted. This information can inform the John James Foundation so that the Foundation can manage the system to provide better efficiencies and keep a record of how the CEEP project has improved the energy efficiency of their buildings.

The following complementary technologies were installed as part of the project:

- 6 x Socomec A40 Multi-function Sub-Meters for the purpose of identifying, Current and Voltage distortion, power factor and Quality, total harmonic distortions these all attribute to power wastage also commonly referred to as losses;
- 1 x Head End Industrial Computer with dual redundant hard drives, battery backup, AC/DC power supply converter and IPC enclosure;
- Adroit Open Architecture SCADA and PMCS control and monitoring software with the capability of providing long term data logging and trending functionality;
- 1 x pulse module capturing pulse outputs from pulsed 2 x NMI meters
- 1x Horizontal Cat5e Cable from Ecoview IPC to BMS ADLS service for connection to Ecoview Head End IPC.

The meters can be remotely monitored allowing the data to be reviewed in real time.

The installation of the meters created the greatest degree of difficulty for the project team as the main switchboard needed to be shut down to connect and commission the meters. Due to some of the tenants nature of business it was not possible to shut down the power for the necessary duration required to safely undertake the connection. The project team resolved this by liaising and negotiating directly with the tenants of the building and organising for an appropriate time afterhours where temporary generators could be used to maintain the vital equipment in their tenancies active whilst bypassing the main electrical board in the basement. This allowed for the works to be completed with minor interruption to the tenants of the building.

The following steps outline the sequence of events that were undertaken in this section of the project:

- Complete documentation of metering systems- January 2014;
- Complete procurement, tender review and analysis- February 2014;
- Coordinate shutdowns of critical items including IVF and MRI Machine - March 2014 onwards.
- Supply and install 6 energy meters in main switch room and on roof - October 2014;
- Install 2 pulse inputs from utility metering - October 2014;
- Install network cabling – October 2014;
- Ongoing monitoring of metering - October 2014.

To date the metering is working as per the design and feeding the necessary information back to the monitoring system so the John James Foundation can monitor their energy consumption.

**Lighting Upgrades**

The Lighting upgrade was a crucial aspect of the project funded works. This was due to the current lighting system being inefficient and wasting energy. In addition the lighting did not comply with current Building Code of Australia Section J requirements for energy efficiency as well as the Australian Standards for the required Lux levels.

The lighting upgrade was divided into two stages:

- Peter Yorke Building Internal Lighting
  - All base building lighting to Peter Yorke building (lobby’s, toilets, waiting areas, undercroft car park, external access lighting)

- External Lighting
  - All car park lighting including main entrance lighting to signage.

The lighting in these areas was mostly on 24/7 and was not energy efficient. This had negative impacts including raising electricity costs and a high turnover in lamp replacement due to bulbs wearing out faster. Also as the lighting was inefficient, the lighting levels were not safe.

The intent of the project was to replace the existing lighting with energy efficient lighting with the introduction of timers and sensors rather than switches. In most cases all that was required was to switch the old fitting to a new LED equivalent.

The following technologies were installed as part of the project:

- LBGT300281-24M5
  - Luminaire Description
- LBPT220281-24m5
  - Luminaire Description
    - 1 x28w Low Brightness Plaster Troffer c/w HF Electronic Non Dim EEI=A2 Ballast 4000K Tube 24 Cell Miro 5 Louvre 1.5mF+P
  - Configuration Detail
    - Tridonic PC 1/28w PRO A2 Ballast Philips 28w 4000k T5 Lamp.
  - Dimension Details
    - 1200 x 300 x 60 (Nom)

- GE300141Y12
  - Luminaire Description
    - 1 x14w TBar Grid Recessed Troffer c/w HF Electronic Non Dim A2 Ballast 4000K Tube Lay in Y12 Prismatic Refractor Lens 1.5m F+P
  - Configuration Details
- **Tridonic PC 1/14w Non Dim Ballast Philips 14w 4000K T5 Lamp.**
  - **Dimension Details**
    - 600 x 300 x 95 (Nom)

- **Tango Cylindrical Wall up-down light dia 160mm**

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<th>Lamp</th>
<th>Light Output</th>
<th>Efficacy</th>
<th>LED Colour</th>
<th>Power W</th>
<th>Beam</th>
<th>Weight</th>
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<td>63lm/w</td>
<td>3000k</td>
<td>60</td>
<td>-40°</td>
<td>5.2kg</td>
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- **Crux 160 LED**
  - 965380085 Cruz 160 1.26W LED L840 HFX F/P
- kopa FIXED round - (fr140) 22 watt led reflector
  - Dimension 140mm round, 94mm high

The following sequence of events outline what occurred in this section of the project:

- Complete Lighting Documentation – January 2014;
- Complete Procurement, tender review and analysis - February – March 2014;
- Complete lighting replacement to Core areas of Peter Yorke building October 2014;
- Complete lighting replacement to car parks – Early 2015;
- Commission Lights.
Main Building HVAC Upgrade

The chiller servicing the operating theatres and maternity ward within the main building is a critical item in delivering hospitals services. It must sustain a constant temperature to ensure operating conditions are maintained. In the event the chiller failed it could potentially put a patient’s life in jeopardy.

The old chiller was at the end of its life span and operating at maximum capacity 24 hours a day 340 days of the year. It required constant maintenance and in the event it shutdown, it had to be manually reset. As the chiller was in constant use, the change over to the new chiller had to occur in the 2 week Christmas shut down period. The new chiller has a greater capacity than the old chiller as it is able to generate more output whilst using less energy.

The following sequence of events outline what occurred in this section of the project:

- Complete documentation of HVAC systems - October 2013;
- Complete Procurement, tender review and analysis - November 2013;
- Supply, delivery and install of new air cooled chiller – Christmas Break 2013;
- Supply and install condenser discharge ductwork and CHW piping alterations including new pumps - Christmas Break 2013;
- New sub-meters - Christmas Break 2013;
- Complete electrical and controls wiring - Christmas Break 2013;

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<th>Annual System Efficiency (kW/KW)</th>
<th>Chiller System Load (KWh)</th>
<th>Total System Energy Use (HWh)</th>
<th>Chiller Electric (KWh)</th>
<th>Chiller Water Pumps (KWh)</th>
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<td>976,138</td>
<td>303,832</td>
<td>266,870</td>
<td>36,963</td>
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</table>

Figure 3: Energy Loads for Chillers
3.0 Photographic Project Timeline

This section contains a photographic installation timeline of the John James Memorial project.
3.1 Main Building HVAC

Figure 4: Demolition of old Chiller December 2013

Figure 5: Demolition of old Pipe Work
Figure 6: Demolition of old Chiller December 2013

Figure 7: Demolition of old Chiller December 2013
Figure 8: New Chiller Arriving December 2013

Figure 9: New Chiller on Crane December 2013
Figure 10: New Chiller on Entering Plant Room December 2013

Figure 11: New Pump on Crane December 2013
Figure 12: New Pumps Installed December 2013

Figure 13: New Chiller Installed Crane December 2013
3.2 Peter Yorke Boiler

Figure 14: New Boiler June 2014

Figure 15: New Boiler on Crane June 2014
Figure 16: New Boiler June 2014

Figure 17: New Pump and Pipework June 2014
Figure 18: New Screening June 2014

Figure 19: New Boiler June 2014
3.3 Peter Yorke Metering

Figure 20: Back-up Generators October 2014

Figure 20: Checking to ensure electrical boards are dead October 2014
4.0 Communication

Communication during the project was one of John James Foundations objectives to provide users information demonstrating the energy efficient initiatives they were being commissioned and demonstrating the benefits to the Hospital and local community.

A number of communication methods were used including:

- General signage on the median strip adjacent to the Peter Yorke Building;

- An article in the John James Foundation monthly newsletter;
  - This article is distributed to all subscribers and those present on the mailing list. It is also available via download off the John James Foundation website (link below).

Online Video showing initiatives.

https://www.youtube.com/watch?v=EdKnKCCtcl0

The communication activities were aimed at the following stakeholders:

- John James Tenants;
- Patients;
- John James Foundation Board;
- University of Canberra, Bachelor of Building and Construction, Sustainability lecture students including site visit; and
- General Public.

These stakeholders were chosen as they have the most to gain out of the Community Energy Efficiency Program as they are the daily users of the buildings. They were targeted so that they would better appreciate the efforts the Foundation is going through to make the Buildings more comfortable and sustainable.

The stakeholders were provided with enough information to inform them as to what works were occurring and what benefits would be achieved. This was done at various stages throughout the project. For instance the signage was erected at the start of the works to inform those who read it what the overarching works were. The article and the video were release at a later date to provide more detailed explanation of the works and the results of the project.
5.0 Project Challenges and Learnings

The challenges encountered throughout the project were overcome through the unique relationships that were formed:

- A strong relationship developed between all stakeholders, including the John James Foundation, building tenants, JLL, consultants and contractors.

All stakeholders wanted the best outcome for the project and were willing to go over and beyond to achieve results. This is best described in what the consultants and contractors were able to achieve within limited budgets noting that they were in constant communication and any discrepancy was quickly rectified this includes the constant attending site almost every day over 2013 Christmas break.

- The entire project was externally managed by JLL on behalf of the John James Foundation. As the projects were managed by an agent it took the pressure of the John James Foundation to deliver these specialised projects. It meant that the Foundation could focus on defining the objectives and maintaining a higher stakeholder engagement while JLL kept the projects on schedule.

JLL has the experience and knowledge of running projects of this nature and were able to bring the conceptual ideas of the Foundation into reality. JLL has developed an extensive history of Project Management expertise and knowledge and were able to adapt to successfully adapt to manage the project. JLL has learnt a lot from this project and will apply the learnt lessons to future projects.

The project had a number of challenges including access and timing of the equipment which were overcome and which can be applied in future projects to be undertaken by the Foundation and project team. The following is a list of challenges and learned outcomes:

- **Challenge:**
  - Unable to shut down the chiller during normal operation of the hospital operating theatres and maternity ward.

- **Learned Outcome:**
  - The works were programmed for the Christmas shutdown break. This gave a window of two weeks between the last surgery being undertaken to when the theatres would be utilised again. In addition, the maternity ward would be at its lowest occupation.
The project team programmed and undertook a number of the necessary tasks prior to the shutdown including structural works, electrical works, positioning of new pumps, equipment purchases, and the provision of temporary climate control if required.

The learned outcome of this phase of the project was that communication and prior planning would provide a successful outcome with the existing chiller replaced within the shutdown period resulting in a more energy efficient, reliable level of service.

- **Challenge:**

  - The power to the Peter Yorke Building could not be switched off for a sustained period of time as one of the tenants had a sensitive MRI machine and another was an IVF clinic which had human embryos kept in critical conditions. If the power was turned off without consulting these tenants, critical equipment would have been potentially damaged and embryos could have been destroyed.

  - An additional challenge that was uncovered during the due diligence phase was that the main electricity supply board was not wired correctly with the hospital generator being ineffective during power outages.

- **Learned Outcome**

  - This challenge was overcome through close consultation with the tenants and it was agreed that we were able to shutdown the building as long as the two tenancies were provided with an alternative source of power. This was achieved through the provision of a small power outage of 2 hours which allowed the electrician to install portable generators to the tenancies. The backup generators fed power to those tenancies whilst the electricians were able to shut down the main board and install the energy meters.

  - The desired outcome was achieved through the effective liaison and communication process providing the tenants and the Foundation with
the ability to manage their power consumption and reducing overall carbon emissions;

- **Challenge:**
  - Procurement of large long lead items such as the chiller and external lighting has proven to be a challenge.
  - The challenge for the chiller that was encountered was even if a chiller was in stock it can still take potentially 10 weeks to reach site. This normal task posed a challenge for this project as the chiller we had pre-ordered was resold 6 weeks out from the physical construction commencing. This meant that we not only had to find a new chiller that met our performance requirements and size limitations but it had to be available within a very short period of time.
  - The challenge for the external lighting has been the procurement of lighting and equipment from overseas where shipping delays have been experienced delaying the final completion of the external lighting. These delays including manufacturing and industrial delays experienced across the US in particular transportation.

- **Learned Outcome**
  - The delays experienced are outside of the control of the project team’s control. Alternative suppliers have been sought with no satisfactory result;
  - The project team will seek to identify earlier lead time items and seek earlier ordering of materials in future, however, this is subject to design and the desired outcomes.
  - Relationships with suppliers have been strengthened to ensure a better supply chain in the future

- **Challenge**
  - Budget and scheduling conflicts were constantly being addressed
- **Learned Outcome**

  - A value management exercise was undertaken with the Foundation contributing additional funds to achieve a better overall outcome providing best value for money whilst providing a higher quality product.

  - Extensions of time due to delays in obtaining necessary equipment required strategies to be developed including the introduction of bank guarantees for contractors to ensure works are completed.
6.0 Outcomes & Benefits of the Project

At this time of the project, all objectives have been met except for the completion of the external lighting which has been delayed due to supplier delays.

As the project has been delivered in stages, the overall benchmarking is staggered and the actual results will not be available for some time as we would need to wait for a 12 month period to determine actual savings in energy following collection of the data.

It can be noted that an initial review of the Building Management System would support the desired outcomes of the energy efficiency. The below diagram shows that since the works have been completed in the buildings, there has been a reduction of the house power consumption.

Once all of the data has been reviewed, the results will be shared with the Government and community providing proof that energy efficiency will be a benefit to the Foundation and the community reducing costs and impacts of carbon whilst educating the building industry.

The benefits to the community will be the provision of better services to the users of the facilities including improved climatic conditions and improved lighting providing a better amenity. Energy efficiencies will deliver cost savings from reduced operational costs which will be able to be used in other areas ultimately providing a higher level of amenity to users.
The community were engaged through the media campaign and a large section of the community has provided positive feedback noting the improved levels of amenity provided. The feedback included noting higher levels of lighting and improved climate control.

As a direct result of the new lighting and energy meters, tenants had also commenced a program of reducing energy as they could now see actual energy usage from the meters as well as using more energy efficient lighting.

At the launch of the project Ms Gesa Ruge FAIB, AFHERDSA, MNAWIC, Assistant Professor, Building and Construction Management, Faculty of Business, Government & Law, University of Canberra discussed the following learned outcomes:

1) Economic

Total annual energy savings were estimated to be approximately $96,500 giving a predicted payback of approximately 10 years, resulting in reduced Operating Costs, Cap Ex/Maintenance costs, Peak demand, free up infrastructure capacity, lower emissions.

It will not be possible to confirm the actual annual energy savings from the project until all of the data has been collected over a 12 month period and then compared against the baseline.

However given the data collected to date, it can be confirmed that energy savings are being identified whilst a better level amenity is being provided. The energy savings achieved to date combined with reduced costs associated with maintenance, can be used to conclude that energy savings and associated on-costs will reduce.

2) Operational Safety

The main chiller plant serving the hospital operating theatres was installed in 1989. The main components of the air conditioning system were between 12 and 23 years old. The new chiller will provide operational safety.

3) Long term Operation and Efficiency

Regular analysis by JLL engineer, including monthly reports, monthly performance review meetings and recommendations for ongoing improvement will be carried out during the next 12 months.

4) Corporate Sustainability

The John James Foundation (JJF) donates from its revenues after expenses to charitable purposes both disadvantaged and special needs groups in the ACT and to disadvantaged groups in low socio-economic regions such as the Northern Territory where indigenous communities are a focus.
Savings from energy efficiency measures translate directly to more funds being available to the Foundations charitable works.

OTHER (Note: Ongoing operation: CO2 monitors, Indoor Air Quality, Health and Wellbeing, Productivity, NABERS Ratings Energy and indoor Air Quality, increasing asset values, portfolio on local and well as national and international standards)

5) Education and Community Development through Sustainability

The Foundation also supports medical education and other community service activities.
7.0 Budget

The CEEP approved budget was $1,005,854.00. Additional budget was needed for a mechanical variation which meant the new budget was $1,085,802.00 +GST (see Table 1).

Overall the CEEP project was delivered within the approved budget with minor variations within the line items.

Additional complimentary works undertaken by the John James Foundation were separately funded. These works included new pumps and redundancy works for the chiller as well as additional external lighting.

All invoices have been paid exhausting the CEEP budget with the John James foundation providing extra capital. The delays associated with the supply of the external lights have been addressed through the provision of a bank guarantee to the value of the outstanding works providing assurance that the works will be completed.

The project is considered good value for money as new efficient and improved services will be provided to the facilities allowing savings to be generated for reuse in other non-profit activities.
John James Foundation Ltd

CEEP Project
Date: 13 February 2015

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<td>ELECTRICAL Peter Yorke Base Bldg Lighting Upgrade</td>
<td>$31,488.00</td>
<td>$0.00</td>
<td>$64,227.00</td>
<td>$32,739.00</td>
</tr>
<tr>
<td>ELECTRICAL External Car Park Lighting Upgrade</td>
<td>$58,554.00</td>
<td>$0.00</td>
<td>$106,743.00</td>
<td>$48,189.00</td>
</tr>
<tr>
<td><strong>SUB TOTAL</strong></td>
<td>$763,108.00</td>
<td>$79,948.00</td>
<td>$870,389.00</td>
<td>$27,333.00</td>
</tr>
<tr>
<td><strong>CONTINGENCY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SUB TOTAL</strong></td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$1,005,854.00</td>
<td>$81,424.37</td>
<td>$1,087,278.37</td>
<td>$0.00</td>
</tr>
</tbody>
</table>
8.0 Conclusions

The delivery of new HVAC equipment has delivered efficiency dividends to the John James Foundation through providing new, efficient equipment including HVAC, meters and lighting. The added benefit of these outcomes will be to the community through higher levels of amenity. Cost savings generated from this project will be returned through other avenues including greater level of service.

The HVAC will provide improved energy efficiency as well as an increased level of amenity as the equipment used to replace the 20 year plus equipment is new more energy efficient and more reliable. This has been noted in review of the building management system as well as user feedback.

The meters will allow John James Foundation to better manage the use of electricity within the Peter Yorke Building as each floor will monitored with tenants assuming a greater level of responsibility for electricity usage.

The lighting will also provide improved energy efficiencies through use of improved lamps providing more energy efficient lighting with the added benefit of increased levels of lighting providing a safer environment for users.

The project has met the desired outcomes of the Foundation and the CEEP Program including:

- Reduction of energy usage and reduced emissions
- Greater level of community understanding
- Greater level of understanding in the construction industry

The project experienced challenges throughout its life but also displayed a number of strengths.

A number of unexpected issues arose that caused delays in the delivery of Milestones, consequently the project sought and received extensions to deliver to adjusted time frames.

Challenges around shutting down power to certain areas on the site caused issues due to the uptime requirements of those medical facilities. The project also encountered procurement challenges concerning the sourcing of the desired technology.

Reviewing the project can provide a number of key learnings that include:

- More extensive stakeholder engagement prior to the planning phase, this would provide successful outcomes in a more efficient manner.
- In similar future projects, the team will seek to identify earlier lead time items and seek earlier ordering of materials to ensure technologies are delivered to schedule.
9.0 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 John James Memorial Foundation Ltd. (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: 18/06/2018

Name: PHIL GREENWOOD
Position: CEO
Organisation: John James Memorial Foundation Ltd.

Witness Signature: ........................................ Date: 18/02/2015

Name: ANDREW BLENCOE
Position: Project Facilities Manager
Organisation: John James Memorial Foundation 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.
## 10.0 Energy Efficiency Improvement Table

### Project Energy Efficiency Improvement

<table>
<thead>
<tr>
<th>PROJECT TITLE</th>
<th>John James Healthcare Campus, Deakin - Community Energy Efficiency Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROJECT ID</td>
<td>CEEP2107</td>
</tr>
<tr>
<td>FUNDING RECIPIENT</td>
<td>The John James Memorial Foundation Ltd</td>
</tr>
<tr>
<td>DATE</td>
<td>13 February 2015</td>
</tr>
</tbody>
</table>

### Site 1

<table>
<thead>
<tr>
<th>Name Site 1</th>
<th>Peter Yorke Clinical Services Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location (address)</td>
<td>173 Strickland Crescent, Deakin, ACT, 2600, Australia</td>
</tr>
<tr>
<td>Type of building, facility or site</td>
<td>Office administration building</td>
</tr>
<tr>
<td>Activity Type and Measure</td>
<td>Upgrade of HVAC system and internal lighting</td>
</tr>
<tr>
<td>Energy Efficiency Estimate Method</td>
<td>AS3598:2000 Level 2 Energy Audit (+-20%).</td>
</tr>
<tr>
<td>Baseline Energy Usage</td>
<td>471,293 kWh per annum</td>
</tr>
<tr>
<td>Baseline Energy Efficiency</td>
<td>400 MJ per m² . annum</td>
</tr>
<tr>
<td>Energy Efficiency Improvement</td>
<td>Reduction 46.88 per m² . annum</td>
</tr>
</tbody>
</table>

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

Energy sub-metering and reporting will be installed and funded as part of funded the CEEP program. In the commercial property management sector, the success of long term energy sub-metering programmes as a means of energy efficiency is well documented. For long term, sustained energy efficiency in energy efficient buildings it is essential that the energy use is:

An energy sub-metering and reporting programme will be initially trialled over a 12 month period during the CEEP projects validation period and if it is found to be a success it can be extended for the normal term of 3 years.

<table>
<thead>
<tr>
<th>Cost of Activity</th>
<th>$533,188.00 (ex GST)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Cost Savings</td>
<td>$86,370 (ex GST) per annum</td>
</tr>
<tr>
<td>Site 2</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td></td>
</tr>
<tr>
<td><strong>Name of Building, Facility or Site</strong></td>
<td>Covered Car Parking Areas</td>
</tr>
<tr>
<td><strong>Location (address)</strong></td>
<td>173 Strickland Crescent, Deakin, ACT, 2600, Australia</td>
</tr>
<tr>
<td><strong>Type of building, facility or site</strong></td>
<td>Car Park</td>
</tr>
<tr>
<td><strong>Activity Type and Measure</strong></td>
<td>Upgrade of lighting</td>
</tr>
<tr>
<td><strong>Energy Efficiency Estimate Method</strong></td>
<td>AS3598:2000 Level 2 Energy Audit (+-20%).</td>
</tr>
<tr>
<td><strong>Baseline Energy Usage</strong></td>
<td>5,931 kWh per annum</td>
</tr>
<tr>
<td><strong>Baseline Energy Efficiency</strong></td>
<td>6.1 MJ per m² annum</td>
</tr>
<tr>
<td><strong>Energy Efficiency Improvement</strong></td>
<td>3.36 MJ per m² annum</td>
</tr>
</tbody>
</table>

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

Energy sub-metering and reporting will be installed and funded as part of funded the CEEP program. In the commercial property management sector, the success of long term energy sub-metering programmes as a means of energy efficiency is well documented. For long term, sustained energy efficiency in energy efficient buildings it is essential that the energy use is:

An energy sub-metering and reporting programme will be initially trialled over a 12 month period during the CEEP projects validation period and if it is found to be a success it can be extended for the normal term of 3 years.

<p>| <strong>Cost of Activity</strong> | $31,954.00 |
| <strong>Estimated Cost Savings</strong> | $588.00 |</p>
<table>
<thead>
<tr>
<th>Building, Facility or Site 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name of Building, Facility or Site</strong></td>
</tr>
<tr>
<td><strong>Location (address)</strong></td>
</tr>
<tr>
<td><strong>Type of building, facility or site</strong></td>
</tr>
<tr>
<td><strong>Activity Type and Measure</strong></td>
</tr>
<tr>
<td><strong>Energy Efficiency Estimate Method</strong></td>
</tr>
<tr>
<td><strong>Baseline Energy Usage</strong></td>
</tr>
<tr>
<td><strong>Baseline Energy Efficiency</strong></td>
</tr>
<tr>
<td><strong>Energy Efficiency Improvement</strong></td>
</tr>
</tbody>
</table>

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

Energy sub-metering and reporting will be installed and funded as part of funded the CEEP program. In the commercial property management sector, the success of long term energy sub-metering programmes as a means of energy efficiency is well documented. For long term, sustained energy efficiency in energy efficient buildings it is essential that the energy use is:

An energy sub-metering and reporting programme will be initially trialled over a 12 month period during the CEEP projects validation period and if it is found to be a success it can be extended for the normal term of 3 years.

**Cost of Activity** | $55,420.00 |
**Estimated Cost Savings** | $1,824.00 |
<table>
<thead>
<tr>
<th>Site 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name of Building, Facility or Site</strong></td>
</tr>
<tr>
<td><strong>Location (address)</strong></td>
</tr>
<tr>
<td><strong>Type of building, facility or site</strong></td>
</tr>
<tr>
<td><strong>Activity Type and Measure</strong></td>
</tr>
<tr>
<td><strong>Energy Efficiency Estimate Method</strong></td>
</tr>
<tr>
<td><strong>Baseline Energy Usage</strong></td>
</tr>
<tr>
<td><strong>Baseline Energy Efficiency</strong></td>
</tr>
<tr>
<td><strong>Energy Efficiency Improvement</strong></td>
</tr>
<tr>
<td><strong>Reporting Data (Measuring Energy Efficiency and Additional Data)</strong></td>
</tr>
<tr>
<td><strong>Cost of Activity</strong></td>
</tr>
<tr>
<td><strong>Estimated Cost Savings</strong></td>
</tr>
</tbody>
</table>