An energy conscious home for regional government

Final Project Report - November 2013
CRADLE COAST AUTHORITY - Portside Building
Retrofit Regional Showcase

LOCATION:
The new Cradle Coast Authority headquarters at 1-3 Spring Street, Burnie, Tasmania.

PARTNERS:
Cradle Coast Authority, the nine councils of the Cradle Coast region, the Australian Government’s Community Energy Efficiency Program.

Potential to encourage improved energy management practices in North West Tasmania

The Cradle Coast Authority is the peak regional organisation servicing the nine Local Government areas of North West Tasmania. The Authority was established in 1999 by these nine Councils to facilitate the sustainable development of the region and lead and coordinate issues affecting the region as a whole.

The Authority’s annual strategy includes the goal to have a long term view that helps protect the region’s natural and productive resources, respond to change and prepare for the future. Under this goal, nine policies have been identified with the first one being:

**Assist communities to adapt to climate change and a lower emissions economy**

Core functions assigned to the Authority include, among others, building regional skills and capabilities, communication and advocacy of the region’s interests and regional leadership and coordination – all of which provide a strong basis for the Authority to lead by example and encourage improved energy management practices in a showcase office-space.

In 2011, the Authority initiated a process with its member Councils to relocate to an office with improved meeting areas, floor space and heating/cooling facilities. The Cradle Coast Authority’s role as a leader and instigator of best practices for the benefit of the region is well known and well supported. Representatives of the nine member Councils including Mayors, Deputy Mayors and General Managers endorsed the Authority’s pursuit of energy efficiency benefits as part of our office relocation at a meeting held in February 2012.

This requirement for office relocation and desire to fulfil its regional strategy led to the exploration of Community Energy Efficiency Program support via the Australian Government, with a funding agreement signed in February 2013.

Operation, mechanisms and processes employed

A showcase new office was selected in Burnie, visible from the Bass Highway. The Heritage Listed site, locally known as Portside, is situated at 1 – 3 Spring Street and was built in the 1940’s in an art deco style as a technical and trade school. The school-building format of distinct classrooms was retained over the following years and the site was subsequently used as a small business incubator, online access centre and as leased rooms for sole traders.

To achieve office energy efficiency goals while retaining the building’s Heritage qualities, the Authority engaged an architectural firm, GHD, to create the interior office design and manage the permit approval and construction tendering process.
A consultant was also appointed to determine if renovations to deliver energy efficiency improvements within the Heritage requirements could be achieved within the Authority’s budget.

The design and build project was overseen by a steering committee of Cradle Coast Authority staff who met as a group weekly, and interacted with the architects daily during the design phase. Steering committee members also attended site meetings with the project manager during the build phase of the work. Progress reports were delivered weekly to staff, monthly to the Authority Board of Directors and quarterly to Representatives of the Authority’s nine member Councils.

All necessary heritage, planning, building and other permits and certificates of compliance were obtained.

An assessment was undertaken of the communication requirements for the office refurbishment project, in particular to showcase the energy efficiency potential of a Heritage Listed building. This assessment included the development of a communication plan which identified communication goals, activities, target audiences, budget requirements and activity timing.

The communication plan was reviewed by the steering committee and endorsed for implementation. Implementation of the plan was conducted by Authority staff, with the assistance of a casual communications consultant (a local journalist).

Implementation of the communication plan for items such as signage and advertising required the writing of creative briefs, sourcing of production estimates, approval of drafts, and management of the production process.

“Portside is an important building for our region. A lot of people have passed through its doors over the years. We’re looking forward to our visitors from across the region seeing that we have respected this heritage while transforming the building into a modern and efficient work and meeting place.”

Roger Jaensch, Executive Chairman

Community Energy Efficiency Program Activities

The Authority was awarded a $125 000 Community Energy Efficiency Program (CEEP) grant from the Australian Government to retrofit the Heritage Listed Portside building with more efficient heating, cooling and lighting solutions.

The energy efficiency improvements were designed to retain the building’s heritage values while delivering a 47% reduction in energy usage and related annual costs for the Cradle Coast Authority. A consultant was engaged to assess the pre-renovation energy consumption levels of the site and monitoring of energy usage against this historical estimate is ongoing.

The scope of physical energy efficiency works included:

- Creation of cross ventilation between the warm and cool sides of the building to balance heating and cooling loads. This required openings to be created in internal walls and the installation of transfer fans and ducting connecting the north and south sides of the building.
- Installation of ventilation. Including both transfer and the ability to exhaust hot air up through the roof.
- Upgrade of lighting to LED lighting and opening of internal spaces to maximise natural lighting.
CRADLE COAST AUTHORITY - Portside Building
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- Upgrade of existing air conditioning systems, including ducting.

Energy efficiency gains were achieved via commercially available products and systems which are accessible throughout North West Tasmania.

Spreading the News

To showcase the energy efficiency improvements, the following communication activities were undertaken:

- Permanent signage was installed in the office foyer outlining the energy efficient heating, cooling and lighting features of the renovation. Duplicates of these signs were created in portable ‘roll-up’ formats for display in the Authority’s meeting rooms during public and local government events.

- An office Open Day was held on 7 July 2013 inviting residents from the region to learn about the energy efficiency improvements made to the Heritage Listed site. The Open Day incorporated static displays of the energy efficiency features, guided walks with demonstrations of the features and guest presentations from the Australian Government, Tasmanian Heritage Council and Burnie Historical Society.

- Flyers depicting the energy efficiency features of the building were created for distribution to office visitors and at the office Open Day.

- The Open Day was advertised on regional radio stations, in the region’s newspaper and featured in media releases and editorial content. Advertising included reference to the energy efficiency potential of Heritage Listed buildings and recognition of the Community Energy Efficiency Program. Promotional activities included a two-page advertising feature in the regional newspaper - The Advocate - in which an interview with the architect outlined the heating, cooling and lighting efficiencies of the project’s design.

- Newsletter stories and photographs were featured in the Authority’s publications and distributed via the Authority’s database to stakeholders, industry and community members.

- News of the energy efficient refurbishment was published on the Authority’s website and updated as milestones in the relocation were achieved.

All of these communication activities were identified in a communication plan created and implemented by the Authority with the assistance of a casual communication consultant and local design, media and marketing organisations.

Benefits and Outcomes

Several benefits and outcomes have been achieved as a result of the Community Energy Efficiency Program’s support of the Authority’s office renovation and relocation project. The first is the provision of a comfortable work space in a building with a northerly aspect. In this geographical location, buildings with a northerly aspect are considerably warmer on the northern, sun-exposed side and cooler on the southern side. The air transfer system has allowed for the movement of air across the building as required, and the removal of hot air from the building by way of external vents. Opening internal spaces by removing key walls also assisted with air circulation and the distribution of natural light. The alternative would have been multiple air conditioning units with the associated increased energy costs.

The activity is also a showcase of the use of a Heritage Listed building as contemporary office accommodation.
without compromising the heritage values of the building. The Heritage Council was consulted prior to commencement of planning and during the design process to ensure that the building’s heritage values were preserved and works were within the heritage guidelines.

The installation of LED lighting and sensors to detect movement to turn lights on and off has also contributed to energy efficiency. These features allows for lighting in infrequently used areas to only be operational when needed.

The office Open Day and other publicity to showcase the energy efficient renovations resulted in the equivalent of three pages of editorial or advertising space in the region’s newspaper (as shown below) and significant airtime on the region’s radio stations. More than 120 people attended the office Open Day and there was a good deal of interest in the key message that energy efficiency can be an integral part of any building renovation.

Results of the Community Energy Efficiency Program in the Portside refurbishment indicate significantly lowered energy use compared to the forecast usage if the renovations did not incorporate the energy efficiency elements. The full impact of these energy benefits will not be known until the building has been occupied for a twelve month period and an entire winter – summer cycle has completed.

Achieving Objectives

The Community Energy Efficiency Program has assisted the Cradle Coast Authority and its nine member Councils to:

- Increase the energy efficiency of a council and community-use Heritage Listed building; and
- Encourage further adoption of improved energy management practices within the member council network and broader community.

The energy efficiency gains enabled by the Community Energy Efficiency Program applied across all aspects of the Authority’s office – from heating/cooling, lighting, insulation and surfaces, and from office design to construction. This broad-ranging showcase better enabled member Councils and other building and facility owners to experience, understand and ultimately apply relevant components to their unique requirements.

As shareholders of the Cradle Coast Authority, all nine member Councils of North West Tasmania were witness to, and are financially benefiting from, the energy-cost savings enabled by the CEEP; evidence which has the potential to act as a driver for additional change.

The refurbished building with its showcase energy efficiency features is being held up within the community as an example of energy efficiency. The Regional Technical College is utilising the building as a case study to its refrigeration mechanic apprenticeship students, demonstrating that there are alternatives to traditional air conditioning methods. The Authority is encouraging use of the energy efficient office as a learning experience for the future providers of heating and cooling systems.

Building improvements and communication activities were successfully undertaken within the budget allowed for the energy efficient renovation.

Energy Efficiency Improvements

The energy efficiency projections as per a NABERS energy rating indicated a baseline energy usage prior to the project commencement of 154 KW/M2. The predicted energy efficiency on completion was estimated to be 82KW/M2 during modelling by energy use as part of the renovation design. This predicted a reduction of 72KW/M2, or a saving in energy of 47%.
The figures were based on a total area of 850M2, 30 occupants and weekday operation hours of 8.30am to 5pm.

The building was constructed in 1948, and while serving a number of purposes over the years, had the construction and energy measures common with that era, with very little done to improve its energy efficiency.

The number of occupants for the five month period from May to September 2013, following the Authority’s occupation of the renovated building, was 26 and the energy usage for this period can be extrapolated to a total annual usage of 81,375 kwh or 96KWH/M2, with an annual saving in energy consumption of 38%.

The period of usage to date encompasses the winter months and it is anticipated that energy usage would decline significantly during the warmer months. When considering the reduced usage of summer, it is predicted that overall the energy usage would be of the order of 25% less on an annual basis.

This would result in an estimated annual usage of 61,031kwh or 72KWH/m2, an annual saving in energy consumption of 54%.

This would indicate a greater saving than the initial Energy Efficiency Improvement estimate to the order of 7%.

The Baseline Energy Usage of 154KWH/M2 indicated that at an average cost of $0.2642 per KWH, the energy cost per square metre is $40.68. For 850M2, the cost per annum is $34,578. At an energy usage of 72KWH/M2 the cost will be $16,169, producing a saving per annum in the order of $18,409.

PHOTOS:

Cover: The Cradle Coast Authority refurbished office at 1 - 3 Spring Street, Burnie Tasmania.

Page 2: Some of the 120 community members who attended the Office Open Day, viewing one of the static displays.

Page 3: Portable banners advising of the energy efficiency features were placed throughout the building during the Office Open Day.

Page 4: Community members listening to guest speakers from the Australian Government, Tasmanian Heritage Council and Burnie Historical Society during the Office Open Day held on 7 July 2013.

Page 5: Example of the public promotion of the energy efficient office refurbishment in the region’s media.
## Project Energy Efficiency Improvement Template

<table>
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<tr>
<th><strong>PROJECT TITLE</strong></th>
<th>Portside Building Retrofit-Regional Showcase</th>
<th><strong>PROJECT ID</strong></th>
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<td><strong>DATE</strong></td>
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### Building, Facility or Site 1

| **Name of Building, Facility or Site 1** | Portside Building |
| **Location (address)** | 1-3 Spring Street, Burnie, Tasmania 7320 |
| **Type of building, facility or site** | Office administration building |

### Activity Type and Measure

- Transfer ventilation
- Heat pump airconditioning
- Increase in Insulation
- Efficient and energy efficient lighting

### Energy Efficiency Estimate Method

The simulation used to provide the estimates is based on the 2011 National Construction Code from specification JV.

### Baseline Energy Usage

- 154kWh/m2

### Baseline Energy Efficiency

- 82kWh x 3.6 = 295 MJ per m2 . annum

### Energy Efficiency Improvement

- Reduction 72 kWh x 3.6 = 259 per m2 . annum

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

- A total area of 850 m2 and 30 occupants
- 85 per cent average operational occupancy level
- Daily hours of operation: 8.30am to 5pm
- Building construction date 1948

### Cost of Activity

- $251,137

### Estimated Cost Savings

- $18,500

### Building, Facility or Site 2

| **Name of Building, Facility or Site** |  |
| **Location (address)** |  |
| **Type of building, facility or site** |  |
| **Activity Type and Measure** |  |
| **Energy Efficiency Estimate Method** |  |
| **Baseline Energy Usage** |  |
| **Baseline Energy Efficiency** |  |
| **Energy Efficiency Improvement** |  |