

2 November 2017

**MAYOR
COUNCILLORS
CITY OF MOUNT GAMBIER**

NOTICE is given that the Environmental Sustainability Sub-Committee will meet in the following Meeting Room on the day, date and time as follows:

Environmental Sustainability Sub-Committee
(Conference Room - Level 1):

Tuesday, 7 November 2017 at 7.30 a.m.

An agenda for the meeting is enclosed.



Mark McSHANE
CHIEF EXECUTIVE OFFICER

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AGENDA OF ENVIRONMENTAL SUSTAINABILITY SUB-COMMITTEE MEETING

Meeting to be held in the Conference Room, Civic Centre, 10 Watson Terrace, Mount Gambier
on Tuesday, 7 November 2017 at 7.30 a.m.

PRESENT Mayor Andrew Lee

Cr Des Mutton
Cr Ian Von Stanke
Cr Penny Richardson
Cr Sonya Meziniec

COUNCIL OFFICERS	Chief Executive Officer	- Mr M McShane
	General Manager Community Wellbeing	- Ms B Cernovskis
	General Manager Council Business Services	- Mrs P Lee
	General Manager City Growth	- Dr J Nagy
	General Manager City Infrastructure	- Mr N Serle
	Manager Governance and Property	- Mr M McCarthy
	Engineering & Design Contract Management	- Mr D Morgan
	Environmental Sustainability Officer	- Mr A Izzard
	Administration Officer (City Infrastructure)	- Ms S Moretti

WE ACKNOWLEDGE THE BOANDIK PEOPLES AS THE TRADITIONAL CUSTODIANS OF THE LAND WHERE WE MEET TODAY. WE RESPECT THEIR SPIRITUAL RELATIONSHIP WITH THE LAND AND RECOGNISE THE DEEP FEELINGS OF ATTACHMENT OUR INDIGENOUS PEOPLES HAVE WITH THIS LAND.

1. APOLOGY(IES)

Apology(ies) received from Cr

That the apology from Cr be received.

Moved: Seconded:

2. CONFIRMATION OF ENVIRONMENTAL SUSTAINABILITY SUB-COMMITTEE MINUTES

Meeting held on 7 February 2017.

That the minutes of the Environmental Sustainability Sub-Committee meeting held on 7 February 2017 (noting that items from 8 August 2017 were included in the Council Agenda for 15 August 2017) be confirmed as an accurate record of the proceedings of that meeting.

Moved: Seconded:

3. QUESTIONS

With Notice

Nil submitted.

Without Notice



4. DEPUTATIONS

Nil

5. ENVIRONMENTAL SUSTAINABILITY SUB-COMMITTEE REPORTS

Environmental Sustainability Sub-Committee Reports commence on the following page.



5.1. Sustainable Developments and Efficient Homes Project 2015-2016 - Report No. AR17/39555

COMMITTEE	Environmental Sustainability Sub-Committee
MEETING DATE:	7 November 2017
REPORT NO.	AR17/39555
RM8 REFERENCE	AF14/94
AUTHOR	Aaron Izzard
SUMMARY	The third round of the Efficient Homes project has once again highlighted the importance of insulation and thermal mass with regards to the thermal comfort of a house. An independent assessment of the Efficient Homes data confirms this. The results raise the question of whether Council can influence developments to go beyond the minimum requirements of the building code.
COMMUNITY PLAN REFERENCE	Goal 4: Our Climate, Natural Resources, Arts, Culture and Heritage
	Goal 1: Our People
	Goal 2: Our Location

REPORT RECOMMENDATION
<p>(a) That Environmental Sustainability Sub-Committee Report No. AR17/39555 titled '<i>Sustainable Developments and Efficient Homes Project 2015-2016</i>' as presented to the Environmental Sustainability Sub-Committee on 7 November 2017 be noted.</p> <p>(b) That Council staff further investigate the possibility of influencing developments to go beyond the minimum requirements of the building code.</p> <p>(c) That the Efficient Homes Project be continued.</p>

Moved:

Seconded:



Background

The aims of the ongoing Efficient Homes project are to assist the community in knowing cost effective and efficient methods of heating and cooling their home, and also assist people who are thinking of building a new house or renovating in knowing how they can design their house to be comfortable, efficient, and cheap to heat and cool. This project involves installing temperature loggers in houses constructed of a variety of materials and leaving them in situ for 12 months. The project is focused on the climate of Mount Gambier. This was the third round of the Efficient Homes Project. The project raises questions about the suitability of certain types of buildings to Mount Gambier's climate.

Discussion

During the 2015-2016 round of the project the two houses that achieved the best thermal performance were the "Kooltherm" house and the "Esky" house. Both of these dwellings are highly insulated, and also have a good level of internal thermal mass. These features enable the internal temperatures to stay fairly constant, and are less prone to influence from external temperatures. The building that performed the worst was the Weatherboard home. This older dwelling would have been constructed before current building code requirements, and awareness and availability of insulative materials. This building is very prone to influence from external temperatures.

In 2016-2017 Council commissioned Moreland Energy Foundation (MEFL) to conduct an analysis and review of data from the Efficient Homes project over the three rounds it has been undertaken. MEFL have significant experience in analysing the energy efficiency of buildings. MEFL staff analysed data from the following type of dwellings:

- Conventional brick veneer house with a wood heater and split-system in the lounge.
- Highly insulated "Esky" house with central heating.
- Heritage Limestone house with a wood heater in the lounge.
- Rammed-earth house with a wood heater in the lounge.

The MEFL analysis concluded that occupants of the thermally massive house (Rammed-earth) experience very stable indoor temperatures that are almost always within the nominal comfort range of 18 to 24 degrees. In contrast, the occupants of the lightweight house (brick veneer) experience much faster swings in temperature, as well as room temperatures that are likely to be either too cold or too hot for a significant period of the year.

The results of the project raise the question of whether Council can influence developments to go beyond the minimum requirements of the building code. In many Victorian councils, planning permit applicants are asked to submit information about how their proposed development addresses sustainability. It goes beyond the minimums of the building code, and not only covers energy, but also water, waste, stormwater and other categories. This is commonly known as "Sustainable Design Assessment in the Planning Process" (SDAPP). A fact sheet on how the program works at the City of Greater Dandenong is attached to this report (AR17/41323). This is included as an example of how SDAPP is run elsewhere, but is not necessarily how it could work in South Australia, as the planning system is different.

The Community Plan contains strong support for environmental sustainability principles, as well as healthy and innovative environs. One of the Measures of Success of the Our People section is "Urban design principles that encourage an active lifestyle are embedded in Council's planning process."



Conclusion

The materials that a home is constructed of makes a big difference to the thermal comfort of the dwelling, and also influences running costs, and the impact on the environment. Buildings that contain high levels of insulation and thermal mass perform best in Mount Gambier's climate, which is primarily a heating climate.

Council may be able to influence developments to go beyond the minimum requirements of the building code. With the current implementation of the new Planning, Development and Infrastructure Act 2016, the extent to which Council can or cannot influence the quality of developments towards more beneficial outcomes for occupants and the environment is currently uncertain.

It is recommended that Council staff further investigate the possibility of influencing developments to go beyond the minimum requirements of the building code. A further update should be brought back to Council at the conclusion of the investigations.

It is also recommended that the Efficient Homes Project be continued.

Attachments

[Attachment 1 \(AR17/29803\): Efficient Homes Project Round 3 - Final Report](#)

[Attachment 2 \(AR17/28856\): Moreland Energy Foundation Analysis of Efficient Homes Project Data – Final Report](#)

[Attachment 3 \(AR17/41323\): SDAPP Explained Fact Sheet – Greater Dandenong](#)



Aaron IZZARD
ENVIRONMENTAL SUSTAINABILITY OFFICER



Barbara CERNOVSKIS
GENERAL MANAGER COMMUNITY WELLBEING

9 October 2017
AI



5.2. Environmental Sustainability Sub-Committee Terms of Reference Update - Report No. AR17/39477

COMMITTEE	Environmental Sustainability Sub-Committee
MEETING DATE:	7 November 2017
REPORT NO.	AR17/39477
RM8 REFERENCE	AF12/377
AUTHOR	Aaron Izzard
SUMMARY	At the 19 September 2017 Council meeting Council adopted the updated Terms of Reference (TOR) of the Environmental Sustainability Sub-Committee. There was one minor error in the TOR that is required to be rectified
COMMUNITY PLAN REFERENCE	Goal 4: Our Climate, Natural Resources, Arts, Culture and Heritage

REPORT RECOMMENDATION
<p>(a) That Environmental Sustainability Sub-Committee Report No. AR17/39477 titled '<i>Environmental Sustainability Sub-Committee Terms of Reference Update</i>' as presented to the Environmental Sustainability Sub-Committee on 7 November 2017 be noted.</p> <p>(b) That the Environmental Sustainability Sub-Committee Terms of Reference section 5.1 be updated to comprise four (4) City of Mount Gambier Elected Members.</p>

Moved:

Seconded:



Background

At the 20 June 2017 Council meeting Council resolved to require sub-committees to review their Terms of Reference, for presentation through the Operational Standing Committee to Council for consideration. The Environmental Sustainability Sub-Committee Terms of Reference was reviewed and presented to Council at the 19 September 2017 Council meeting, and was subsequently adopted.

Discussion

There was one minor error in section 5.1 of the Terms of Reference that relates to membership of the sub-committee. In the document it stated that membership comprised of three (3) City of Mount Gambier Elected Members, whereas the sub-committee has always comprised of four (4) City of Mount Gambier Elected Members. This error occurred when using a template Terms of Reference as the basis for the review, and this error was not noticed at the time.

At the 27/01/2015 Council meeting it was resolved that the following Members be appointed as members of the Environmental Sustainability Sub-Committee:

- Cr Ian Von Stanke
- Cr Des Mutton
- Cr Penny Richardson
- Cr Sonya Meziniec

The purpose of this report is to update this to reflect the current membership numbers.

Conclusion

The Environmental Sustainability Sub-Committee Terms of Reference are required to be updated to reflect the membership of (4) City of Mount Gambier Elected Members. The updated Terms of Reference are attached to this report.

Attachments

[Attachment 1 \(AR17/39478\): Environmental Sustainability Sub-Committee Terms of Reference November 2017](#)



Aaron IZZARD
ENVIRONMENTAL SUSTAINABILITY OFFICER



Barbara CERNOVSKIS
GENERAL MANAGER COMMUNITY WELLBEING

26 September 2017
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5.3. ReUse Market Update - October 2017 - Report No. AR17/39533

COMMITTEE	Environmental Sustainability Sub-Committee
MEETING DATE:	7 November 2017
REPORT NO.	AR17/39533
RM8 REFERENCE	AF14/34
AUTHOR	Aaron Izzard
SUMMARY	At the 15 August 2017 Council meeting Council resolved to commence the construction of the ReUse Market. This report provides an update of progress since that date.
COMMUNITY PLAN REFERENCE	Goal 4: Our Climate, Natural Resources, Arts, Culture and Heritage
	Goal 3: Our Diverse Economy
	Goal 1: Our People
	Goal 2: Our Location

REPORT RECOMMENDATION
(a) That Environmental Sustainability Sub-Committee Report No. AR17/39533 titled ' <i>ReUse Market Update</i> ' as presented to the Environmental Sustainability Sub-Committee on 7 November 2017 be noted.

Moved:

Seconded:



Background

At the 15/08/2017 Council meeting the following resolution was passed:

That Council endorse the detailed design plans and cost estimates for the construction of a Mount Gambier Reuse Market at 3 and 5 Eucalypt Drive and proceed to construct this facility (within the limits of the 2017/2018 budget allocation of \$560,000) and with the facility being fully operational by October 2018.

Since that time Council staff have commenced the necessary tasks required to complete this project.

Discussion

Since the August Council meeting the following activities have been undertaken:

- A project plan and timeline to guide the development of the facility have been formulated (attachment 1).
- Tender for the Design, Supply and Installation of Storage Shed at the Waste Transfer Centre was let, and awarded to Thomson Bilt. The contractor has lodged plans for Building Approval, which should be received within 2-3 weeks, then the shed construction will commence. Construction is scheduled to be completed in January 2018.
- Bulk earthworks in preparation for the receival shed at the Waste Transfer Centre have largely been completed.
- An assessment of the work required to bring the ReUse Market site (3 Eucalypt Drive) back up to standard has been undertaken. Works are being scheduled.
- Organising removal of large diseased *Eucalypts* at the ReUse Market site.
- Council has become a member of Community Recycling Network Australia (CRNA). CRNA is a network of organisations who run facilities similar to the ReUse Market. Membership not only allows access to the network, but also template policies and procedures, saving Council resources on developing these from scratch.
- A marketing plan is being developed.
- Some discussions have taken place with various community members and groups who have expressed an interest in the ReUse Market. These will be ongoing.


Conclusion

Since the August Council meeting a lot of work has been done towards establishing the ReUse Market. There are still a number of tasks to be completed to ensure that the facility becomes operational, but the ReUse Market is on schedule to open in October 2018.



Attachments

[Attachment 1 \(AR17/36980\): Project Plan Summary – ReUse Market](#)



Aaron IZZARD
ENVIRONMENTAL SUSTAINABILITY OFFICER



Barbara CERNOVSKIS
GENERAL MANAGER COMMUNITY WELLBEING

26 September 2017
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5.4. Caroline Landfill Waste to Energy Pre-Feasibility Study - Report No. AR17/43576

COMMITTEE	Environmental Sustainability Sub-Committee
MEETING DATE:	7 November 2017
REPORT NO.	AR17/43576
RM8 REFERENCE	AF16/507
AUTHOR	Aaron Izzard
SUMMARY	<p>Through the RDA Bioenergy Feasibility Fund, an investigation into the feasibility of a waste-to-energy (WtE) facility at the Caroline Landfill was undertaken.</p> <p>The ratio of CAPEX / Net Benefit for the proposed WtE plant is 13.5. Once financing / investment costs are considered, and financial (discounted cash-flow) analysis is conducted, it is not likely that this project would be deemed feasible or financially attractive at the current time. However, this could change in the next five years if electricity continues to increase in price, the cost of landfill disposal rises further, and the cost of WtE technology reduces further.</p>
COMMUNITY PLAN REFERENCE	Goal 4: Our Climate, Natural Resources, Arts, Culture and Heritage
	Goal 3: Our Diverse Economy

REPORT RECOMMENDATION

- (a) That Environmental Sustainability Sub-Committee Report No. AR17/43576 titled '*Caroline Landfill Waste to Energy Pre-Feasibility Study*' as presented to the Environmental Sustainability Sub-Committee on 7 November 2017 be noted.
- (b) That Council staff keep a watching brief on the waste to energy sector, with particular attention to options that may become feasible for the City of Mount Gambier.

Moved:

Seconded:



Background

In late 2016 Regional Development Australia Limestone Coast released a program called the “Bioenergy Feasibility Fund”, where funding was available to contribute towards the feasibility assessment of bioenergy projects in the region.

Council staff made an application to investigate the feasibility of a waste-to-energy (WtE) facility at the Caroline Landfill, which was successful. Colby Industries were selected by the RDA steering committee to undertake the study. As part of the project the consultant contacted Council staff and others to inform the assessment.

Discussion

The final report entitled “Proposed Project: Municipal Waste-to-Energy Plant at Caroline Landfill” is not for release at this point. The RDA steering committee will determine in early 2018 how the report and learnings from this project will be disseminated.

In the interim a brief synopsis of the report is as follows:

- The CAPEX or build cost would be ca. \$30-35M ($\pm 20-30\%$); and
- The net financial benefit generated for the City of Mount Gambier would be ca. \$2.3M per year.

The ratio of CAPEX / Net Benefit for the proposed WtE plant is 13.5. Once financing / investment costs are considered, and financial (discounted cash-flow) analysis is conducted, it is not likely that this project would be deemed feasible or financially attractive at the current time. However, this could change in the next five years if electricity continues to increase in price, the cost of landfill disposal rises further, and the cost of WtE technology reduces further.

It should be noted that this was a very high level pre-feasibility study, not a detailed analysis.

Waste to Energy is something that should be regularly considered and revisited by Council. Whilst it has not been determined to be feasible at this point in time, this may change in the medium or long term.

Conclusion

Following on from the organics and waste modelling done for Council in 2014 by Blue Environment (AR15/5713), Council is endeavouring to reduce waste to landfill and reduce carbon emissions. The guiding principle for reducing waste is the waste hierarchy. The hierarchy clearly states that energy recovery is preferable to landfill, but reducing overall waste volumes is the first step. The Blue Environment report outlined this process with regards to reducing organics to landfill.

The first step was to conduct a trial of kitchen caddies with green organics subscribers. This has been completed, with encouraging results.

Following on from the successful trial, the second step is to give kitchen caddies to all green organics subscribers.

The third step is to change the configuration of the kerbside bin system to best practice. This involves the rubbish and recycling bins being collected fortnightly, and the organics bin being collected weekly. However, some councils collect all three bins on a fortnightly basis. All residences within the municipality are given a kitchen caddy, which use compostable bags.



Finally, when Council have done all they can to reduce overall waste volumes, then waste to energy should be considered. By this stage the organic and recyclable content of the waste stream should be minor.

Attachments

Nil



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6. MOTION(S)

With Notice

6.1. Nil Submitted

Without Notice

Meeting closed at p.m.

AR17/



7. REPORT ATTACHMENTS





Efficient Homes Project Round 3: Final Report

August 2017

Aaron Izzard, Environmental Sustainability Officer, City of Mount Gambier

1. Project Aims

The aims of this project are to assist the community in knowing cost effective and efficient methods of heating and cooling their home, and also assist people who are thinking of building a new house or renovating in knowing how they can design their house to be comfortable, efficient and cheap to heat and cool. This project involves installing temperature loggers in houses constructed of a variety of materials – mudbrick, Esky House (referred to as “Esky House”), kooltherm and weatherboard – and leaving them in situ for 12 months. Heating and cooling actions will ideally be recorded by residents. The project is focused on the climate of Mount Gambier. This was the third round of the Efficient Homes Project.

2. Intended Outcomes

- Assist people who are thinking of building a new house or renovating in knowing how they can design their house to be comfortable, efficient, and cheap to heat and cool.
- Highlight the amounts of energy (and hence cost) required to heat or cool homes constructed of various materials in Mount Gambier.
- Assist the community in knowing the most cost effective, efficient and environmentally friendly methods of heating and cooling their home.

3. Exclusions & Clarifications

- Room temperatures are not only affected by the building envelope materials, but can also be affected by their position in the house – e.g. north vs south facing, microclimate, position and geography of the house, level of insulation etc.
- Room temperatures, and the amount of energy used in a house is also affected by the habits of the occupants.
- No fan pressurisation testing was undertaken to measure air leakage rates and identify draughts.
- Outside temperatures are all correlated, but likely to be affected by their placement at their particular location and micro climates.

4. Method

All temperature loggers were tested in an office environment prior to their use in the project. All loggers recorded temperatures within 0.2 of a degree when placed at the same location within a building.

In September 2015 HOBO temperature loggers were placed in three different types of house: Mudbrick, Esky House, Kooltherm. A set of Geosignal XT100 temperature loggers were placed in a Weatherboard

house in November 2015. The purpose of using the two different types of temperature loggers was to compare performance and price.

The Geosignal loggers were removed from the Weatherboard house in June 2016 so the data could be downloaded and the batteries replaced if necessary. They were then returned to their positions.

5. Temperature Loggers



HOBO UX100 Temperature Data Logger

Geosignal XT100 Temperature Logger

The HOBO temperature loggers are the more expensive variety (\$102 vs \$24 for a Geosignal logger), but they are much better quality. It is expected that the HOBO loggers will last much longer, and so be able to be reused more times than the Geosignal loggers. The HOBO loggers can be attached to surfaces by a magnet or Velcro strap, the Geosignal loggers do not come with any attachment features.

The HOBO loggers come with their own software which makes downloading the data and exporting it very user friendly. The Geosignal loggers do not come with any software and changing the settings and downloading data is not as straight forward.

As with the majority of products, you get what you pay for. The Geosignal loggers are cheaper, but they are significantly lower quality and nowhere near as user friendly. The other main advantage of the HOBO loggers is that they have a temperature display, so residents can see the temperature in the room at any time, hence they can play a role in behaviour change through knowledge provision. Finally, the battery does not last as long in the Geosignal loggers, these batteries only lasted just over 6 months, whereas the batteries in the HOBO loggers are expected to last over 12 months.

If more temperature loggers are purchased for future stages of the Efficient Homes Project then it is recommended to purchase HOBO temperature loggers.

6. Results

The period from April to October is generally a heating period in Mount Gambier, with residents using heating appliances on most days during this time. The first round of this study found that Mount Gambier residents commonly actively heat their homes between 100-150 days per year. December to February is the period of the year when active cooling is more likely to be used. The first round of this study found that Mount Gambier residents actively cool their homes with an air conditioner between 0-15 days per year. Less intensive methods such as ceiling fans, pedestal fans and opening windows of an evening are used more often – but still much less often than heaters are used.

Overall, Mount Gambier residents use active heating much more often than active cooling throughout the year.

A number of graphs have been produced from the data downloaded from all of the temperature loggers.

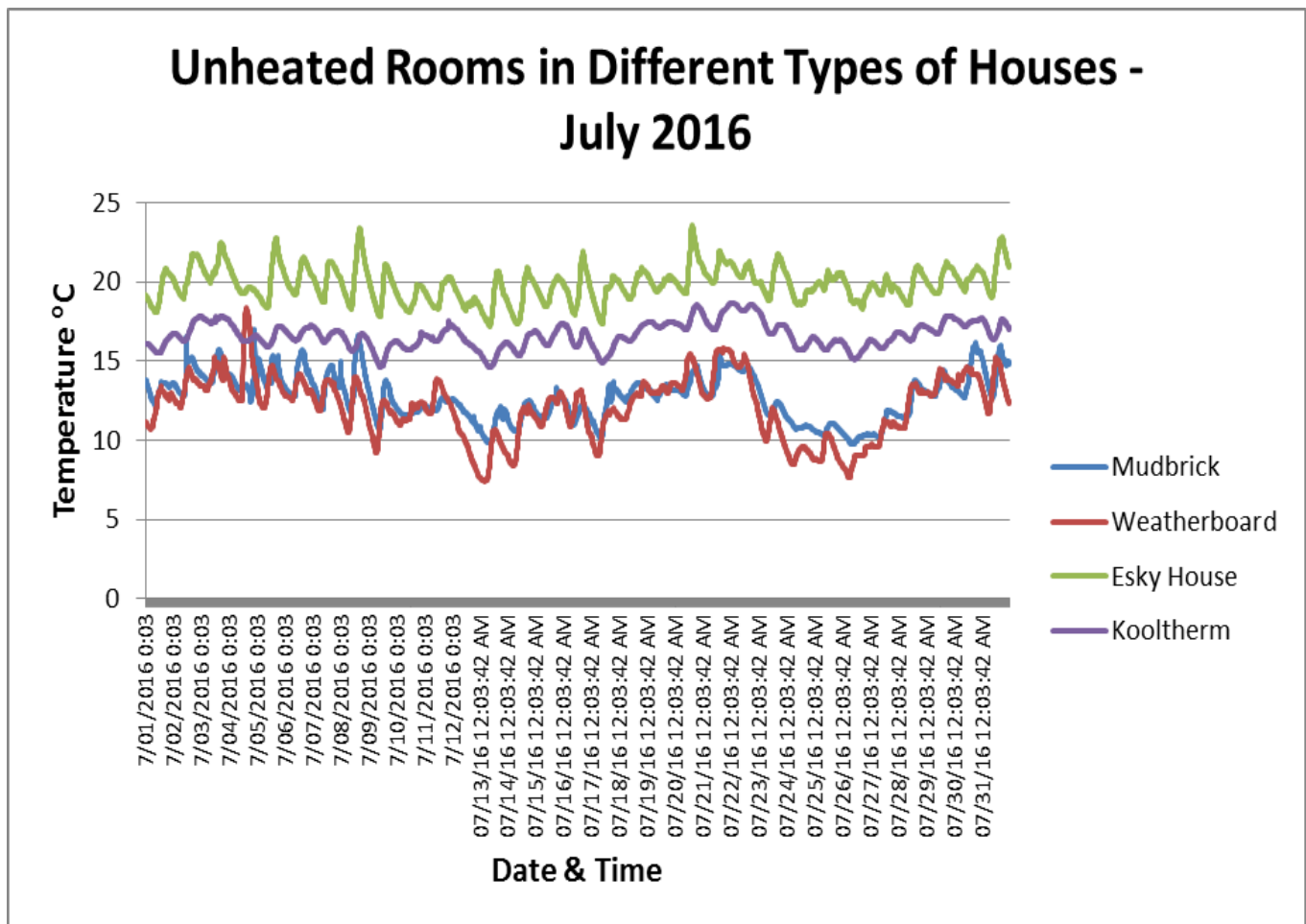
More graphs are located in Appendix A – House Temperature Graphs.

a. *Unheated Rooms*

The efficiency of a home, or more specifically a room within a home, can be ascertained by looking at the temperature change over a 24 hour period and comparing that with the outside temperature change. In order to assess this characteristic without the interference of artificial heating, temperature loggers were placed in unheated rooms that are isolated from the rest of the house by a closed door. This was not possible in the Esky House, as it has a central heating system. A logger was placed in the pantry, which is not heated, but it does not have a door and is open to the kitchen and lounge, which are heated.

The room that changed the least was the Kooltherm, closely followed by the Esky House. The unheated room with the greatest temperature change was the Weatherboard.

The walls of the Kooltherm house incorporate a highly insulative material - "kooltherm". The house also has internal concrete block walls. The Weatherboard is a typical older weatherboard house with thin wood walls, and most likely only little insulation.



Basic Statistical Analysis – Unheated Rooms, July 2016.

	Minimum	Maximum	Average	Standard Deviation	Range
Mudbrick	9.8	17.0	12.7	1.4	7.2
Esky House	17.2	23.6	19.9	1.1	6.4
Kooltherm	14.6	18.7	16.7	0.8	4.0

Weatherboard	7.4	18.4	12.1	1.9	11.0
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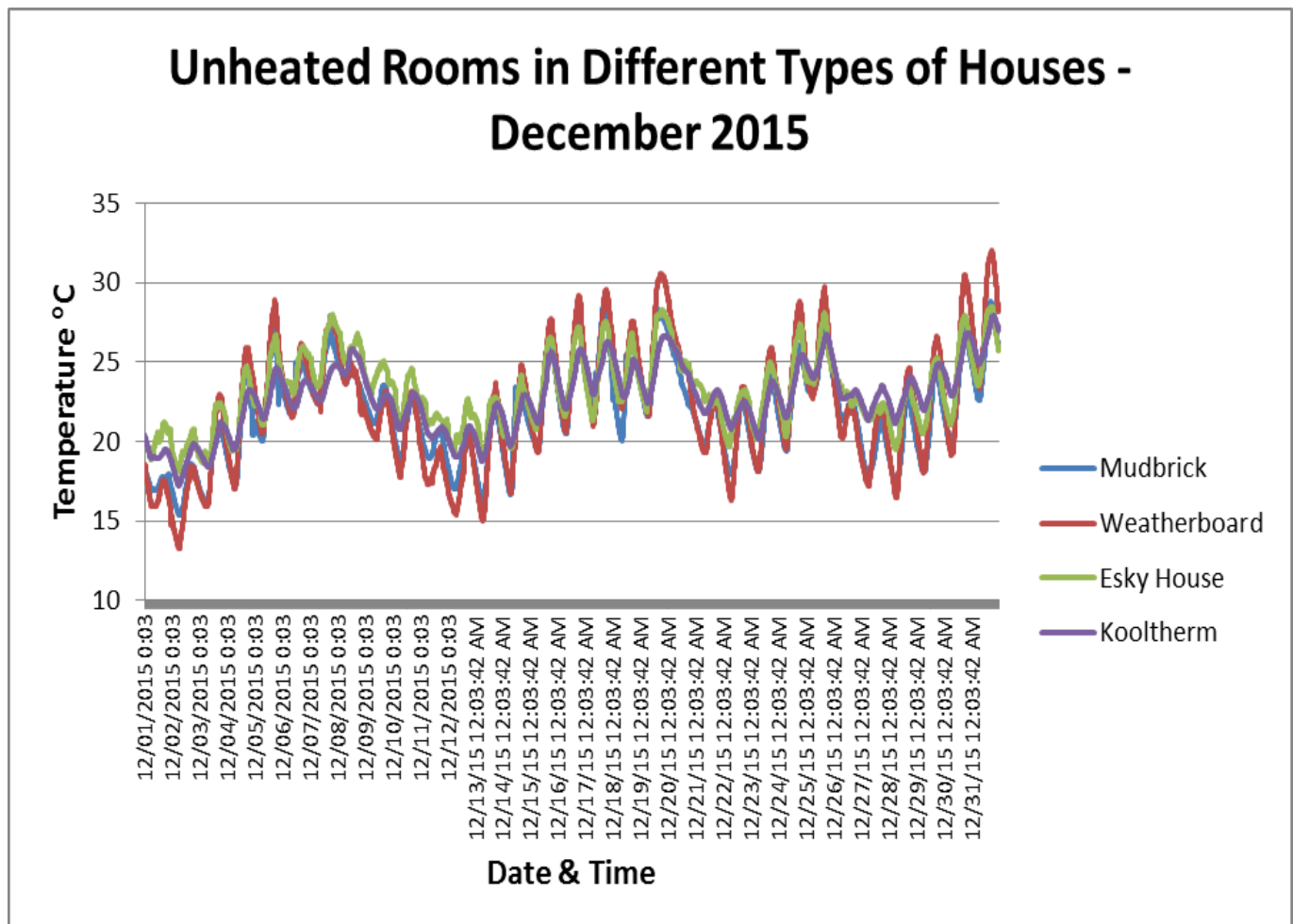
Basic Statistical Analysis – Unheated Rooms, December 2015.

	Minimum	Maximum	Average	Standard Deviation	Range
Mudbrick	15.4	28.8	21.8	3.0	13.5
Esky House	18.1	28.5	23.2	2.3	10.4
Kooltherm	17.2	27.9	22.7	2.1	10.7
Weatherboard	13.3	32.0	22.2	3.8	18.7

In terms of the standard deviation and the range, the lower the better in terms of the thermal comfort of a house.

The standard deviation measures the variation of the temperature readings, and how much they differ from the average temperature. Basically, the higher the standard deviation, the more the temperature varies and the less stable it is.

The range is the difference between the minimum and maximum temperatures.



b. Heated (& Cooled) Rooms

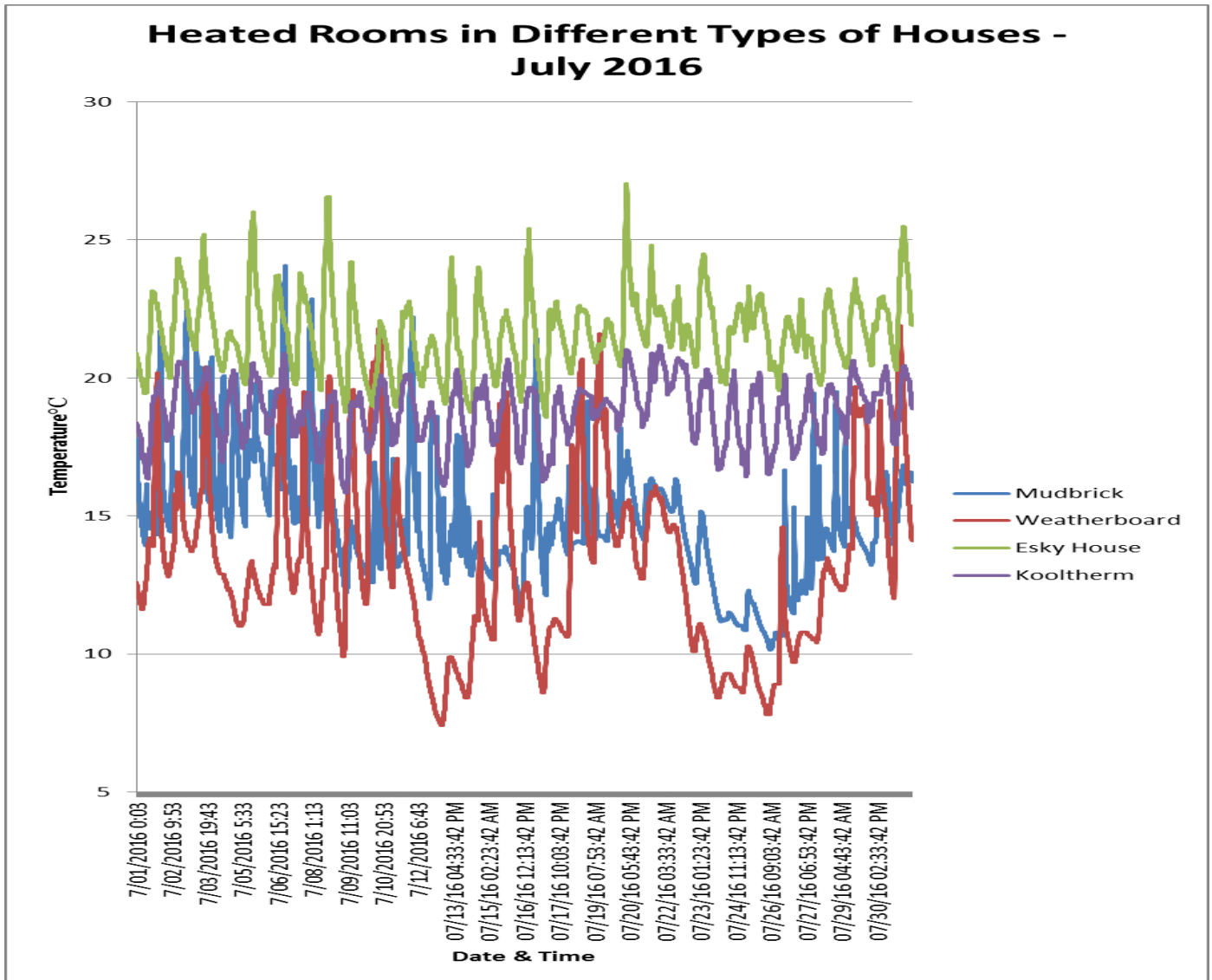
The performance of heated and cooled rooms is largely influenced by the behaviour of the residents. Some residents use heaters, air conditioners, fans etc. more often than others, and also like to have the temperature at a higher or lower set point than others.

During the cooler months the Weatherboard heated room had the greatest daily temperature change, followed by the Mudbrick. The Weatherboard also dropped to the lowest temperature overnight.

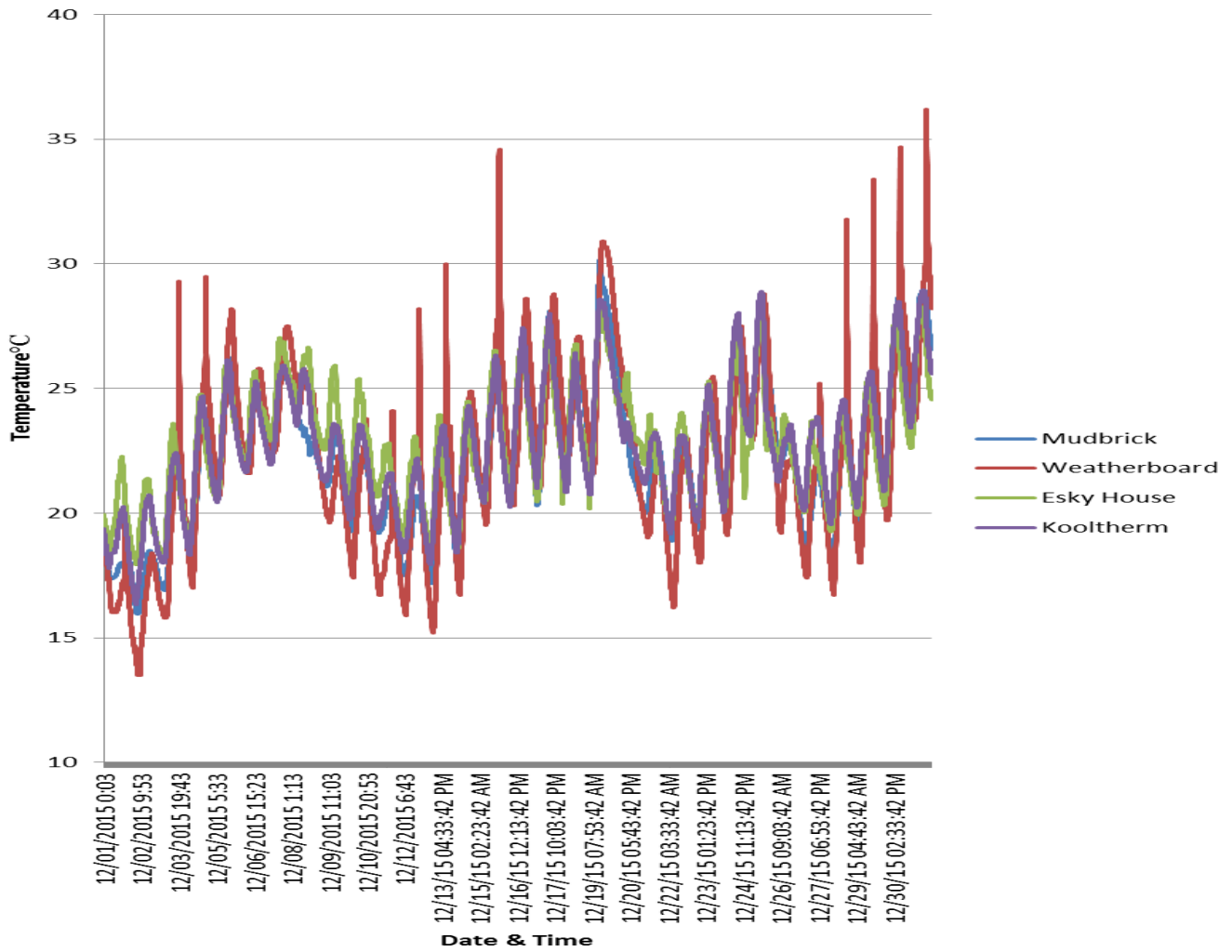
The Kooltherm heated room experienced the smallest daily temperature change, followed by the Esky House. They also held their temperature well overnight.

During the hotter months the Weatherboard room got more consistently hotter, and generally had the greatest temperature variance. This indicates the susceptibility of Weatherboard homes to the external temperature.

The other three houses had less variance over summer, due to their high thermal mass – much higher amounts of energy are required to change their temperature.



Conditioned Rooms in Different Types of Houses - December 2015



Basic Statistical Analysis – Heated Rooms, July 2016.

	Minimum	Maximum	Average	Standard Deviation	Range
Mudbrick	10.2	24.1	14.8	2.3	13.9
Esky House	18.6	27.0	21.6	1.4	8.5
Kooltherm	15.8	21.2	18.8	1.1	5.4
Weatherboard	7.4	21.9	13.1	3.2	14.5

Basic Statistical Analysis – Conditioned Rooms, December 2015.

	Minimum	Maximum	Average	Standard Deviation	Range
Mudbrick	15.9	30.2	22.2	2.9	14.3
Esky House	17.9	28.5	22.8	2.3	10.6
Kooltherm	16.3	28.9	22.6	2.5	12.6

Weatherboard	13.5	36.2	22.2	3.7	22.7
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c. Overall

These results seem to indicate that two factors are important in determining a house's ability to be isolated from outside temperature changes, and retain heat – those being thermal mass and placement of the room within the building (though these are certainly not the only factors – especially the level of insulation).

Going one step further, isolated thermal mass within an insulated building envelope would regulate the internal temperature even more. For example, this may be an internal stone or brick wall or feature which is not directly connected to an exterior wall, but fully contained within the insulating layer.

The Kooltherm and Esky houses keep a very stable temperature, which would make it more pleasant for the occupants. Overall this appears to be a good design for this southern climate.

The results also clearly demonstrate the variation within houses. Building designs must take into account not only the materials, but also the site location, in order to design a building that will take a minimal amount of active energy to heat or cool.

The ideal is a house that is completely passively heated and cooled, with no requirement for extra energy for this purpose. This may be difficult in Mount Gambier's predominantly heating climate, but a building that only requires minimal active heating (and cooling) could surely be achieved.

High thermal mass seems to make a significant contribution to this end. If a house contained isolated thermal mass that could be relatively passively activated, this would mean an even more stable temperature for the occupants.

Heating

Heating every room regardless of whether someone is using them or not is very inefficient. Many modern homes have central heating (and cooling), but they heat every room on the system regardless of whether they are occupied or not. Energy (and money) is being used to heat rooms that are not being used.

Home owners thinking of installing central heating should make sure that it can be zoned. This may involve having vents that can be closed when the room is not being used, as well as doors to isolate the rooms from heated areas.

Home owners should also seriously consider if they really need (central) heating in the bedrooms. In Mount Gambier's climate, heating should generally only be required in bedrooms for people with special needs e.g. infants, elderly, those who are sick etc. Generally, healthy adults in a reasonably constructed home should not need heating in their bedroom in this climate.

7. Future Recommendations

As far as possible, install the temperature loggers in similar locations within (and outside) each house e.g. unheated room on the south side of the house. This will not always be possible, but some consideration should be given to this when selecting houses for subsequent rounds of the project.

After six months download the data from all loggers, include the Hobo type, and replace the batteries. This seems especially important for loggers that are located outside.

8. Next Steps

Given that all the temperature loggers are still working, place them in another set of houses for 12 months. Preferably place the loggers in homes made of different materials to those tested in previous rounds.

9. Enquiries

Enquiries about this project can be made to:

Aaron Izzard

Environmental Sustainability Officer

City of Mount Gambier

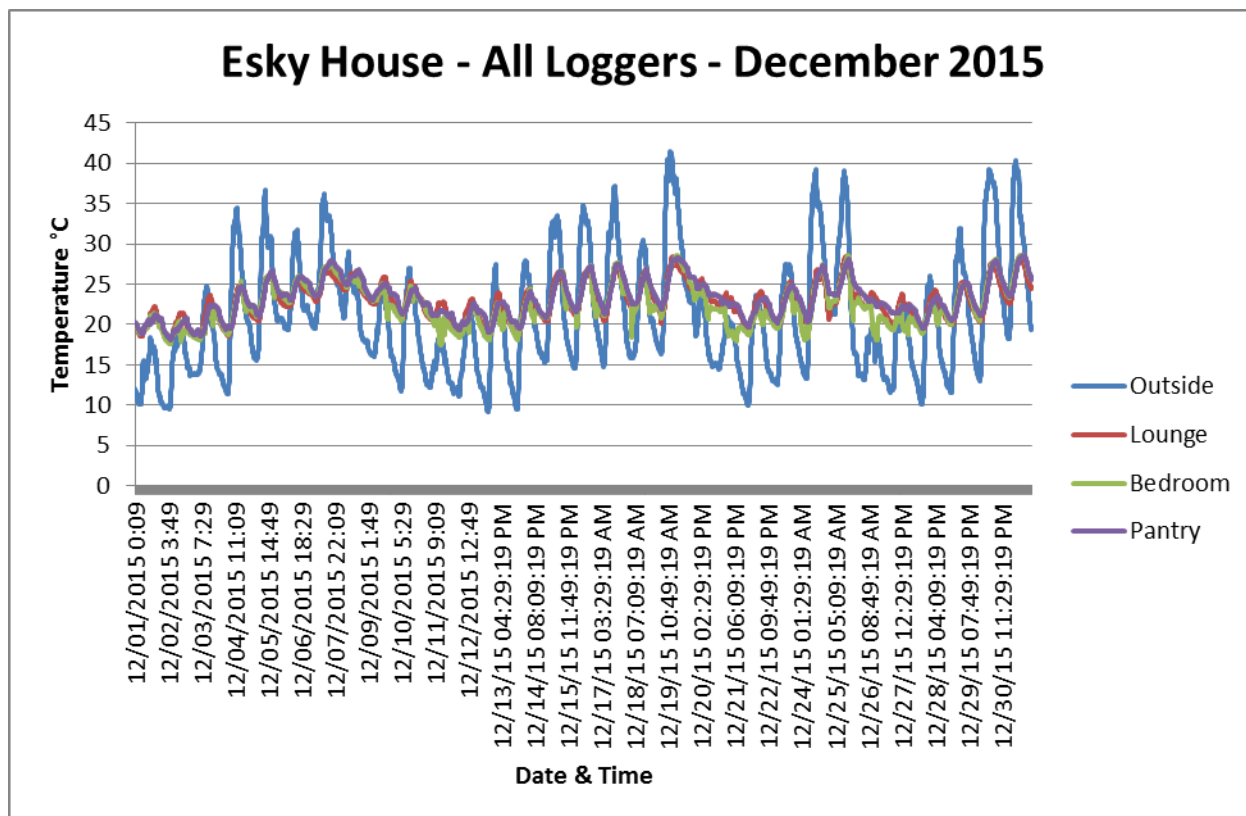
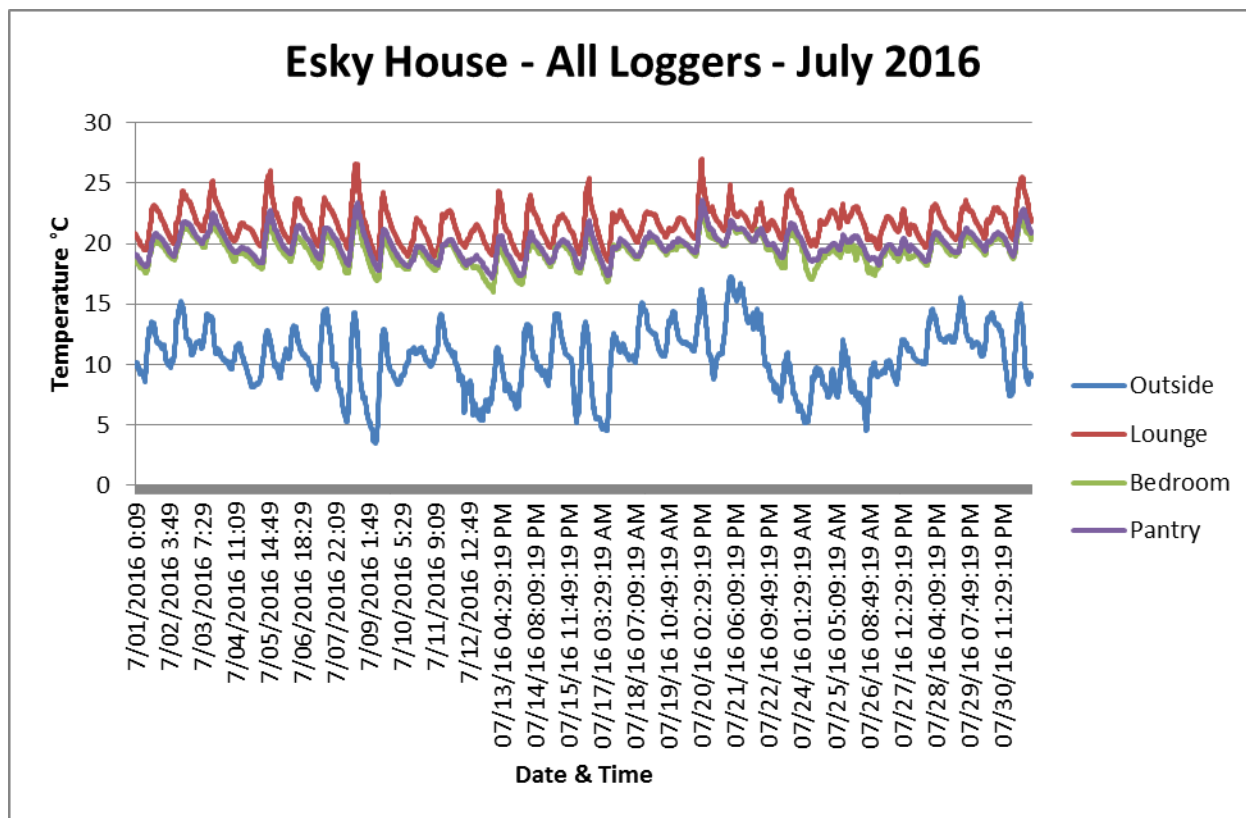
E: aizzard@mountgambier.sa.gov.au

T: 08 8721 2528

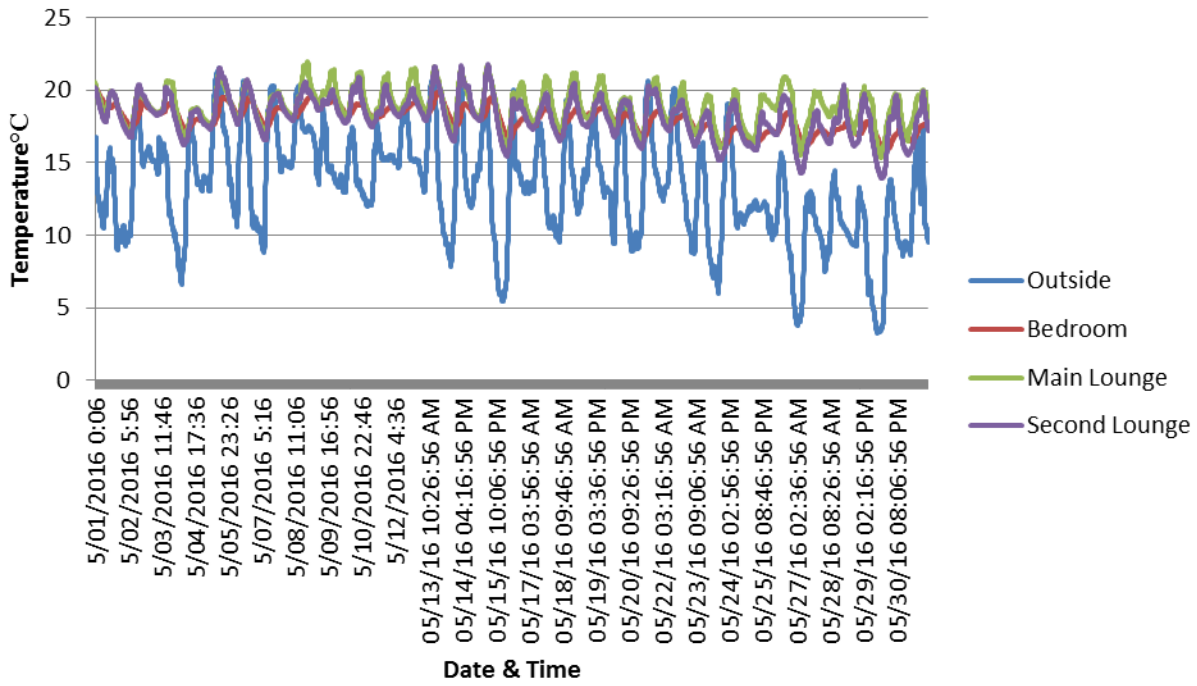
10. Further Information on Home Energy Efficiency

For a more detailed discussion on the energy efficiency of a variety of existing homes see this report commissioned by Sustainability Victoria: [On-Ground Assessment of the Energy Efficiency Potential of Victorian Homes](#)

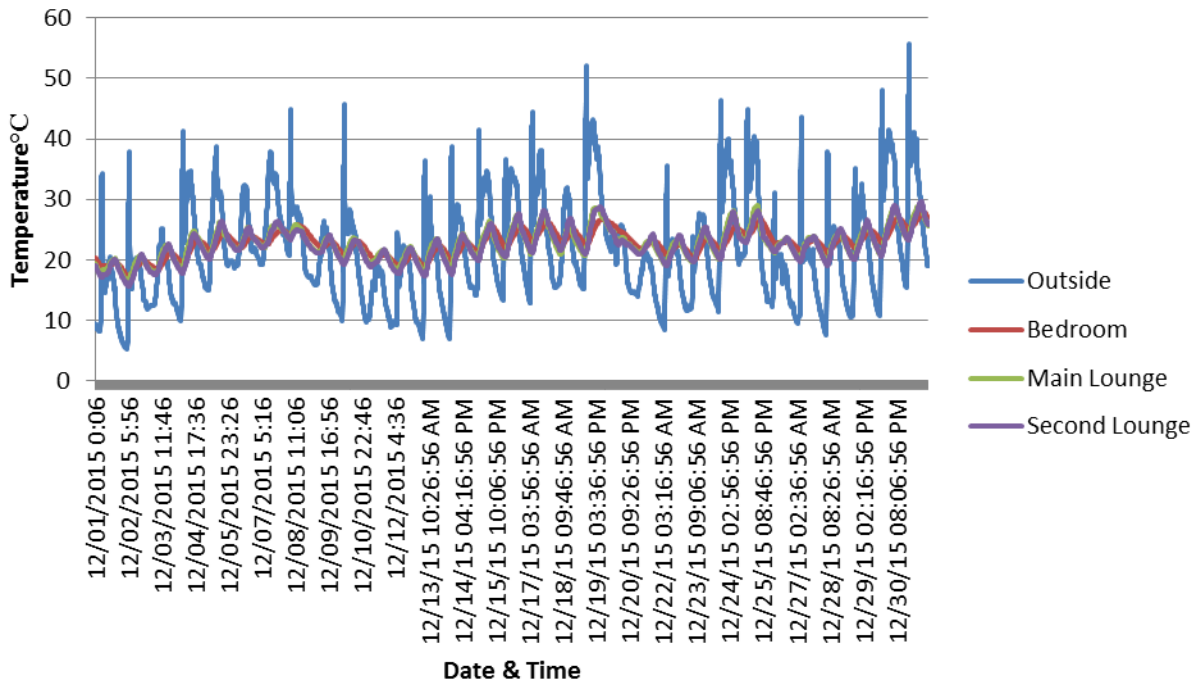
Appendix A – House Temperature Graphs



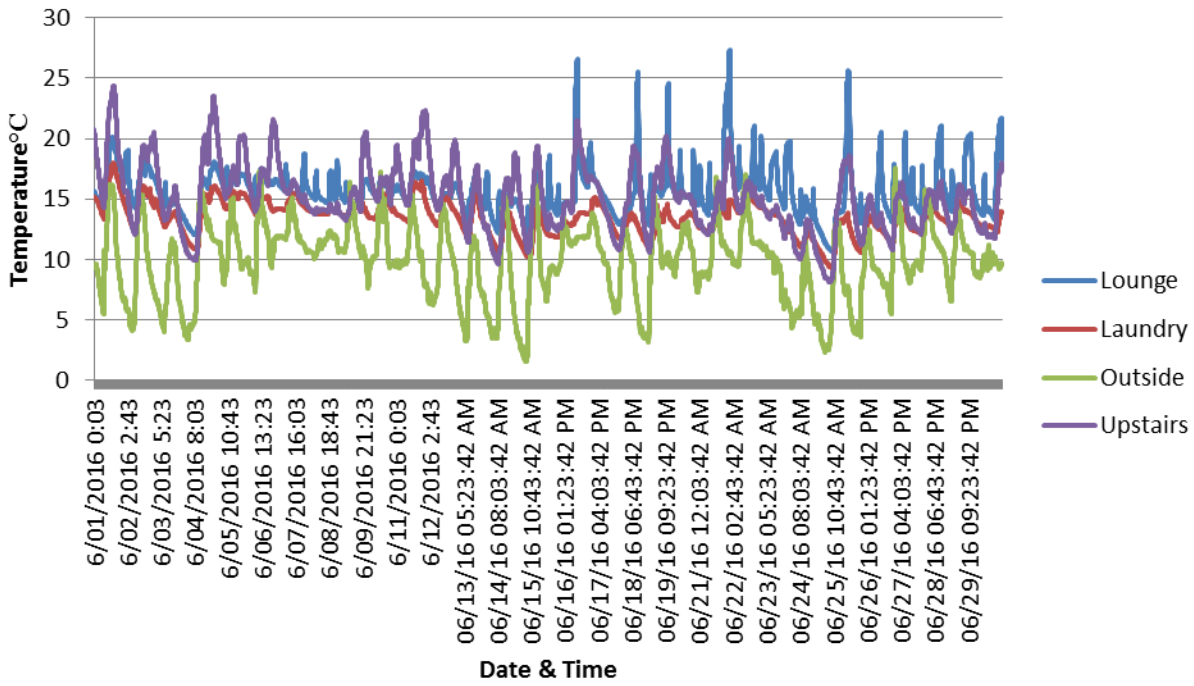
Kooltherm - All Loggers - May 2016



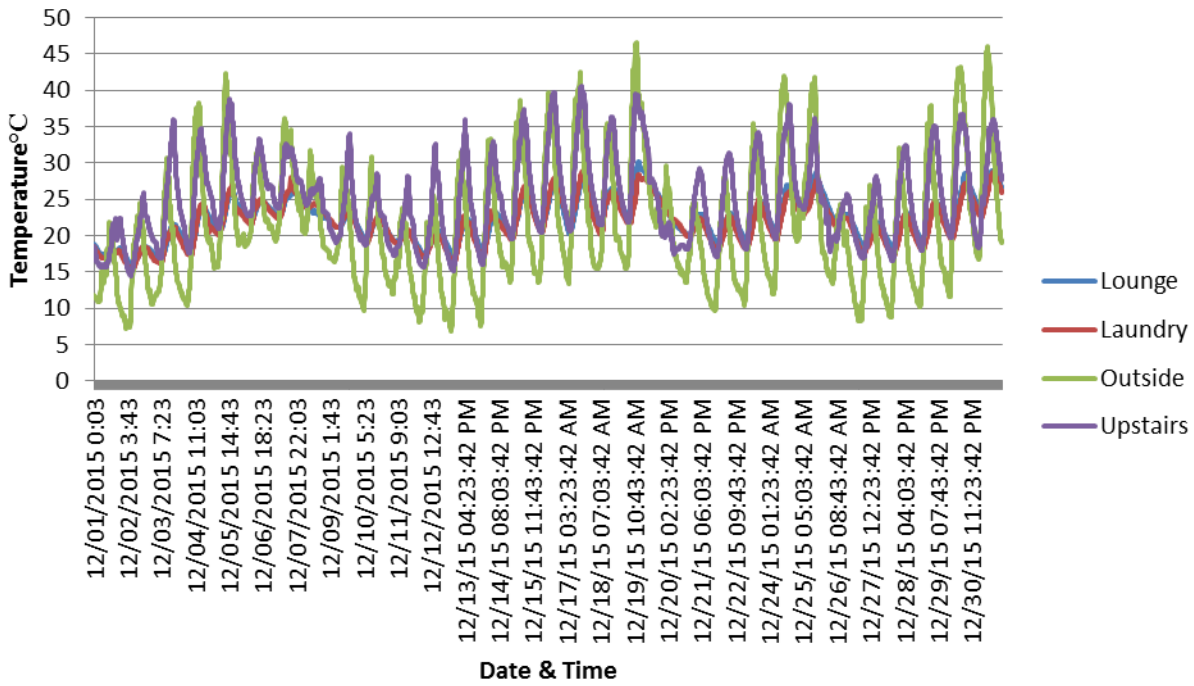
Kooltherm - All Loggers - December 2015



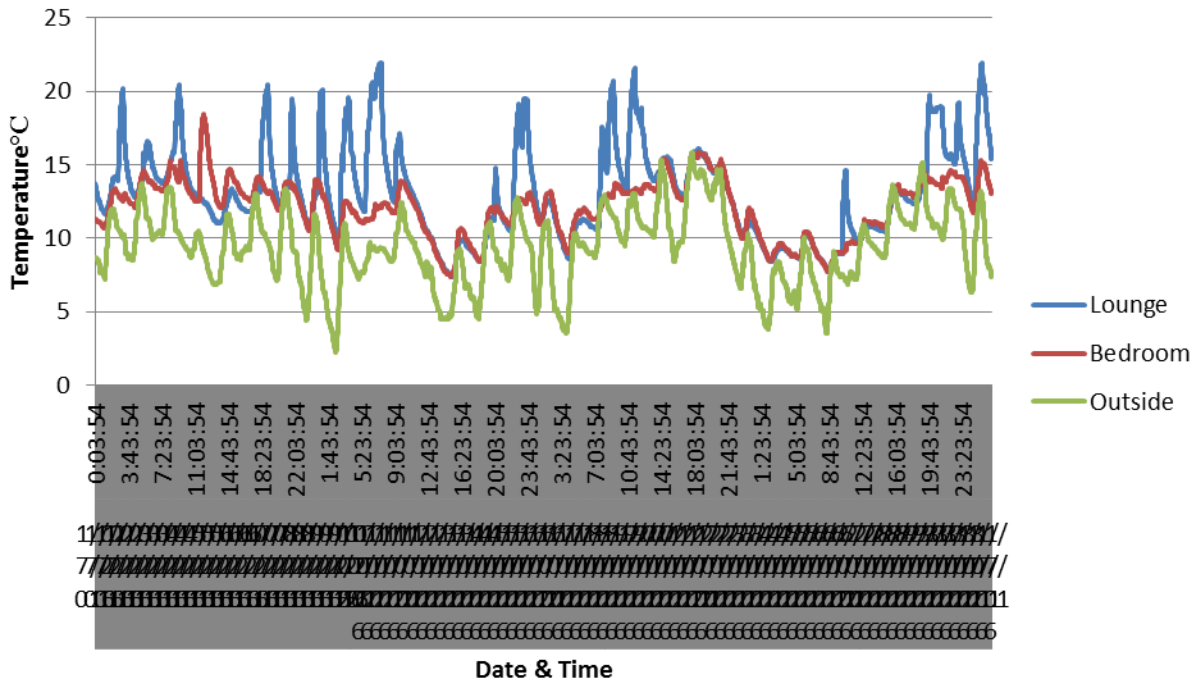
Mudbrick - All Loggers - June 2016



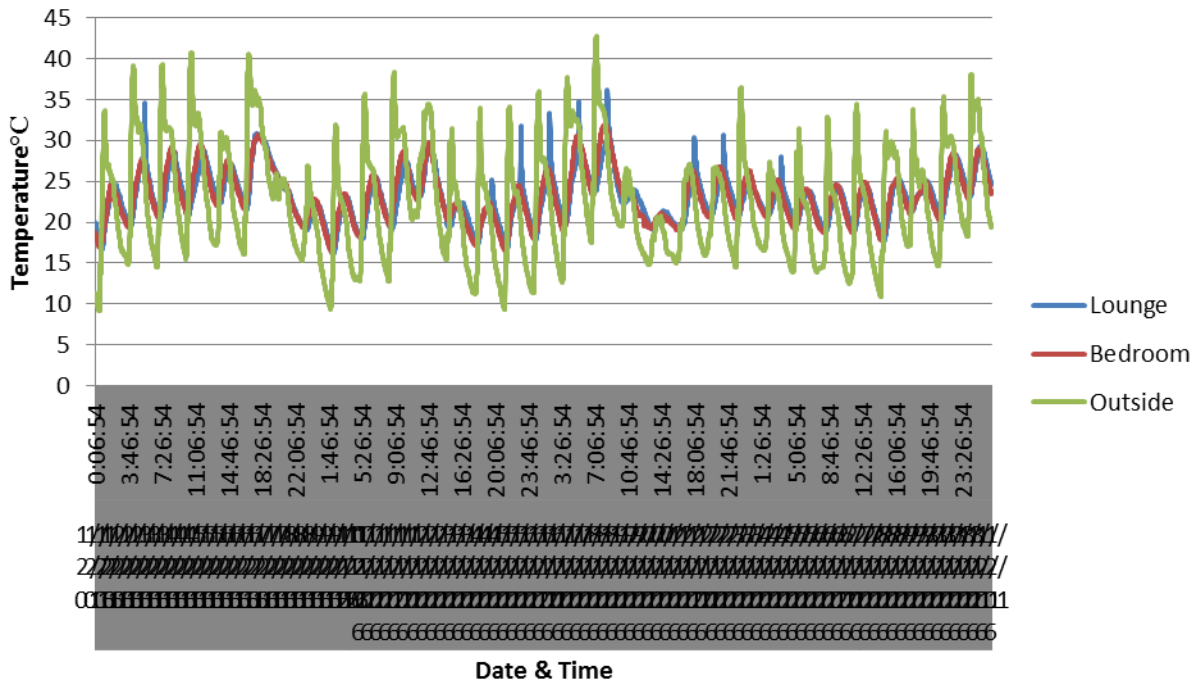
Mudbrick - All Loggers - December 2015



Weatherboard - All Loggers - July 2016



Weatherboard - All Loggers - December 2015





Moreland
Energy
Foundation

Analysis of Efficient Homes Project data

4th April 2017

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1 Introduction

The Moreland Energy Foundation (MEFL) was engaged by City of Mount Gambier to undertake an analysis of data collected through the Efficient Homes Project. The objective of the analysis is to provide insight into the thermal performance of four houses, which have been selected to represent a range of different construction techniques.

2 Dwellings

The four houses selected for the study represent a range of different construction techniques ranging from a lightweight/insulated house (brick veneer) through to arguably the highest level of thermal mass short of earth-berm construction (rammed-earth). Each house includes a heating system, either solid fuel wood heating, central gas heating, or a reverse-cycle split-system.

The following list describes the different construction types and heating systems.

- Conventional brick veneer with a wood heater and split-system in the lounge.
- Lightweight and highly insulated “Esky” with central heating
- Limestone with a wood heater in the lounge
- Rammed-earth with a wood heater in the lounge

3 Monitoring & Analysis

Data has been collected over a four year period from 2013 to 2016. For each house, data was collected for approximately 12 months to facilitate analysis of both summer and winter periods. The brick-veneer and limestone houses were monitored through 2013/14, the rammed-earth house through 2014/15 and the Esky house through 2015/16.

Each house was fitted with temperature loggers in a range of habitable and non-habitable rooms, typically including living rooms, bedrooms, kitchens and basements. Ambient temperatures were also monitored for each house using a wall-mounted temperature sensor on the outside of the dwelling. Data loggers had a typical resolution of 10 minutes.

The data provided by Mount Gambier Shire has not been filtered or edited in any way and it is quite possible that some measurements would be better removed from the dataset (e.g. measurements accidentally included prior to installation or after removal of the device). The key observations, however, are derived from a statistical analysis that treats this small number of observations as outliers without skewing the results.

The statistical analysis included the indoor temperature as well as the rate of change of indoor temperature, the second variable being particularly important to facilitate comparison across different years and therefore different outdoor weather conditions.

The available monitoring data does not include operation of the heating and/or cooling systems and in this respect it is not possible to separate thermal response due to the building characteristics from the response to heating or cooling systems. Notwithstanding this limitation, it is still possible to derive useful insights into thermal performance.

The key observations outlined below are supported by attached charts providing summaries of the data, as well as a Tableau workbook, which is available.

4 Key Observations

4.1 Brick veneer house

4.1.1 Kitchen

Summer temperatures in the kitchen are within the comfort range for around half the time but frequently above 24 degrees. During winter the kitchen is frequently below 18 degrees and is probably considered to be quite cold. In winter the kitchen appears to cool down quickly and heat up quickly in response to activation of central heating.

4.1.2 Laundry

During summer the laundry is typically within the comfortable range but also experiences extremes of temperature above 35 degrees. The rate of change in temperature is similar to the kitchen and relatively fast. In winter the laundry gets quite cold, but this is likely to be acceptable since it is a less frequently occupied space.

4.2 Esky house

4.2.1 Bedroom and lounge

The bedroom and lounge of the Esky house exhibit similar thermal characteristics. The temperature in summer and winter is almost always within the comfortable range and the rate of change in temperature is quite moderate. On occasion, the temperature changes quickly, but it is more likely to be quite slow.

4.2.2 Pantry

Conditions in the pantry are similar to the bedroom and lounge although a little more stable, this is likely to be the results of closed conditions in the pantry.

4.3 Limestone house

4.3.1 Cellar

Thermal conditions in the cellar are extremely stable and relatively cold. Summer temperatures are typically around 18 degrees and dropping to 15 degrees in winter. As expected, the temperature changes very slowly. A small number of measurements show a fast rate of

temperature change, it is understood that these are due to the use of a small heater that comes on intermittently to maintain comfort in a room that is now used occasionally as a lounge/retreat.

4.3.2 Main lounge

The main lounge appears to be quite comfortable throughout the year. Interestingly, the temperature in winter is generally warmer than the temperature in summer. This living area has a solid fuel heater and the location of the thermometer could be affecting the measurements. Alternatively, it is possible that this room is kept very warm throughout winter. Temperature changes in winter are quite fast in the main lounge and not dissimilar to the brick veneer house, again this could be either due to the location of the temperature sensor or the true performance of the dwelling.

4.3.3 Old lounge

The old lounge is quite different to the main lounge with respect to thermal performance. Whilst it appears that the summer temperatures are quite similar, in winter the room temperature is much lower. The rate of temperature change in winter is quite low, which might indicate a combination of different thermal mass characteristics in combination with less frequent use of this living area.

4.4 Rammed-earth house

4.4.1 Lounge

The lounge of the rammed earth house has the highest level of performance of all the rooms in this study. The room is almost always within the nominal comfort range and the rate of change in temperature is very low. This type of performance is to be expected from houses with a very high amount of thermal mass and good passive design characteristics.

5 Conclusions

The key observations are largely as expected, which is that occupants of the thermally massive house experience very stable indoor temperatures that are almost always within the nominal comfort range of 18 to 24 degrees. In contrast, the occupants of the lightweight house experience much faster swings in temperature as well as room temperatures that are likely to be either too cold or too hot for a significant period of the year.

Appendix A

Box plots

The box plot chart summarise the results using a statistical technique called the box plot. Using this method, all of the observations are located on one chart but separated by season (summer/winter), dwelling and room type. Half of the observations are contained within the grey, two-toned box, which provides an indication of the typical temperature range. The horizontal lines above and below the grey box contain most of the observations, excluding about 1% of the data that are considered to be outliers and most likely to be spurious.

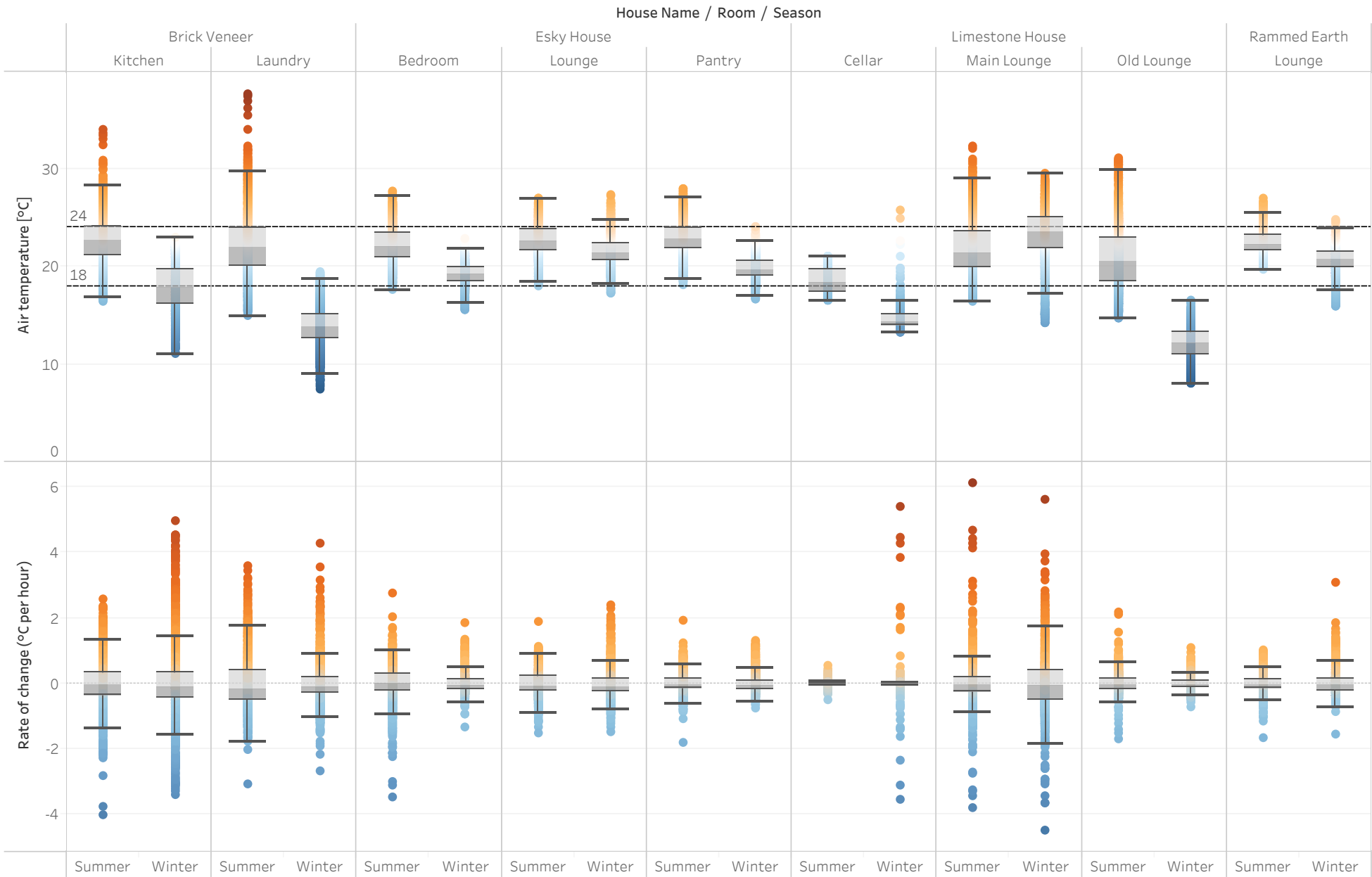
Detailed Temperature Plot

The detailed temperature plot shows all of the data for each house, colour coded according to house and room. This is a snapshot of the Tableau report, which provides interactive access to the underlying data.

Summary Charts

The summary charts provide an overview of the data including the ability to look at data subsets (e.g. by season) and also using different aggregation types (e.g. maximum, average, minimum). This is a snapshot of the Tableau report, which provides interactive access to the underlying data.

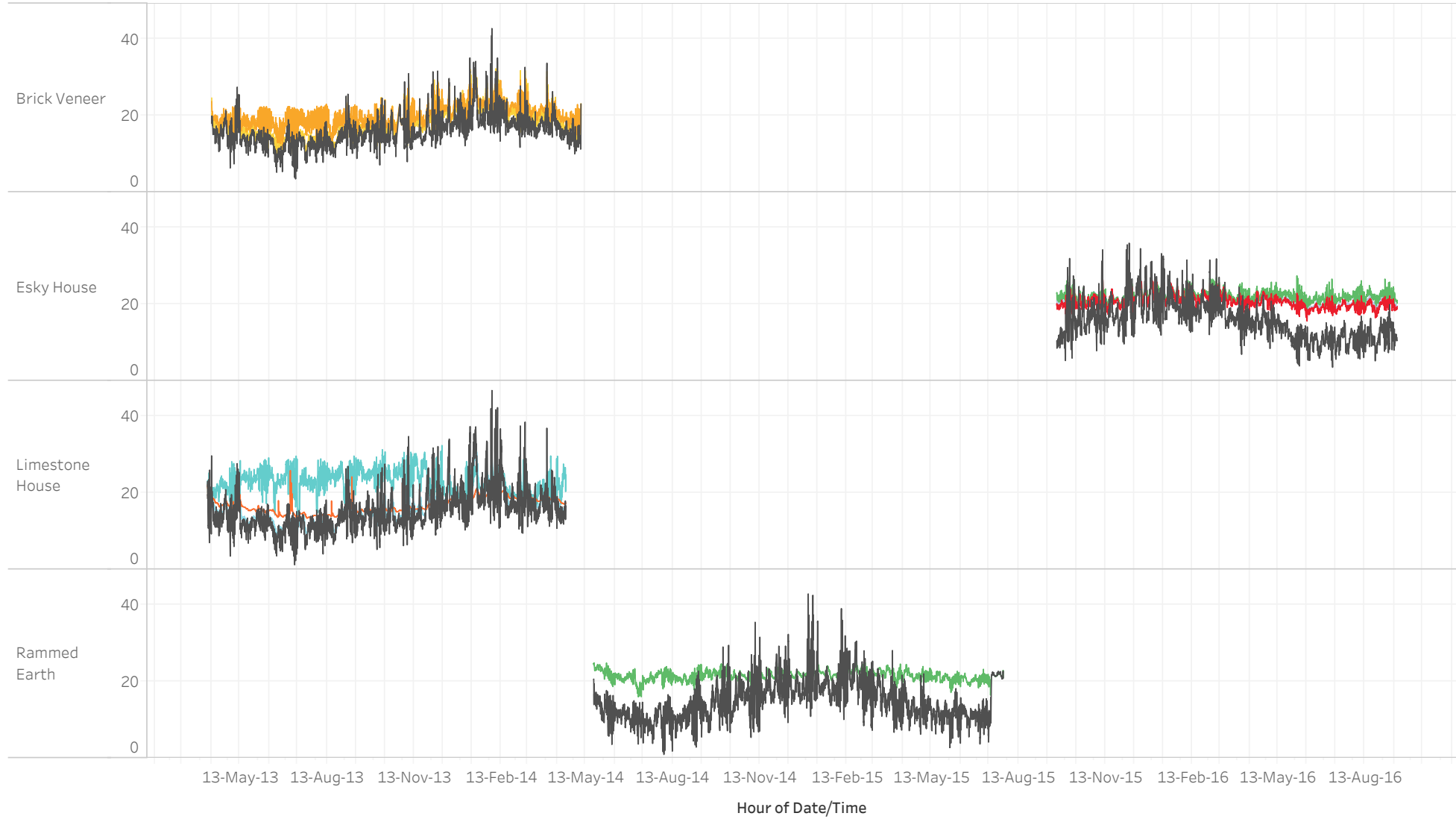
Efficient Homes Project Statistical Analysis



Detailed Temperature Plot

House Name All

Date/Time 08-Apr-13 8:00:00 AM to 15-Sep-16 12:00:00 PM
and Null values



Room Outside Bedroom Cellar Kitchen Laundry Lounge Main Lounge Old Lounge Pantry

Summary Charts

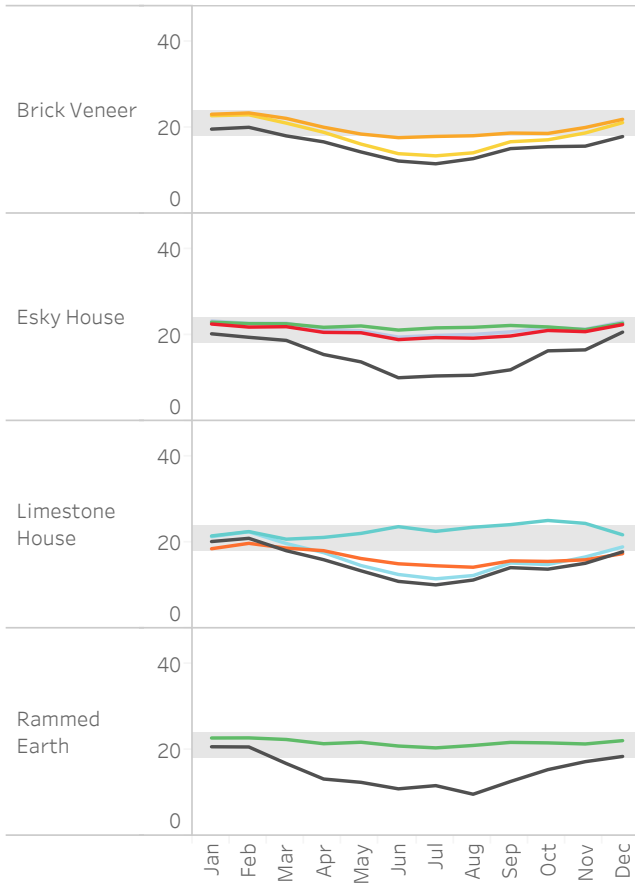
House Name All

The first chart shows the change in temperature through the year using the aggregation option selected in the Aggregation drop-down menu (Minimum, Maximum or Average). The second chart is histogram showing the relative amount of time spent at each temperature band. The histogram data is based on the selection in the Season drop-down menu. The third chart shows the average rate of change of temperature for each hour of the day, for the season selected in the Season drop-down menu.

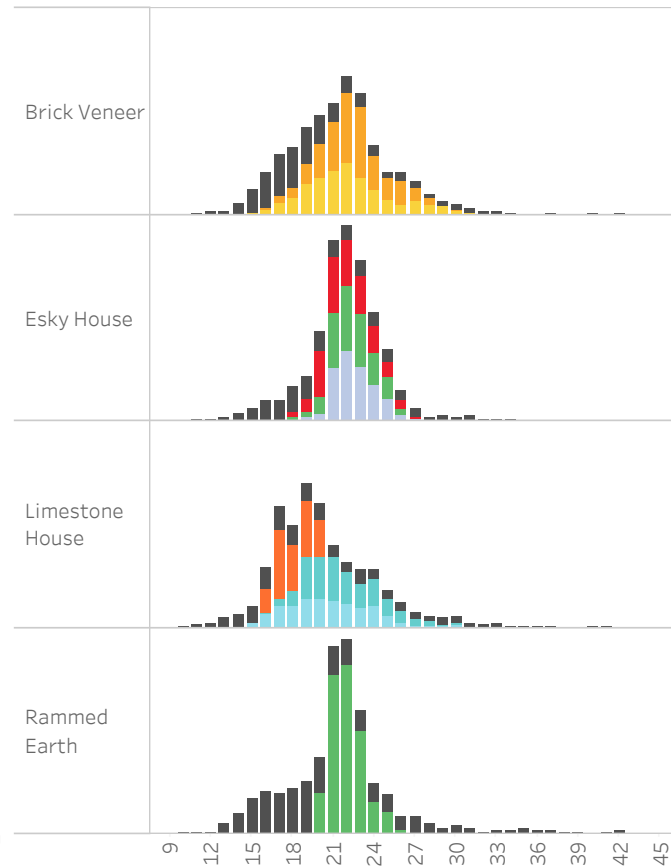
Aggregation Average

Season Summer

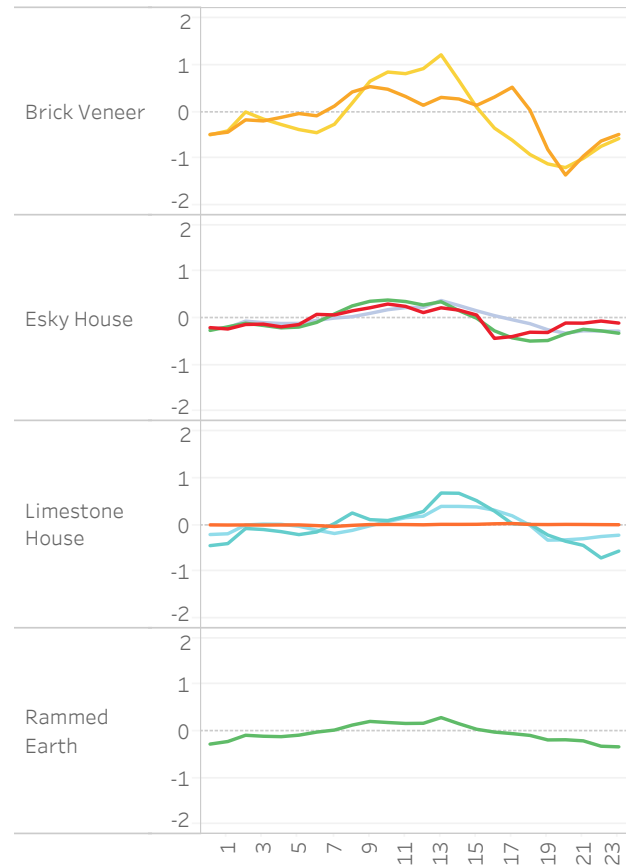
Monthly Temperature [°C]



Frequency of time



Rate of change [°C per hour]



Room Outside Bedroom Cellar Kitchen Laundry Lounge Main Lounge Old Lounge Pantry

SDAPP

Sustainable Design Assessment
in the Planning Process
10 Key Sustainable Building Categories



SDAPP Explained

Building design for a sustainable future



What's included in this fact sheet:

What is sustainable design?

Sustainable design in your planning application

What is the SDAPP program?

Submitting sustainable design information

- Sustainable Design Assessment (SDA)
- Sustainable Management Plan (SMP)

The 10 Key Sustainable Building Categories

Council's sustainability resources

Where can I find out more?

Mandatory Requirements

Council's Best Practice Standard.

The protection of our environment is an important global and local responsibility. Council wants to help lead the transformation in how we live and use our resources in the future.

Today, buildings produce 20% of Australia's greenhouse gas emissions through the use of energy during operation. What's more, the construction of buildings, including demolition waste, contributes 40% of all the materials sent to landfill. And in operation, buildings use large amounts of potable water for non-drinking purposes.

For environmental, economic and social reasons, Council supports you in creating a more sustainable lifestyle. Therefore, Council's planning application process includes sustainable design considerations.

This fact sheet explains what this means for applicants and what resources and assistance are available.

What is sustainable design?

Sustainable design is a key priority in the development of today's built environment. Sustainable design protects our environment, secures today's living standards and future-proofs our community against rising energy, water and waste disposal costs.

Several Victorian Councils have developed a consistent and transparent sustainable design assessment process. This process offers a high level of planning certainty relevant to sustainable design, and ensures that it has been considered during the early project phase – when it achieves the greatest benefits at the lowest cost.

Sustainable design in your planning application

Sustainable design is critical to any building project – be it minor alterations or a large new development. Council has established different application categories that relate to the size and type of your application.

The chart overleaf explains whether your planning application falls into the 'Small', 'Medium' or 'Large' category and whether sustainable design-related information needs to be submitted with your application.

What is the SDAPP program?

The SDAPP (Sustainable Design Assessment in the Planning Process) program refers to the inclusion of key environmental performance considerations into the planning permit approvals process in order to achieve more sustainable building outcomes for the long-term benefit of the wider community.

SDAPP is:

- Your guide to achieving more sustainable building outcomes.
- A practical approach to assessing sustainable development matters during the planning permit application process.
- The consistent inclusion of key environmental performance standards into the planning permit approvals process.

“SDAPP is an excellent tool to foster collaborative design at a project's early design stage. In my experience, the planning approval process is the key stage to lock in best practice sustainable design outcomes.”

Tim Angus,
Sustainable Design Architect

Submitting sustainable design information

Submitting sustainable design information

All applicants are encouraged to consider the 10 Key Sustainable Building Categories within their design. However, Council will request certain applications (based on size) to specifically address these criteria. On the back page of this fact sheet you will find an overview of these categories and relevant design considerations. Council has also developed detailed fact sheets for each of these categories, highlighting the key benefits and strategies to implementing them.

Sustainable Design Assessment (SDA)

When is an SDA requested?

An SDA is required for medium developments, comprising of 10 to 14 residential dwellings or 1999m² to 2498m² of non-residential Gross Floor Area (GFA).

What is an SDA?

An SDA is a simple sustainability assessment of a proposed design at the planning stage. The assessment will support your planning application by showing how you intend to address the 10 Key Sustainable Building Categories.

Regardless of the formal requirements of the planning scheme, we encourage you to strive for excellence, creativity and innovation. By using free web-based tools, such as BESS, combined with a brief description of how the project responds to the above categories, you can easily demonstrate that your project meets Council's best practice standards for sustainable design. Generally, an SDA can be prepared by the applicant and it is not necessary to engage a sustainability expert.

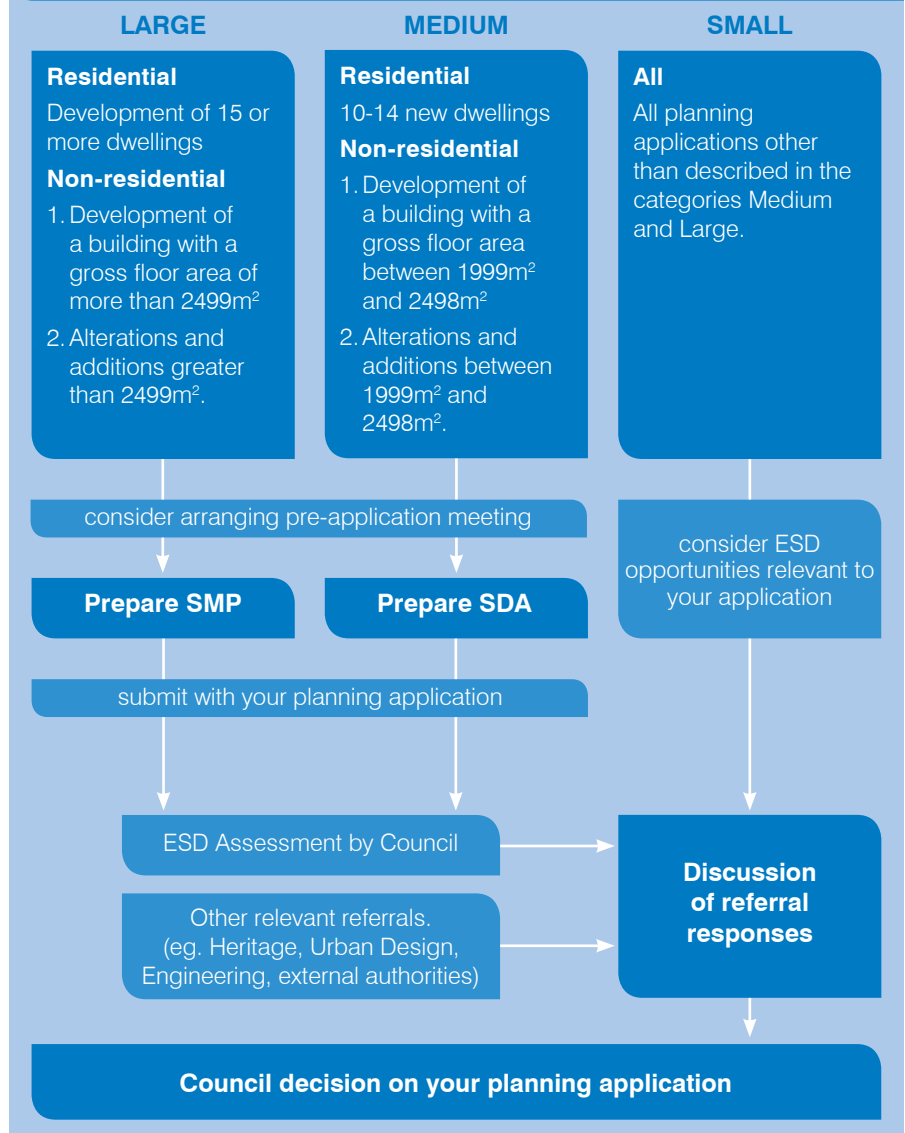
Please also refer to the SDA guidelines and resources on our website for further information.

Sustainable Management Plan (SMP)

When is an SMP required?

An SMP is required for all larger developments, comprising of 15 or more residential dwellings or more than 2499m² of non-residential Gross Floor Area (GFA).

Determining your SDAPP category



What is an SMP?

An SMP is a detailed sustainability assessment of a proposed design at the planning stage. An SMP identifies beneficial, easy to implement and best practice sustainability initiatives. It addresses the 10 Key Sustainable Building Categories and demonstrates that a holistic sustainable design review has been undertaken during a project's early design stage.

In relation to these categories, an SMP must:

- identify relevant sustainability targets or performance standards

- document the means by which the appropriate target or performance will be achieved.

The nature of larger developments provides the opportunity for increased environmental benefits and the opportunity for major resource savings. Hence, greater rigour in investigation is justified. It may be necessary to engage a sustainability professional to prepare an SMP.

Please also refer to the SMP guidelines and resources on our website for further information.

The 10 Key Sustainable Building Categories

1.0 Indoor Environment Quality

Objective: to achieve a healthy indoor environment quality for the wellbeing of building occupants.

Examples of design decisions:

- daylight
- thermal comfort
- natural ventilation.

2.0 Energy Efficiency 2.1 Sunshading

Objective: to ensure the efficient use of energy, to reduce total operating greenhouse emissions and to reduce energy peak demand.

Examples of design decisions:

- effective shading
- building fabric enhanced above the minimum Building Code of Australia (BCA) requirements
- efficient heating and cooling services.

3.0 Water Efficiency

Objective: to ensure the efficient use of water, to reduce total operating potable water use and to encourage the appropriate use of alternative water sources.

Examples of design decisions:

- use efficient fixtures and fittings
- avoid the use of mains water for landscape irrigation
- re-use water (e.g. greywater).

4.0 Stormwater Management 4.1 Site Permeability

Objective: to reduce the impact of stormwater run-off, to improve the water quality of stormwater run-off, to achieve best practice stormwater quality outcomes and to incorporate the use of water sensitive urban design, including rainwater re-use.

Examples of design decisions:

- minimise watercourse pollution
- maximise stormwater capture
- maximise onsite rainwater re-use (e.g. for flushing toilets and irrigation).

5.0 Building Materials

Objective: to minimise the environmental impacts of materials used by encouraging the use of materials with a favourable lifecycle assessment:

Examples of design decisions

- embodied energy of materials
- use of materials with recycled content
- future recyclability of materials.

6.0 Transport

Objective: to minimise car dependency and to ensure that the built environment is designed to promote the use of public transport, walking and cycling.

Examples of design decisions:

- providing convenient and secure bike storage
- providing access to showers and lockers at work
- Green Travel Plan for residents, visitors and staff.

7.0 Waste Management

Objective: to ensure waste avoidance reuse and recycling during the construction and operation stages of development.

Examples of design decisions:

- preparation of a construction Waste Management Plan
- adoption of a demolition and construction material recycling target
- preparation of a operational Waste Management Plan.

8.0 Urban Ecology 8.1 GreenRoofs, Walls and Facades

Objective: to protect and enhance biodiversity and to encourage the planting of indigenous vegetation.

Examples of design decisions:

- maintaining / enhancing the site's ecological value
- creating resident amenity
- encourage biodiversity areas.

9.0 Innovation 9.1 Melbourne Climate

Objective: to encourage innovative technology, design and processes in all development, so as to positively influence the sustainability of buildings.

Examples of design decisions:

- significant enhancements of best practice sustainable design standards
- introduction of new technology
- good passive design approach.

10.0 Construction and Building Management

Objectives: to encourage a holistic and integrated design and construction process and ongoing high performance.

Examples of design decisions:

- Building Users Guide that explains a building's sustainable design principles
- preparation of operation Environmental Management Plan
- contractor has valid ISO14001 (environmental management) accreditation.

ESD Tools

What are ESD Tools?
Why use them?
Voluntary or mandatory?
Which tool for SDAPP?

An overview of the following tools:

- BESS
- STORM
- MUSIC
- Green Star
- NatHERS
- NABERS

Council's sustainability resources

On Council's website, you will also find reference documents that demonstrate how an SDAPP submission can be prepared. You may wish to adopt these documents for use in your planning application. To make sure that your project realises its full sustainable design potential, we encourage you to discuss your design approach and environmental targets with our Statutory Planning staff or Council's sustainable design experts.

Mandatory Requirements and Council's Best Practice Standard

Mandatory Requirements:

Meeting minimum sustainability standards as outlined by the National Construction Code of Australia and the relevant Planning Scheme clauses.

Best Practice Standard:

In order to claim that your development has met Council's best practice standard, the development must:

- Meet or exceed best practice standards as described in each of the 10 Key Sustainable Building Categories.

Where can I find out more?

10 Key Sustainable Building Categories Fact Sheets

Make sure you download your fact sheets on the 10 Key Sustainable Categories from Council's website.

www.greaterdandenong.com

BESS

Built Environment Sustainability Scorecard. Developed by local government members of CASBE (Council Alliance for a Sustainable Built Environment), BESS is a free and simple online assessment rating tool for most types of development. BESS has been tailored to suit the SDAPP program and help applicants demonstrate 'best practice' in the following categories:

- Indoor Environment Quality
- Energy Efficiency
- Water Efficiency
- Stormwater Management
- Transport
- Waste
- Urban Ecology
- Management

www.bess.net.au

FirstRate

A software tool developed under the Nationwide House Energy Rating Scheme (NatHERS). FirstRate estimates your home's future energy demands for heating and cooling. The calculations consider your building's orientation, thermal insulation and other major design attributes. The higher the rating the less demand the building will have on mechanical heating and cooling therefore reducing operational energy demand. An energy rating may be required to apply for a residential building permit but we recommend confirming your rating in advance to ensure compliance with both planning and building standards.

Please note that FirstRate is only one of the accredited energy rating tools, alternative tools such as BERS Pro or AccuRate can also be used to confirm compliance.

Refer to the following websites for more information about Victoria's 6 Star Standard.

www.makeyourhomegreen.vic.gov.au
www.buildingcommission.com.au

NABERS

NABERS rates the operational impacts of non-residential buildings on the environment. It can be used during building's operations as well as during the design phase to predict base building ratings and establish benchmarks and likely outcomes. NABERS distinguishes between the tenancy and base building and therefore can identify and detail areas for improvement.

NABERS applies to offices, hotels and retail buildings. The areas of sustainability considered are:

- Energy Efficiency
- Water
- Indoor Environment Quality
- Waste

www.nabers.com.au

Green Star

Green building rating tools from the Green Building Council Australia (GBCA). These tools for large scale building projects represent a comprehensive national environmental rating scheme. The tools evaluate the design and achievements of buildings in all sustainable design categories.

www.gbca.org.au



Environmental Sustainability Sub-Committee

TERMS OF REFERENCE

A Sub-Committee of Council Established
pursuant to the provisions of Section 41
of the Local Government Act 1999.

Terms of Reference for the conduct of the business of the Council Environmental Sustainability Sub-Committee were approved and adopted by the City of Mount Gambier at its meeting held on 19th September 2017.

Environmental Sustainability Sub-Committee

The Environmental Sustainability Sub-Committee has been established to:

- Assist Council achieve its environmental sustainability goals and objectives.
- Provide advice to Council, staff and community on sustainability including assistance with assessment of projects and initiatives against Council's adopted Natural Step Framework.
- Monitor achievements in environmental sustainability against the adopted Strategic Plan, Annual Business Plan and Budget.
- Promote environmental sustainability to the organisation and community.
- Develop programs and activities that fit the Natural Step Framework and submit to the Operational Standing Committee and Council for consideration.

Environmental Sustainability Sub-Committee

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1. NAME

- 1.1 The name of the Council Sub-Committee shall be the Environmental Sustainability Sub-Committee (in these Terms of Reference referred to as “the Sub-Committee”).

2. INTERPRETATION

For the purpose of these Terms of Reference, unless inconsistent with the subject matter or context: -

2.1 Definition

- 2.1.1 “Act” means the Local Government Act 1999 and includes all Regulations and Schedules.
- 2.1.2 “Sub-Committee” means the Sub-Committee of Council established pursuant to 3.0.
- 2.1.3 “Sub-Committee Member” means the person appointed by the Standing Committee.
- 2.1.4 “Commencement Date” means the date on which the Sub-Committee is established and becomes operative pursuant to 3.2.
- 2.1.5 “Council” means the City of Mount Gambier.
- 2.1.6 “Presiding Member of the Sub-Committee of Council” means the person appointed to that position pursuant to 5.3.
- 2.1.7 “Observers” means those persons attending any meeting of the Sub-Committee of Council, but not having a vote on any matter to be determined by the Sub-Committee and not having been appointed as Members.
- 2.1.8 “Singular” includes a reference to the “plural”.
- 2.1.9 Standing Committee means the Committee to which the Sub-Committee reports.

2.2 Defined Terms

Any words, phrases or terms used in these Terms of Reference that are defined in the Act shall have the same meaning as are given in the Act.

2.3 Local Government Act

The Terms of Reference shall be interpreted in line with the provisions of the Act.

2.4 Notices

All communication to be given to the Sub-Committee shall be addressed to: -

Environmental Sustainability Sub-Committee
PO Box 56
MOUNT GAMBIER SA 5290
Email: city@mountgambier.sa.gov.au

3. ESTABLISHMENT

- 3.1 The Sub-Committee is established under Section 41 of the Local Government Act 1999.
- 3.2 The Sub-Committee will be established and become operative from the time a resolution of the Standing Committee is passed.
- 3.3 The Sub-Committee is established by the Standing Committee to assist in the co-ordination and administration of environmentally sustainable practices.

4. OBJECTIVES

- 4.1 The Sub-Committee is created for the express purpose of assisting the Standing Committee to develop and implement a range of environmental sustainability initiatives and programs that are aligned to Councils strategic management framework.

5. MEMBERSHIP

- 5.1 Membership of the Sub-Committee will comprise four (4) City of Mount Gambier Elected Members. The Mayor has Ex-Officio membership on this Sub-Committee.
- 5.2 City of Mount Gambier Elected Members will serve on the Sub-Committee for a term determined at the pleasure of Council.
- 5.3 Notwithstanding Clauses 5.1 and 5.3 all Sub-Committee Members hold office at the pleasure of the Council.
- 5.4 The Sub-Committee will appoint a Presiding Member.
- 5.5 If a Sub-Committee Member is absent from 2 or more consecutive meetings of the Sub-Committee without an apology accepted by the Standing Committee and Council then that Sub-Committee Members position shall be considered vacant.
- 5.6 The Standing Committee reserves the right not to appoint any nominee, to remove and replace any Sub-Committee Member, or to leave any Sub-Committee member position vacant.

CASUAL VACANCIES AND REPLACEMENT REPRESENTATIVES

- 5.7 The Standing Committee may replace any Member on the Sub-Committee or fill any casual vacancies, by notifying the Sub-Committee the identity of the person proposed to replace the representative or fill the casual vacancy.

6 NO PROXY

- 6.1 The appointment of a person as proxy for any Member on the Sub-Committee is not permissible.

7 RESIGNATION OF REPRESENTATIVES

- 7.1 Any Sub-Committee Member may resign from the Sub-Committee, but such resignation shall not be effective until the Presiding Member has received written notice to that effect.

8 QUORUM

- 8.1 At all Meetings of the Sub-Committee a quorum must be present.
- 8.2 A quorum will be determined by dividing by 2 the number of Members formally appointed to the Sub-Committee ignoring any fraction and adding 1 (excluding Mayor as ex-officio).

9 MEETINGS OF THE SUB-COMMITTEE

- 9.1 The Sub-Committee shall meet as and when determined by the Presiding Member.
- 9.2 The CEO or his appointee shall give notice to each Sub-Committee Member at least five clear days prior to any meeting.
- 9.3 The CEO or his appointee shall send a copy of the notice of a meeting and minutes of the Sub-Committee to the Standing Committee.
- 9.4 The CEO or his appointee must, at the request of the Presiding Member or three other Members, call a special meeting of the Sub-Committee.
- 9.5 All notices of meetings shall be issued by the CEO or his appointee.
- 9.6 No business shall be transacted at any meeting of the Sub-Committee unless a quorum of Members is present.
- 9.7 Each Member of the Sub-Committee including the Presiding Member present at any meeting of the Sub-Committee must vote on any matter requiring determination and all decisions shall be decided on a simple majority of votes cast.
- 9.8 Each Member of the Sub-Committee including the Presiding Member present at any meeting of the Sub-Committee shall have one deliberate vote only.

10 PROCEDURES AT MEETINGS

- 10.1 The procedure to be observed in relation to the conduct of meetings of the Sub-Committee is in accordance with Local Government (Procedures at Meetings) Regulations 2013.

11 LIABILITY OF THE SUB-COMMITTEE

11.1 A liability incurred by the Sub-Committee rests against Council.

11.2 No liability attaches to a Member of the Sub-Committee for an honest act or omission by that Member of the Sub-Committee in the performance or discharge, or purported performance or discharge, of the Member's or the Sub-Committee's functions or duties.

12 MINUTES OF THE SUB-COMMITTEE

12.1 Administration

12.1.1 The CEO or his appointee must cause minutes to be kept of the proceedings of the Sub-Committee.

12.1.2 Minutes of the Sub-Committee shall be available to all Members of the Sub-Committee, Standing Committee, Council and the public.

12.1.3 The Minutes of the proceedings of a meeting must include:

12.1.3.1 the names of the Members present and the time at which they entered or left the meeting;

12.1.3.2 the names of observers or visitors to any meetings;

12.1.3.3 every motion or amendment and the names of the mover and seconder;

12.1.3.4 any disclosure of interest declared by a Member;

12.1.3.5 whether the motion or amendment is carried, lost or lapsed;

12.1.3.6 Minutes of the Sub-Committee Meeting shall be distributed within 5 days of the meeting;

12.1.3.7 Minutes of the Sub-Committee Meeting shall be submitted for confirmation at the next meeting of the Sub-Committee and if confirmed, shall be signed by the Presiding Member or other person presiding at the subsequent meeting.

13 AMENDMENTS TO THESE TERMS OF REFERENCE

13.1 It will be lawful for the Standing Committee by resolution of the Standing Committee to revoke, vary or add to any of the provisions of these Terms of Reference at its own discretion within the parameters of the Local Government Act and other relevant legislation.

13.2 Notwithstanding 13.1 hereof before the Standing Committee resolves to revoke, vary or add to any of the provisions of these Terms of Reference the opinion of the Sub-Committee shall be obtained.

14 INTERPRETATION OF THESE TERMS OF REFERENCE

- 14.1 Should there be any dispute as to the definition and/or interpretation of these Terms of Reference, or any part thereof or any irregularities whatsoever, then the Standing Committee shall determine the dispute and the decision of the Standing Committee shall be final and binding.

15 WINDING UP

- 15.1 The Standing Committee may cease the operation of the Sub-Committee and the Sub-Committee may make such recommendation to the Standing Committee on the completion of its function.

8th June 2017
Ref.

PROJECT PLAN SUMMARY

Project Reference:	2017-009	TRIM Ref.: AR17/36980
Project Name:	Reuse Centre	
Documented on:	11 September 2017	
Executive Sponsor:	Judy Nagy	
Project Manager:	Aaron Izzard	Project Team: ESO, GMs

1. PROJECT OBJECTIVE

Minimise waste to landfill.

2. PROJECT OUTCOME

- Establish a working reuse market that is recognised as best practice in governance and operation.
- Raise awareness and educate the community about waste reduction through education program.
- Change community behaviours.
- Protect the environment.
- Reduce costs to community of waste processing (recycling or dumping).
- Reduce waste to landfill.
- Engage community and volunteers in sustainability behaviours and attitudes i.e. reuse activities and (e.g. UTA, men's shed).

3. PHASES, ACTIVITIES AND DECISION GATES

What are the key phases/stages, deliverables and decision gates for the project?

Phase	Deliverable	Decision Gate
Council approval	Council report 2017/2018 Budget	August 2017 – Final Council approval July 2017 – Capital budget approved
Establish project team	Project team members nominated	Approved by MET 19 Sept. 2017
Planning and building approval	CAP Report	Planning and development approval by CAP
Procure and contract management	Specifications Tender Contract	Report by GM City Infrastructure approved by CEO September 2017
Fit out of unloading shed at WTS.	Fit out complete	March 2018
Fit out of ReUM site.	Fit out complete	April 2018
Commence collection of items to sell at ReUM.	Items being collected.	Commence March 2018.
Research and site visits e.g. Goolwa, Ballarat. Salaries, SOPs,	Research and site visit report	Report endorsed by MET by 30 December 2017
Build	Earth works and building delivered to spec and budget	Completion report endorsed by MET
Recruitment	Recommended applicant	Letter of appointment signed by CEO and applicant
WHS and SOPs incl. fees, what's accepted and what's not	SOP and WHS documented	Signed off by CEO and Site Coordinator by July 2018
Media and Communication Plan	Plan and Schedule	Phase 1 – Pre 30 June 2018 Phase 2 – Post 30 June 2018 Both approved by MET
Marketing including signage	Marketing Plan documented Signage specified and built	Phase 1 – Pre 30 June 2018 Phase 2 – Post 30 June 2018 Both approved by MET
POS hardware, software and procedures	Specifications, HW, SW, Procedures procured / documented	POS HW, SW and procedures approved by MET by 1 July 2018
Induction and training	Induction and training documented and delivered	Approved by Site Coordinator by 1 July 2018. Delivered by 30 July 2018.

3. PHASES, ACTIVITIES AND DECISION GATES contd.

Phase contd.	Deliverable	Decision Gate
Governance incl. insurance, competitive neutrality, amend Council policies as required, financial model/delegations	Governance Structure, delegations, policies, procured documented	Approved by GM City Infrastructure and City Growth by 1 July 2018

3. LINKS AND DEPENDENCIES

This project has links to existing committees / groups / organisations:

- Community Plan
- Environmental Sustainability Sub Committee
- Community Engagement and Social Inclusion network
- Community Recycling Network Australia (CRNA)
- Community Action for Sustainability (CAS)
- DECD
- Green Triangle Recycling
- Community groups

This project has potential synergies with:

- Labour market suppliers e.g. Bedford Industries and Orana Enterprises

4. DATES

Estimated start date	1 July 2017 Budget approved
Estimated end date	1 October 2018

Are there any time considerations that must be considered for this project?

- LG Election November 2018.

5. BENEFITS

Key benefits of this project are:

- Reduction in landfill.
- Community education, awareness and skill development.
- Meet the Natural Step System conditions.
- Reduce residents dumping costs.
- Low cost products for purchase / reuse.
- Creates employment.
- Potential reduction in Council waste costs.

6. RISKS

Key risks for this project are:

- Time frame not met.
- Inability to secure qualified and experienced Site Coordinator.
- Inappropriate product mix to sell.
- Budget overrun.
- Competitive neutrality considerations.
- Integration with IT systems.
- Work, health and safety practices.
- Site not embraced by the community.

SUMMARY

7. ISSUES

The issues (other than risks) that this project needs to consider are:

Issue No.	Description
1	WHS
2	Media, Communications and Marketing Plan
3	Market (retail) Development
4	Education Program
5	Operations and interface with the transfer station
6	Financial model – capex and opex for 2018/2019 and beyond

8. RESOURCES

The resources (e.g. people, financial, infrastructure) required for this project are:

People needed	Skills / experience needed	FT or PT or contract
Project Manager	Project management, sustainability, environmental science	PT
Project team members	SOPs, SW, HS,	PT
Site Coordinator	See "Site Coordinator" section of AR17/23357. Further info from site visits and research	FT
On Site Support Staff	TBC	
Organisation support staff to establish	IT, HR, Finance, Procurement and Contract Management, Communications	

Financial resources needed	Capex or opex?	Existing or additional budget?	Budget \$
Budget approved as part of 2017/2018 e.g. build, signage	Capex	Existing	\$560,000
Budget for fitout proposed for 2017/2018 e.g. tools, racking, security, cleaning equipment (high pressure)	Capex	Additional	\$100,000
Proposed for 2018/2019 e.g. staffing, IT, workstation, chair, training,	Opex	Additional	\$180,000
Some staffing funds will be required in 2017/2018 to recruit a 2 nd person at the WTS to assist in collecting and processing items for sale. Would also be beneficial to recruit Site Coordinator in April/May 2017.	Opex	Additional	\$50,000

9. EXECUTIVE APPROVAL

Considered on: 11 September 2017
 Approved on: 11 September 2017
 Status reported on: 27 October 2017