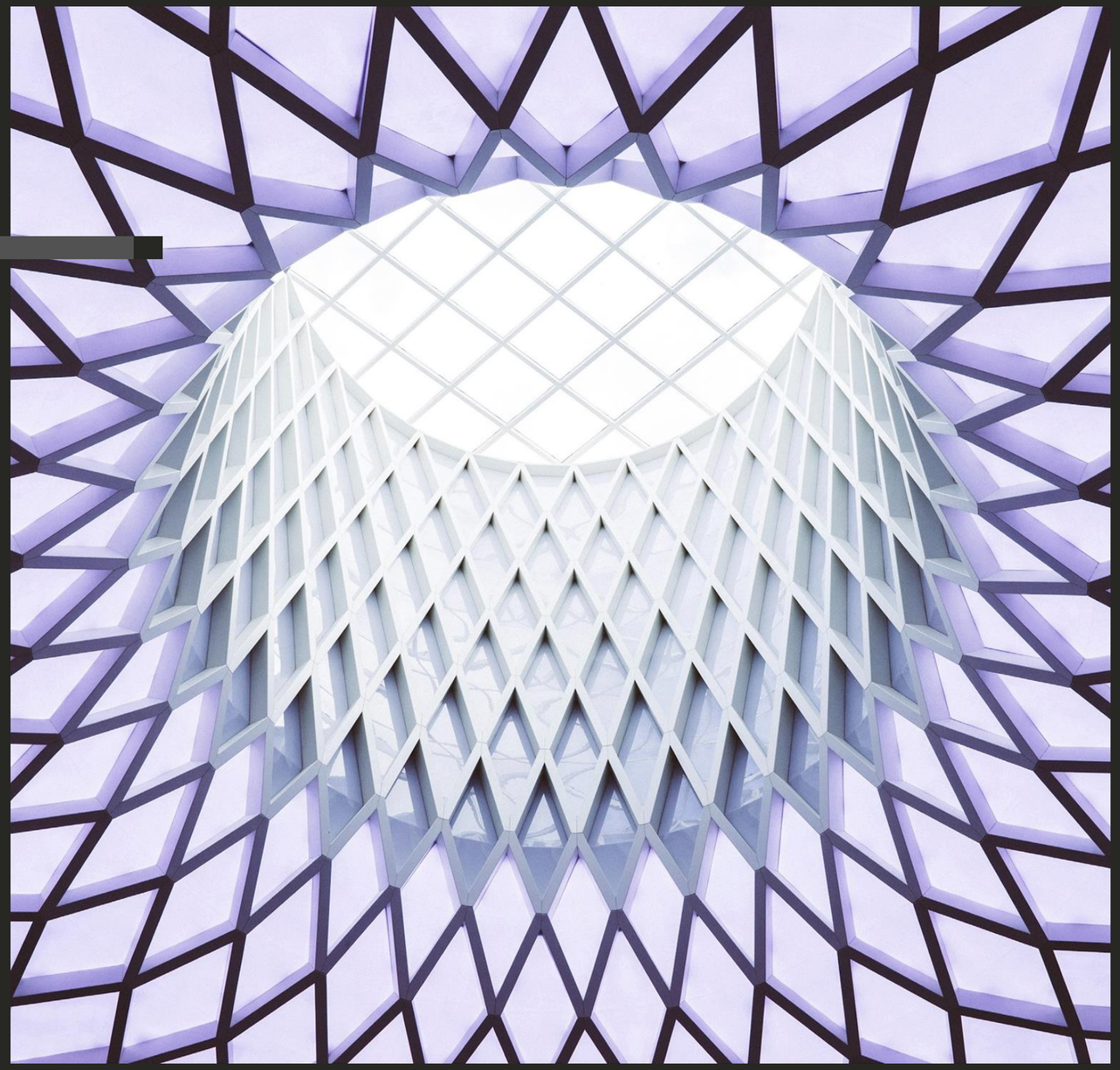
THE MALTINGS

M3 & M4

REV 03

Development Application
Sustainability Report



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DOCUMENT VERIFICATION

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EXECUTIVE SUMMARY

This Ecologically Sustainable Development (ESD) Report has been developed for a Development Application (DA). This has been prepared by Engineering Lab NSW Pty Ltd (trading as E-LAB Consulting) on behalf of Colliers International Project Management Ltd (Colliers) for the proposed redevelopment of The Maltings Stage M3 and M4 located Mittagong, NSW 2575.

This ESD Report accompanies the Development Application (DA) to Wingecarribee Council and provides an overview of the sustainability targets and design responses in place.

The Maltings is a multi-stage redevelopment to a heritage building which consists of the M1 & M2 and Maltster's House stage and the M3 & M4 stage. This DA is for the M3 & M4 stage which this report supports in application.

The project aims to create facilities and spaces that support the activities within which aims to enhance the user experience whilst working and respecting within the heritage of the building and its façade. The project aims to meet the following objectives through design, initiatives and planning:

- Develop an environmentally sustainable retreat which connects occupants to the environment and ecological cycles of the region, delivering social and economic outcomes to the Southern Highlands tourist economy.
- Protecting, improving and reviving the ecology of the site through biodiversity and water conservation and improvement.
- Ensure high levels of indoor environmental quality for occupants through a healthy regenerative environment and sustainable practices.
- Celebration of nature and the native site through building and landscape spaces and designs.
- Conservation and re-purposing of the heritage sites and building re-use to reduce material consumption.
- Develop spaces with flexibility and multi-use to ensure longevity of project.
- Minimise carbon and environmental footprint through minimising demand, supplying efficiency, utilising existing site resources and offsetting where possible to achieve carbon positive operation.
- Implement an environmentally responsible procurement strategy and maintenance strategies for materials to reduce waste and support circular economy principles.

CONTENTS

Click the sections below to navigate to each section of the report

Introduction

1 INTRODUCTION

This section provides a brief overview of :

a. The purpose of this document
b. The project background
c. The project site and context

Sustainable Initiatives

3 SUSTAINABLE INTIATIVES

In this section, the design initiatives are detailed for The Maltings – M3 and M4.

These sustainable design responses have been carefully selected to meet the objectives of the project whilst considering the broader impact on the environment, economy and society.

State Environmental Planning Policy 2022

2 STATE ENVIRONMENTAL PLANNING POLICY 2022

In this section, details on the State Environmental Planning Policy (SEPP) for Sustainable Buildings 2022 will be outlined. Additionally, design responses in place for The Maltings – M3 and M4 will be detailed in accordance to the policy.

Summary

4 SUMMARY

This section covers the summary of the report in a concise manner.

This will provide a brief overview of the design principles and objectives of The Maltings.

1 INTRODUCTION

This section provides a brief overview of :

a. The purpose of this document

b. The project background

c. The project site and context

Image courtesy of John Wenban

1.1 Purpose

This Ecologically Sustainable Development (ESD) Report has been developed for a Development Application (DA). This has been prepared by Engineering Lab NSW Pty Ltd (trading as E-LAB Consulting) on behalf of Colliers International Project Management Ltd (Colliers) for the proposed redevelopment of The Maltings Stage M3 and M4 located Mittagong, NSW 2575.

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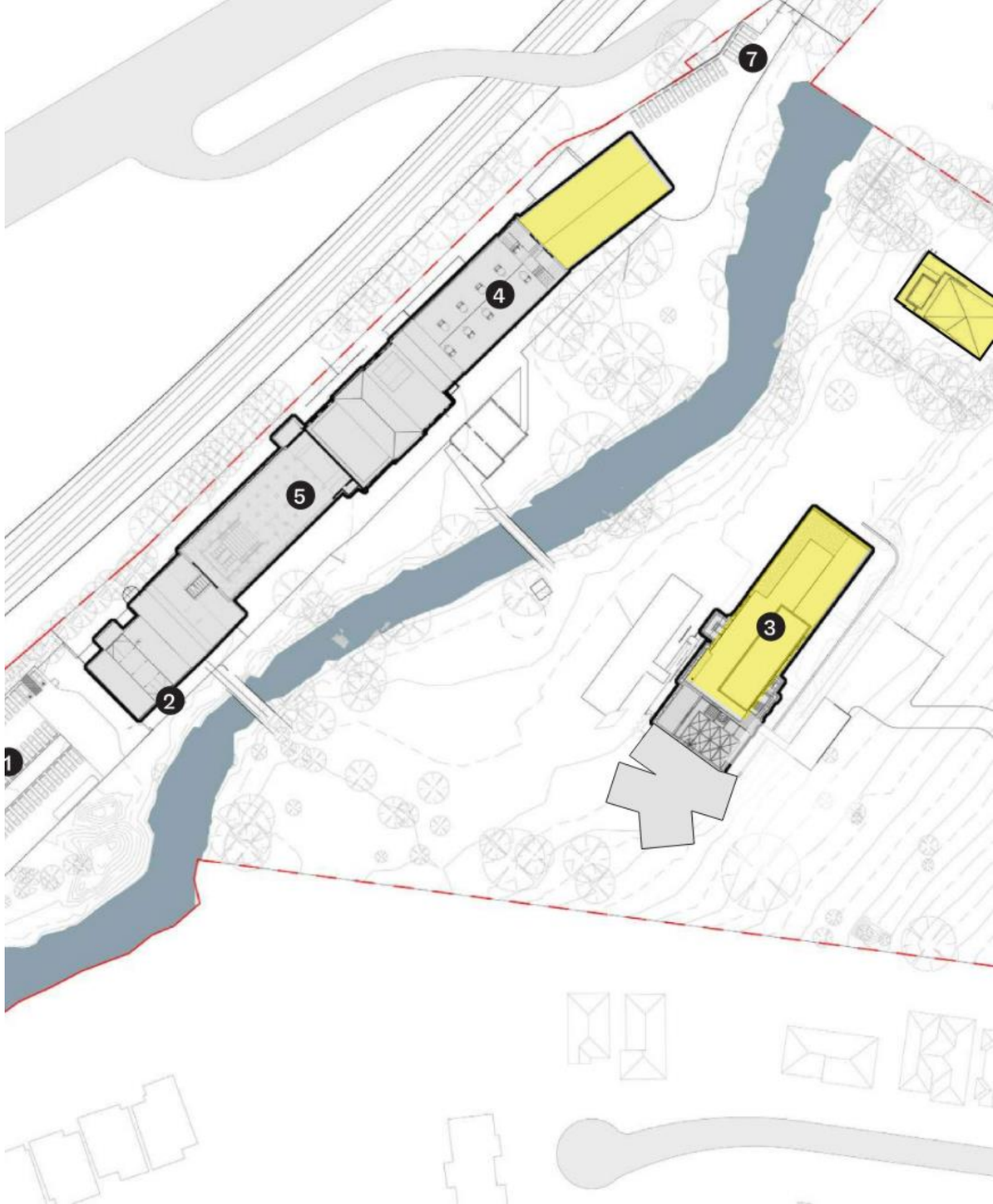
The Maltings is a multi-stage redevelopment to a heritage building which consists of the M1 & M2 and Maltster's stage and the M3 & M4 stage. This DA is for the M3 & M4 stage which this report supports in application.

1.2 Project

The Maltings, established in 1899 was a large three-malthouse complex in Mittagong NSW in the Southern Highlands which supplied malt to breweries across NSW. Listed as a local council heritage building, Colliers is aiming to repurpose the buildings into a boutique hotel and facilities centre which aims to retain the heritage construction and exterior while transforming the internal spaces.

This report is focused on the M3 & M4 stages of the project which seeks development consent for the following;

- Redevelopment of M3 and M4;
    - Demolition of internal spaces of the buildings, floors, roofs and cladding
    - Redevelopment (alteration and addition) of a 5-storey facilities building (M3) which provides multiple gallery spaces, terrace spaces, lounge, dining and bar along with associated amenities and a pool.
    - New extension of a 7-storey hotel accommodation building (M4) to M3 which provides standard and studio hotel rooms (additional guest suite) with associated amenities, private terrace, basement level with gym, parking, laundry, storage etc.
    - Associated outdoor car parking with 48 spaces and additional private garage with 4 underground car spaces under M4



1.3 Objectives

The project aims to create facilities and spaces that support the activities within which aims to enhance the user experience whilst working and respecting within the heritage of the building and its façade. The project aims to meet the following objectives through design, initiatives and planning:

- Develop an environmentally sustainable retreat which connects occupants to the environment and ecological cycles of the region, delivering social and economic outcomes to the Southern Highlands tourist economy.
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- Implement an environmentally responsible procurement strategy and maintenance strategies for materials to reduce waste and support circular economy principles.

1.3 Site Description

The project is located at 2 Colo Street, Mittagong NSW 2575 and has no direct road access, however, is opposite of Old Hume Highway. Mittagong is a town located within the Southern Highlands and is under the Wingecarribee Shire (Local Government Area).

The site is legally defined as Lot 21 DP1029384 and is bounded by Old Hume Highway, Ferguson Crescent and Railway Crescent.

The site itself houses the 3 building complex of The Maltings surrounded by trees, lawn and vegetation. The site expands further out with additional vegetation, however, is bordered by residential development. The immediate site context is residential which includes homes, hotels, schools and some retail.

The Maltings is located in the northern-centre of Mittagong which is bordered by Renwick and Bowral on the east and west. Mittagong Railway Station is located approximately 1 kilometre away from the site with major bus stops also located near by the Maltings.

Image courtesy of Google Maps

1.3 Site Identification

ITEM	DEFINITION
Site Address	2 Colo Street, Mittagong NSW 2575
Legal Description	Lot 21 in DP1029384
Minimum Site Area	700 sqm
Municipality	Wingecarribee Shire Council
Heritage	The Maltings Conservation Area Significance: Local

2 STATE ENVIRONMENTAL PLANNING POLICY 2022

In this section, details on the State Environmental Planning Policy (SEPP) for Sustainable Buildings 2022 will be outlined.

Additionally, design responses in place for The Maltings – M3 and M4 will be detailed in accordance with the policy.

Image courtesy of Medich Family Office

2.1 SEPP Overview

The NSW Government has introduced the State Environmental Planning Policy (SEPP) for Sustainable Buildings 2022 to ensure new and renovated buildings are sustainable and resilient for the future climate and bring NSW towards net zero emissions.

As part of the SEPP, the following is required to be addressed in developments as minimum:

- General Sustainability – reporting on general performance, including water conservation, waste minimization and use of renewable energy.
- Embodied Emissions Reporting – disclose at development application and construction certificate the quantities of materials and associated emissions.

  Describe how embodied emissions are minimised (by re-used or recycled content and low emissions construction technologies).

Being a non-residential building that involves alterations to an existing building, Clause 3.2 of the SEPP is required to be addressed as minimum requirements:

- The minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials.
- A reduction in peak demand for electricity, including through the use of energy efficient technology (standard for energy use in hotels/motels is 4-Star NABERS Energy rating).
- A reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design.
- The generation and storage of renewable energy.
- The metering and monitoring of energy consumption.
- The minimisation of consumption of potable water (standard for water use for large commercial development is 3-Star NABERS Water rating).
- Attributable embodied emissions of the development quantified.

2.2 SEPP Responses

REQUIREMENT	RESPONSE
General Sustainability – reporting on general performance, including water conservation, waste minimization and use of renewable energy.	This report provides an outline on general sustainability strategies that are being proposed along with sustainability principles and specific design responses. Refer to Section 3.6 for strategies on water conservation, refer to Section 3.7 for strategies on waste minimization, refer to Sections 3.2 and 3.4 for use of renewable energy. This report details all sustainability aspects which can be referred to for this requirement.
Embodied Emissions Reporting – disclose at development application and construction certificate the quantities of materials and associated emissions. Describe how embodied emissions are minimised (by re-used or recycled content and low emissions construction technologies).	Refer to Sections 3.4 and 3.7 for the Carbon Positive and Material strategies which are proposed to reduce embodied emissions through careful selection of materials and processes. The redevelopment will provide site wide quantity survey documentation to list the quantities of materials and associated emissions. This will be provided separate to this ESD report.
The minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials.	Refer to Section 3.7 for the proposed strategies in place for waste minimisation associated to demolition and construction. The redevelopment aims to retain the building as much as possible which allows reuse of materials, structure, fabric etc. Additional strategies are proposed to minimise construction and demolition waste.
A reduction in peak demand for electricity, including through the use of energy efficient technology (standard for energy use in hotels/motels is 4-Star NABERS Energy rating).	Refer to Sections 3.2, 3.3, 3.4 and 3.8 for a collection of proposed strategies in place to reduce peak demand of electricity and energy. Additionally, the redevelopment is designing for a 5-Star NABERS energy rating.

2.2 SEPP Responses Cont.

REQUIREMENT	RESPONSE
A reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design.	Refer to Sections 3.2 and 3.3 for proposed strategies regarding lighting and lighting controls along with discussion on the proposed heating, ventilation and air conditioning (HVAC) system which works in conjunction with the adaptive thermal comfort strategy. Refer to Section 3.8 for additional passive design strategies in accordance with National Construction Code (NCC) Section J Energy Efficiency.
The generation and storage of renewable energy.	The project is proposing to install solar photovoltaic (PV) arrays to support energy consumption through renewable energy generation with a potential of a 50 kWp system across approximately 350 sqm.
The metering and monitoring of energy consumption.	Refer to Section 3.2 which discusses strategies in place for energy efficiency and includes proposed metering and monitoring of energy usage and consumption.
The minimisation of consumption of potable water (standard for water use for large commercial development is 3-Star NABERS water rating).	Refer to Section 3.6 for the proposed strategies in regards to consumption of potable water. The redevelopment is aiming to reduce consumption of potable water and handle water with importance.
Attributable embodied emissions of the development quantified.	The redevelopment will provide site wide quantity survey documentation to list the quantities of materials and associated emissions. This will be provided separate to this ESD report

3 SUSTAINABLE INTIATIVES

In this section, the design initiatives are detailed for The Maltings – M3 and M4.

These sustainable design responses have been carefully selected to meet the objectives of the project whilst considering the broader impact on the environment, economy and society.

Image courtesy of Blake Sharp – Wiggins/Daily Mail

3.1 Objectives

To demonstrate excellence in sustainability, the M3 & M4 stages of the redevelopment is targeting the following sustainability outcomes:

- Develop an environmentally sustainable retreat which connects occupants to the environment and ecological cycles of the region, delivering social and economic outcomes to the Southern Highlands tourist economy.
- Protecting, improving and reviving the ecology of the site through biodiversity and water conservation and improvement.
- Ensure high levels of indoor environmental quality for occupants through a healthy regenerative environment and sustainable practices.
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3.2 Energy Systems and Efficiency

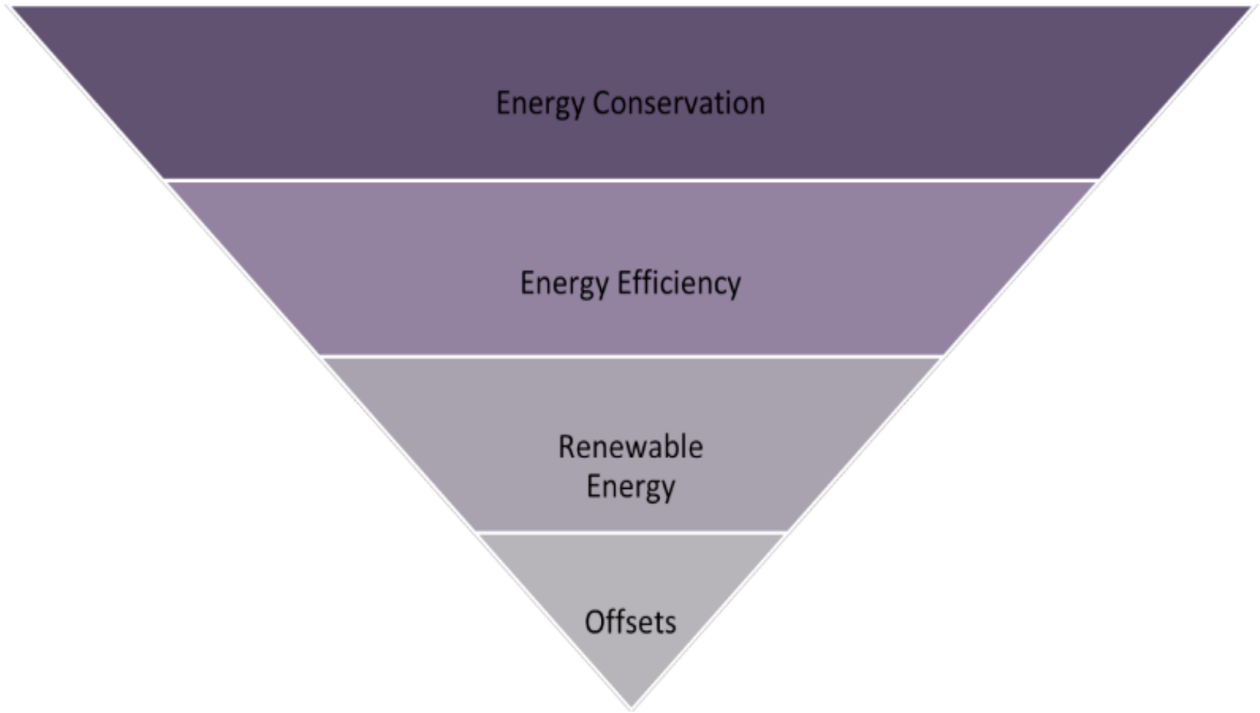
Low carbon economy and reduction in global temperature increase impacts will be addressed through comprehensive and complete consideration of how the development consumes resources, including energy, water, and material efficiency.

The proposed energy efficiency strategy generally follows the energy efficiency pyramid. In the first instance demand for greenhouse gases will be reduced.

This will be achieved by firstly removing the need for energy to be consumed where possible, and then making remaining systems more efficient. This will be through careful and efficient design of lighting, mechanical systems, and appropriate services.

Once energy efficiency initiatives and optimisation strategies have been delivered, renewable energy sources will be considered. With roof mounted solar PV systems to be installed at a rate that maximises the coverage of the non-trafficable area that is available.

Only after all the above steps have been completed will carbon offsets be used to close the gap and achieve neutrality. The issue regenerative impacts in respect to delivering a carbon positive outcome is further discussed in the following sections which works in hand with energy reduction and efficiency.



Hierarchy of Design – Energy Efficiency

3.2.1 HVAC System

Since the required mechanical heating, ventilation and air-conditioning (HVAC) systems will be a significant contributor to the energy consumption of the development, their optimal design and selection will be an important consideration in achieving the desired energy efficiency and consumption reduction. Through an initial comparison and analysis undertaken, it is being recommended that the project adopts a distributed HVAC strategy which works in conjunction with the adaptive thermal comfort strategy proposed, which is discussed further in the report.

It is also being recommended that the project employs an all-electric central plant which works in conjunction with on-site solar photovoltaic (PV) supplemented by an all-electric ground source heat pump.

STRATEGY	DESCRIPTION	COMMENTS
All-electric central plant	Elimination of on-site natural gas consumption for domestic hot water, space heating and pool heating and all electric kitchen. Heating and cooling will be supplied purely by electricity.	All electric central plant will supply heating and cooling to spaces without the use of gas. This will result in higher carbon emissions immediately however will reduce in the future with the low carbon grid.
Solar PV	Solar PV system will be employed on site to capture sunlight and convert into electricity which can supplement and support the all-electric central plant.	The Solar PV array will assist with reducing peak loads and support the all-electric servicing strategy being adopted for the redevelopment.
Ground source heat pump	Utilise stable ground temperatures for space conditioning reducing direct load on electricity. Depends on ground conditions and can support the all-electric central plant.	To confirm the viability of the geothermal solution proposed a combination of the annual operational heating / cooling balance as well as ground conductivity and heat transfer will be needed, which will be undertaken in the subsequent design stages.

3.2.2 Ground Source Heat Pump

The recommended supplementary ground source heat pump strategy can supplement the central plant through providing additional cooling and heating supply offering which in turn can help reduce energy consumption. The following benefits:

- ***Electrification***: No gas combustion which supports the proposed all-electric central plant servicing strategy and the total electrification of site.
- ***Efficiency***: Improving efficiency of existing system.
- ***Acoustics***: Reduce the need for fan driven heat rejection improving acoustics for the site and specifically the hotel rooms.

Ground source heat pumps, however, will require the following to be met for effective integration:

- ***Energy Balance***: Long term operation requires heating and cooling balance for plant efficiency and capacity. Initial assessment of the site annual energy for M3 and M4 suggests there is a balance between these (with minimally more cooling). This will need to be confirmed in later design stages.
- ***Ground Condition***: Ground conductivity and heat transfer are aspects that will need careful consideration as it will impact the efficiency and size of the plant. This will also need to be confirmed in later design stages.

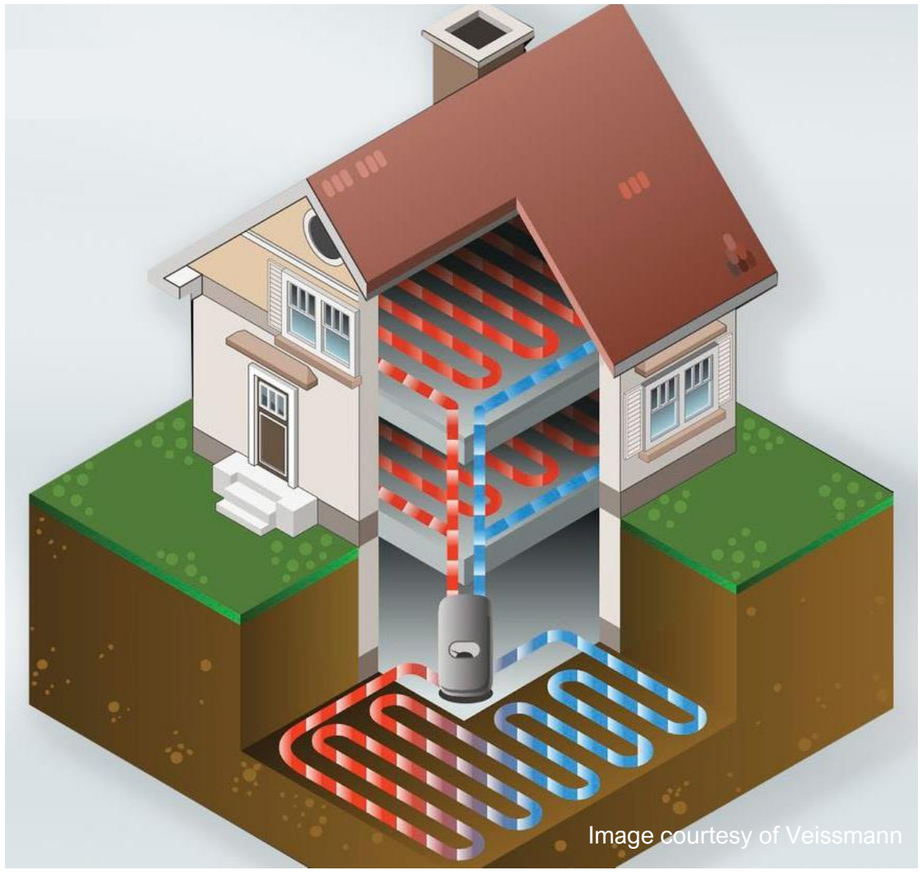


Image courtesy of Veissmann

3.2.3 Energy Efficiency Strategies

Preliminary assessments of the energy consumption and breakdown have allowed tailored energy reduction and efficiency strategies.

The following are considerations for the strategies:

Passive Design

- Landscaping designed to provide optimal shading where required allowing for evapotranspiration, landscaping provided on terraces for moderating heat build-up and radiant temperatures reducing cooling reliance.
- Architectural design of circulation corridors and nodes allowing internal air to be controlled and minimise energy required through prioritising internal spaces to be heated or cooled.
- Provision of water features, pools and terrace gardens allowing evaporative and natural cooling.
- Glazing selection that is optimised and off-sets the underperformance of heritage retained fabric.

Active Intervention

- Potential for fan assisted air movement in communal and semi-outdoor spaces
- Total electrification on-site meaning no gas, allowing project to be ‘net zero ready’.
- All electric central plant supplemented with potential ground source heat pump which will be selected to have higher energy efficiency and bespoke effective control systems for optimal usage.
- Efficient luminaires and advanced lighting control to be installed which includes high efficiency light emitting diode (LED) lighting systems to reduce energy consumptions along with controls such as motion sensors, time clocks and zone switching especially within hotel rooms.
- Installation of a roof mounted solar PV arrays to support energy consumption through renewable energy generation, potential of 50 kWp system across approximately 350 sqm.
- Energy meters, controls and monitoring systems to be provided allowing systems to be controlled to reduce energy consumption when not required and monitor trends for future improvements.
- Hot water systems to be selected with high efficiency which can potentially be supported by PV systems.

3.3 Adaptive Thermal Comfort

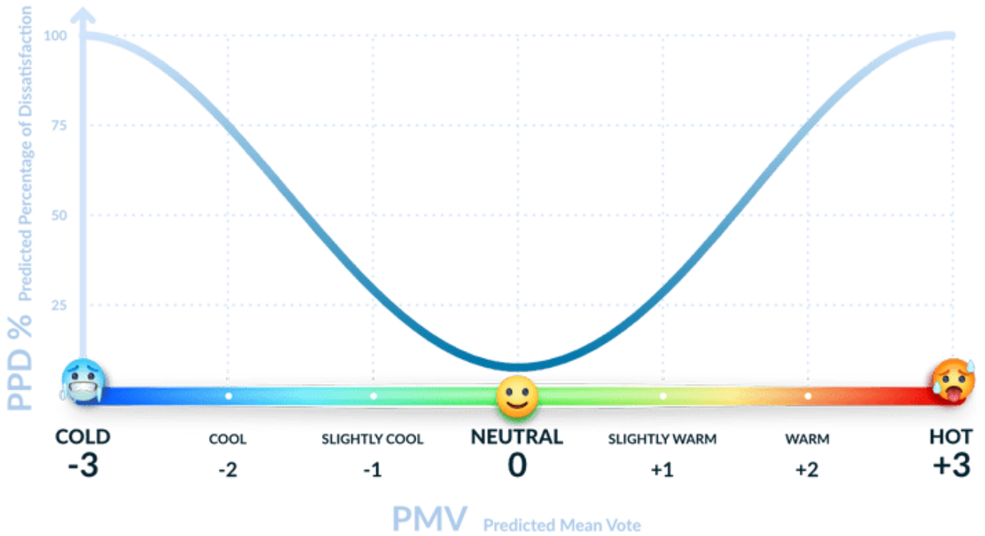
The Maltings will aim to provide a boutique hotel and facilities experience which will be enhanced through an adaptive thermal comfort strategy which aims to provide different thermal comfort parameters based on the space. This changing thermal comfort strategy will provide a multi-sensory thermal journey enhancing the spaces and providing comfort to occupants which is considered optimal.

Through the proposed adaptive thermal comfort strategy the development aims to provide comfortable spaces across the development while reducing demand on the HVAC system and in turn reduce energy consumption through combining natural and mechanical ventilation, cooling and heating.

While variation in comfort is plausible, the M3 section of the redevelopment will thoroughly focus on occupant thermal comfort to ensure no sacrifices are applied in the hotel rooms.

The Maltings will include a range of spaces which include fully outdoor terraces, semi-conditioned indoor transition spaces and fully conditioned indoor spaces. Based on the use and function of the space, the heating and cooling set-points can be relaxed and thus reduce demand on the HVAC system.

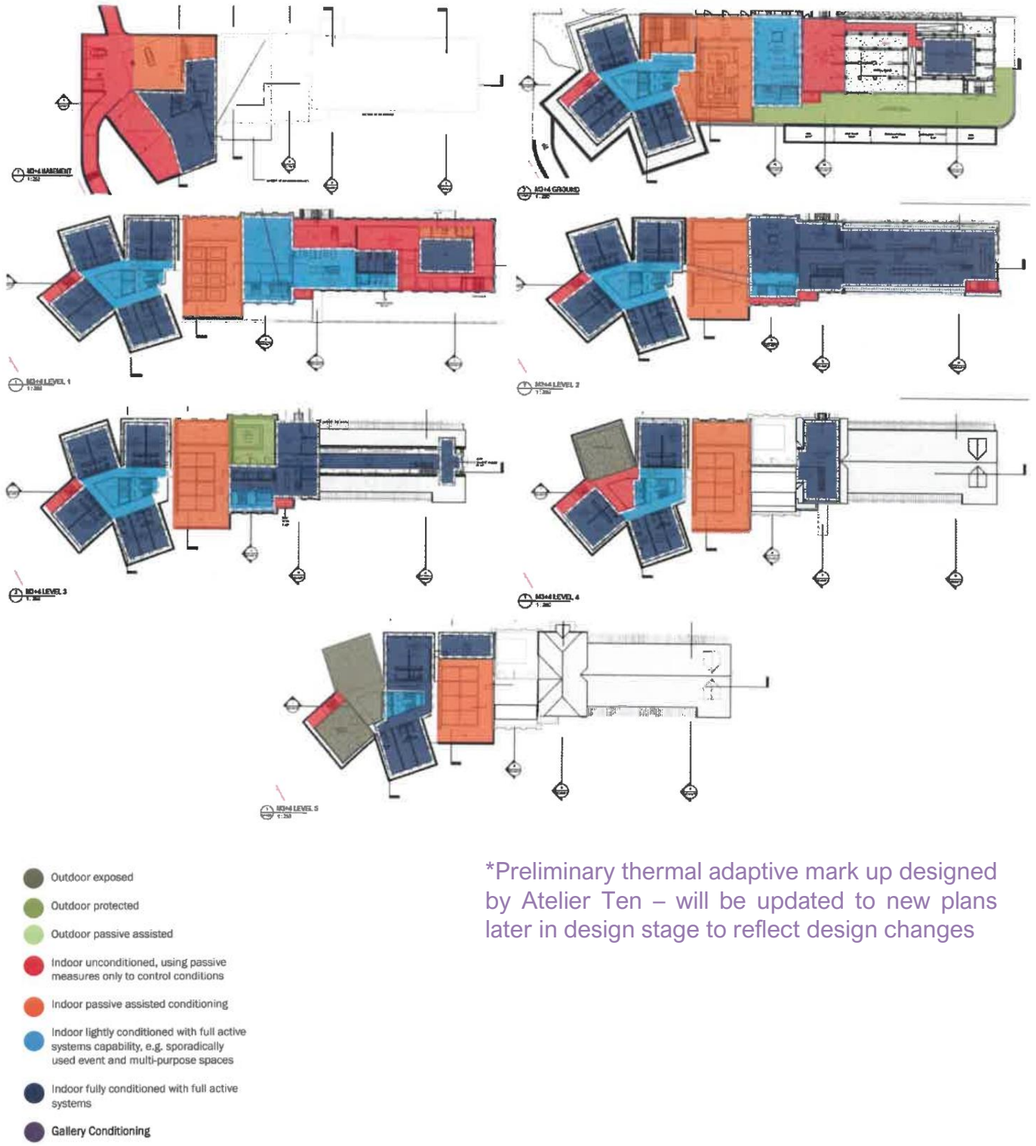
Factors impacting thermal comfort



Predicted mean vote measuring system to quantify comfort

3.3.1 Functional Thermal Control Breakdown

SPACE TYPE	DESCRIPTION	SET POINT
Outdoor exposed	Limited total control Fully exposed	Outdoor conditions and solar
Outdoor protected	Limited control over temperature Limited control over solar exposure Use of landscape, materials and air movement	Outdoor conditions and solar
Outdoor passive assist	Limited control over solar exposure Use of fans, evaporation, active thermal mass	Outdoor conditions +/- 2 ºC
Indoor unconditioned	Some control over solar exposure Some control over air movement Use of air movement, materials and shading	Outdoor conditions +/- 4 ºC
Indoor passive assist	Some control over solar exposure Some control over air movement Use of fans, evaporation and active thermal mass	Operative temperature 22 +/- 6 ºC
Light conditioning	Good control over solar exposure Good control over air movement Use of active conditioning systems to supplement passive design	Operative temperature 22 +/- 4 ºC
Indoor conditioned	Good control over solar exposure Good control over air movement Use of active conditioning for fully conditioned environment	Operative temperature 22 +/- 2 ºC
Gallery conditioning	High control over solar exposure High control over air movement Use of active conditioning for fully conditioned environment	Operative temperature 21 +/- 2 ºC Relative humidity 55% +/- 5



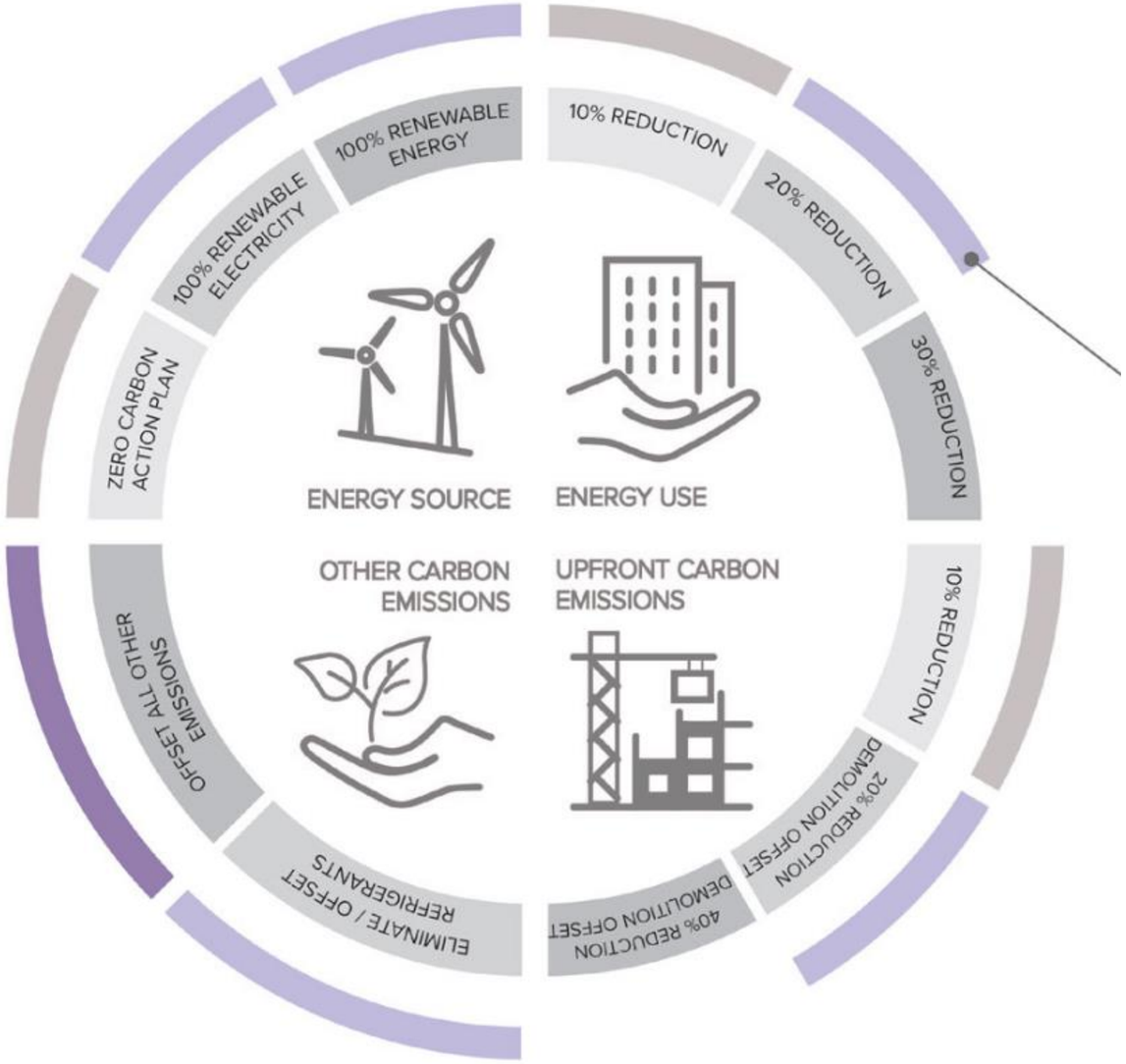
*Preliminary thermal adaptive mark up designed by Atelier Ten – will be updated to new plans later in design stage to reflect design changes

3.4 Carbon Positive

The project aims to support the push towards carbon neutral and carbon positive to actively contribute to the Net Zero Plan.

The approach will be an elimination or reduction-first outcomes based approach.

Additionally, off-setting in conjunction with passive design elements will reduce emissions and in turn provide long-term resilience.



3.4.1 Carbon Positive Strategies

To achieve the carbon positive outcome being targeted the response proposed for the Maltings redevelopment:

Design, Documentation and Construction Principles

- Building construction minimises embodied greenhouse gas emissions and offsets the remainder.
- Building operation minimises greenhouse gas emissions and offsets the remainder.
- Pursue climate positive operations through a strategic hierarchy of reducing carbon demand, supplying services efficiently, harvesting resources renewable on-site, purchasing remaining resources from renewable supplies, and offsetting any remaining greenhouse gas (GHG) emissions.
- All energy flows are metered and reported to the building management system (BMS) for real-time monitoring.

Performance Targets

- Design for a 5-Star or ‘Excellent’ NABERS Energy rating outcome for the total site.
- Assess occupant comfort against comfort standards, recognising variable set points.
- Generate at least 50 kWp of roof mounted solar PV on site (inclusive of all stages – 350 sqm of PV).
- Eliminate combustion within building for general heating.
- Minimise the use of high embodied carbon materials, prioritising natural and regenerated materials.
- Procure all operating energy as Green Power.
- Offset all remaining operational GHG emissions.

3.5 Climate Change & Context

The Maltings redevelopment is aiming to future proof itself from climate change risks.

To achieve this risk assessments of the potential impacts of climate change are needed, (such as flooding, extended periods of high temperature, rises in utility infrastructure costs etc.) to be undertaken and dedicated design responses to be included which specifically address risks deemed to be relevant or high.

The redevelopment will investigate these climate change risks in the subsequent design stages.

Projected climate change is based on the climate system, historical trends and outputs from climate models. These climate models are used to understand and predict changes in the earth's climate system through mathematical processes.

The primary source for NSW climate projections is through NSW and ACT Regional Climate Modelling (NARCliM). These projections were released in 2020 using the most current and widely available global climate models available. The NARCliM models employ the A2 emissions scenario developed by the Intergovernmental Panel on Climate Change (IPCC). Two time scales are provided, the near future (2020-2039) and far future (2060-2079).

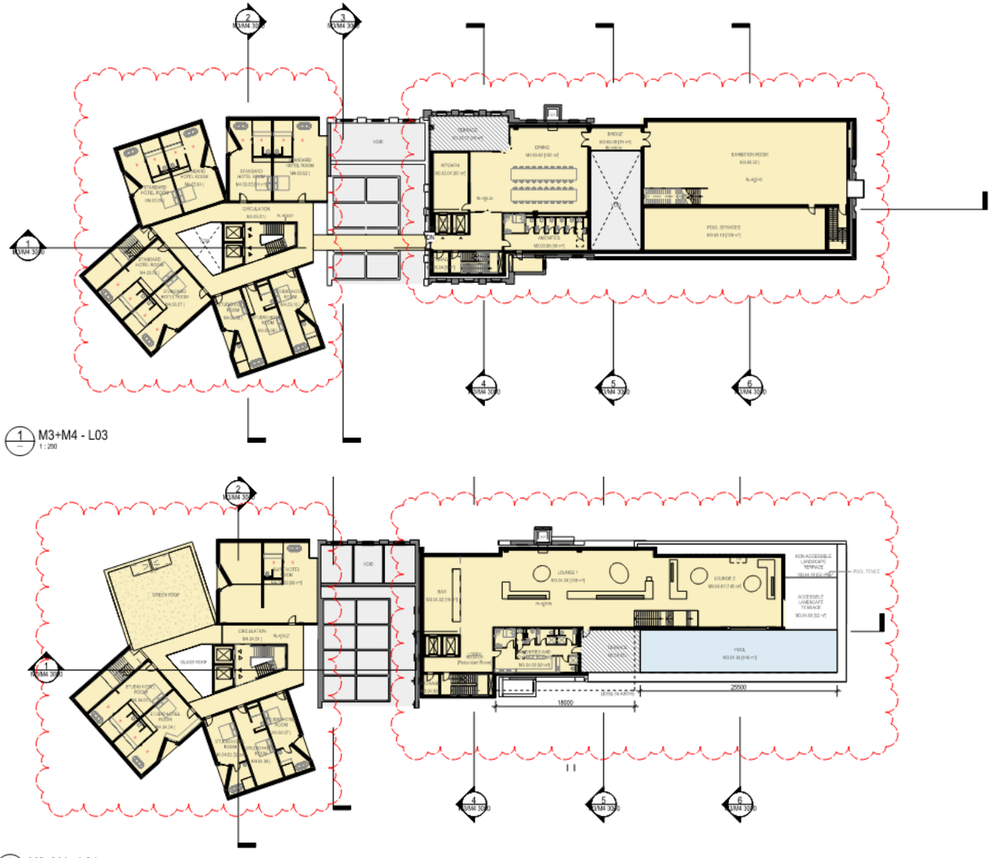
The following table summarises the climate projections for the South East and Tablelands region which is susceptible to heatwaves (inclusive of Mittagong) from the NARCliM projections:

CATEGORY	NEAR FUTURE (2020-2039)	FAR FUTURE (2060-2079)
Maximum Temperatures	+0.5 – 1.0°C	+1.8 – 2.5°C
Minimum Temperatures	+0.4 – 0.7°C	+1.4 – 2.3°C
Number of Hot Days (above 35°C)	5 – 10 additional days	+ 30 additional days
Number of Cold Days (below 2°C)	10 – 20 fewer days	+ 40 fewer days
Autumn/Summer Rainfall	Increase	
Spring/Winter Rainfall	Decrease	
Fire Weather	Increase in average and severe fire weather in Summer and Spring Decrease in severe fire weather in Autumn	

3.5.1 Climate Change Resilience

Design Considerations

- Resilience to short term changes (near future – gradual extreme weather and utility failure).
- Resilience to long term stresses (far future – climate change, temperature increases etc).



Level 03 and Level 04 Floor Plans

Design Responses

- Renewable energy generation through PV systems to supplement peak loads.
- Refurbished thermal comfort strategy aiding optimised HVAC system.
- Landscaping to aid temperature increases along with native and endemic plantation.
- Oversized civil and stormwater systems to be designed to compensate increasing rainfall and storms.
- Consideration of lighter materials and pools to combat increasing urban heat island effect
- Green roofs applied to aid in cooling building and combat urban heat island effect
- Additional responses are to be developed in later design stages.

3.6 Water Efficiency

To achieve responsible water consumption and a water sensitive urban design, best practice water saving initiatives will be implemented throughout the redevelopment. As the development is a hotel and accompanying facilities, water consumption will primarily be driven by a combination of the water efficiency of fixtures and fittings and user behaviour. Specifically, M3 and M4 will accommodate multiple guest. In consideration of this, high water efficiency fixtures and fittings will be used, and water use monitoring will be implemented to reinforce responsible use by guests.

Design Principles

- Treat and manage water as an important resource.
- Minimise water use, focusing on reduction of potable water.
- Limit landscape, terrace garden and green roof water consumption through planting of native and endemic plant species.
- Capture, treat and reuse water on site wherever practical.
- Allow guests and staff to monitor water use especially within hotel rooms.

Design Responses

- No potable water to be supplied to non-potable uses.
- Water Efficiency Labelling Standards (WELS) rating for all fixtures to be in line with Green Star Design & As Built.
- Achieve 2 points for native species in Green Star Design & As Built rating landscape calculator.
- Fitout building with separate non-potable supply wherever uses is required instead of potable water.
- Collection and re-use of rainwater.
- Pools to be provided with a pool cover that offers a minimum R0.05 thermal insulative performance to limit evaporation and improve thermal efficiency.

3.7 Materials and Waste Efficiency

The Maltings have considered a materials and waste management strategy for the development and site. At concept stage this is high level and will be detailed in the subsequent detailed design stages.

Building Re-use

The Maltings is considered a local heritage building with cultural and historic importance. Thus, this project aims to refurbish and redevelop the building with aims to preserve the overall structure and façade of the building while reconstructing the internal space. Inherently, this project reduces consumption of materials and reduces waste output through the re-use of the building.

This gives the project a unique opportunity to reduce material and resource usage and recycle materials from demolition which overall improves the sustainable design and reduces embodied carbon relative to a standard project.

In addition to building re-use facilitating waste reduction, the redevelopment will aim to reduce construction waste diverting a large portion of construction and demolition waste from landfill. Once operational, the facility management will implement an on-going waste management plan which allows waste to be effectively sorted, separated and recycled. This will ensure sufficient bins and appropriate separation systems are in place to further propagate waste minimisation and improve recycling.

Design Strategies

The environmental impact of materials will be achieved through the careful consideration of materials and finishes in terms of the following lifecycle implications:

- Eco-preferred and recycled content.
- Environmental impacts during product manufacture.
- Toxicity (e.g. polychlorinated biphenyls (PCB's), cadmium, lead); recycled content.
- Forestry practices (i.e. Programme for the Endorsement of Forest Certification (PEFC) or Forest Stewardship Council (FSC) certified).
- Validation of environmental credentials through independently verified and audited Environmental Product Declarations (EPDs) (e.g. Good Environmental Choice Australia (GECA) materials & products, Australian Forestry Certification (AFS) / FSC timber, etc.).

Indoor air quality will be improved through the combination of:

- Use of low volatile organic compound paints, sealants, adhesives and flooring.
- Setting of industry best practice formaldehyde emissions limits for engineered wood products.

3.8 NCC BCA Section J Energy Efficiency

The proposed redevelopment will be subject to compliance with the Building Code of Australia (BCA) Section J Energy Efficiency under the National Construction Code (NCC) 2022 Amendment 1 code by the Australian Building Codes Board (ABCB). This code places environmental performance requirements on the building envelope and services within the building which further outlines energy efficiency requirements for non-residential buildings to minimise greenhouse gas emissions.

The project will demonstrate compliance via Deemed-to-Satisfy (DtS) method – which requires the all new building fabric elements to meet the DtS requirements specified by Section J in the NCC 2022.

The Maltings is a significant heritage cultural and historic building hence the existing fabric is an integral part of the building. Thus, the DtS requirements will not be applied to the retaining fabric as altering this to meet NCC 2022 requirements will diminish and degrade such elements.

Hence, the scope of the Section J compliance is limited to areas that meet the following criteria:

- Non-Residential Areas
- Conditioned Spaces
- New Construction (Existing Heritage Fabric to be Omitted)

To aid in energy performance and improvement in addition to Section J requirements the project aims to adopt the following:

1. Only provide conditioning where and when absolutely required, working in conjunction with thermal comfort adaptability and tailor to function of the space
2. Where energy performance is impaired by air tightness or fabric performance use flexible temperature set points
3. Offset under performance of heritage fabric with high efficiency services where possible
4. Integrate energy generation on site using photovoltaics

3.8.1 Building Envelope

Glazing

The following outlines the indicative glazing options that may be implemented into the project. Section J requires a window/wall target U-value of 1.1 W/m^2.k for a hotel building and its facilities located in Climate Zone 7.

Window glazing requires selection to take building fabric insulation into consideration, refer to Section J Report to confirm these indicative values. These glazing values are to be selected and detailed in the detailed design stage.

The below values are whole of system values, including the impact of framing.

WINDOW OPTIONS	PROPOSED PERFORMANCE*
Triple glazed windows with argon gas and low E coating	Total System U-Value = 1.3
Double glazed windows with argon gas and low E coating	Total System U-Value = 2.0
Timber or uPVC window – double glazed with 3mm clear glass/6mm air gap/3mm clear glass	Total System U-Value = 3.0

*The values are whole of system values, including the impact of framing.

Building Fabric

The following outlines the indicative building fabric performance requirements for all new construction as per DtS requirements. This is the minimum performance required to Section J. Refer to Section J Report to confirm these indicative values and for the thermal envelope and insulation mark ups determining local variations.

ELEMENT	PERFORMANCE**
Roofs/Ceilings Exposed to Outside Air (Heat Flow Downward)	R_T -Value = 3.7 (solar absorptance ≥ 0.45)
Internal Ceiling Construction (Separating Conditioned and Unconditioned Spaces)	R_T -Value = 2.0
Concrete Slab on Ground (with no in-slab heating or cooling system presented) (Heat Flow Downward)	No additional thermal insulation requirement as per clause J4D7(2)
External Wall Construction	R_T -Value = 2.8
Internal Wall Construction	R_T -Value = 2.8
Heritage Fabric (Wall, Floor or Roof)	No additional thermal insulation.

**R-Value represents whole system, including thermal breaks, air gaps, bulk insulation and metal-on-metal contact.

4 SUMMARY

This section covers the summary of the report in a concise manner.

This will provide a brief overview of the design principles and objectives of The Maltings.

Image courtesy of Adara Rosalie

4.1 Summary

This report summarises the sustainability targets, strategies and commitments for the proposed redevelopment at The Maltings, Mittagong 2575. This report specifically covers the M3 and M4 stage of The Maltings redevelopment where the sustainability objectives and requirements have been discussed and coordinated with the design team.

This will allow the redevelopment to achieve a high level of sustainable practices across the entire refurbishment whilst meeting the objectives and goals of the spaces.

As part of its commitment to sustainability, the M3 and M4 stage of The Maltings has the following objectives in place:

- Develop an environmentally sustainable retreat which connects occupants to the environment and ecological cycles of the region, delivering social and economic outcomes to the Southern Highlands tourist economy.
- Protecting, improving and reviving the ecology of the site through biodiversity and water conservation and improvement.
- Ensure high levels of indoor environmental quality for occupants through a healthy regenerative environment and sustainable practices.
- Celebration of nature and the native site through building and landscape spaces and designs.
- Conservation and re-purposing of the heritage sites and building re-use to reduce material consumption.
- Develop spaces with flexibility and multi-use to ensure longevity of project.
- Minimise carbon and environmental footprint through minimising demand, supplying efficiency, utilising existing site resources and offsetting where possible to achieve carbon positive operation.
- Implement an environmentally responsible procurement strategy and maintenance strategies for materials to reduce waste and support circular economy principles.

Step 1: About the building

Fill out blue cells

Building location and site data	Value	Unit	Note	Comment
Building address	2 Colo Street, Mittagong NSW 2575 (Lot 21 DP 1029384)			
Postcode	2575		Required	Postcode of building
Town/city	ALPINE + 20 other localities		Town/city/suburb/region automated from postcode (may not give exact town name)	Town/city/suburb/region of the building site.
Distance to nearest major city/town		km	Enter for rural/regional locations only	Declare the shortest route by road to your site from the centre of your nearest major city (>100,000 people). The route must be traversable by a semitrailer truck.
Project stage	Development Application		Required	Stage of development
New build or major renovation?	Major renovation		Required	
Brownfield or greenfield site?	Brownfield		Required	

Floor area by NCC building classification	Gross (GFA)	Net (NLA/NSA/UFA)	Unit	Note	
Please enter all floor areas relevant to your building. Leave areas blank if not applicable. Please enter Gross Floor Area (GFA) for all building classifications. Please also enter the corresponding net area (Net Lettable Area, Net Sellable Area or Usable Floor Area) where it is commonly used for that building classification.					
Class 1a: Detached residential buildings			m²	Required for Class 1a: Detached residential houses, townhouses	Gross Floor Area (GFA), as defined by the AIQS Australian Cost Management Manual
Class 1b: Boarding houses and hostels	10,331		m²	Required for Class 1b: Boarding house, guest house, hostel	Net area (Net Lettable Area, Net Sellable Area, Usable Floor Area), as defined by the PCA's Method of Measurement
Class 2: Multi-unit residential buildings			m²	Required for Class 2: Multi-unit residential, including apartment buildings	
Class 3: Other residential buildings			m²	Required for Class 3: Other residential buildings	
Class 4: Residential inside non-residential			m²	Required for Class 4: Residential building inside a non-residential building, e.g., caretaker residence	
Class 5: Office buildings			m²	Required for Class 5: Office building	
Class 6: Retail buildings			m²	Required for Class 6: Retail building, e.g., shop, restaurant, café	
Class 7a: Carparks			m²	Required for Class 7a: Carparks	
Class 7b: Warehouse-type buildings			m²	Required for Class 7b: Warehouses, wholesalers and storage facilities	
Class 8: Industrial buildings			m²	Required for Class 8: Industrial buildings, e.g., factories and workshops	
Class 9a: Healthcare buildings			m²	Required for Class 9a: Healthcare, e.g., hospitals, clinics, day surgeries	
Class 9b: Civic buildings			m²	Required for Class 9b: Civic buildings, e.g., theatres, civic centres, train stations	
Class 9c: Aged care and personal care buildings			m²	Required for Class 9c: Aged care and personal care	
Class 10a: Non-habitable buildings			m²	Required for Class 10a: Non-habitable buildings including sheds, carports and private garages	
Class 10b: Miscellaneous structures			m²	Required for Class 10b: Miscellaneous structures, including fences, masts, antennas, retaining walls and swimming pools	
Class 10c: Bushfire shelters			m²	Required for Class 10c: Bushfire shelters not attached to a Class 1a building	
Total	10,331	0	m²	Required: Sum of m² inputs must be more than 0.	

Project information	Value	Unit	Note	
Total cost of project	47,000,000	AUD excl. GST	Required	Include labour, materials, transport, plant, equipment and professional fees. Exclude GST, land, finance, escalation and other costs.
Building design life	50	years	Required	If uncertain, enter 50 years
Estimated envelope life		years	Optional	
Estimated replacement cycle for mechanical services		years	Optional	
Estimated replacement cycle for vertical transportation		years	Optional	

Dimensions of the building and the site	Value	Unit	Note	
Site area	66,626	m²	Required	Total area of site to external boundary.
Shared services or infrastructure	No		Required	Indicate if there are shared services that the building utilises, or shared foundations, basement or podium
Building footprint area	2,340	m²	Required	Total floor area of the ground floor measured to the outside edge of the floorplate.
Typical floor area (if different to building footprint area)		m²	Only needed if different to row above	
Typical floor perimeter	308	m	Required	
Area of external carpark (not included in GFA)	1,480	m^2	Required. Enter 0 if not applicable.	
Area of external hardstand (not included in GFA)	0	m^2	Required. Enter 0 if not applicable.	
Area of other hard landscaping (not included in GFA)	598	m^2	Required. Enter 0 if not applicable.	Include all other impervious areas. For example, patios, paths and driveways (not already included in carparks and hardstands above).
Number of floors/storeys above ground, including ground floor	5	no.	Required	
Number of floors/storeys below ground	0	no.	Required. Enter 0 if not applicable.	
Number of floors/storeys of car parking	1	no.	Required. Enter 0 if not applicable.	
Total height above ground	23	m	Required	Measured from the average finished grade to the highest point of the building, excluding protrusions (lighting rods, masts, chimneys, etc.)

Structural material choices	Value	Unit	Note	
Foundation type	Piles		Required	
Frame type (dominant)	Reinforced concrete		Required	
Suspended floor type (typical)	Reinforced concrete		Only needed for multi-storey buildings	

Describe low carbon materials specified in your building (e.g. green concrete, low carbon bricks)	-Lower Carbon Concrete Or Ashcrete Envisia concrete by Bowral: lower carbon concrete with excellent performance benefits and plastic placement and finishing properties similar to conventional concretes. Allowing less cement to be used in the concrete manufacturing process without impacting on performance (50% cement replacement). Ashcrete: substitutes for traditional concrete. Ashcrete mitigate both the high rate of carbon dioxide production during cement production and the disposal of fly ash, a residue of coal-based energy production. It is more environmentally friendly when compared to cement concrete. -Brick: We would look at locally manufactured Brick (Bowral brick). While the brick has not been specified yet, we are investigating low carbon bricks made from recycled construction and demolition waste from the site.		Required	
Describe recycled content specified in your building (e.g. recycled steel)	-Concrete: The quality of the existing concrete is very low and it is largely lightly or in places unreinforced. Concrete can be crushed and reused in new pavements / Low carbon Bricks etc. on the site and within the building. -Cast Iron Columns: The columns from M1 are all to be salvaged, retained and will be re-used as part of the landscape on the site. -Timber: The major material to be dismantled is timber. It forms floor framing, flooring, columns, roof trusses, roof beams and other elements. Much of the timber is damaged but much of it is capable of future use, even if not structurally. It is proposed to dismantle the timber elements and milled for new purposes and retained on site for re-use. The aim is to re-use as much timber as possible on the site as part of the works. Timber can be used for linings, cladding, joinery and new furniture. -Steel elements: Steel falls into several forms: structural steel that is exposed and steel that forms part of the concrete structures. Much of the steel is very deteriorated and will be recycled. Some elements, where they are sound will be assessed for potential re-use on site.		Required	

Step 2: Quantity of materials

Complete all blue cells that are applicable to the building. Leave items that aren't applicable blank.

Fill out blue cells

Material category	Sub-category 1	Sub-category 2	Sub-category 3	Value	Unit of measure	Comment	AIQS ACMM Code	ICMS3 (Level 3 Codes Construction)
Structure								
The structural parts of the building that are below ground (substructure) and above ground (superstructure). This includes fill below the substructure, foundations, basement levels, suspended floors, wall structure, roof structure, stairs, lift shafts and balconies. It excludes external areas such as hardstands, carparks, patios, etc.								
Coverage of structural material spend	-	-	-	81	%	Required. Coverage of spend for structural elements entered below. Minimum requirement = 80%. Exclude head contractor preliminaries and margins.		
Concrete in-situ	≤10 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>10 MPa to ≤20 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>20 MPa to ≤32 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>32 MPa to ≤40 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>40 MPa to ≤50 MPa	-	-	4,662.0	m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>50 MPa to ≤60 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>60 MPa to ≤80 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>80 MPa to ≤100 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>100 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete pre-cast panel	-	-	-		m³	Please enter reinforcing steel in relevant line items below. If not known at DA stage, please make your best estimate. If not known at CC stage, please ask your supplier.	01_SB or 02-11	02 or 03
Concrete block	Hollow core	-	-	153.0	m³	Enter as cubic metres, calculated as (area in m²) * (thickness in mm / 1000). Please include all block fill concrete and all reinforcing steel in relevant line items above/below.	01_SB	02 or 03
Concrete block/brick	Solid	-	-		m³	Enter as cubic metres, calculated as (area in m²) * (thickness in mm / 1000)	01_SB	02 or 03
Concrete block/brick	Solid AAC	-	-		m³	Solid Aerated Autoclaved Concrete (AAC) block. Enter as cubic metres, calculated as (area in m²) * (thickness in mm / 1000).	01_SB	02 or 03
Mortar	-	-	-		kg		01_SB	02 or 03
Reinforcing steel	Bar & mesh	-	-	528,120	kg	**Include all reinforcing steel bar/mesh in the building's structure in this row.** Usually this is calculated as kg/m³ per concrete element and then summed. Example: 10 m³ of 40 MPa concrete @ 100 kg/m³ + 5 m³ of 50 MPa concrete @ 150 kg/m³ = 1,750 kg reinforcing steel.	01_SB or 02-11	02 or 03
Reinforcing steel	Fibre & strand	-	-		kg	**Include all steel fibre reinforcing and steel strand in the building's structure in this row.**	01_SB or 02-11	02 or 03
Structural steel	Hot rolled structural	-	-		t	Examples include universal beams, universal columns and welded beams	01_SB	02 or 03
Structural steel	Cold formed structural	-	-		t	Examples include C purlins, Z purlins and all light gauge steel framing	01_SB	02 or 03
Structural steel	Other welded structural	-	-		t		01_SB	02 or 03
Structural steel	Plate	-	-		t	Include any allowance for connections here	01_SB	02 or 03
Structural steel	Sheet	-	-		t		01_SB	02 or 03
Stainless steel	-	-	-		t	Primarily for engineered timber structure connections	02_11	02 or 03
Reinforced concrete piles	Concrete	-	-	1,904	m³	Please enter reinforcing steel in the line below. If not known at DA stage, please make your best estimate. If not known at CC stage, please ask your supplier.	01_SB	02 or 03
Reinforced concrete piles	Steel reinforcing			418,880	kg	If not known at DA stage, please make your best estimate. If not known at CC stage, please ask your supplier.	01_SB	02 or 03
Steel piles	-	-	-		t	Where concrete and reinforcing steel are also used, enter these in the rows above.	01_SB	02 or 03
Timber poles/piles	-	-	-		m³	Where concrete and reinforcing steel are also used, enter these in the rows above.	01_SB	02 or 03
Timber (solid)	Sawn softwood	-	-	140.0	m³		02_11	02 or 03
Timber (solid)	Sawn hardwood	-	-		m³		02_11	02 or 03
Timber (engineered)	CLT	-	-		m³		02_11	02 or 03
Timber (engineered)	Glulam	-	-		m³		02_11	02 or 03
Timber (engineered)	LVL	-	-		m³		02_11	02 or 03
Timber (engineered)	OSB	-	-		m³	Enter as cubic metres, calculated as (area of wall in m²) * (thickness in mm / 1000)	02_11	02 or 03
Brick	Heat cured	-	-		m³	Enter as cubic metres, calculated as (area of wall in m²) * (thickness in mm / 1000)	02_11	02 or 03
Structural Insulated Panel (SIP)	Steel outer	-	-		m²		01_SB	02 or 03
Structural Insulated Panel (SIP)	Aluminium outer	-	-		m²		01_SB	02 or 03
Structural Insulated Panel (SIP)	Engineered timber outer	-	-		m²		01_SB	02 or 03
Fill	-	-	-		t	Include purchased material only. Exclude site-won material.	01_SB	01
Sand & gravel	-	-	-	320	t	Include purchased material only. Exclude site-won material and sand/gravel in concrete.	01_SB	01
Waterproofing membrane	Bituminous	-	-	1,117	m²		01_SB	01 or 02 or 03
Waterproofing membrane	Polyethylene	-	-	2,066	m²		01_SB	01 or 02 or 03
Other structural (Describe and add unit >>)		-	-			Please enter a description for any structural material that does not fit a predefined classification		
Other structural (Describe and add unit >>)		-	-			Please enter a description for any structural material that does not fit a predefined classification		
Other structural (Describe and add unit >>)		-	-			Please enter a description for any structural material that does not fit a predefined classification		
Envelope								
The skin of the building that separates the internal building from the external environment. This includes the roof cladding, wall cladding, windows, doors and internal/external shading. It also includes insulation and the internal wall lining of envelope walls.								

Coverage of envelope material spend	-	-	-	89	%	Required. Coverage of spend for the envelope items you have entered below. Minimum requirement = 80%. Exclude head contractor preliminaries and margins.		
Roof cladding	Profiled steel	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap in the roofing sheets. This row includes all metal-coated and pre-painted steel sheets where steel is the base metal. Examples include: galvanised steel, zinc-aluminium (zincalume) coated steel and zinc-aluminium-magnesium (ZAM) coated steel, whether painted or unpainted.	05_RF	03 or 04
Roof cladding	Profiled aluminium	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap in the roofing sheets. This row also includes pre-painted aluminium sheets.	05_RF	03 or 04
Roof cladding	Profiled zinc	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap in the roofing sheets. This row also includes pre-painted zinc sheets.	05_RF	03 or 04
Roof cladding	Membrane	-	-	1,952	m²	Enter as m² of roof area. Exclude allowances for overlap in the membrane sheets.	05_RF	03 or 04
Roof cladding	Tiles (traditional clay)	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap between the tiles.	05_RF	03 or 04
Roof cladding	Tiles (concrete)	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap between the tiles.	05_RF	03 or 04
Roof cladding	Other (Please describe >>)		-		m²	Please enter a description for any roofing that does not fit a predefined classification	05_RF	03 or 04
Wall cladding	Bricks (heat cured)	-	-	1,823	m²	Enter as m² of wall area. Heat-cured bricks use a kiln or furnace to raise the brick temperature above ambient temperature during curing process.	06_EW	03 or 04
Wall cladding	Bricks (air dried)	-	-		m²	Enter as m² of wall area. Air-dried bricks are cured using ambient temperature.	06_EW	03 or 04
Wall cladding	Bricks (under fired)	-	-		m²	Enter as m² of wall area.	06_EW	03 or 04
Wall cladding	Bricks (concrete)	-	-		m²	Enter as m² of wall area	06_EW	03 or 04
Wall cladding	Mortar and render	-	-		kg		06_EW	03 or 04
Wall cladding	Profiled steel	-	-		m²	Enter as m² of wall area. Exclude allowances for overlap in the cladding sheets, offcuts, etc. This row includes all metal-coated and pre-painted steel sheets where steel is the base metal. Examples include: galvanised steel, zinc-aluminium (zincalume) coated steel and zinc-aluminium-magnesium (ZAM) coated steel, whether painted or unpainted.	06_EW	03 or 04
Wall cladding	Profiled aluminium	-	-		m²	Enter as m² of wall area. Exclude allowances for overlap in the cladding sheets, offcuts, etc. This row also includes pre-painted aluminium sheets.	06_EW	03 or 04
Wall cladding	Profiled zinc	-	-		m²	Enter as m² of wall area. Exclude allowances for overlap in the cladding sheets, offcuts, etc. This row also includes pre-painted zinc sheets.	06_EW	03 or 04
Wall cladding	GRC cladding	-	-		m²	Enter as m² of wall area. GRC = Glass Reinforced Concrete.	06_EW	03 or 04
Wall cladding	Timber weatherboards	-	-		m²	Enter as m² of wall area. Exclude allowances for overlap between weatherboards, offcuts, etc.	06_EW	03 or 04
Wall cladding	Fibre cement board	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc.	06_EW	03 or 04
Wall cladding	Terracotta	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc.	06_EW	03 or 04
Wall cladding	Brick tiles / veneers	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc.	06_EW	03 or 04
Wall cladding	Plasterboard	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc. Include both external wall linings and internal wall linings for envelope walls.	12_WF or 06_EW	03 or 04
Wall cladding	Plywood	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc. Include both external wall linings and internal wall linings for envelope walls.	12_WF or 06_EW	03 or 04
Wall cladding	Other (Please describe >>)		-		m²	Please enter a description for any wall cladding that does not fit a predefined classification	06_EW or 12_WF	03 or 04
Windows & doors	Aluminium frame	Single glazed	-		m²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Aluminium frame	Double glazed	-	1,654	m²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Aluminium frame	Triple glazed	-		m²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Timber frame	Single glazed	-		m²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Timber frame	Double glazed	-		m²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Timber frame	Triple glazed	-		m²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	uPVC frame	Single glazed	-		m²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	uPVC frame	Double glazed	-		m²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	uPVC frame	Triple glazed	-		m²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Frameless	Single glazed			m²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Frameless	Double glazed			m²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Frameless	Triple glazed			m²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Other (Please describe >>)		-		m²	Please enter a description for any windows or doors that do not fit a predefined classification	07_WW or 08_ED	03 or 04
Curtain wall	Single skin façade	Glazed panel	Single glazed		m²	Please declare all single-skin façade area in this section. All double-skin façade area should be entered in the next section. Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Single skin façade	Glazed panel	Double glazed		m²	Include all double glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Single skin façade	Glazed panel	Triple glazed		m²	Include all triple glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	Aluminium cladding		m²		06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	GRC cladding		m²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	Insulated shadow box		m²		06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	Brick cladding		m²		06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	Stone cladding		m²		06_EW	03 or 04
Curtain wall	Double skin façade	Glazed panel	Single glazed		m²	Please declare all double-skin façade area in this section. Please declare as the area of the curtain wall and do not enter the inner and outer skins twice. Include all single glazing, including standard, toughened, laminated and low-E.	06_EW	03 or 04
Curtain wall	Double skin façade	Glazed panel	Double glazed		m²	The type of glazing refers to the building's envelope wall, not including the outer skin	06_EW	03 or 04
Curtain wall	Double skin façade	Glazed panel	Triple glazed		m²	The type of glazing refers to the building's envelope wall, not including the outer skin	06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	Aluminium cladding		m²		06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	GRC cladding		m²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04

Curtain wall	Double skin façade	Opaque panel	Insulated shadow box		m²		06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	Brick cladding		m²		06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	Stone cladding		m²		06_EW	03 or 04
Curtain wall	Other (Please describe >>)		-		m²	Please enter a description for any curtain wall that does not fit a predefined classification	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Glazed section	Single glazed		m²	Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Glazed section	Double glazed		m²	Include all double glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Glazed section	Triple glazed		m²	Include all triple glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	Aluminium cladding		m²		06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	GRC cladding		m²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	Insulated shadow box		m²		06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	Brick cladding		m²		06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	Stone cladding		m²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Glazed section	Single glazed		m²	Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Steel frame	Glazed section	Double glazed		m²	Include all double glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Steel frame	Glazed section	Triple glazed		m²	Include all triple glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	Aluminium cladding		m²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	GRC cladding		m²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	Insulated shadow box		m²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	Brick cladding		m²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	Stone cladding		m²		06_EW	03 or 04
Stick-framed wall system	Other (Please describe >>)		-		m²	Please enter a description for any wall system that does not fit a predefined classification	06_EW	03 or 04
Wall louvre system	Aluminium	-	-		m²		06_EW	03 or 04
External shading system	Aluminium frame	Aluminium cladding	-	1,158	m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	GRC cladding	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000). GRC = Glass-fibre Reinforced Concrete.	06_EW	03 or 04
External shading system	Aluminium frame	Terracotta cladding	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Stone cladding	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Pre-cast concrete	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Timber	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Glass (opague)	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Steel	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Other (Please describe >>)		-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
Roller doors	Steel profile	-	-		m²	Please note unit is square metres, not quantity	08_ED	03 or 04
Roller doors	Hardwood over steel	-	-		m²	Please note unit is square metres, not quantity	08_ED	03 or 04
Roller doors	Softwood over steel	-	-		m²	Please note unit is square metres, not quantity	08_ED	03 or 04
Revolving doors	Glass/aluminium/steel	-	-		no.		08_ED	03 or 04
Fire-rated doors	Engineered timber	-	-	14	no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	08_ED	03 or 04
Fire-rated doors	Steel	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	08_ED	03 or 04
Fire-rated doors	Aluminium/glass	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	08_ED	03 or 04
Insulation	Glass wool / fibreglass	-	-	4,526.0	m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Stone wool	-	-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Polyester	-	-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Expanded polystyrene	-	-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Other (Please describe >>)		-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Other (Please describe and add unit >>)		-	-			Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and add unit >>)		-	-			Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and add unit >>)		-	-			Please enter a description for any envelope material that does not fit a predefined classification		

Permanent internal walls and doors

Walls and doors within the building that are either structural or designed to be permanent.

Coverage of material spend on permanent internal walls and doors				81	%	Enter the % coverage of spend for the items you have entered below. There is no minimum requirement: enter what you know. This should include all structural walls. Exclude head contractor preliminaries and margins.		
Interior wall (permanent)	Steel (light framing)	-	-		t		09_NW	03 or 04
Interior wall (permanent)	Timber framing	-	-		m³		09_NW	03 or 04
Interior wall (permanent)	AAC panel (reinforced)	-	-		m²	Panels of autoclaved aerated concrete (AAC) with reinforcing steel. E.g., Hebel.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Concrete-filled steel panel	-	-		m²	Panels made from a steel sheet outer with an aerated concrete core. E.g., Speedpanel.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Plasterboard	-	-	11,842	m²	Enter as single-layer equivalent. If using 2 layers, multiply the area by 2.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Plywood	-	-		m²	Enter as single-layer equivalent. If using 2 layers, multiply the area by 2.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Fibre cement sheet	-	-		m²	Enter as single-layer equivalent. If using 2 layers, multiply the area by 2.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Insulation	-	-	8,500.0	m²		09_NW or 12_WF	03 or 04
Interior wall (permanent)	Glass	-	-		m²		09_NW or 12_WF	03 or 04
Interior wall (permanent)	Other (Please describe >>)		-		m²	Please enter a description for any internal wall that does not fit a predefined classification	09_NW or 12_WF	03 or 04
Internal door (permanent)	Aluminium/glass	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04

Internal door (permanent)	Timber/glass	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Timber solid lightweight	-	-	143	no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Fire resistant	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Steel	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Other (Please describe >>)		-		no.	Please enter a description for any internal door that does not fit a predefined classification	11_ND	03 or 04
Other (Please describe and add unit >>)		-	-			Please enter a description for any material that does not fit a predefined classification		
Other (Please describe and add unit >>)		-	-			Please enter a description for any material that does not fit a predefined classification		
Other (Please describe and add unit >>)		-	-			Please enter a description for any material that does not fit a predefined classification		

Services

					Unit of measure			
Building services included within the main building contract. If the building components that are the subject of the development application or the construction certificate are base building only, then only enter these items. If you cannot split services by type, please enter them all in the "Other services" category at the bottom. Enter all values as material costs in dollars.								
Mechanical services	-	-	-	1,061,493	AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	28_SS	05
Vertical transportation	-	-	-	603,750	AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	28_SS	05
Electrical services	-	-	-	948,353	AUD excl. GST	Electrical services including the main power supply, backup generators, security and communications. Excluding solar installations. Where possible, enter material costs excluding labour, plant, equipment, margins and taxes.	26_LP	05
Solar photovoltaic installations	-	-	-		AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	26_LP_LPGP	05
Plumbing/hydraulic services	-	-	-	1,807,415	AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	18_PD and 19_WS	05 or 06
Fire services				790,373	AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	25_FPSS04 or 39 XWAW_03 or 41_XF	05
Other services (Please describe)		-	-		AUD excl. GST	Please group all other services here, meaning that coverage will always be 100% for services. Enter only the material costs (excluding labour, plant, equipment, margins and taxes).	29_SS or multiple	

External works

The materials associated with hard landscaping and outbuildings on the site but outside the building envelope. This includes hardstands, carparks, driveways, covered walkways, decks, patios, awnings, fences, gates, etc. Soft landscaping should be excluded.								
Coverage of spend on external works	-	-	-	83	%	Required. Coverage of spend for external works (excluding soft landscaping) entered below. Minimum requirement = 80%. Exclude head contractor preliminaries and margins.		
Asphalt	-	-	-		t		33_XR	07
Concrete in-situ	≤10 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>10 MPa to ≤20 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>20 MPa to ≤32 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>32 MPa to ≤40 MPa	-	-	477.0	m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>40 MPa to ≤50 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>50 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Pavers, bricks and blocks	Concrete	-	-		m²		33_XR	07
Pavers, bricks and blocks	Clay	-	-		m²		33_XR	07
Reinforcing steel	Bar & mesh	-	-	52,470	kg	**Include all reinforcing steel bar/mesh in the external works in this row.** Usually this is calculated as kg/m³ per concrete element and then summed. Example: 10 m³ of 40 MPa concrete @ 100 kg/m³ + 5 m³ of 50 MPa concrete @ 150 kg/m³ = 1,750 kg reinforcing steel.	33_XR or 34_XN or 35_XB or 36_XL	07
Reinforcing steel	Fibre & strand	-	-		kg	**Include all steel fibre reinforcing and steel strand in the external works in this row.**	33_XR or 34_XN or 35_XB or 36_XL	07
Structural steel	-	-	-		t		02_11	07
Structural aluminium	-	-	-		t	Includes structures, louvre systems, etc.	35_XB	07
External roof/wall cladding	Polycarbonate	-	-		m²	Enter as profiled polycarbonate sheet that would ordered, including allowance for overlap	35_XB	07
External roof/wall cladding	PVC	-	-		m²	Enter as profiled PVC sheet that would ordered, including allowance for overlap	35_XB	07
External roof/wall cladding	Bitumen sheet	-	-		m²	Enter as bituminous sheet that would ordered, including allowance for overlap	35_XB	07
External roof/wall cladding	Steel profile	-	-		m²	Enter as profiled steel sheet that would ordered, including allowance for overlap	35_XB	07
Fill	-	-	-		t	Include purchased material only. Exclude site-won material.	33_XR or 34_XN or 35_XB or 36_XL	07
Sand & gravel	-	-	-		t	Include purchased material only. Exclude site-won material and sand/gravel in concrete.	33_XR or 34_XN or 35_XB or 36_XL	07
Timber (solid)	Sawn softwood	-	-		m³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (solid)	Sawn hardwood	-	-		m³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (engineered)	CLT	-	-		m³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (engineered)	Glulam	-	-		m³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (engineered)	LVL	-	-		m³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (engineered)	OSB	-	-		m³		33_XR or 34_XN or 35_XB or 36_XL	07
Fabric (awning/sunshade)					m²		35_XB or 36_XL	07
Other (Please describe and add unit >>)		-	-			Please enter a description for any external works that does not fit a predefined classification		
Other (Please describe and add unit >>)		-	-			Please enter a description for any external works that does not fit a predefined classification		
Other (Please describe and add unit >>)		-	-			Please enter a description for any external works that does not fit a predefined classification		

Step 3: Certifier details

Fill out blue cells

The material quantities must be determined through an itemised list of building materials (such as a bill of quantities) and certified by a quantity surveyor, designer, engineer or NABERS Assessor.

Person that completed this form	Value	Note
Name	Kelvin Perrie	Required
Company	MBMpl	Required
ABN	74 099 962 231	
Profession	Quantity Surveyor	Required
Qualification or registration	Bcmp	Required

Person that certified the details in this form	Value	Note
Name	Stephanie Tecli	Required
Company	MBMpl	Required
ABN	74 099 962 231	
Profession	Quantity Surveyor	Required
Qualification or registration	Bcmp	Required

Confirmation of certification	Value	Note
Are 80% of material costs captured for the building's structure, envelope and external works?	Yes	Required
If no - why not?		

Additional comments from data provider
Quantities in this report are indicative only pending detailed design.

Additional comments of certifier

Attach this Excel spreadsheet to your development application or construction certificate application.