

WALSH BAY ARTS AND CULTURAL PRECINCT

STATE SIGNIFICANT DEVELOPMENT APPLICATION

SSDA 8671

APPENDIX 11:

SUSTAINABILITY FRAMEWORK

Arts NSW
Walsh Bay Arts and Cultural Precinct
Sustainability Framework

SSDA

Rev E | 21 September 2017

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Arup
Arup Pty Ltd ABN 18 000 966 165



Arup
Level 10 201 Kent Street
PO Box 76 Millers Point
Sydney 2000
Australia

Sustainability Framework

ARUP

21/09/2017

Table of Contents

1	Objectives of Assessment	3	7	User Comfort and Wellbeing	12
1.1	Introduction	3	7.1	Introduction	12
1.2	Recommendations	4	7.2	Space Conditioning Strategy	12
2	Site and Project Description	5	7.3	Function Space Strategy	13
2.1	The Project	5	7.4	Initiatives	14
3	Design Requirements & Regulatory Context	6	7.5	Concepts Review Summary	14
3.1	Relevant Policies and guidelines	6	8	Transport	15
3.2	Summary	6	8.1	Introduction	15
4	Energy	7	8.2	Initiatives	15
4.1	Introduction	7	8.3	Concept Design Summary	15
4.2	Conditioning of Spaces	7	9	Operation	16
4.3	Section J Considerations	7	9.1	Introduction	16
4.4	Function Space	7	9.2	Initiatives	16
4.5	Initiatives	8	9.3	Concept Design Summary	16
4.6	Concept Design Summary	8	10	Community Engagement	17
5	Water	9	10.1	Introduction	17
5.1	Introduction	9	10.2	Initiatives	17
5.2	Initiatives	9	10.3	Concept Design Summary	17
5.3	Concept Design Summary	9	11	Mitigation Measures	18
6	Materials	10			
6.1	Introduction	10			
6.2	Embodied Energy & the Precinct	10	A	Appendix Conclusion and Framework Matrix	
6.3	Initiatives	11			
6.4	Concept Design Summary	11			

1.0 OBJECTIVES OF ASSESSMENT

1.1 Introduction

The Walsh Bay Arts and Cultural Precinct (WBACP) Sustainability Framework has been developed as part of the WBACP State Significant Development Application (SSDA) and is based upon the key drivers identified by a number of invested parties during workshops and meetings, and in collaboration with arts representatives, architects and Arup. This framework is a requirement under the SEARs for the site and responds to Section 7(4) Schedule 2 of the Environmental Planning and Assessment Regulation.

The WBACP has a vision of growing and developing to become the Arts destination hotspot on the Sydney Harbour foreshore. The project includes the upgrading of theatre spaces and the overall precinct to bring the old wharf up to a contemporary arts facility.

This framework addresses the three key project objectives with regards to delivering a sustainable site:

- ▶ Activate the precinct with a unique cultural offering and visitor experience
- ▶ Rejuvenate a vital piece of Sydney's waterfront cultural heritage, providing inter-generational benefits for the people of NSW
- ▶ Provide facilities that better enable arts organisations to develop world class productions + experiences + deliver on their strategic visions

It is imperative the site achieves high standards of environmental sustainability. The Sustainability Framework responds to this desire and addresses seven key principles. These form the basis of the report:

- ▶ **Section 4—Energy efficiency and carbon**
- ▶ **Section 5—Reduction of potable water**
- ▶ **Section 6—Sustainable materials**
- ▶ **Section 7—User comfort and well being**
- ▶ **Section 8—Sustainable transport**
- ▶ **Section 9—Sustainable in operation**
- ▶ **Section 10—Social sustainability and community**

Current State

The WBACP is currently a low-impact site with low energy demands due to a number of key elements in practice. The site currently uses:

- ▶ Photovoltaic cells to offset electric energy
- ▶ Primarily naturally ventilated spaces, with operable windows for occupant control
- ▶ Air conditioning for prime spaces only, where thermal comfort is demanded for business operation
- ▶ Heating only in certain spaces for occupant comfort
- ▶ The original materials of the finger wharfs, which maintain the heritage and history of the site. This also reduces the embodied energy of construction

Drivers

For a long time the arts have been among the leading forces in developing high-performance buildings and adopting sustainable principles. This interest has been motivated by a combination of factors, including practical and financial concerns with the long-time operation and ownership of facilities, the demand for advanced facilities and infrastructural capacities, growing environmental awareness from all users, the desire for a smarter and more comfortable space and the aspiration to develop a public profile in line with the increasing concern over climate change and resource limitations.

With those principles in mind, this Sustainability Framework looks at the WBACP in two ways: as a precinct and as specific spaces within individual buildings.

The framework has been developed to present the key design aspects to be implemented.

The following sections of this Sustainability Framework document in detail the discussions held and the reasoning for the recommendations provided in this summary.

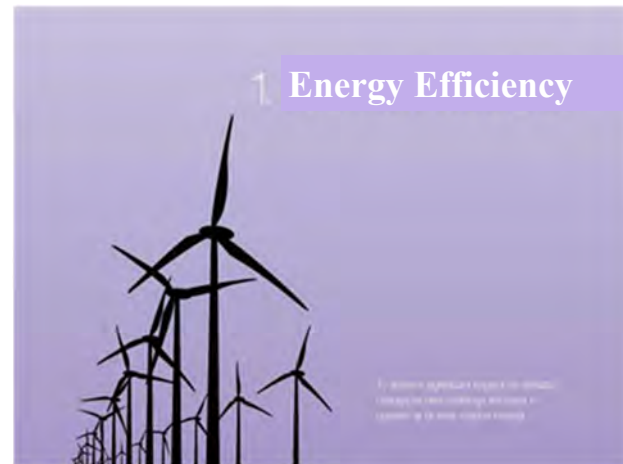
The framework also details the specific plans and practicality of the key drivers outlined in this section. It outlines the intended design response to address the drivers.

Conclusions & Recommendations

The WBACP is perfectly located in an area rich in natural resources and opportunities. As such, the performance of the buildings in this precinct can be improved through design based upon high standards of environmental sustainability.

The Sustainability Framework recommends a number of initiatives be included as a minimum in the WBACP. These are listed under each category over the page.

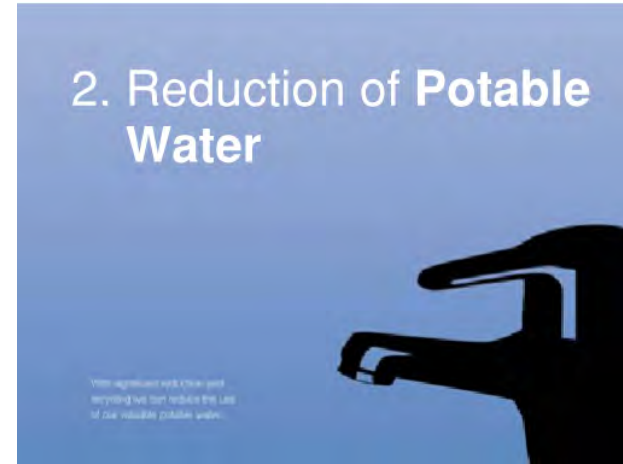
1.2 Recommendations



- ▶ Maximise Natural Ventilation and adoption of the adaptive comfort model
- ▶ Specify high efficiency systems, including innovative, site specific technologies
- ▶ Harbour Heat rejection/ heat absorption
- ▶ Provision for onsite Photovoltaic array



- ▶ On-site bicycle parking facilities for tenants and visitors
- ▶ Connect to Sydney City's current cycleways
- ▶ Link to harbour foreshore walk



- ▶ Reduce potable water demand
- ▶ Efficient, low water use systems
- ▶ Optional future upgrade to collect and store rainwater for reuse
- ▶ Remove parking from Wharves to allow clean run-off of rainwater



- ▶ Maintain an operation plan beyond occupancy for ongoing works
- ▶ Minimise and recycle waste
- ▶ Provide long life LED lighting where possible
- ▶ Increase efficiency and comfort through on-going commissioning and awareness



- ▶ Maintain / restore existing heritage façade and structure
- ▶ Use opportunity to specific internal materials with low environmental impact
- ▶ Local and responsible sourcing



- ▶ Create diversification of uses and interaction with the local community
- ▶ Open the commercial spaces up to the public domain
- ▶ Lighting of public spaces to provide secure, welcoming areas after hours



- ▶ User-specific design for each space
- ▶ Design to maintain/enhance air quality
- ▶ Reduce legionella risk by providing non-water based heat rejection
- ▶ Upgrade existing services and space quality
- ▶ Adopt adaptive comfort and transient space gradings
- ▶ Connect buildings and spaces to harbour views
- ▶ Ability for occupants to control windows
- ▶ High visual light levels to increase daylight levels

2.0 SITE AND PROJECT DESCRIPTION

2.1 The Project

The NSW Government is committed to development of a public arts and cultural precinct at Walsh Bay. Infrastructure NSW is acting on behalf of the client, Arts, Screen and Culture Division in preparing this State Significant Development Application for the project.

This SSDA will seek approval for the construction and operation of Pier 2/3 and Wharf 4/5 for arts and cultural uses with complementary commercial and retail offerings to activate the precinct.

The site generally comprises Pier 2/3, Wharf 4/5, and Wharf 4/5 Shore Sheds. The site has a street frontage to Hickson Road as shown in Figure 1. The site is part of the Walsh Bay area, which is located adjacent to Sydney Harbour within the suburb of Dawes Point.

The Scope of the Project is as follows:

Pier 2/3

- The adaptive re-use providing for new arts facilities including performance venues for the Australian Chamber Orchestra, Bell Shakespeare and Australian Theatre for Young People;
- Retaining a large heritage commercial events/art space for events such as Sydney Writers Festival, Biennale of Sydney and a wide range of commercial and artistic events;
- A series of stairs, external lift and balconies designed as a contemporary interpretation of the original gantries reflecting the precinct's former industrial heritage
- Modifications to the roof

Wharf 4/5 (including Shore Sheds)

- Refurbishment of the ground floor arts facilities and its associated Shore Sheds for Bangarra Dance Theatre, Sydney Dance Company, Sydney Philharmonia, Gondwana and Song Company;
- New commercial retail opportunities; and

- A series of stairs, external lifts and balconies designed as a contemporary interpretation of the original gantries reflecting the precinct's former industrial heritage
- Modifications to the roof



Figure 1: The Site (Source: MG planning)

3.0 DESIGN REQUIREMENTS & REGULATORY CONTEXT

The Secretary's Environmental Assessment Requirements (SEARs) and tools used for guidance during design development of the WBACP proposal are outlined below:

3.1 Relevant Policies and Guidelines

The following planning provisions and codes apply to the WBACP with regards to the Ecologically Sustainable Design (ESD):

- National Construction Code (NCC) / Building Code of Australia (BCA) 2016
- Environmental Planning and Assessment Regulation, 2000

Two tools have been used as reference in designing ESD initiatives and performance standards. While the project is not held to these, each have been influential in the design

- City of Sydney LEP 2012
- Green Building Council of Australia Green Star Credit targets.

3.1.1 Environmental Planning and Assessment Regulation (EPA)

The SEARs states that "ESD principals as defined in Section 7(4) Schedule 2 of the Environmental Planning and Assessment Regulation 2000) will be incorporated in the design, construction and ongoing operation of the development". This document states:

- (4) The principles of ecologically sustainable development are as follows:
- a. The precautionary principle, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:
 - (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
 - (ii) an assessment of the risk-weighted consequences of various options,

- b. Inter-generational equity, namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,
- c. conservation of biological diversity and ecological integrity, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,
- d. Improved valuation, pricing and incentive mechanisms, namely, that environmental factors should be included in the valuation of assets and services, such as:
 - (i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,
 - (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste, environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

The intent of these principles serves as the foundation of this report, with the intent to minimise damage done to the environment.

3.1.2 NCC/BCA 2016

The NCC/BCA requirements pertaining to ESD are in Section J—Energy Efficiency of Volume 1. This sets minimum energy benchmarks which must be exceeded for the mechanical conditioning of spaces and addresses the performance of any new fabric and building services.

A strategy for addressing Section J has been developed in collaboration with the BCA certifier. In summary, this is as follows:

- The building contains a mixture of classes namely; Class 5 Office/Admin, Class 6 Retail also Class 9b Assembly building.
- All *new building works* will need to comply with the requirements of Section J. Where there are no new

- works to the external façade it need not be upgraded.
- Any external fabric upgrades being nominated are considered voluntary and not strictly required for Section J in terms of fabric compliance.
- Any improvements to existing sealing is considered voluntary and not subject to Section J requirements.
- Any replacement fabric (e.g. new window or the like) is considered *new building works* and must comply with Section J.
- Any new building services are considered *new building works* and must comply with Section J.

Although considered voluntary, fabric upgrades in conditioned areas are recommended, within the constraints of the heritage context, in order to maintain comfort in the air-conditioned areas and exercise environmentally and socially responsible design.

The specific design response recommended to address Section J is outlined in the following section 4.0 *ESD REQUIREMENTS—ENERGY* and in summary, is as follows:

- Ensure opaque envelope of air conditioned spaces meets the performance requirements of Section J Part J1 Building Fabric (within heritage constraints)
- Ensure any new glazed areas and any new building services systems meet the performance requirements of Section J
- Where practically possible, upgrade the existing façade to minimise air leakage / air infiltration

3.2 Summary

The WBACP endeavours to go above and beyond the baselines outlined to achieve a carefully thought-out, considerate and intelligent design. The initiatives targeted are discussed throughout the report, and have been grouped into the seven principles listed in the introduction.

4.0 ESD REQUIREMENTS—ENERGY

4.1 Introduction

The design for reducing the energy and carbon impact of the WBACP is commensurate with the concepts below.

- Load Reduction** - through efficient lighting fittings such as LEDs being specified in the site. High quality glazing where windows are to be replaced, providing insulation and sealing to fully conditioned spaces (where heating and cooling is provided) in line with Section J requirements.
- Passive Systems** - by naturally ventilating corridors and transient spaces where possible. Mixed mode spaces reduce the air conditioned hours and take advantage of the mild climate in Sydney
- Active Systems** - specified plant equipment is high-efficiency to reduce energy associated with conditioning
- Energy Transfer** - Harbour heat rejection provides a method for increasing efficiency of heat, reducing the carbon footprint of the building
- Renewables** - installing provision for photovoltaics on the roof to offset the electrical demand for heating / cooling systems, including any future tenant demands
- Offsets** - Are not proposed in this project, but would be required to reduce the site energy and carbon emissions to net zero. This can be achieved by buying green power during operation

Where possible and economic, the existing infrastructure will be maintained to reduce capital costs. This is the recommended design response for Wharf 4/5, where currently the level 1 office spaces utilise air cooled refrigerant systems to provide heating and cooling. These systems are to be retained where possible, with minor ductwork alterations.

4.2 Conditioning of Spaces

The needs of each space differ significantly across the site. A blanket rule for all spaces is not appropriate - the best outcome for one organisation may not be appropriate for others. To provide the best outcome, each space will be designed to meet the specific amenity, comfort and energy needs of the site. When possible, natural ventilation is preferred, and mixed mode provided over fully air conditioned spaces.

By providing a number of naturally ventilated spaces, energy consumption of the building can be reduced. The added benefits include allowing for the retaining of the heritage façade, reducing construction waste and material consumption.

A condenser water pipework loop is to be considered to serve spaces that may require cooling for future tenant fitouts. This is intended to allow future flexibility and remove the need for tenants to install air cooled condenser units to the heritage façade.

4.3 Section J Considerations

Although not required for Section J compliance, the fabric envelope of conditioned spaces (those that are to be mechanically heated and cooled) will be made to comply with the minimum performance requirements of Part J1 Building Fabric.

To achieve this, any replacement windows will be upgraded, the spaces will be sealed and insulation is to meet the Deemed-to-Satisfy requirements of Part J1.

An improved fabric in line with Section J performance requirements is necessary in order for the new mechanical systems to be able to maintain temperatures. Without this improvement, the mechanical systems would be limited by the code requirements for auxiliary system pumping and fan powers with the result that temperatures could not be controlled to the desired range.



Source: heatray by celmec

Overhead radiant heating or temporary free standing heaters will be considered for occupant amenity during winter conditions in the *Function Space*

Mechanical equipment is to be selected to exceed the Minimum Energy Performance Standards (MEPS) and the criteria outlined in Section J.

Any new glazing on site will need to meet the BCA Section J requirements.

4.4 Pier 2/3 Function Space

The Pier 2/3 Function Space is to be used intermittently throughout the year for commercial and arts events. The space will be naturally ventilated and subject to internal fluctuations in temperature and humidity in line with the external weather conditions. Should heating be required on particularly cold days, it can either be provided by way of a fixed solution such as a high level radiant system. Alternatively, a temporary solution such as removable free standing heaters could be employed if and when required.

Although not required, the project will, where practically possible, seal the façade in this location to reduce air leakage when such a heating system is operating. It will also act to reduce air infiltration which can drive heating demands.

4.0 ESD REQUIREMENTS—ENERGY

4.5 Initiatives

4.5.1 Natural Ventilation

Natural ventilation is the preferred servicing option, where a high air velocity of fresh air will temper the air in the space. This will serve as a viable solution for all spaces that do not require significant acoustic treatment.

Servicing strategies are discussed in greater detail in section 7.

4.5.2 High Efficiency Systems

High-efficiency systems can be installed to reduce energy in the HVAC system design. The simplest way to reduce the loads is through quality equipment. This is driven in the first instance by construction code requirements, which demand a minimum efficiency.

Efficient systems can reduce the overall operating cost significantly, and see a relatively short payback period on the original investment. The equipment for WBACP should be selected to exceed the Minimum Energy Performance Standard (MEPS) / Section J minimum requirements.

4.5.3 Onsite Renewables

Onsite renewables are an excellent way to reduce the energy consumption of the site. The location is ideal for taking advantage of natural sources of power such as unblocked sunlight.

The provision of photovoltaics (PV) is currently proposed. As a minimum, the infrastructure to support a future photovoltaic array is included in the design. The PV array will be able to offset the electrical energy consumption of the project and offer capacity for future tenancy system offsets. The maximum available roof space will be allocated to PV. Connection to existing PV array on Wharf 4/5 will be explored.

4.5.4 Harbour Heat Rejection

Harbour heat rejection is an incredibly efficient and spatially minimalist way to allow air conditioning heat rejection. The system rejects heat to (or absorbs heat from) the harbour - almost an energy free system. It is currently recommended for the project.

The operational costs associated with the process are limited to maintenance and pumping costs, making this a viable long term option. This also removes potable water consumption through evaporative cooling and allows the roof line to remain unencumbered by plant equipment.

4.5.5 Solar hot water

Solar hot water heating uses the sun's heat to provide heated water to the site. This is much more energy efficient than traditional boilers. The heated water required on site is minimal enough to make this a viable option.

4.6 Concept Design Summary

- ▶ Incorporate natural ventilation design strategies into all non-performance/thermally critical spaces in the development where appropriate
- ▶ Provide mixed-mode ventilation strategies for offices and other appropriate locations as a preference over full air conditioning
- ▶ Maintain as much of the existing structure, façade and form as possible to reduce the embodied energy consumption of materials
- ▶ Window upgrades to meet minimum performance requirements as per BCA Section J
- ▶ Re-use spill air from auditoria to temper surrounding spaces
- ▶ Meter large energy uses individually
- ▶ Target high efficiency mechanical services equipment. In excess of minimum MEPS / Section J
- ▶ Provide infrastructure as a minimum to support photovoltaics to offset building energy demands and create capacity for future tenancy systems (maximum available roof space)
- ▶ Use LED light fixtures where possible to extend lamp life and reduce energy costs
- ▶ Install occupancy sensors and dimmable lighting where appropriate
- ▶ Include solar hot water with gas boost for the domestic hot water services

5.0 ESD REQUIREMENTS—WATER

5.1 Introduction

In Australia, water has long been considered a precious and high-demand resource, essential for all living things. Fresh water supplies are increasingly affected by a range of factors including catchment locations, contaminated sources, drought and rising demand. Australia remains the driest inhabited continent in the world with the third largest per capita water consumption rate. Demand for water is fast outstripping supply in many major cities.

In addition to reducing the demand for water, efficient use of water in buildings can save building owners money in operational costs.

The ESD strategy surrounding water is about the responsible reduction of potable water consumption, and where possible increasing the quality of water in the surrounding harbour.

5.2 Initiatives

5.2.1 Rainwater Tanks

Rainwater tanks that collect fresh run-off from the roofs of the buildings can have significant positive impacts on the total consumption of potable water. The systems do require space to store the run-off. Rainwater is currently collected from the roof of Wharf 4/5 and stored in a tank located under the pier.

A second rainwater tank is to be considered for Pier 2/3, with infrastructure as a minimum to facilitate the later inclusion of a storage tank.

5.2.2 Efficient Fixtures

Low flow fittings and high Water Efficiency Labelling and Standards (WELS) rated fixtures will minimise the potable water demand on the site. This is a simple and inexpensive way to reduce the impact of potable water consumption and can be retrofitted to parts of the development that will remain unchanged.

5.2.3 Harbour Heat Rejection

Harbour heat rejection will save on the use of evaporation in the heat rejection phase. This system will also allow the roof line to be uncompromised by heat rejection systems, unlike the air cooled condenser unit. This system is currently recommended for the project.

5.2.4 Solar Hot Water

Solar hot water heating uses the sun's heat to provide heated water to the site. This is much more efficient (in terms of energy) than traditional boilers. The heated water required on site is minimal enough to make this a viable option.

5.2.5 Stormwater Water Runoff

Stormwater runoff from the piers may carry with it a number of pollutants that damage marine life and the Sydney Harbour's water quality. Parking on the piers has already been removed, which will increase the quality of water runoff.



Image: seawater cooling coil installation, Woolloomooloo & heat exchanger

Harbour Heat rejection is an incredibly efficient way of transferring energy, which also consumes no potable water in the heat rejection method.

5.3 Concept Design Summary

- ▶ Specify water efficient fixtures to all fittings, including retrofits. This include WELS rated products as follows:
 - 3 L/half flush, 4.5L/ full flush WCs
 - 1 L/flush Urinals
 - 4.5 L/min Taps
 - 7.5 L/min Showers
- ▶ Provide Harbour Heat Rejection
- ▶ Provision for rainwater tank & infrastructure to pier 2/3 to facilitate later installation of storage tank
- ▶ Include solar hot water with gas boost for the domestic hot water services

6.0 ESD REQUIREMENTS—MATERIALS

6.1 Introduction

The production and use of building materials can have serious impacts on the environment. Energy is used to extract, produce and transport building materials; natural resources are exploited to be used in building materials; the industrial production process of the materials causes pollution (e.g. fly ash from cement production); and when the material ends up as waste, it becomes difficult to process.

The environmental impact from building materials is reduced by limiting the quantities of virgin building materials used in projects and choosing those produced in the least harmful way when using virgin building materials.

The heritage façade is to be maintained, as is the form and structure of the building. Where fixes and updates are required, these are to be of the least damaging materials relevant to the function of the precinct.

6.2 Embodied Energy & The Precinct

Embodied Energy (EE) is one of several factors contributing to the environmental impact of building projects. In terms of energy consumption over a reasonable life cycle period (e.g. 50 years), the embodied energy usually represents about 20-30 per cent of energy consumption while the operating energy accounts for the remainder.

EE is the energy required to provide a product, both directly and indirectly through all processes upstream (i.e. traceable backwards from the finished product to consideration of raw materials). It represents the sum of all energy inputs, which may even include those required in the disposal phase.

The WBACP will maintain as much of the existing form and features as possible, which is important for maintaining the heritage listed façade, hence maintaining the embodied energy in-situ.

6.3 Fitout

The focus for integrated and future fitouts should be to reduce the environmental impact of materials through careful selection. Low-impact materials are becoming increasingly common and sought after in the market, allowing a simpler implementation than ever before.

The fitout should target achieving the criteria set out in the Green Star Rating Tools for Indoor Environment Quality and Materials. While no formal rating is being targeted in this project, the criteria outlined provide a framework which will define best practice.

The following list describes the ideal targeted outcomes:

- ▶ Procure paints, sealants, fitout items and floor coverings with low levels of Volatile Organic Compounds
- ▶ Procure wooden articles that have either low or no formaldehyde
- ▶ Flooring and wall coverings selected with no PVC or best practice PVC
- ▶ Timber is re-used, recycled or FSC-AU certified where possible



Image: FSC certified timber and Australian made products should be considered



Responsibly and locally sourced materials reduced the environmental impact products incorporated into the project.

6.0 ESD REQUIREMENTS—MATERIALS

6.3 Initiatives

6.3.1 No CFC/HCFC or Halons

Not using chlorofluorocarbons (CFC) / hydro-chlorofluorocarbons (HCFC) or Halons in the HVAC system's refrigerants and fire retardant systems is common practice. The ozone depletion potential of these products render their use irresponsible, and in many cases illegal.

This is a base provision that must be met as part of any responsible plan. All refrigerants will have an Ozone Depletion Potential of zero.

6.3.2 Asbestos Removal

As with the above, asbestos use is not permitted in the site. Where asbestos has been found in the site audit, it is to be remediated in line with current Australian Standards.

Any remediation is to be performed by trained, qualified professionals.

6.3.3 Low-VOC Paints, Sealants, etc.

The use of materials with a low level of Volatile Organic Compounds (VOC) should be implemented where possible. VOCs are often considered a health risk to humans in high quantities and their use should be minimised.

Maximum acceptable levels should be defined before procurement and imposed on all products used through the construction and installation of fitouts.

6.3.4 Recycled Materials

Where possible, recycled materials are preferred over new materials. The obvious advantages include increasing the life of the product, and therefore reducing the embodied energy associated with their use.

Elements removed from the existing building will be salvaged and stored for future reuse.

6.3.5 Responsible Timber

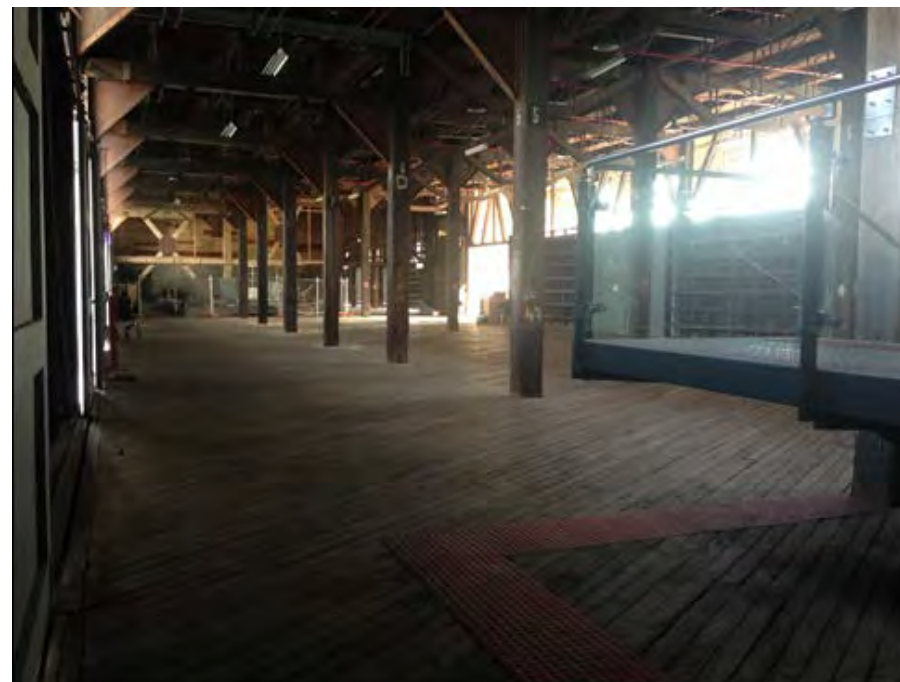
Certified timber, such as Forest Stewardship Council (FSC), source timber from sources that protect waterways, wildlife, forests and communities. Where possible, timber products should come from certified sources or recycled timber should be used.

6.3.5 Locally Sourced

Locally sourced products help both the local economy and reduce the embodied energy associated with transportation. Where possible, locally sourced products should be preferred.

6.3.6 Building Retention

The existing façade is to be maintained. The existing structure and finishes shall be where possible given a 'light touch', reducing the virgin material consumption of the project's



The Function Space in its raw state

6.4 Concept Design Summary

- ▶ Maintain the form and materials of the existing building. It is recommended that the current leaky façade is fixed where practicable to extend its life and to reduce discomfort issues
- ▶ All work is to be carried out in accordance with the Australian Icomos Burra Charter
- ▶ A hazardous materials survey has been conducted for the site to ensure any asbestos, lead or polychlorinated biphenyls found will be remediated prior to construction works in accordance with relevant standards
- ▶ Specify refrigerants with an ozone-depleting potential of zero
- ▶ Carpets, fitout items, paints, adhesives and sealants should be low VOC in accordance with Green Star Design & As Built tool
- ▶ Timber to be from recycled source or FSC or PEFC certified with full Chain of Custody where possible. No wood products to contain formaldehyde, in accordance with Green Star Design & As Built tool

7.0 ESD REQUIREMENTS—USER COMFORT & WELLBEING

7.1 Introduction

Daylight provides occupants with a healthier environment that will have direct impact on productivity and wellbeing. A major benefit of providing good daylight quality is a reduction on energy consumption due to a reduction on the operation of artificial lighting systems. Providing a visual connection with the external environment also improves workspace quality for increased productivity levels.

To maximise daylight levels, where glazing is required to be replaced, a minimum Visual Light Transmission (VLT) of 70% is recommended if it can be demonstrated it complies with Section J. Where possible, the lantern design should be optimised to achieve high daylight levels in the spaces directly below.

Recognising that each space type has its own environmental conditions will enable the right ventilation strategy to be implemented to maintain thermal comfort and air quality whilst reducing energy consumption. The Sustainability Framework proposes different spaces within the WBACP adopt an adaptive comfort strategy so that as occupants move from an outdoor space and gradually transition into a indoor and more controlled environment the criteria will change resulting in further reduction of energy use and increase in the use of passive approaches to achieve comfort conditions.

The specific strategies for maximising user comfort and wellbeing are addressed together with the building services report. Each space's method of deriving comfort is a factor of the servicing strategy.

7.2 Space Conditioning Strategy

The following servicing strategies are provided throughout the WBACP:

7.2.1 Natural Ventilation

The space is not directly controlled and considered an unconditioned space. Where possible, windows openings should be sized to provide ventilation.

7.2.2 Ventilation

An exhaust or supply fan is provided to circulate air. This is unconditioned, e.g. internal bathrooms, kitchens, etc.

7.2.3 Full Air Conditioning

Offices are served by a fan coil unit in the ceiling void, and chilled/heated water recirculated to a plant. Outdoor air is provided by a supply air fan. Auditoria and performance spaces conditioned have a dedicated air handling unit, with its own outdoor air fan and exhaust air.

7.2.4 Mixed Mode

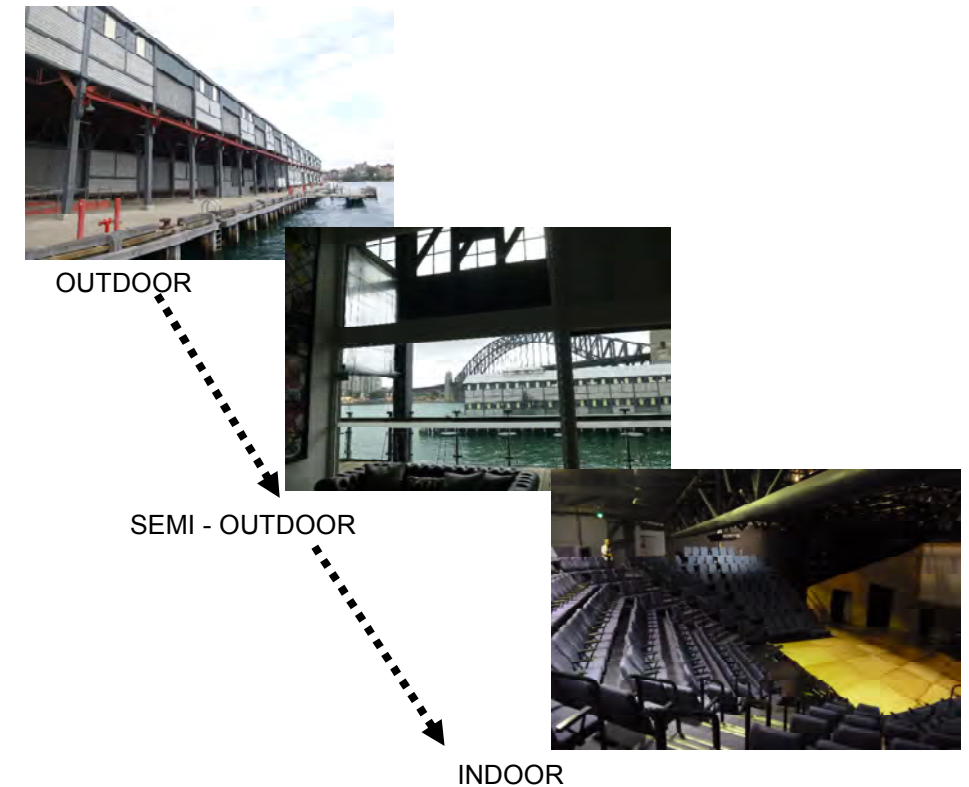
Mixed mode offices have systems for full air conditioning and operable windows where possible to allow the spaces to operate naturally ventilated when the outdoor conditions permit.

7.2.5 Heated

Heated spaces are either by radiant or full air distribution depending on the space.

7.2.6 Cold Shell

A condenser water pipework loop will be provided to serve spaces that may require cooling to be installed in the future by tenants.



7.0 ESD REQUIREMENTS—USER COMFORT & WELLBEING

7.3 Pier 2/3 Function Space Strategy

The Pier 2/3 Function Space is to be used intermittently throughout the year for commercial and arts events. During winter, it is expected that conditions may become thermally uncomfortable for occupants due to low ambient air temperatures and high air infiltration resulting from the existing façade being unsealed.

Initial assessment of the predicted winter temperatures in this space has been conducted to inform the percentage of hours occupants may feel thermally uncomfortable. Options for radiant heating were compared against existing conditions (no heating) to understand the extent of this benefit.

Full details of this assessment are contained within the Appendices. The table following provides a summary of the results. Operative temperature, Predicted Mean Vote (PMV) and Predicted Percentage Dissatisfied (PPD) are the metrics presented to understand the level of expected comfort within the space.

Note that radiant heating is assumed with varying thermal capacity: 15 W/m2; 45 W/m2; 100 W/m2.

Predicted hours below 16°C and 18°C is shown to give an indication of how well the space could be maintained at these target temperatures, which are considered to offer reasonable comfort to occupants in this type of space during winter.

The operative temperature ranges highlighted in the table should be considered with respect to the intended leasing profiles of the space. If at completion of the project, the Space is not immediately heated, the tenant would expect to feel temperature ranges as shown in Scenario 1 results during winter.

If heating is introduced tenants could expect to feel warmer during winter months in this space which could extend intended leasing profiles.

		Scenario			
		1	2	3	4
		No Heating	15W/m²	45W/m²	100W/m²
Outdoor air	Min	9.6	9.6	9.6	9.6
temp °C	Average	14.9	14.9	14.9	14.9
	Max	22.0	22.0	22.0	22.0
Operative air temp °C	Min	10.5	11.3	12.8	16.3
	Average	14.4	15.5	17.6	19.6
	Max	19.6	20.0	21.7	21.4
PMV	Min	-1.7	-1.6	-1.3	-0.7
	Average	-0.8	-0.7	-0.3	0.0
PPD	Average	22%	17%	10%	5%
	Maximum	60%	53%	41%	16%
Occupied Hours below:	16°C	83%	60%	30%	13%
	18°C	98%	92%	54%	21%

1. Assumes winter heating only
2. Overhead radiant panels assumed - TBC in coordination with mechanical services systems
5 ACH assumed as rate of infiltration

Scenarios 3 and 4 (45 and 100 W/m2 of thermal heating) offer reasonable operative temperature ranges and reduced number of hours below 16°C. Even with only 15W/m2 of thermal heating, the average operative temperature is predicted to be 16°C. However, over half of occupied hours (60%) will fall below a target temperature of 16°C.

It is worth noting that other non-conditioned spaces within the development that are also adjacent to existing façade are expected to be subject to similar temperature profiles. For example, occupants within the central shared foyer of Pier 2/3 should also expect to feel cooler temperatures during winter. The eastern exposure could also lead to increased internal temperatures during peak summer compared to outside. As with the Function Space, tenants of these types of spaces would need to be aware of expected temperature profiles.

7.3.1 Function Space Concept Design Summary

- ▶ It should be a tenant driven decision on whether to introduce heating to the space.
- ▶ If existing conditions are considered acceptable, then as a minimum the fabric should be sealed to reduce air leakage / infiltration.
- ▶ Consider a staged approach, where no heating is provided initially and feedback during operation is sought regarding operational comfort
- ▶ Provision for PV array on the roof would help to offset any future installation of space heating in this location if it is determined that it is required
- ▶ The final heating strategy would need to be finalised in coordination with the mechanical system design

7.0 ESD REQUIREMENTS—USER COMFORT & WELLBEING

7.4 Additional Comfort Initiatives

7.4.1 Maximised Daylight

Maximising the daylight increases occupant wellness as well as reducing the need for artificial lighting. Increase glazing in lanterns if possible within heritage and Section J constraints.

7.4.2 Increased Views

Increased views have the obvious advantages of increased value, and occupant comfort. The extent of this will be limited, considering the heritage status of the façade, however, new windows are proposed in a chequer board pattern.

7.4.3 Individual Space Design

Designing each space individually guarantees the most suitable outcome for each space. It also removes the risk and costs of including unnecessary plant and services equipment

7.4.4 Health (Reduced Legionella Risk)

Use of harbour heat rejection allows the site to have no water-based cooling towers. Cooling towers provide bacteria a chance to grow, increasing the risk of Legionella. Harbour heat rejection significantly reduces this risk compared to traditional water-based heat rejection methods.

7.5 Concepts Review Summary

- ▶ Maximise the area of workspace with access to natural daylight and views to the outdoors
- ▶ Consider user-operable windows to increase outdoor air
- ▶ High Visual Light Transmission (VLT) glazing selection where possible
- ▶ Space-specific temperature requirements
- ▶ Consider Function Space heating to Pier 2/3 Space, or provision for future installation. As a minimum, seal the façade in this area where practical to improve thermal comfort whilst understanding the heritage implications
- ▶ Optimise lanterns to maximise daylight levels if possible

8.0 ESD REQUIREMENTS—TRANSPORT

8.1 Introduction

Motor vehicles in general, and the use of private cars in particular, are responsible for many forms of pollution. Global warming is directly affected by motor vehicle use due to the high amounts of energy required to build cars and supporting infrastructure and services, as well as the fuels that in turn lead to greenhouse gas emissions within exhaust fumes. Car exhaust fumes also increase the levels of polluting particles in the air, which are a contributing cause of asthma and other respiratory illnesses.

There is a need to maximise alternative transport options if the use and environmental impact of car commuting is to be reduced. Options available may include trains, buses, light rail and trams, water-based transport such as ferries, as well as pedestrian and cycling opportunities. Of all of these alternatives, walking is the most 'sustainable', with no associated embodied energy or pollutants; cycling is similarly not polluting the environment.

8.2 Initiatives

8.2.1 Public Transport

Taking advantage of Sydney's existing network is a simple and effective way to increase the use of public transport to the space.

8.2.2 Bicycle facilities

Providing safe, secure bicycle parking for all users of the space will encourage sustainable transport options to the space.

These spaces should be provided in a combination of covered, dedicated areas and on grade outside the site. They should serve both tenants and visitors.



Bicycle racks will be provided securely within the site and on grade for ease of all users

8.2.3 Interconnectivity

Connecting services, and connecting the cycle path to the existing foreshore allows tourists and cyclists to include the precinct as part of any tour. It also enhances the users experience of accessing the space.

This will become part of interlinking the precinct to the Sydney Harbour foreshore.

The Green Travel Plan for the site will be used to guide design of sustainable transport initiatives.

8.3 Concept Design Summary

- ▶ Designated Bicycle Parking for tenants, visitors and the community
- ▶ Encourage public modes of transportation
- ▶ Provide a space for information about travel options
- ▶ Connect cycle ways to Sydney's cycle network where possible

9.0 ESD REQUIREMENTS—OPERATION

9.1 Introduction

The operation plan surrounds simplifying and reducing required maintenance as much as possible. The key concepts surround proper planning at the inception stage to reduce ongoing maintenance required.

9.2 Initiatives

9.2.1 Recycling

Recycling of materials can reduce the embodied energy and extend the product life of many products. This is also a simple measure that can be placed around the site at minimal cost by providing recycling bins.

9.2.2 Knowledge Sharing

Sharing knowledge is a great way to help the local community and guests take responsibility for their actions. Informatics is a way of informing people of the affects of their actions which is a great way to curb poor practice.

9.2.3 Ongoing Maintenance

Ongoing maintenance is an important part of continuing sustainability. Over time, products lose efficiency and performance if they are not maintained.

9.2.4 Waste Management Plan

Implementing a detailed waste management plan is crucial to the success of the sustainable operation. This includes setting targets and striving to meet them. Refer to the Arup Waste Management Plan prepared for this SSDA.

9.2.5 Tracking and Monitoring

Sub metering on major water and energy uses can assist in commissioning, driving efficiency and discovering water leaks. It is also great for trend setting, benchmarking and understanding energy and water use.

Meters will be monitored to assist in the ongoing operation of the building by identifying departure from trends.

9.3 Concept Design Summary

- ▶ Develop an ongoing tuning/ commissioning strategy to provide an efficient running building
- ▶ Develop the Waste Management Plan for the site
- ▶ Identify maintenance and replacement requirements
- ▶ Locate recycling bins throughout the precinct with instructions on proper use of what can and cannot be recycled
- ▶ Develop an Environmental Management Plan commensurate with the Green Star Rating Tools

10.0 ESD REQUIREMENTS—COMMUNITY ENGAGEMENT

10.1 Introduction

The site achieves engagement with the greater community through its landmark location on Sydney's harbour foreshore and the welcoming layout of the precinct. The strategies for engagement are centred about maximising the usability and amenity of the space.

10.2 Initiatives

10.2.1 Social Spaces

Bars, restaurants, cafés, theatres and public domain are great ways to bring people to the precinct outside of shows. The local community can be encouraged to use the area for social reasons, transforming the precinct into one of the places to be.

10.2.2 Space Hire

Using the precinct for markets and functions will increase knowledge of the precinct. This can also be a revenue stream out of hours.

10.2.3 Extended Hours

Opening the space up to out of hours use for TAFE style classes, evening dance classes and the like is a great way to extend the usefulness of the buildings.

10.3 Concepts Review Summary

- ▶ Space use to encourage the local community, through open gathering spaces, cafes, theatres and the public domain.
- ▶ Space hire for markets, festivals, functions and the like to increase the use and knowledge of the precinct.
- ▶ Open buildings to the public domain
- ▶ Lighting the space at night to provide an encouraging and secure location.

11.0 ESD REQUIREMENTS—MITIGATION MESAURES

11.1 Meeting the ESD targets

The sustainability framework contained within Appendix A captures the targeted ESD initiatives for the project.

This framework contains an ongoing tracking system for each of the identified initiatives. This includes nominating the specific design response to address the target, identifying the party responsible for enacting this and listing the documentation expected to be provided as evidence of target completion.

The tracking system will note if the right documentation has been sighted at each design phase.

When the project moves into construction phases, the Contractor will become responsible for providing documentation demonstrating compliance with the framework.

11.2 Key mitigation measures

The following table is an extract from the framework within Appendix A and highlights the key mitigation measures, responsible party and program requirement.

Key Mitigation Measure	Responsibility	Timing
Develop a Waste Management Plan for the site	Contractor	Prior to occupation
Develop an Environmental Management Plan for the site	Contractor	Prior to construction
Develop a Commissioning Plan for the project	Contractor	Prior to occupation
Develop a Building Tuning Plan for the project	Contractor	Prior to occupation
Develop a Tenant Fitout Guide	Contractor	Prior to tenant fitout construction
Develop a Building Users Guide	Contractor / Building Owner	Prior to occupation
Develop an Energy, Water and Waste Benchmarking and Target Plan	Contractor / Building Owner	Prior to and during occupation

11.0 ESD REQUIREMENTS—MITIGATION MEASURES

11.3 Addressing City of Sydney requirements

The following table extract summarises the key areas of concern raised by the City of Sydney in early 2017 and how the project intends to address them. This is also captured in the framework in Appendix A.

(c) ESD – CoS comments	Project response
a. an above “minimum compliance” with Section J of the NCC to prevent future occupants from seeking inefficient heating solutions such as plug-in radiant or convection heaters. Concern is raised that if these design aspects are not well-resolved, it will be difficult to retrofit a passive design solution later;	The design of the redevelopment focuses on passive strategies by maximising naturally ventilated spaces, providing spot cooling fans or minimal heating where possible. Risks associated with tenants will be addressed with Tenancy Fitout Guides which nominates expectations in terms of system energy efficiencies.
b. visibly demonstrated commitment to solar water heating. As hot water demand for arts spaces is modest, only a modest solar water heat would be required. The City’s own Renewable Energy Masterplan identifies solar water heating as a significant energy savings option across the LGA;	The project will include solar hot water with gas boost for the domestic hot water services. The solar hot water panels will be coordinated next to the PV panels.
c. indication of additional photovoltaics and the scale of systems that could be accommodated should be provided;	Current architectural drawings reflect the work that was completed for sizing - the system maximises available roof space.
d. with regard to the above two points, there is no need for roof space allocation for solar water heating to be traded against space for photovoltaic panels – both technologies can be accommodated and when placed alongside each other make a clear statement of commitment to diverse renewable energy solutions;	See “b” above.
e. the application of Battery Storage technology to enable onsite renewable energy generated during daylight hours to be used to meet the higher site energy demand of the evening/night. This is a serious oversight given the rapid development of battery technology and the NSW Government’s stated commitment to energy efficiency innovation;	The existing STC solar PV array is adequately sized to meet the future increased demands of the STC. Further, an option of combining the STC solar PV panels and the Wharf 2/3 proposed PV panels is being explored as a precinct wide strategy so that demands of both are adequately met by the PV arrays. Thus, battery storage becomes less viable against the capital cost.
f. references to using recycled and sustainably sourced (certified – FSC) timber “where possible” are somewhat vague and uncertain. The applicant must demonstrate a commitment to this aspect of the proposal and ensure that only certified or recycled timber is used;	The framework requires “95% by cost to be FSC with CoC”. 100% was not nominated given that there is a concern over meeting the heritage requirements for replacement structural timber piers.
g. a stronger commitment to lock in rainwater capture and re-use is required. New storage capacity should be included as part of the current design and construction – not deferred to the future;	The water conservation strategy reduces potable water consumption via efficient appliances and the innovative application of using the harbour water as a source of heat rejection. Wharf 4/5 has an existing rainwater storage system that was installed as part of the <i>Greening of the Wharf</i> project. There is a surplus of recycled rainwater that can be supplied from the STC rainwater system to supply recycled water to any landscaped areas / wash downs areas for the project.
h. greater consideration for working with the Barangaroo site owners/operators to establish whether export of recycled water services is feasible to WBACP; and	The precinct has developed a water conservation strategy using efficient appliances and recycled rainwater from Wharf 4/5 to supply toilet flushing in Wharf 4/5. Also one of the main typical large water uses in a building are cooling towers which have been replaced with a harbour heat rejection system therefore eliminating water make up and cooling towers. Therefore, it is not believed that another source of recycled water from an external third party is required or feasible to supply the WBACP.
i. little or no reference is made to existing adopted NSW Government energy efficiency, renewable energy or water conservation plans/policies. As the proponent, INSW should accord with the latest policy positions of the NSW government including the recently exhibited NSW Climate Change Fund Draft Strategic Plan and its Draft Plan to Save NSW Energy and Money	Design is being developed to reflect the current Government plans / policies and will incorporate requirements once they are finalised within government.

APPENDIX A - CONCLUSION AND FRAMEWORK MATRIX

The following sustainability framework is designed to influence decisions regarding initiatives discussed in this document.

This document is intended to serve as a reference going forward. It is to be used as a benchmark and will be referred to when making decisions about the WBACP.

Note that some initiatives are subject to further investigation when the project moves into more detailed design. These initiatives are indicated with “Maybe” in the targeted column. The project will seek to investigate the feasibility of these initiatives within the heritage constraints of the project.

If the project was to register for a formal Green Star rating, these principles would form the basis of the strategy for achieving this.

The framework also contains an approach to ongoing tracking of the project progress in relation to the sustainability targets. This includes nominating the specific design response to address the target, identifying the party responsible for enacting this and listing the documentation expected to be provided as evidence of target completion. The framework is designed to ensure that the initiatives are being embedded at each stage of the project. The tracking system will note if the right documentation has been sighted at each phase.

Note that when the project moves into construction phases, the Contractor will become responsible for providing documentation demonstrating compliance with the framework.

The framework should be read as illustrated below.

DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence	Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
1	Energy & Carbon	Greenhouse Gas Emissions	Reduce Greenhouse Gas Emissions through passive design approach, vernacular architecture and energy efficiency of buildings in operation	1.1 Any new opaque façade shall be upgraded to meet Section J Part J1 Building Fabric in all spaces where cooling is delivered.	Y	As built drawings demonstrating opaque fabric performance requirements are met.		X	X									X

Sustainability category & design initiative

Specific design response

Is the project targeting the initiative?

Responsible party & required document

FRAMEWORK

TRACKING

Walsh Bay Arts and Cultural Precinct, Sustainability Framework

DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence	Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
1	Energy & Carbon	Greenhouse Gas Emissions	Reduce Greenhouse Gas Emissions through passive design approach, vernacular architecture and energy efficiency of buildings in operation	1.1 Any new opaque façade shall be upgraded to meet Section J Part J1 Building Fabric in all spaces where cooling is delivered.	Y	As built drawings demonstrating opaque fabric performance requirements are met.		X	X									X
				1.2 Any new glazing in spaces where cooling is delivered shall meet Section J Part J2 Glazing i.e. comply with NCC Glazing Calculator OR Meet the requirements nominated as part of a compliant JV3 assessment.	Y	As built drawing / receipt / docket showing glazing performance requirements are met.		X	X									X
				1.3 Where practically possible, within the constraints of the heritage context, sealing of existing facade shall be improved to minimise air leakage / infiltration. This shall occur to any spaces where heating or cooling is delivered. New fabric elements to meet Section J Part J3 Building Sealing requirements.	Y	As built drawing demonstrating sealing treatments to door frames, window frames. Copy of building air infiltration tests carried out for the building showing test specification and results.		X	X									X
2	Energy & Carbon	Efficient HVAC Systems/ Passive Design	Provide passive systems wherever possible, and simple, decentralised systems where not	2.1 Overall installed systems will exceed Minimum Energy Performance Standards (MEPS) or NCC Section J target for services. Target 5% exceedance where spatials allow. Refer to Mechanical Specification for nominated systems. Response to CoS: Risks associated with tenants can also be addressed with a Tenant Fitout Guide which nominates expectations in terms of system energy efficiencies.	Y	As built equipment schedules demonstrating minimum performance standards for equipment is nominated and short report including calculations demonstrating exceedance on NCC for all equipment.				X								X
						Tenant Fitout Guide nominating expectation in terms of tenant system performance, including lighting, equipment, supplementary HVAC and material selections and advice regarding operation and impact on energy / water use.	X											X

Walsh Bay Arts and Cultural Precinct, Sustainability Framework
DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence	Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
				2.2 Natural ventilation to be adopted in the following spaces: Pier 2/3 - Public foyer (heating only to be provided) - Function Space (heating only to be provided) Shore Sheds - Public foyer Wharf 4/5 - Studios adjacent to facade (heating only) Opening area of window or the like to be 5% of floor area served.	Y	Mechanical as built drawing showing absence of ventilation systems.				X								X
						As built drawings (plans and elevations) showing operable window location with opennable area indicated for each window / louvre or the like.		X	X	X								X
				2.3 Mixed mode systems to be installed in the following spaces: Wharf 4/5 - all areas below now predominantly operate in AC mode. - Green Room adjacent to façade (now AC) - Any office / admin adjacent to facade (now AC) Pier 2/3 -Green room adjacent to façade(now AC) - Any office / admin adjacent to facade (now AC) - Boardroom adjacent to facade (now AC) - ATYP rehearsal (all rooms except ATYP Performance) (now AC) - Bell rehearsal (all rooms) (now AC) - ACO Green room adjacent to facade (ACO rehearsal & auditorium full AC) (now AC) Shore sheds between piers - all areas below to have capped services with intent that they are to be AC - Rehearsal space - Any office / admin spaces adjacent to façade Any external windows or doors to e.g. green room / boardroom will need reed switch or the like to turn AC off when opened. Recommended min. 2% opening area to floor area served to facilitate natural ventilation mode. To be coordinated with any acoustic requirements.	Y	Mechanical as built drawings mechanical systems to mixed mode areas.				X								X
						Extract from commissioning report showing AC zones correctly switch off when doors or windows are opened.		X		X								X
						As built drawings (plans and elevations) showing operable window location with opennable area indicated for each window / louvre or the like.		X	X									X
				2.4 Harbour Heat Rejection to be installed. Minimum system efficiency as per Mechanical Tender Specification.	Y	Mechanical as built drawings nominating harbour heat rejection system and equipment schedule detailing performance criteria of system.				X								X

Walsh Bay Arts and Cultural Precinct, Sustainability Framework
DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence	Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
3	Energy & Carbon	Peak Energy Demand Reduction	Reduce peak demand on energy infrastructure	3.1 Peak load to be reduced by 15-30% through use of passive design, efficient fittings and onsite generation via PV array. New PV array to cover maximum available roof space within heritage visual constraints on roof of Pier 2/3 with minimum size of 100kWp. Response to CoS: Current architectural drawings reflect the work that was completed for sizing - the system maximises available roof space within heritage visual constraints. This is minimum PV array required. Contractor to offer price option for increased array size. Battery storage has been explored to assess the feasibility based on life cycle costs. It has been found that the projected precinct demand for energy is such that the existing PV array on Pier 2/3 and the proposed new array on Wharf 4/5/ is likely to be of optimal size for precinct demand, making storage less feasible.	Y	Mechanical as built equipment schedules nominating system performance for chiller, AHUs, fans, pumps, miscellaneous fans				X								X
						Electrical as built drawing showing PV infrastructure, array size, location.					X							X
						Lighting as built drawing and luminaire schedule showing lighting fixtures, quantities and annotated with lighting power density calculations to show compliance with initiative 4.4 of this framework (reduction of artificial lighting consumption compared to NCC)					X	X						X
						Extract from commissioning report showing PV array operating correctly.					X							X
4	Energy & Carbon	Lighting strategies	Reduce artificial lighting energy consumption	4.1 LED light fixtures to be used throughout where possible, as a minimum in back of house, front of house spaces, external lighting / precinct. May be exceptions where not cost effective in specialised spaces such as theatre performance spaces.	Y	Electrical / lighting as built drawing showing lighting layout. As built lighting schedule showing LEDs are nominated throughout.					X	X						X
				4.2 Dimmable controls to be included for all areas except specialist theatres.	Y	Electrical / lighting as built drawing showing location of dimmers. As built lighting schedule showing fixtures for which dimming is possible.					X	X						X
				4.3 All spaces except where required for safety reasons (workshops) & except specialist theatres to have occupancy sensors. External lighting to have sensors and time clocks to manage operating hours.	Y	Electrical / lighting as built drawing showing location of motion sensors.					X	X						X
				4.4 Reduce max NCC Section J lighting power density by min. of 30- 40% in areas such as office, corridors, back of house. Sydney Theatre Company space named "the walk" (eastern corridor) is in fact a gallery space. Therefore considered "specialist function" and excluded as are specialist theatres.	Y	Electrical / lighting as built drawing and schedule showing number and type of fixtures in each space and lighting power for each fixture & calculations demonstrating that the lighting power density on average is reduced by 40% across the project					X	X						X

Walsh Bay Arts and Cultural Precinct, Sustainability Framework

DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence	Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
5	Energy & Carbon	Energy Sub-Metering	Facilitate ongoing management of energy consumption	5.1	Y	Mechanical as built drawing showing where energy sub-meters have been installed.				X								X
						Electrical as built drawing showing where energy sub-meters have been installed.					X							X
						Commissioning report extract demonstrating the meters have been installed and commissioned in accordance with correct standards.				X	X							X
				5.2	Y	Commissioning report extract demonstrating the system installed and connected to the sub-metering network and is capable of monitoring and displaying the building's performance on at least a monthly basis and is operating correctly,	X			X								X
6	Water	Potable Water Efficiency	To reduce potable water consumption by building occupants	6.1	Y	Hydraulic or architectural as built drawings highlighting location of all fixtures and fittings		X					X					X
						Architectural as built fixtures / fittings schedule nominating the products that have been installed		X					X					X
				6.2	Y	Mechanical as built drawings nominating harbour heat rejection system and equipment schedule detailing performance criteria of system.				X								X

Walsh Bay Arts and Cultural Precinct, Sustainability Framework
DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence	Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
7	Water	Water Metering	To monitor and manage water consumption	7.1 Water sub-metering to be installed for the following: - Bathrooms - Showers (where separate from bathrooms) - Evaporative rejection system (if installed) - Rainwater tank (if installed) Response to CoS: The water conservation strategy reduces potable water consumption via efficient appliances and the innovative application of using the harbour water as a source of heat rejection. Wharf 4/5 has an existing rainwater storage system that was installed as part of the Greening of the Wharf project. A non-potable water tap is to be installed on the side of Wharf 4/5 to draw from this existing tank for e.g. watering of any landscaped areas or washdowns. One of the main typical large water uses in a building are cooling towers which have been replaced with a harbour heat rejection system therefore eliminating water make up and cooling towers.	Y	Hydraulic as built drawings showing where water sub-meters have been installed and showing external hose tap connected to Wharf 4/5 rainwater tank for use in irrigating or wash downs in public areas.							X					X
				7.2 A system is to be installed that it is connected to the water sub-metering network and is capable of monitoring and displaying the building's water performance on at least a monthly basis. This could be a BMS or the like, depending on appropriateness for scale and type of building. Each tenant to have access to they system such that they can monitor their consumption. The system must be capable of monitoring in at least 15 minute increments.	Y	Commissioning report extract demonstrating the system installed and connected to the sub-metering network and is capable of monitoring and displaying the building's performance on at least a monthly basis and is operating correctly.	X			X								X
8	Water	Stormwater and Landscape Irrigation	Improve quality of site stormwater runoff and reduce potable water consumed by landscape irrigation	8.1 Currently not targeted. Contractor to explore if landscaping increases in size:- Explore potential for edge swales or the like (e.g. planting) to treat water runoff from site before it enters the harbour. Subject to any installation of landscape areas.	N	As built site drawings showing the landscaping that has been incorporated to treat water before runoff.		X							X			X
				8.2 Currently not targeted. Contractor to explore if landscaping increases in size:- Landscaping, if present on site, to be xeriscape (drought tolerant plant species that do not require irrigation to survive).	N	As built planting schedule showing the planting selection around site		X							X			X
						Hydraulic as built drawing showing no irrigation is provided							X					X

Walsh Bay Arts and Cultural Precinct, Sustainability Framework
DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence	Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
9	Water	Domestic Hot Water	Reduce carbon and energy associated with the heating of water for domestic uses	9.1 Provide solar thermal array on roof if hot water heating demand is great enough. Response to CoS: The project will include solar hot water with gas boost for the domestic hot water services. The solar hot water panels will be coordinated next to the PV panels. Refer to Hydraulic Specification.	Y	Hydraulic as built drawings showing size and location of the solar thermal array							X					X
						Extract from commissioning report showing solar thermal array operating correctly.							X					X
10	Sustainable Materials	Internal materials	Reduce health impacts associated with material finishes and assemblies across the precinct	10.1 For all paints applied as internal finishes, VOC limits shall be in accordance with the Good Environmental Choice Australia (GECA) standard GECA-23-2005.	Y	Product certificates that demonstrate certification under the correct scheme / standard. Certificates must be in date.		X		X	X		X	X				X
				10.2 For all adhesives and sealants used in the project, VOC limits shall be in accordance with the limits adopted by the South Coast Air Quality Management District (California, USA) Rule 1168.	Y	Product certificates that nominate emissions levels or Material Safety Data Sheets demonstrating compliant emission levels. Certificates / Data Sheets must be in date.		X		X	X		X	X				X

Walsh Bay Arts and Cultural Precinct, Sustainability Framework
DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence	Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
				10.3 All carpets installed in the project shall have VOC limits in accordance with the Good Environmental Choice Australia (GECA) standard GECA-50-2010 v2 for Carpets. Other floor coverings shall be in accordance with GECA 25-2010 v2 for Floor Coverings.	Y	Product certificates that demonstrate certification under the correct scheme / standard. Certificates must be in date.		X										X
				10.4 All Fitout items VOC levels shall be in accordance with the Good Environmental Choice Australia (GECA) standard GECA-28-2010 v2 for Furniture & Fittings	Y	Product certificates that demonstrate certification under the correct scheme / standard. Certificates must be in date.		X										X
				10.5 All specified internal engineered wood products shall be in accordance with the Green Star Design & As Built v1.1 limits for Formaldehyde	Y	Product certificates that demonstrate certification under the correct scheme / standard. Certificates must be in date.		X										X
						Confirmation that 100% by cost of internally applied paints, adhesives, sealants, carpets, floor coverings, fitout items and engineered wood products comply with requirements.											X	
						Invoices / proof of purchase or dockets for all applicable products demonstrating that the nominated products have been procured and delivered to site.												X
	11 Sustainable Materials	Resource Efficiency	Reduce embodied energy and resource depletion associated with the project	11.1 A site wide strategy for resource efficiency is to be implemented. - Any existing timber will be reused where possible onsite. - Timber piles to be salvaged where possible. - Precinct wide services strategy to be implemented which shares main plant between Wharf 4/5 and Pier 2/3. - Tenant Fitout Guide to be used to outline and encourage tenants to reduce, reuse, recycle their existing furniture / appliances etc.	Y	Short report that references all products, their certificates and cost such that it can readily demonstrated that the requirements have been met for all items 10.1 through to 10.5.											X	X
						Short report outlining approach to resource efficiency adopted for the project, highlighting building elements that have been dematerialised, serve multiple purposes, are reused or recycled. Contractor to include details on reuse and recycle rate which should be monitored throughout demolition and construction. Tenant Fitout Guide extract to be issued as part of this short report demonstrating how tenants have been encourage to adopt resource efficient policies.	X	X										X
	12 Sustainable Materials	Recycled material content	Prolong the useful life of existing products and materials and encourage the uptake of products with recycled content	12.1 Site wide, the project shall target: - 5% by cost of fitout items within the base building scope (e.g. furniture within reception areas) to have at least 20% recycled content or are reused. e.g. re-use timber piles for reception desk.	Y	Short report by Quantity Surveyor with summary table demonstrating compliance with requirements. All fitout items that have been procured must be included with those that are reused or contain >20% recycled content highlighted. Cost of reused items can be estimated by selecting equivalent product as new.		X									X	X
						Material data sheets for any items used to claim >20% recycled content must be submitted where percentage of recycled content is clearly nominated. Alternatively a letter from the supplier confirming the recycled content can be submitted.		X										X

Walsh Bay Arts and Cultural Precinct, Sustainability Framework
DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence	Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
13	Sustainable Materials	Local material sourcing	To reduce embodied energy associated with transportation of materials	13.1 20% by cost of all construction materials, including fitout items, within base building scope to be sourced from the local area (within 1500Km of site, if feasible). For example, new piles to be NSW turpentine timber.	Y	Short report by Quantity Surveyor with summary table demonstrating compliance with requirements. All construction materials and fitout items that have been procured must be included with their site of origin nominated. Cost of any reused items sourced locally can be estimated by selecting equivalent product as new.		X	X								X	X
						Letter from the supplier confirming the site of origin of product to be submitted.												X
14	Sustainable Materials	Timber	To encourage the use of reused timber and timber sourced from forests whose conservation values are not degraded	14.1 95% (by cost) of all timber used shall be from a reused source or is certified by a scheme accredited by FSC International or PEFC and has a full Chain of Custody (CoC) Timber pile replacements to be FSC certified if possible - heritage requirements may prevent this. Response to CoS: The matrix within the framework provided in the ESD report from the EIS states "95% by cost to be FSC with CoC". 100% is not nominated given that there is a concern over meeting the heritage requirements for replacement structural timber piles. Recommended timber pile replacements to be FSC certified if possible - heritage requirements may prevent this.	Y	Short report by Quantity Surveyor with summary table demonstrating compliance with requirements. All timber items that have been procured must be included with those that are reused or certified highlighted. Cost of reused items can be estimated by selecting equivalent product as new.		X									X	X
						Invoices confirming types of timber product and quoting chain of custody code.												X
15	Sustainable Materials	PVC	Reduce the environmental and health impacts of PVC by encouraging the use of PVC that adheres to Best Practice Guidelines	15.1 90% (by cost) of PVC products & PVC containing products that meet the Best Practice Guidelines for PVC in the Built Environment, Products include: permanent formwork, pipes, flooring, blinds and cables.	Y	Short report by Quantity Surveyor with summary table demonstrating compliance with requirements. All PVC items that have been procured must be included with those that meet Best Practice highlighted. Costs shall be the entire cost of the product (excluding installation costs), irrelevant of the percentage of PVC in the product.		X		X	X		X	X			X	X
						Invoices confirming types of PVC products.												X
16	Sustainable Materials	Zero Ozone Depletion Potential	To encourage practices that minimise the environmental impacts of refrigeration equipment	16.1 All refrigerants will have an ozone-depleting potential of zero.	Y	Short report by mechanical contractor describing all mechanical systems within the building, nominating those that contain refrigerant and the type of refrigerant used in each piece of equipment. The report is to include the ODP and volume of each refrigerant demonstrating all have ODP of zero. Any existing systems that are not refurbished or replaced can be excluded.				X								X
17	Sustainable Materials	Hazardous Materials Survey	Reuse previously developed land and remediate contaminated land / buildings	17.1 A comprehensive hazardous materials survey is to be carried out in accordance with the relevant Environmental and Occupational Health and Safety (OH&S) legislation. Any identified asbestos, lead or PCBs are to be stabilized, or removed and disposed of in accordance with best practice guidelines.	Y	Copy of HazMat report by qualified professional that demonstrates the survey was conducted in accordance with recognised standards and guidelines.	X											X
						Confirmation that HazMat survey was conducted and any remediation works completed before construction began.												X
18	User Comfort & Wellbeing	External Views and visual comfort	To provide occupants with a visual connection to the external environment	18.1 Glazed elements are being introducing in a few areas where previously opaque. E.g. Doorways to East, West elevations shall be replaced with glazing. Note - glass selection to encourage natural light but constrained to within heritage and Section J requirements. Where no thermal requirements for glazing, introduce higher VLT glass.	Y	As built drawings highlighted to show areas of new glazing that have been introduced and any supporting receipts / dockets showing glazing VLT.		X	X									X

Walsh Bay Arts and Cultural Precinct, Sustainability Framework

DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

							Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence												
19	User Comfort & Wellbeing	Environmental conditions (wider temperature range)	To provide a range of spaces with a mix of environmental conditions to maintain thermal comfort with reduced energy consumption	19.1 The spaces are controlled to meet the user needs as follows: - Naturally ventilated spaces - as per outdoor air temperatures. Where heating only provided, heating to >16 deg C. - Mixed mode rehearsal / office spaces - 21-24 degrees C when A/C operating, outdoor air temp in NV mode. - Performance spaces (ATYP, ACO auditorium) - fully AC to 21-24 deg C. Instrumental areas to have humidity control.	Y	Extract from commissioning clause nominating the setpoints each space type has been set to.				X								X
20	User Comfort & Wellbeing	Daylight (internal)	To maximise daylight penetration into the floor plate, improving indoor visual quality and reducing tenant lighting energy consumption.	20.1 Spaces below lanterns shall receive 2.5% daylight factor at floor level OR A significant improvement in daylight to be shown compared to existing conditions through e.g. replacement of opaque skylight elements with new glazed elements.	Y	Short report nominating the daylight factor at floor level within the space below lanterns or describing the new glazing that has been introduced, its size and orientation and the improvement compared to existing conditions.		X	X									X
						As built drawings highlighted to show areas of new glazing that have been introduced and any supporting receipts / dockets showing glazing VLT.			X									X
21	Sustainable Transport	Public Transport	To encourage responsible and carbon-minimal forms of transport for users to the site	21.1 Signs shall be provided indicating connection to Sydney bike routes - Wayfinding plan to address this.	Y	As built drawings showing location and size of signposts to Sydney CBD cycle route. If digital, supporting report to be submitted from contractor that confirms the signs will indicate bike routes.		X										X
				21.2 No car parking will be provided	Y	As built drawings showing absence of car parking.		X										X
22	Sustainable Transport	Cyclist Facilities	To facilitate the use of bicycles by occupants and visitors	22.1 Bike parking spaces to be in line with Green Travel Plan recommendations. Adequate showers, change facilities and locker storage to be provided.	Y	Short report highlighting requirements of Green Travel Plan and demonstrating the precinct provides facilities as required by the plan, including numbers of showers, lockers and bike spaces (staff and visitors) that are provided.		X										X
						As drawings highlighted to show location of facilities, including: showers, change facilities, bike storage and lockers.		X										X
						Extract from Green Travel Plan where bike facilities and end of trip facilities requirements are nominated.		X										X

Walsh Bay Arts and Cultural Precinct, Sustainability Framework

DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence	Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
23	Operation	Recycling Waste Storage	To provide facilities that encourage and facilitate the recycling of waste	23.1 A waste storage area shall be provided that is readily accessible for council waste collection. The area shall have a separate, designated space for the separation and collection of recyclables including: - paper & cardboard - glass - plastic - organics - cooking oil (for retail tenancy use) Refer to waste consultant report / Waste Management Plan for required area for accommodating separate waste streams and location.	Y	As built drawings showing location and size of waste storage facilities where separation of waste streams is demonstrated .		X									X	X
						Copy of the Waste Management Plan										X		X
				23.2 Separate bins for recycling and general waste shall be provided in each separate tenancy. Bins shall accommodate these waste streams as a minimum: - landfill - paper & cardboard - glass - plastic - organics - any other specific waste stream as required by tenant In addition, refer to Waste Management Plan for recommended external bin allowance based on footfall. Refer to separate Event Management Plan for waste requirements related to precinct wide events.	Y	As drawings showing location of bins for the precinct and within tenancies where known.		X								X		X
24	Operation	Construction Waste Management	Minimise the amount of construction waste going to disposal	24.1 Both Demolition and Main Works Tender to include requirement that the Contractor develops and complies with WMP and retains quarterly reports for demonstrating that the targets are being met.	Y	Tender Phase - Copy of tender documentation nominating the requirements the Contractor must meet.	X									X		X
				24.2 A WMP shall be developed that addresses: -Construction waste management -Outlines how to achieve recycling rate for demolition / construction waste as nominated within the Tender WMP (refer to Arup WMP).	Y	Construction Phase - Copy of the Waste Management Plan addressing the criteria.	X									X		X
						Construction Phase - quarterly waste reports demonstrating the project is on track to meet the nominated targets.	X									X		X
25	Operation	Environmental Management Plan	Minimise environmental impacts of all sources during construction stage.	25.1 Tender to include requirement that the Contractor develops and complies with EMP requirements and issues reports for demonstrating that the EMP is being successfully implemented.	Y	Tender Phase - Copy of tender documentation nominating the requirements the Contractor must meet.	X											X

Walsh Bay Arts and Cultural Precinct, Sustainability Framework
DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence	Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
				25.2 An EMP shall be developed by the Contractor that complies with Section 3 of the NSW Environmental Management System guidelines 2009. In addition, the plan is to address erosion / sedimentation of construction works to avoid polluting the surrounds.	Y	Construction Phase - Copy of the Environmental Management Plan and short report outlining how the EMP has been addressed during construction including a compliance matrix of how the criteria is fulfilled.	X											X
26	Operation	Commissioning and building tuning plan	Ensure all building services operate to optimal design potential	26.1 Contractor to fully commission the project within one year of operation. A Commissioning Plan should be in place that outlines pre-commissioning and commissioning activities to be performed based on approved standards and guidelines (refer to GBCA Green Star Design & As Built v1.1 Credit 2.2 Building Commissioning. The requirements of this credit must be met in full.)	Y	Contractor to provide record of commissioning that takes place for all systems within the project within one year of operation. This includes extracts from the commissioning report demonstrating that comprehensive pre-commissioning and commissioning activities have been performed in accordance with the Green Star Credit 2.2.	X			X	X	X	X					X
				26.2 There is to be a Building Tuning Commitment in place with the Contractor, including a commitment to perform quarterly adjustments and measurement for the first 12 months after occupation. (Refer to GBCA Green Star Design & As Built v1.1 Credit 2.3 Building Tuning. The requirements of this credit must be met in full.)	Y	Copy of Building Tuning Commitment demonstrating building tuning will take place in accordance with Green Star Credit 2.3.	X			X	X	X	X					X
						Contractor to provide record of building tuning that takes place for all systems within the project within one year of operation. This includes extracts from the quarterly building tuning reports demonstrating that comprehensive measurements and adjustments have been performed.	X			X	X	X	X					X
27	Operation	Efficient equipment selection	Ensure any new equipment to be installed is energy efficient	27.1 Any installed fridges, freezers, washers, dryers, microwaves within base building scope are to be within 1 star of the highest available on the market under the Energy Rating Labelling Scheme (refer to energyrating.gov.au). Tenant Fitout Guide to recommend tenancies install the same.	Y	Short report nominating all appliances procured as part of base build scope. The report is to reference Energy Rating Label certificates.		X										X
						As built schedule or docket showing appliances that have been procured.												X
						Contract documentation or Tenant Fitout Guide showing tenants must install appliances within 1 star of the highest available on the market.	X											X
28	Operation	Building Services Procurement	Ensure services are procured based on considering the life cycle cost and environmental impact associated with operation, replacement and maintenance	28.1 Select systems based on LCC analysis looking at the NPV (Net Present Value) over a maximum 3 year period. Consideration to include capital, operational, maintenance, churn and replacement over the systems period assessed. Mechanical Engineers report (Precinct Cooling Options Study) issued during detailed design addressed this requirement, with Tender Mechanical design reflecting outcome. Refer to Mechanical Tender documentation for recommended cooling design.	Y	Evidence that the systems installed are as per those recommended in the Arup Precinct Cooling Options Study. Alternatively, issue a summary report and calculations demonstrating an LCC has been performed and how the outcome informed the specification of equipment for the project.				X	X		X					X

Walsh Bay Arts and Cultural Precinct, Sustainability Framework

DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

							Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence												
29	Operation	Green Orientation and ongoing education	Encourage transfer of information to new and ongoing users to optimise the sustainable performance of the precinct	29.1 Issue a Building Users Guide to inform all new users of the building commitment to sustainability. Guide is to highlights the sustainability aspects of the project and nominates initiatives relevant to the user e.g. bike facilities, recycling bins, mixed mode and/or natural ventilation operation etc. (Refer to GBCA Green Star Design & As Built v1.1 Credit 4.2 Building User Information. The requirements of this credit must be met in full.) It should include how the Guide will be made accessible to tenants and suited to the target audience. Digital Building Users Guide is acceptable.	Y	Copy of the Building Users Guide	X	X										X
						Confirmation from the Building Owner that it has been made available to occupants by project completion.	X											X
30	Social and Community	Public performance feedback system / Informatics	Monitor and communicate resources use	30.1 Install display screen in public areas that shows monthly / annual water & energy consumption. An example location is Visitor Portal space. Waste recycling rates to be considered for display here too.	Y	As built drawings showing location of display screens.		X			X							X
						Commissioning extract demonstrating the screens are operating correctly.				X	X							X
						Confirmation from the Building Owner that the screens display water and energy consumption (and waste recycling rates as an option).	X											X
31	Social and Community	Out of hours use	Maximise building use and provide additional facility to local community	31.1 The buildings shall accommodate public festivals (Vivid, Writers Festival) during non-typical working hours, in which the facilities & amenities will be operational.	Y	Operational profiles / leasing profiles or the like demonstrating the accessibility of the facilities during out of hours.	X											X
32	Social and Community	Community space	Contribute to community wellbeing	32.1 10% of the waterside precinct NLA shall be dedicated to the community for e.g. public art installation, public events. Fishing access at aprons is an example of contributing area.	Y	As built drawing highlighted to show location and size of community space.	X	X										X
33	Benchmarks and targets	Sustainability Framework	Facilitate ongoing management and monitoring of sustainability drivers	33.1 An energy, water and waste target for the precinct shall be developed	Y	A Benchmarking & Target Plan is to be developed. Within this Plan, the strategy for establishing the environmental targets is to be outlined e.g. the baseline should be set using first 6 months operation (or after full commissioning and tuning has taken place). The roles and responsibilities of parties involved in tracking the environmental performance is to be outlined in the Plan. The Plan is to include recommendations on remedial actions that should be implemented when targets are not being met. The Plan should include monitoring and reporting requirements including frequency & stakeholders to be informed.	X			X	X	X	X			X		X

Walsh Bay Arts and Cultural Precinct, Sustainability Framework

DOCUMENTATION ROLES & RESPONSIBILITIES MATRIX

							Building Owner	Architect	Façade	Mechanical / BMS	Electrical	Lighting	Hydraulic	Acoustic	Landscape architect	Waste	Quantity Surveyor	Head Contractor
#	Category	Initiative	Intention	Design Response / Contractor Requirements	Targeting	Required evidence												
				33.2 Quarterly reports by the Facilities Management team during operation shall be issued to determine if the building is operating in line with the targets	Y	A letter of commitment from the Building Owner that the Facilities Management Team is following the Benchmarking & Target Plan, is responsible for issuing quarterly reports that note the waste, energy and water consumption of the building, how it compares to the targets and remediation actions that should be taken.	X											X