

Final Business Case for the Renewal of the Powerhouse Museum - Appendices

Museum of Applied Arts and Sciences
24 October 2014

Table of contents

Appendix A – Commercial strategy	2
Appendix B – Planning report	3
Appendix C – Compliance with the MAAS Act.....	4
Appendix D – Strategic Gateway Review Report.....	7
Appendix E – Value Management Workshop findings.....	8
Appendix F – Staging options	9
Appendix G – Patronage numbers	24
Appendix H – Capital costs.....	30
Appendix I – Economic assessment	31
Appendix J – Financial Impact Statement	42
Appendix K – Financial assessment.....	44
Appendix L – Risk management	57
Appendix M – Project Plan.....	74
Appendix N – Benefits realisation strategy	75
Appendix O – Auckland Art Gallery Revitalisation project	79

Appendix A – Commercial strategy

**Museum of Applied Arts & Sciences
Commercial Real Estate Strategy**

October 2014



**Building a better
working world**



Building a better
working world

Ernst & Young
8 Exhibition Street
Melbourne VIC 3000 Australia
GPO Box 67 Melbourne VIC 3001

Tel: +61 3 9288 8000
Fax: +61 3 8650 7777
ey.com/au

Ms Elizabeth Stratford
Director, Corporate Resources
Museum of Applied Arts and Sciences
500 Harris Street
Ultimo NSW 2007

13 October 2014

Private and confidential

MAAS Commercial Real Estate Strategy

Dear Elizabeth

In accordance with our executed Agreement dated March 2014, we are pleased to enclose our report which provides a Commercial Real Estate Strategy and Concept Drawings Materials in relation to the Museum of Applied Arts and Sciences ("MAAS") real estate in New South Wales.

The attached report outlines our understanding of your business accommodation needs, and provides an accommodation strategy which aligns your real estate to best meet the current and future needs of the business.

Thank you for your instructions and entrusting this work with our Firm. We trust that we have provided you with the information you require, however, should you have any queries regarding this matter please contact us.

Yours sincerely

Ross Hamilton

Partner
Real Estate Advisory Services

Contents

1. Executive Summary	4
2. Introduction	9
3. Business Service Delivery and Accommodation Objectives	12
4. Powerhouse Museum, Ultimo	22
5. Sydney Observatory, Millers Point	59
6. Powerhouse Discovery Centre	69
Appendix 1 – FJMT Architectural Response	79
Appendix 2 – JBA Planning Report	80
Appendix 3 – RLB Construction Cost Estimate	81
Appendix 4 – Rental & Sales Evidence	82
Appendix 5 – Feasibility Analysis	83
Appendix 6 – Procurement Options	84
List of Tables	
Table 1 – Phases of the project	5
Table 2 – Key findings	6
Table 3 – Phases of the project	10
Table 4 – Summary of Interviews with MAAS staff	16
Table 5 – Accommodation description	24
Table 6 – Function Space - PHM	25
Table 7 – Construction costs for total Commercial Real Estate Strategy	47
Table 8 – Hypothetical Development Assumptions and Inputs	50
Table 9 – Extract from Estate Master Development Feasibility Summary	51
Table 10 – Extract from Estate Master Development Feasibility Summary	52
Table 11 – Expected benefits	53
Table 12 – Delivery Option 1	54
Table 13 – Delivery Option 2	55
Table 14 – Delivery Option 3	55
Table 15 – Next Steps – Powerhouse Museum redevelopment	58

Table 16 – Function Space – Discovery Centre

72

List of Figures

Figure 1 – Commercial Real Estate Strategy Vision	7
Figure 2 – Location Map –Powerhouse Museum, Ultimo, Sydney Observatory and Powerhouse Discovery Centre	11
Figure 3 – MAAS Executive Team	13
Figure 4 – Roles and responsibilities of Departments within MAAS	14
Figure 5 – Site Plan - Powerhouse Museum, Ultimo	23
Figure 6 – Photos of the Powerhouse Museum	25
Figure 7 – Photos of the Harwood building	28
Figure 8 – Heritage Overlay – Powerhouse Museum	30
Figure 9 – Maximum Building Street Frontage Height & current planning building heights (in metres) – Powerhouse Museum	31
Figure 10 – Powerhouse Museum and Surrounding Development	32
Figure 11 – Darling Harbour Live Master Plan	34
Figure 12 – Darling Harbour Live Master Plan	36
Figure 13 – UTS developments	38
Figure 14 – Museum Vision – FJMT Spatial Analysis	40
Figure 15 – FJMT Space Summary	41
Figure 16 – Museum Vision – Arrival and Access Points	42
Figure 17 – Museum Vision – Working Museum along Harris Street	43
Figure 18 – Museum Vision – proposed Turbine Hall	44
Figure 19 – Commercial Real Estate Strategy	45
Figure 20 – Photos of Sydney Observatory	61
Figure 21 – The Sydney Observatory and Surrounds	64
Figure 22 – The Sydney Observatory service yard and outdoor seating area	66
Figure 23 – The Sydney Observatory connectivity from the south-eastern corner of the site	67
Figure 24 – Site Plans of Powerhouse Discovery Centre	70
Figure 25 – Photographs of the Powerhouse Discovery Centre	71
Figure 26 – The Powerhouse Discovery Centre and Surrounds	74
Figure 27 – Discovery site use blocking	77

1. Executive Summary

- 1. Introduction
- 2. Key Findings

1.1 Introduction

The Museum of Applied Arts and Sciences ("MAAS") includes the Powerhouse Museum, Sydney Observatory and Powerhouse Discovery Centre, situated at three locations across metropolitan Sydney. MAAS is currently faced with financial and operating issues and has therefore commenced a significant phase of planning to ensure its future success and sustainability. This has included the development of its MAAS 2020 Vision which outlines the vision, ambitions, areas of focus and a new interdisciplinary model for MAAS.

The organisation recognises that the property portfolio, in its current state, does not support the MAAS 2020 Vision. The current configuration and condition of the Powerhouse Museum buildings in particular, is directly impacting on the Museums ability to provide a competitive offering. This has resulted in the performance of the Powerhouse Museum deteriorating over recent years, including a decline in visitor numbers.

This report is required by MAAS to identify a Commercial Real Estate Strategy which addresses the operational issues at each of the three sites and supports the MAAS 2020 Vision going forward.

The following methodology has been followed in defining the Commercial Real Estate Strategy for MAAS:

Table 1 – Phases of the project

Phase	Objective	Description
One	Confirm objectives and proposed scope of works with MAAS.	Project Inception meeting with MAAS Executive Committee to finalise methodology and submit information requests.
Two	Understand the MAAS business and strategic planning objectives as they relate to current and future accommodation requirements of the Museum at each location.	Review relevant MAAS strategic objectives, reform initiatives, future service delivery, workforce, asset and technology strategies. Undertake interviews with key staff members to confirm future accommodation and requirements.
Three	Establish a detailed understanding of the three properties.	Undertake property inspections of each of the three sites, review third party reports for each premises in relation to condition, capital requirements, environmental issues, heritage reports etc. and determine the utilisation of each premises including functionality, capacity, current and potential uses.
Four	Analyse the functionality and suitability of the three MAAS sites.	Assess the appropriateness of each location, the size of the site and the context of the property's ability to meet service delivery goals. Identify the assets that are currently over utilised, under utilised or peripheral to the Museum's needs.
Five	Identify and develop strategies which maximise each of the sites commercial ability in the context of the MAAS 2020 Vision.	Determine the Highest and Best use of each property and formulate a Real Estate Strategy for each site. EY to facilitate a series of workshops with FJMT and MAAS for the three teams to work collaboratively to finalise the Commercial Real Estate Strategy.
Six (a)	Undertake detailed feasibility analysis of the proposed Commercial Real Estate Strategy for the Powerhouse Museum.	Engage an independent quantity surveyor to provide cost estimates of the proposed development and engage an independent planner to advise on the permit requirements for the proposed development. Prepare a detailed feasibility analysis of the proposed Commercial Real Estate Strategy to determine the net return to the Museum of developing the Harwood site.
Six (b)	Consider the impact on both hard and soft economic returns to the state of New South Wales from the proposed commercial real estate strategy.	In consultation with MAAS, define the 'base case', develop and agree the economic benefits of the Commercial Real Estate Strategy. Benefits may include aspects of the economy such as tourism, education, wellbeing, community engagement and precinct cultural offerings.
Seven	Develop a clear and feasible implementation plan for the Commercial Real Estate Strategy.	Consider procurement options and determine key activities to undertake prior to implementation of the Commercial Real Estate Strategy. Prepare a high level financial analysis to demonstrate the potential financial outcomes.

1.2 Key Findings

Our key findings and Commercial Real Estate Strategy for each property are detailed below in Table Two:

Table 2 – Key findings

Powerhouse Museum, Ultimo

Current State:

- ▶ The Powerhouse Museum complex comprises of three separate adjacent buildings located in Ultimo. The three buildings are the Powerhouse Museum building, the Harwood building and the Northern Annex building. The Powerhouse Museum comprises a mix of inter- connected heritage structures together with a circa 1980's building known as the 'Wran' building. The Harwood building comprises a three level saw tooth warehouse building used for workshop, office, laboratory and collection storage purposes. The Harwood site is significantly underdeveloped. The Northern Annex building provides a heritage protected, brick office building in poor condition at the northern end of the site.
- ▶ The buildings are not fit for purpose and, in their current configuration and condition, limit the opportunity for the Museum to create independent revenue streams. Further, the current condition and configuration limit the opportunity for the Museum to collaborate with domestic and international institutions, reducing the Museums ability to attract significant loans and exhibitions.
- ▶ The Powerhouse Museum is uniquely positioned within a key development precinct in inner Sydney. Key projects that are currently underway include Darling Harbour Live, The Goods Line redevelopment and University of Technology ("UTS") Master Plan. These projects will all affect the Powerhouse Museum, increasing population in the immediate area, patronage to the area and revitalizing Ultimo and its surrounds. It is envisaged that these significant redevelopments will improve the overall appeal of the area.
- ▶ The Powerhouse entrance faces Harris Street and the built form of the structures does not integrate with its surrounding precincts and is isolated from the extensive redevelopment opportunities surrounding it. This will result in a missed opportunity to increase visitor numbers and build successful independent revenue streams.
- ▶ The quality and layout of the office accommodation, the size and number of meeting rooms, the limited storage facilities and restricted onsite car parking do not sufficiently meet the needs of the business.
- ▶ The Harwood Building is significantly underutilized. The collection storage on this site is sub-optimal and presents OH&S issues. Further, completion of the Goods Line will present security issues with Macarthur Street becoming a pedestrian thoroughfare. Options to redevelop this site to its Highest and Best use to maximise utility and revenue for the Museum should be explored.

Proposed Commercial Real Estate Strategy:

The Powerhouse Museum:

- ▶ Re-orientate the entry of the Museum to front Hay Street which will link the Museum with the city and optimise exposure to the Goods Line and the Light Rail. This will provide direct access to Darling Harbour and Central Station. A new arrival hall will be located at the corner of Hay and McArthur Streets which will also double as function space.
- ▶ A new Group Arrival area will be located at the corner of Macarthur and Harris Streets, primarily to be used for school visits allowing the Museum to hold multiple functions simultaneously without noise disruption.
- ▶ The office accommodation, public library and shared storage facility will be housed in a newly constructed building along Harris Street, replacing the existing Wran building. The new building will achieve a far greater utilisation than the Wran building and comprise a glass facade, allowing for a visible working museum to exist and interact with the general public along Harris Street.
- ▶ Internally, the existing heritage buildings will be remodeled to provide refurbished Permanent and Temporary Galleries, two new theatres, a refurbished shop and café with back of house facilities, six classrooms and a member's lounge.

The Harwood Building:

- ▶ Additional gallery space required by the Museum will be constructed on the corner of Hay and Macarthur Streets with a footbridge over Macarthur Street (at level one subject to approval) to link the two Museum buildings. This new gallery space will provide purpose built touring halls and a media lab. The footbridge connection will most importantly enable the safe and efficient movement of collection objects.
- ▶ The ground level of the site fronting the Goods Line will be redeveloped to provide retail accommodation, capitalising on the increased pedestrian patronage anticipated as a result of the operating Goods Line, residential development of Darling Harbour and additional UTS student traffic (generated from residential towers proposed opposite the Powerhouse Museum).
- ▶ A commercial development on the corner of Mary Ann Street, together with a residential podium with a 30 level residential tower above facing the Goods Line incorporating an external exhibition roof top terrace open to the public, displaying MAAS collections. (MAAS will have no role in the management or sale of the residential and commercial completed development as this will have been sold to a third party).
- ▶ A commercial car park of 165 spaces. (MAAS can choose to sell this to a third party or maintain ownership and receive an ongoing annual income after operating and management costs).
- ▶ The partial relocation of the existing workshop in the Harwood building to the redeveloped Harris Street Museum operations building.

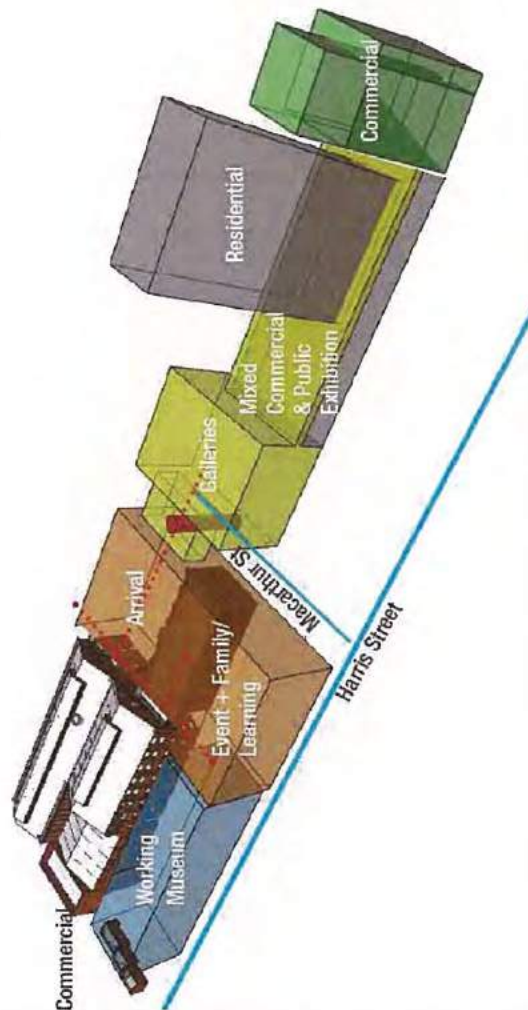
Powerhouse Museum, Ultimo (continued..)

Financial Analysis

A detailed Financial Analysis of the proposed Commercial Real Estate Strategy has been undertaken with the key findings below:

- ▶ The total construction cost estimate of the Powerhouse Museum refurbishment and expansion after projected proceeds from the Harwood site the net cost is \$291,400,000. This cost includes; refurbishment of the heritage structures; replacement of the Wran building (as summarised above); refurbishment of the Northern Annex; construction of the footbridge; and, the Museum's first AAA Rated Temporary Galleries on the Harwood site.
 - ▶ A detailed feasibility analysis has been undertaken to determine the net proceeds to MAAS of divesting the Harwood site (whilst retaining the retail component). This feasibility analysis reflects a return to MAAS of approximately \$61,000,000. In addition, independent revenue streams to be received by MAAS as a result of the implementation of the Commercial Real Estate Strategy include:
 - \$560,000 per annum approximately in retail revenue from the refurbished shop and café which can be let to an external party;
 - \$200,000 per annum approximately in retail revenue from the refurbished shop and café which can be let to an external party, located within the Powerhouse Museum redevelopment;
 - ▶ \$1,130,000 per annum approximately in commercial office revenue from office accommodation surplus to MAAS needs which can be let to an external party, located within the new Harris Street Operations building.
- An image of the Commercial Real Estate Strategy vision upon full implementation is provided below:

Figure 1 – Commercial Real Estate Strategy Vision



Sydney Observatory, Millers Hill

Current State:

- ▶ The Sydney Observatory is a heritage listed site overlooking Sydney Harbour in Millers Hill, which functions as a museum and includes extensive garden surrounds. The site has several heritage listed buildings with parts of the site containing footings of an historic former fort that cannot be redeveloped.
 - ▶ There is no permanent function space, food and beverage or retail offering on this site. Visitors to the Sydney Observatory are forced to leave the site for food and beverages, resulting in a lost opportunity for the Museum to secure an independent rental stream. Currently a temporary structure is erected in the forecourt, however due to weather conditions and permit conditions, this can only be used up to 60 days a year for functions on the site.
 - ▶ The Sydney Observatory is located in close proximity to Barangaroo, a significant redevelopment of 22 hectares of disused wharves which will include residential, commercial, recreation and cultural facilities. This project will increase population and patronage to the area.
 - ▶ Several redevelopment proposals for the site have historically been rejected as a result of the sites heritage listing however we note the recent planning changes to allow redevelopment at Barangaroo which demonstrates examples where planning change have been allowed to enable strategic development.
- Commercial Real Estate Strategy:**
- ▶ A restaurant or café could be constructed in the south-western corner of the site which is currently used for car parking, storage and visitor seating in the garden. This portion of the site has not been identified as being affected by fort remains or a strict heritage overlay. A building constructed on this site could also be used for functions and could provide a glass cantilever roof to allow for star viewings in the evening.
 - ▶ It is expected that the proposed development will go through a vigorous and lengthy planning approval process as a result of the sites heritage listing.
-

Powerhouse Discovery Centre, Castle Hill

Current State:

- ▶ The Powerhouse Discovery Centre is located in Castle Hill and provides a purpose built collection storage facility comprising of various storage sheds and group entry building that caters for small to medium sized groups, particularly education groups. The site is open to the public for organised tours. The storage density within the sheds is reduced as a result of being open to the public for viewing.
 - ▶ Additional Shared Storage and Access Facilities are currently being constructed along the northern boundary of the site, which will be also be open to the public for tours. Sydney Living Museums and the Australian Museum will be co-located with MAAS within the new store as well as a shared temporary exhibition space in the public access areas.
 - ▶ The Powerhouse Discovery Centre is expected to benefit from the development of the North West Rail Link Corridor Strategy through increased visitation to the area.
- Commercial Real Estate Strategy:**
- ▶ The site needs to achieve a greater utilisation of the existing storage on site to allow for collection expansion. This can be achieved by closing off the southern portion of the site to the public and increasing the density of the internal storage within each shed. Vacant land for a collection storage shed to be constructed on has been identified in the south-west corner of the site.
 - ▶ The Shared Storage and Access Facility being constructed on the northern portion of the site has been designed to allow public viewing. Therefore, the northern portion of the site should be the only area open to the public. This will require public road access off Windsor Road and a group arrival area to be established.
-

2. Introduction

1. Project Background
2. Methodology and Approach
3. An introduction to the sites

2.1 Project Background

The Museum of Applied Arts and Sciences ("MAAS") comprises the Powerhouse Museum (Ultimo), Sydney Observatory (The Rocks) and Powerhouse Discovery Centre (Castle Hill). MAAS is currently faced with severe financial and operating issues and in response has commenced on a significant phase of planning, commencing with the development of the MAAS 2020 Vision which outlines the vision, ambitions, areas of focus and a new interdisciplinary model of working for the Museum.

MAAS is now looking to capitalise on its unique land holdings, in particular leveraging on its opportunity to integrate with surrounding activity precincts and development opportunities to drive revenue and visitor numbers at each location. MAAS engaged EY in conjunction with FJMT to help it develop and prepare a MAAS Commercial Real Estate Strategy and Concept Masterplan.

2.2 Methodology and Approach

In delivering the commercial real estate strategy we tailored a methodology which follows seven distinct phases with clear objectives, outlined as in Table 3:

Table 3 – Phases of the project

Phase	Objectives
One – Project Inception	Confirm objectives and proposed scope of works with MAAS.
Two – Review of Business Service Delivery and Accommodation Objectives	Understand MAAS business and strategic planning objectives as they relate to current and future accommodation requirements of the Museum at each location.
Three – Current State Assessment	Establish a detailed understanding of the three properties.
Four – Gap Analysis	Analyse the functionality and suitability of the three MAAS sites to identify the assets that are currently under utilised or peripheral to the Museum's needs.
Five – Development of Commercial Real Estate Strategy Options	For each of the three properties, identify and develop strategies which maximise the sites commercial ability in the context of MAAS business strategy (the future strategy for each of the sites combined then forms the commercial real estate strategy for MAAS).
Six (a) – Detailed Feasibility Analysis	Obtain independent quantity and planning advice in relation to the proposed development. Prepare a detailed feasibility analysis of the proposed Commercial Real Estate Strategy to determine the net return to the Museum of developing the Harwood site.
Six (b) – Economic Benefit Analysis	Develop the economic benefits of the Commercial Real Estate Strategy. Benefits may include aspects of the economy such as tourism, education, wellbeing, community engagement and precinct cultural offerings.
Seven – Implementation Plan	Develop a clear and feasible implementation plan for the commercial real estate strategy.

2.3 An introduction to the sites

MAAS includes the Powerhouse Museum, Sydney Observatory and Powerhouse Discovery Centre, situated at three strategic locations across Sydney. The locations of each of the properties within the portfolio can be seen in the location maps below. The Sydney Observatory and Powerhouse Museum are situated in inner city locations at Millers Hill and Ultimo respectively, whilst the Discovery Centre is located in the western suburb of Castle Hill, some 30 kilometres west of the Sydney CBD. Figure 2 indicates the location of the individual sites together with key surrounding development uses:

Figure 2 – Location Map – Powerhouse Museum, Ultimo, Sydney Observatory and Powerhouse Discovery Centre



Source: FJMT, EY

3. Business Service Delivery and Accommodation Objectives

1. Organisational Structure
2. Primary Accommodation Requirements
3. Summary of Primary Accommodation Requirements

3.1 Organisational Structure Overview

A primary consideration in preparing the accommodation strategy is to understand the organisational structure and business delivery methods of the business. This assists in understanding the primary accommodation requirements on a Department basis and helps form the 'Gap Analysis', that is the variance between the current state of accommodation and what accommodation will be required going forward to ensure the museum operates to its maximum potential.

MAAS business is currently in the process of implementing a significant restructure. This restructure is realigning the business to the MAAS 2020 Vision, reducing full time equivalent staff ("FTE") from 276 to approximately 205 FTE. MAAS organisation is now structured under four key areas which report to the Director. This structure is reflected in Figure 3.

Figure 3 – MAAS Executive Team

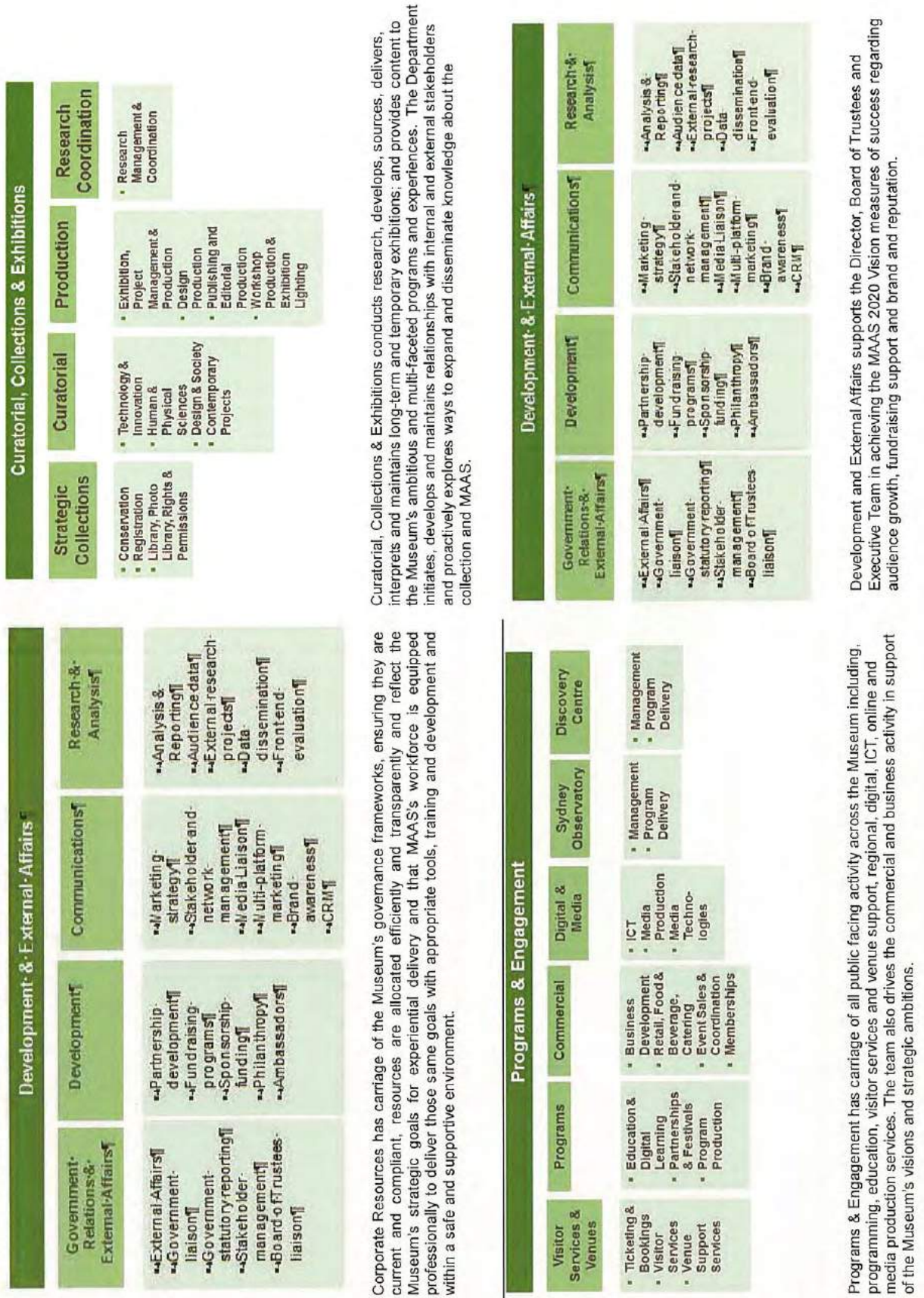
Source: MAAS



The Director is responsible to the Trustees of the Museum and the Minister for Arts, through the Department of Trade, Investment, Regional Infrastructure, and Services NSW, for the overall management and control of the Museum and its activities.

An overview of each of the proposed MAAS Departments and the teams included within these Departments is summarized in Figure 4:

Figure 4 – Roles and responsibilities of Departments within MAAS



3.2 Primary Accommodation Requirements

To determine the key accommodation issues and functional accommodation requirements for MAAS, key staff were interviewed to provide input with regard to current accommodation, how it does or doesn't support operations and what future accommodation requirements should be considered to improve operational and service delivery outcomes. The key messages and accommodation requirements arising from these interviews are summarised in Table 4 and have informed the preparation of the medium to long term strategies detailed herein.

Representatives from the following Teams were interviewed as part of the process:

- ▶ Fiona Bennett, Manager - Events
- ▶ Rebecca Bushby, Acting Manager, Exhibitions and Festivals, Project Management and Planning
- ▶ Judith Coombes, Manager, Registration
- ▶ Danny Grant, Manager, Facilities Management
- ▶ Bede Langley, Security Manager, Operations
- ▶ Christopher Snelling, Manager, Powerhouse Discovery Centre
- ▶ Dolla Merrillees, Director Curatorial, Collections & Exhibitions
- ▶ Elizabeth Stratford, Director Corporate Resources & CFO

The column headed 'Current Accommodation' in Table 4 provides a summary of the existing functionality of the Department's accommodation (both from an office and working space perspective). The 'Functional Accommodation Requirements' column summarises what the Department primarily requires to operate efficiently and effectively. This column specifically excludes "wants" and only focusses on the "needs" of the Department.

It is important to note that as at the date of the interviews, the Department representatives interviewed were not fully cognisant of the overall structure of the business moving forwards – this was communicated at a later date. We have captured subsequent changes in our Commercial Real Estate Strategy herein.

Table 4 – Summary of Interviews with MAAS staff

Current Accommodation – Overview & Key Issues		Functional Accommodation Requirements
The Executive		
Overview ▶ The Executive includes five Directors, support staff and contractors at various times, all of whom require office accommodation at the Powerhouse. ▶ The interview focused on the core requirements and on a broader level, all three of the MAAS sites and future needs. The interview was structured to capture the views of the Executive with the knowledge of the pending organisational re-structure. Key Issues ▶ Orientation of the Powerhouse is incorrect with its main frontage to Harris Street; a busy and hostile thoroughfare. The Museum would better integrate with the city and Darling Harbor if the orientation faced east down Hay Street. ▶ A large amount of exhibition space in the Powerhouse Museum is currently sub standard ▶ The internal layout of the Powerhouse Museum is flawed; with lots of add-ons, inefficient spaces, internal columns, compromised service lifts, and centrally located lifts / columns and mezzanine levels. ▶ Noise transfer within the Powerhouse is a major issue – minimizing the number of concurrent / multiple events within the museum. ▶ Insufficient foyer space at Powerhouse with poor quality not suiting current needs. ▶ The ageing infrastructure within the Powerhouse is problematic for Museum operations and limits access to national and international exhibitions. ▶ The office accommodation within the Powerhouse is disjointed and of a poor quality.		Focusing on the Ultimo Powerhouse site; ▶ Any proposed redevelopment of the Powerhouse / Harwood Building will need to integrate with emerging development precincts i.e. The Goods Line and Darling Harbour Live. ▶ The re-orientation of the building to its south-eastern corner to enable integration with the emerging precinct to the east and the Sydney CBD. ▶ The Museum needs to provide a continually fresh offer being a combination of permanent exhibitions (5-7 year lifespan) and temporary galleries (3-4 months). ▶ Provision of major seminar / theatre space – with up to 500 seats capacity seminar space and two x 250 seat capacity theatres. ▶ Larger foyer space to accommodate the seminar and theatre events, in to enable concurrent independent functions. Ideally this space would have capacity for 1000 people cocktail style. ▶ Formal meeting spaces for 10 to 20 people. ▶ Event equipment storage (chairs, tables, staging, a.v. etc.) with efficient storage and transport systems for nimble changeover and response. ▶ Office accommodation for circa 200 staff. ▶ Large group arrivals / greeting / holding area to accommodate multiple groups including school groups. Focusing on the Sydney Observatory; ▶ Suitable permanent venue space that leverages location and likely clientele ▶ Day food and beverage offering that captures both Tour and Garden visitation.
Conservation, Registration and Library Overview ▶ This team covers storage and logistics, documentation, cataloguing, archives management, loans, acquisitions, collection administration and exhibition assembling and dismantlement. ▶ The smaller and generally more valuable collection is predominantly stored in the basement of the Harwood Building at Ultimo; while larger items (such as cars and furniture etc.) are stored at the Powerhouse Discovery Centre at Castle Hill. ▶ This team manages 500,000 individual items. Key Issues ▶ The Harwood Building basement is nearing its capacity for collection storage. ▶ The basement in the Harwood building has had and continues to have issues with both flooding and climate control, with the inability to stabilise humidity a key issue impacting the preservation of collection objects. ▶ Moving collection items is kept to an absolute minimum to reduce the risk of damage. ▶ The Shared Storage and Access Project is currently underway at Castle Hill. While completion of this project is forecast for 2015, it is expected to reach capacity within 10 years and will not provide any significant expansion space to continue to grow the collection.		▶ It is considered important for the team to be located on-site, or in close proximity, to where the bulk of the collection is stored thereby providing accessibility to the collection for on-going conservation, registration, guided tours etc. ▶ The greater number of object movements occur between the Harwood and Museum sites in Ultimo due to the size and capacity to turn over collection based exhibitions. It would be inefficient and incur significant operational overheads to move the collection to an alternate site. ▶ Any proposed development needs to consider the provision of visible storage on-site at the Powerhouse Museum. This will greater activate the collection, ensuring more items are available for public viewing and appreciation. ▶ A clearly delineated research centre comprised of labs and classrooms to enable further research on the collection by both MAAS staff and external visitors. ▶ The precinct developments adjoining the Ultimo site will require operational and infrastructure responses to ensure safe connectivity between collection storage and the exhibiting Powerhouse Museum for the movement of objects and bump in and bump out of exhibitions. ▶ Object safety needs to be retained post the UPN activation on MacArthur Street.

Events**Overview**

- This team coordinates the commercial and internal events held across the Powerhouse and Observatory sites.
- Commercial and internal events for MAAS are predominantly held at the Powerhouse Museum with limited events being held at Sydney Observatory or the Powerhouse Discovery Centre.
- Events are held at the Powerhouse within the following spaces; Coles Theatre, Target Theatre, Turbine Hall, Powerhouse Learning Theatre, Transport Exhibition, The Atrium & Boardroom.
- In terms of office requirements, the events team needs limited space.

Key Issues – Powerhouse Museum

- Noise transfer throughout the Powerhouse Museum is a major issue. This makes it difficult for the Events team to schedule multiple events within the museum at the same time.
- Total capacity within the theatre accommodation at the Powerhouse is 400 people; however the capacity of the foyer / gathering space outside the theatre, utilised for drinks and gatherings post events in the theatres is only 150-200. This foyer area is also utilised as a thoroughfare for other parts of the museum and is accordingly affected by noise. The area is not sufficient in terms of size or noise interruption issues.
- Ageing infrastructure within the theatres i.e. chairs are original from the '80s and are in poor condition.
- There is limited natural lighting within the Powerhouse Learning Centre reducing the overall presentation and appeal for student groups.

Key Issues – Sydney Observatory

- Function space at the Sydney Observatory is limited; most events at the Observatory are held within the 'Sydney Observatory Marquee'.
- At this stage, the Observatory Marquee is typically only erected and utilised for up to 60 days p.a. We are advised that this is for a number of reasons including; council requirements, weather and demand.

Key Issues – Powerhouse Discovery Centre

- Very few events are held at the Powerhouse Discovery Centre due to its predominant use as a collection storage facility. The facility has not been designed for events (constrained by power / catering facilities).

Exhibitions and Festivals, Project Management and Planning**Overview**

- This Team oversee Exhibition development from their inception through to closure.
- Work includes developing internal and external (touring) exhibitions.

Key Issues

- This team is currently "doing the best with what they've got" as opposed to utilising purpose built, open plan exhibition spaces which would be considered ideal.
- This team is greatly impacted by restricted circulation and fire code compromised spaces not being available for activation.
- A large amount of exhibition space is currently considered inefficient within the Powerhouse. The internal layout of the Museum is flawed; lots of "add-ons", inefficient spaces, internal columns, centrally located lifts / columns and mezzanine levels.
- The cost of exhibitions are higher due to modifications to cabinetry display cases required to meet environmental standards set by external leading partners.

- Staff within the Events team need to be located on-site at the Powerhouse to enable client interface with event site inspections and comparisons of available event space prior to making a booking.
- The theatre space requires significant refurbishment works to rectify the issues associated with ageing infrastructure and to increase its market appeal.
- A larger foyer space immediately outside of the theatres is required to accommodate greater capacity and provide an adequate space for registration, stand-up lunches etc.
- The internal layout of the Powerhouse needs to be considered to rectify noise transfer issues.
- The Powerhouse requires more internal meeting rooms; currently competition for space exists between internal and external parties (ideally with 15 to 20 person capacity). This could cater to break out groups from Darling Harbour corporate activities.
- The overall presentation of the Powerhouse buildings needs to be improved to increase market appeal and demand. For example, the temporary exhibition space on Level 2 is a construction site during exhibition installation / dismantlement which is visible to guests / clients who are utilising the event space within the Turbine Hall.
- The Events team require three permanent car parks to be shared between caterers and clients.
- There needs to be more event equipment storage space.
- Flexible event space is required moving forwards; allowing MAAS to cater multiple internal and external events concurrently.

- This team requires clearly defined, open plan exhibition spaces.

- Sectional based permanent exhibition space which can be turned over / refreshed readily without impacting other parts of the museum would be ideal.

- The Museum needs flexible temporary exhibition space that can be readily adapted to meet the needs of different exhibitions.

- The overhead costs of exhibitions will be improved once external environments meet external lending standards.

Key Accommodation Issues

Functional Accommodation Requirements

Security

Overview

- The Security Team is positioned across several locations at the Powerhouse Museum; the Gatehouse, the control room and adjoining office accommodation.
- This team does patrols at night at the Discovery Centre and limited patrols in the evening at the Observatory.

Key Issues

- The current office accommodation is positioned within the lower levels of the Powerhouse Museum; this is not considered ideal from a security perspective as there is only one point of ingress and egress.
- The Gatehouse is located on MacArthur Street which will be transformed into part of the Ultimo Pedestrian Network ('UPN') in late 2014. The Gatehouse will therefore no longer be useable and needs to be relocated by late 2014.
- When the UPN is activated, public will have access along MacArthur Street which will create security concerns and prohibit the Museum's ability to provide safety to the collection under the MAAS Act. Current interface with the Harwood Building and the Powerhouse will need to be looked at.

Facilities & Asset Management

Overview

- This Team is responsible for all maintenance, compliance, general up-keep, total asset management and capital works across the three sites.
- The team comprises of 18 FTE's.

Key Issues

- Current use of the Harwood Building as a workshop creates significant OH&S concerns. This is because the Harwood Building is in part utilised as a fully operational workshop and in part as office accommodation with office staff walking through an operational workshop en-route to other parts of the site. The workshop also creates increased amounts of noise, dust and other pollutants within the building.

Powerhouse Discovery Centre

Overview

- This is a permanent staff of three, frequent visitors from conservation, registration and curatorial staff and a group of volunteers occupying the Discovery Centre.
- The Shared Storage and Access project is currently underway.
- The improvements on site are generally purpose built storage facilities with limited amounts of visible storage. Public has limited access to the site via guided tours.

Key Issues

- From a public accessibility perspective, the current site has many shortcomings, including:
- A lack of visitor car-parking.
- Main road arterials adjoin the boundaries of the site, creating vehicular access difficulties.
- Identity of the site is blurred between the Discovery Centre and the adjoining TAFE campus.
- The site is largely utilised, with the collection facilities nearly at capacity.

- The Gatehouse will need to be relocated in late 2014 to enable Security to continue to provide their core services.
- Security will need to retain a presence along or nearby MacArthur Street with the increased pedestrian activity.
- Connectivity is maintained between the Harwood Building and the Powerhouse once the UPN is activated along MacArthur Street (assuming Harwood building is retained).
- Creation of a centrally located 'Security Hub' which comprises the required office accommodation and security control room in one location. It was indicated that an ideal position of this 'Hub' would be overlooking MacArthur Street from Level One of the Harwood Building.

- There is an opportunity to relocate the conservation and part of the exhibition & facilities workshops (possibly to Castle Hill or outsource this work to an external provider).
- The nature of running a large complex campus for the Ultimo Museum site requires the electricians, mechanical and plant operators within this team remain on-site. This is to ensure that environmental and utility aspects of the site remain constant and available. The visitation to this site far exceeds all other sites.

- The identity of the site needs to be further confirmed prior to confirmation of its core accommodation requirements i.e. is the Discovery Centre to be retained for public access? Is the sites core function storage or public visitation? If public visitation is of high importance for the site, will this be in the form of a visible storage platform or purpose built exhibition / event spaces?
- Upon completion of the Shared Storage and Access project, further development opportunities will be limited on the site due to a lack of surplus land.
- Public accessibility and car parking on the site will need to be rectified if visitor numbers are to increase.

3.3 Summary of Primary Accommodation Requirements

Powerhouse Museum

Current Condition of the Museum

The current condition and configuration of the Museum is limiting its opportunities to collaborate with both domestic and international institutions, and reducing the Museums ability to attract significant loans and exhibitions. The exhibition space within the Powerhouse Museum is not fit for purpose; with several structural add-ons, inefficient spaces marred by multiple internal columns, centrally located lifts / columns and mezzanine levels directly also impacting the Museums ability to attract and present exhibitions and the overall circulation of the Museum. The less than ideal exhibitory and operational capacity is further impacting by ageing infrastructure.

Orientation of the Powerhouse

The Museum is isolated from the extensive redevelopment opportunity of surrounding precincts with its main entry facing Harris Street away from the City or Darling Harbour and the new junction of Hay Street, The Goods Line and Macarthur Park. There is a very significant risk that the Museum will fail to integrate with the surrounding precincts and not realise the opportunity to capitalise on a precinct development and associated opportunities of a once in a generation scale to grow and broaden audiences and reputation.

Powerhouse Building limits independent revenue streams

The Museum is heavily reliant on government funding which in real terms escalates at a rate lower than CPI. Without independent and diversified revenue streams, the Museum cannot raise the working capital to continually reinvest and improve both its permanent and temporary service offering. The current building limitations and orientation limits the capacity of the Museum to develop and improve and develop new independent revenue streams, such as:

- ▶ Food and beverage
- ▶ Retail
- ▶ Events Capacity
- ▶ Corporate events
- ▶ Contemporary teaching facilities

OH&S Issues within the Harwood Building

The Harwood Building Work Health and Safety conditions are not satisfactory, as a result of building being currently used for both workshop and office accommodation. This dual usage results in office staff walking through an operational workshop en-route to other parts of the site. The workshop also creates increased amounts of noise, dust and other pollutants within the building.

The demolition of the current walking bridge and opening of The Goods Line / Hay Street stair and ramp access will result in new pedestrian traffic and connectivity upon completion of the UPN requiring a significant change to security and site operations.

Collection Storage

In its current form, the Museum is, and will be compromised in relation to its responsibility under the MAAS Act to display, conserve, maintain, secure and operationally manage its collections, in terms of:

- ▶ Environment management
- ▶ Sub-optimal storage
- ▶ The campus becoming a thoroughfare as part of the precinct development

There is an immediate need to improve the collection storage conditions and include a visible storage platform to activate the collection, ensuring more items are available for public viewing and appreciation. Current storage in the Harwood Building is nearing capacity and there is a need for greater storage areas to enable collection expansion (This in addition to the Shared Storage Project at Castle Hill). The high level of object movements from the Harwood based collection for display, conservation, loan or research purposes requires the collection remain co-located with the Museum to retain operational efficiencies.

Layout and quality of office accommodation

Some of the required synergies between the Departments of MAAS are not being adequately achieved, due to the physical location of different departments. Ideally the office accommodation for all staff at the Powerhouse museum would be consolidated to allow efficient work practises. Further, many MAAS employees are currently working in poor quality office accommodation which does not support the Museum's vision of curious and creative staff as the key to the culture of the organisation. Thus improved amenity of office accommodation and associated facilities is a factor to be considered during the preparation of the accommodation strategy.

Function areas and Theatres

The current lecture theatres are out dated and in poor condition. They require upgrading in order to provide a competitive offering and drive venue hire commercial results. To be competitive and capitalize on the increased Corporate and Business Activity Darling Harbour Live will generate the Museum requires a major seminar / theatre space of up to 500 seats seminar space and two x 250 seat theatres. A large foyer space is required to accommodate gatherings pre and post theatre events, together with allowing the ability to hold independent functions. Ideally this space would have capacity for 1000 people cocktail style.

Require more meeting / break-out rooms

There is a high demand for the meeting / break-out rooms within the Powerhouse for both external and internal activity. Further the Darling Harbour live convention space is likely to increase opportunities to leverage on break out or small workshop facility hires. . Accordingly, additional meeting rooms are required.

Car parking in the area; operational and visitor perspective

Car parking in the immediate area, from both a visitor and operational perspective is limited. Car parking in the area will further reduce when the Entertainment Centre Car Park, to the east of the Powerhouse Museum, is demolished as part of the Darling Harbour Live redevelopment.

The Observatory

Function Space

Function space is currently very limited with most events held within the temporary marquee. Due to Council requirements and weather limitations, this marquee can only be erected approximately 60 days per year.

Retail & Café Offering

There is no retail or café offering onsite, resulting in the loss of an independent income stream for MAAS to supplement existing revenues. Further, a lack of food and beverage onsite results in limited time at the site for visitors and reduces the overall potential experience of the visit to the Sydney Observatory.

The Powerhouse Discovery Centre

Storage

The current configuration of the sheds provides limited storage expansion space. Accordingly, consolidation and potential expansion of storage accommodation is required onsite. This is currently hindered as a result of the sheds being open to the public resulting in reduced collection storage within each shed.

3.4 Next Steps

Having determined the Primary Accommodation Requirements from MAAS business units, a detailed investigation into the ability of the sites to meet the requirements is undertaken in Sections 4-6 inclusive. These Sections of our report explore on a site by site basis, the current condition and utilisation of the property improvements, the town planning ordinance applicable to the site (to understand potential development opportunities), the “gap” between what the property currently offers and what is required to support the business and finally the Commercial Real Estate Strategy for each site.

(Note: The Powerhouse Museum, Ultimo has far greater development potential than the other two sites as a result of its location, size, zoning and nature of improvements, accordingly, a more detailed analysis, including financial investigations has been undertaken for this site.)

4. Powerhouse Museum, Ultimo

- 1. Description of the Powerhouse Museum
- 2. Town Planning Ordinance
- 3. Surrounding Development
- 4. Gap Analysis
- 5. Spatial Analysis
- 6. Commercial Real Estate Strategy
- 7. Financial Analysis of Powerhouse Museum Commercial Strategy
- 8. Economic Benefits
- 9. Potential Delivery Options
- 10. Next Steps

4.1 Description of the Powerhouse Museum, Ultimo

The Powerhouse Museum complex comprises of three separate but adjacently located buildings. The three buildings are the Powerhouse Museum building, the Harwood building and the Northern Annex building. The complex is situated on the western side of Harris Street, bound by Henry Street to the north and Mary Ann Street to the south. Macarthur Street runs between the Powerhouse Museum and Harwood building, providing vehicular access onto the property. The Goods Line Redevelopment, Light Rail line together with public open space extends along the eastern boundary of the site.

The Powerhouse building was originally constructed 1899-1902 and formerly housed an electric tram power station. The building was refurbished and opened to the public as MAAS in March 1988. The Harwood building, situated immediately south of the Powerhouse Museum, comprises a former tram depot and was refurbished in 1981 to provide offices, workshops, laboratories and storage for MAAS. The Northern Annex building is situated on the north western portion of the site and is a heritage structure, currently used for office accommodation.

Site plans of the Powerhouse Museum Complex are provided in Figure 5:

Figure 5 – Site Plan - Powerhouse Museum, Ultimo



The Powerhouse Building

The Powerhouse Museum comprises approximately 20,000m² of exhibition space, including Sydney's largest temporary exhibition space of 1,800m². The building spans over five levels, with a large open forecourt fronting Harris Street, which forms the main public entry into the Museum. This building comprises five distinct structures which are internally connected. The Boiler House, Engine House and Turbine House are heritage buildings, being the former electric tram power station building. These buildings are adjacent to one another, positioned on the eastern side of the site. The Switch House joins Turbine House, extending south to front onto Mary Ann Street to the south.

The remainder of the building comprises the Wran building which extends along Harris Street (this building is not heritage listed). The five buildings are all internally connected and each varies in height clearance. The floor plan is difficult to navigate as a result of the unusual floorplates of each building, with access to the different levels within the Museum provided via a series of lifts, non-compliant ramps, stairs and escalators.

A summary of the general uses of each level within the Powerhouse Museum building is provided in Table 5 below:

Table 5 – Accommodation description

Floor Level	Description of Usage
Basement level	This area comprises various plant and equipment items and operational machinery providing services to both the Powerhouse Museum and the Harwood building. This area is restricted to authorised staff only.
Level One (street level access off Macarthur St)	Level One is utilised for permanent and temporary exhibitions together with staff office areas, multipurpose rooms and bathroom amenities. A large outdoor public courtyard and children's play area adjoins an outdoor café on the eastern boundary of the building, overlooking the light rail line. There is courtyard access into the Museum at this level, accessed via Macarthur Street; however this is not used as the primary public access/ exit for the museum. Bitumen onsite car parking is accessible off Macarthur Street.
Level Two	This level comprises permanent and temporary exhibitions, including two theatre rooms, (the Coles and Target theatres) one cinematic screening room, staff office areas, multipurpose rooms and bathroom amenities. The Coles Theatre comprises seating for 300 people whilst the Target Theatre provides seating for 100 people. Both theatres are situated on the western side of the floorplate with a breakout area provided in the foyer outside the theatres with a capacity for 150 people. The cinematic screening room is known as Kings Cinema, located on the eastern side of the floorplate within Turbine House and provides a small art deco style working cinema. The mezzanine area within the Boiler House is accessed via a separate lift and is used as additional gallery space.
Level Three (ground level access from Harris St)	Level Three provides the main public access into the Museum via a large, brick paved external forecourt on Harris Street which can also be accessed via an external staircase accessed from street level from Macarthur Street and a bridge link to the monorail. The main public access opens into an internal foyer area, extending into permanent and temporary exhibition areas, commercial areas including a café and museum retail store (separate access also provided directly off forecourt), staff office areas and bathroom amenities. The Volunteers Centre is located adjacent to the Powerhouse Museum within a former Post Office building with an adjoining courtyard area. Access to this two level heritage building is via a gate off Harris Street or an access door fronting the courtyard.
Level Four	Level four comprises the members lounge within the Boiler House, staff office areas and bathroom amenities.
Level Five	This level provides a boardroom, staff office areas, multipurpose rooms and bathroom amenities.

Functions at the Powerhouse

Table 6 below outlines the capacity of the different function spaces currently available within the Powerhouse Museum by capacity of people:

Table 6 – Function Space - PHM

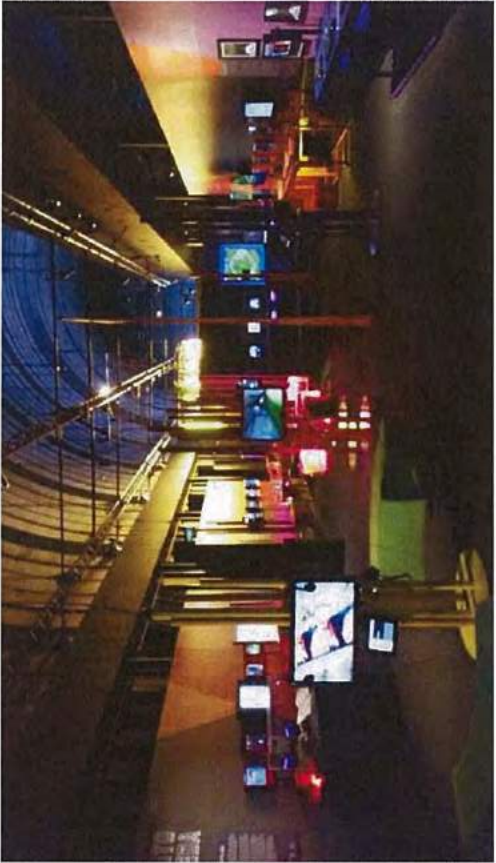
Venue	Banquet	Class Room	Cocktails	Theatre
Coles Theatre				300
Target Theatre		100		100
Turbine Hall	200		500	250
Transport Exhibition	100		300	100
The Atrium	50		100	
Boardroom	40	24	50	50

Photographs of the site are provided overleaf in Figure 6:

Figure 6 – Photos of the Powerhouse Museum



Public Entrance & forecourt, corner Harris Street and Macarthur Street



Temporary Exhibition Space extending north to south along Harris Street on Level Three



Volunteers cottage and internal forecourt situated on the north-western corner of the site



Permanent Exhibition space in the Engine House



Function space – Turbine Hall, Level Two and Three



Permanent Exhibition in the Boiler House



Coles Theatre, Level Three



Shop and Café, Level Three (accessed via the Harris Street forecourt or internally via the Museum)

The Harwood Building

The Harwood building is located on the southern side of Macarthur Street, bound by Mary Ann Street to the rear. At grade access is provided via both streets, with public access off Mary Ann Street. A large loading dock entry is accessed via Macarthur Street (which extends between the Powerhouse Museum and the Harwood building). The Harwood building comprises three levels, with access between the floors available via either stairs or a goods lift (operating between ground and basement levels only). The ground level provides a large workshop together with laboratories extending along the eastern perimeter. Storage for the Museum collection is located in the basement comprising extensive shelving and compactors. A large mezzanine level which is accessed via either Mary Ann Street (pedestrian access) or via an internal staircase from the workshop comprises a library and additional office areas. Photos of the Harwood Building are provided in Figure 7 overleaf.

Figure 7 – Photos of the Harwood building



Loading dock access via Macarthur Street



Ground floor workshop and mezzanine level offices



Ground floor workshop



Mezzanine level offices and library

4.2 Town Planning Ordinance

The following section provides an overview of the current planning regulations at each location. It is important to understand planning regulations in considering any future development or proposed building works.

Local Environmental Plan

The relevant Local Environmental Plan ("LEP") is the Sydney LEP 2012. The following conditions / restrictions to the Powerhouse Museum apply pursuant to the LEP:

Zoning:	B4 Mixed Use
Heritage:	Part of the Powerhouse Museum is a general heritage item referred to as "I2031"
Floor Space Ratio:	Maximum floor space of 4:1
Maximum Building Height:	28 metres

Zoning

The objectives of the "B4 Mixed Use" zone are:

- ▶ To provide a mixture of compatible land uses.
- ▶ To integrate suitable business, office, residential, retail and other development in accessible locations so as to maximise public transport patronage and encourage walking and cycling.
- ▶ To ensure uses support the viability of centres.

Heritage

The former warehouse buildings at the Powerhouse Museum (also referred to as the former Ultimo Powerhouse) and their interiors are a listed heritage item ("I2031") pursuant to the Sydney LEP 2012. This is detailed in below:

The objectives of "Clause 5.10 Heritage Conservation" of the LEP are:

- ▶ To conserve the environmental heritage of the City of Sydney.
- ▶ To conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views.
- ▶ To conserve archaeological sites.
- ▶ To conserve Aboriginal objects and Aboriginal places of heritage significance.

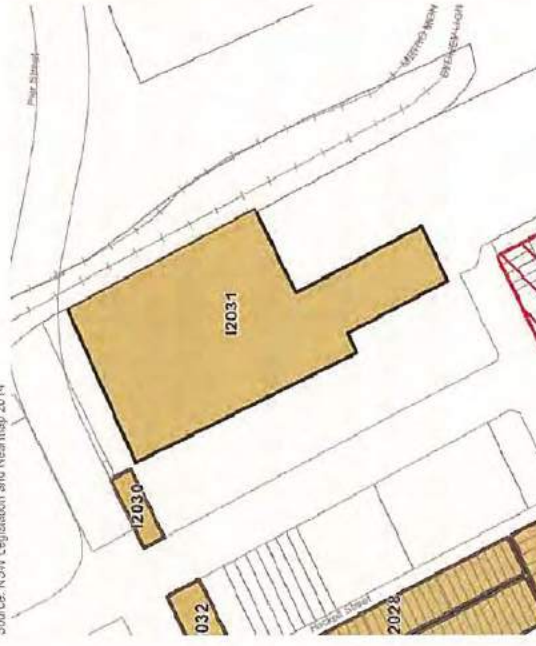
The building dates to the turn of the 20th century, a period during which the Harris and Macarthur Estates were subdivided and subsequently redeveloped to accommodate industrial development. The building is recognised as a notable example of a Federation industrial building which makes a positive contribution to the streetscape. It is also significant for its association with the Sydney tram network.

NSW Environment and Heritage affirm that the building should be retained and conserved. A Heritage Assessment and Heritage Impact Statement, or a Conservation Management Plan, should be prepared for the building prior to any major works being undertaken. There shall be no vertical additions to the building and no alterations to the façade of the building other than to reinstate original features. The principal room layout and planning configuration as well as significant internal original features including ceilings, cornices, joinery, flooring and fireplaces should be retained and conserved. Any additions and alterations should be confined to the rear in areas of less significance, should not be visibly prominent and shall be in accordance with the relevant planning controls.

The location of the heritage overlay is highlighted in Figure 8 below:

Figure 8 – Heritage Overlay – Powerhouse Museum

Sources: NSW Legislation and Neatmap 2014



Development Control Plan

Pursuant to the Sydney Development Control Plan ("DCP") 2012, the maximum building street frontage height for selected frontages of the Powerhouse Museum is 6 storeys. The frontages affected are outlined in the first two images in Figure 9 below. The final image depicts the current permissible building heights of surrounding development and the Powerhouse Museum in metres.

Figure 9 – Maximum Building Street Frontage Height & current planning heights (in metres) – Powerhouse Museum



Source: Sydney Development Control Plan 2012, Neamap 2014, FJMT

4.3 Surrounding Development

The Powerhouse Museum is uniquely positioned within a key development precinct in inner Sydney. Key projects that are currently underway include:

- ▶ Darling Harbour Live (current development)
- ▶ The Goods Line Redevelopment / Ultimo Pedestrian Network (current development)
- ▶ UTS Master Plan (current development)

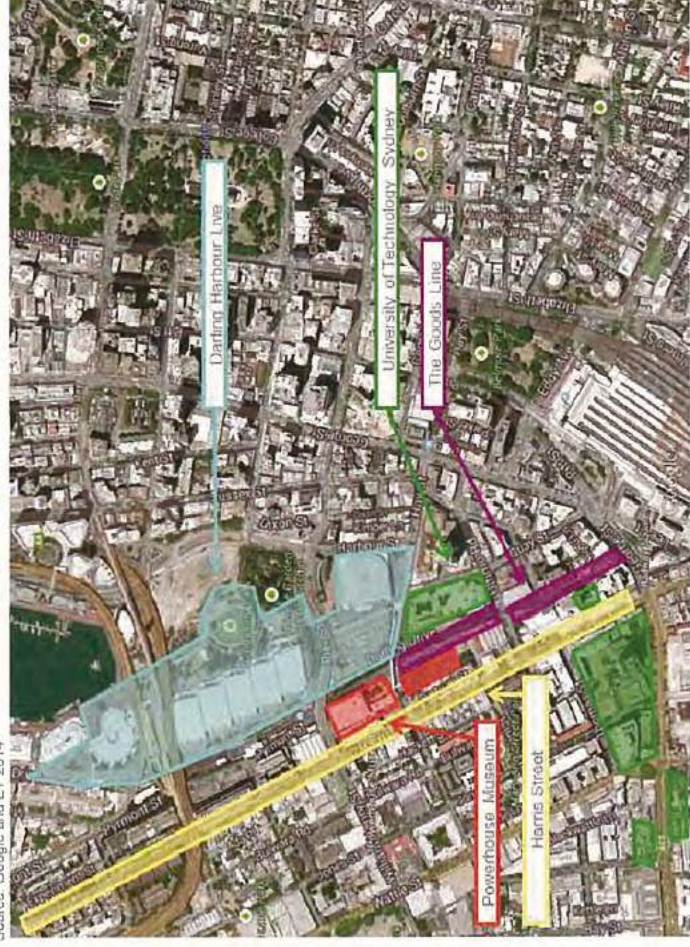
All of the projects will have an impact on the Powerhouse Museum through:

- ▶ Increasing population in the immediate area
- ▶ Increasing patronage to the area
- ▶ Revitalising Ultimo and surrounding areas and improving the overall general appeal of the area.

The location of each key project is detailed below.

Figure 10 – Powerhouse Museum and Surrounding Development

Source: Google and EY 2014



There is a significant level of development occurring in the Powerhouse Museum vicinity which provides a unique, once in a generation opportunity for the Museum to capitalise on the increased patronage of the area. We have summarised the key projects below.

Darling Harbour Live

Overview of Development

- ▶ Darling Harbour Live is a project to renew 20 hectares in Darling Harbour. The project will be delivered by the NSW Government (Infrastructure NSW) in partnership with Lend Lease and other organisations. The new precinct will include new convention, exhibition and entertainment facilities. The southern end of Darling Harbour will comprise a residential and business district that will accommodate over 2,000 people (apartments and student housing) as well as high-tech businesses, shops, cafes, restaurants and a new city square.
- ▶ The convention, exhibition and entertainment facilities are scheduled to be completed in late 2016.
- ▶ The residential and business district will open in stages through to the early 2020s.

The Darling Harbour Live Master Plan is provided in Figure 11.

Figure 11 – Darling Harbour Live Master Plan

Source: Darling Harbour Live 2014



Notes to graphic - Locations and areas are approximate only.

Current Status of Works

- ▶ Darling Harbour Live is seeking approval for each aspect of the project based on individual development applications (DAs). Six DAs were lodged progressively over 2013. As at May 2014, two of the six DAs have been approved allowing for:
- ▶ International Convention Centre, Exhibition Centre, the entertainment theatre and associated public domain works
- ▶ Concept proposal for a new urban neighbourhood has been approved
- ▶ Demolition of the existing convention and exhibition centre is underway. Demolition work is expected to be completed in May 2014. *(The immediate impact on the Powerhouse Museum includes a need to re-situate the security gatehouse facility; implement an organisational response to manage public in a traditional secure collection transport zone and modify the pedestrian access areas).*

Accommodation Provided upon Completion

Upon completion, Darling Harbour Live will comprise the following:

- ▶ International Convention Centre Sydney ("ICC Sydney"): Includes a convention and exhibition centre plus a theatre comprising 40,000sqm of exhibition space across two levels.
- ▶ Entertainment theatre: Situated alongside and connected to the ICC Sydney, the new theatre will have a seating capacity for 8,000 people.
- ▶ Hotel: A new hotel creating integrated conference, convention and accommodation facilities.
- ▶ New urban neighbourhood: Mix of commercial, residential and retail uses with connections to Chinatown, Ultimo, the CBD and the south of the City. Will provide up to 1,400 apartments and accommodation for 1,000 students.

The Goods Line Redevelopment / Ultimo Pedestrian Network

Overview of Development

- ▶ The Goods Line is a pedestrian and cycle network through Ultimo between Railway Square and Darling Harbour. It will create a new hub and connect Central Station to Darling Harbour. The public open space will feature a series of elevated spaces or platforms which can be used for entertainment, recreation, study and other activities.
- ▶ It will be completed in two stages: The Goods Line North and The Goods Line South.
- ▶ The project will be led by the Sydney Harbour Foreshore Authority.

Current Status of Works

Work on The Goods Line North commenced in March 2014 and is expected to be completed in November 2014 to coincide with the opening of the UTS Dr Chau Chak Wing Business School.

Project upon Completion

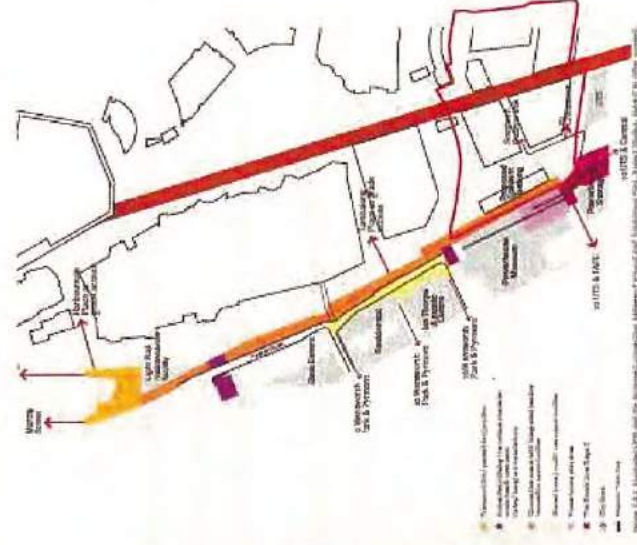
The Goods Line project will be completed in two stages:

- ▶ The Goods Line North: Is the current stage of the project. It will be approximately 250 metres long and extend from Ultimo Rail underbridge to the Powerhouse Museum, running parallel to Harris Street.
- ▶ The Goods Line South: The next stage will be The Goods Line South, which will run from Ultimo Road underbridge through to Railway Square. In total, the northern and southern sections will be approximately 500 metres long.

Figure 12 – Darling Harbour Live Master Plan



The Goods Line formerly UPN - Ultimo Pedestrian Network



UTS Master Plan

Overview of Development

The UTS City Campus Master Plan outlines a vision for the rollout of major new buildings, facilities and significant upgrades with an estimated total cost of \$1 billion. Work on the Master Plan began in 2008 and is expected to be completed by the end of 2019.

Current Status of Works

The City Campus Master Plan has already delivered seven projects in five locations across the campus. These include:

- ▶ Building 6 Podium Extension (opened March 2012): Upgrades to levels three to seven including reconfigurable classrooms, collaborative spaces and interactive technology
- ▶ Building 10 (opened 2011): General refurbishment
- ▶ Great Hall and Balcony Room (opened December 2011): Upgrade UTS's principal ceremonial venue
- ▶ Multipurpose Sports Hall (opened May 2011): Underground multipurpose sports facility
- ▶ Yura Mudang Student Housing (opened July 2011): A 720-bed residential tower for UTS students

There are a number of projects that are currently under construction, which include:

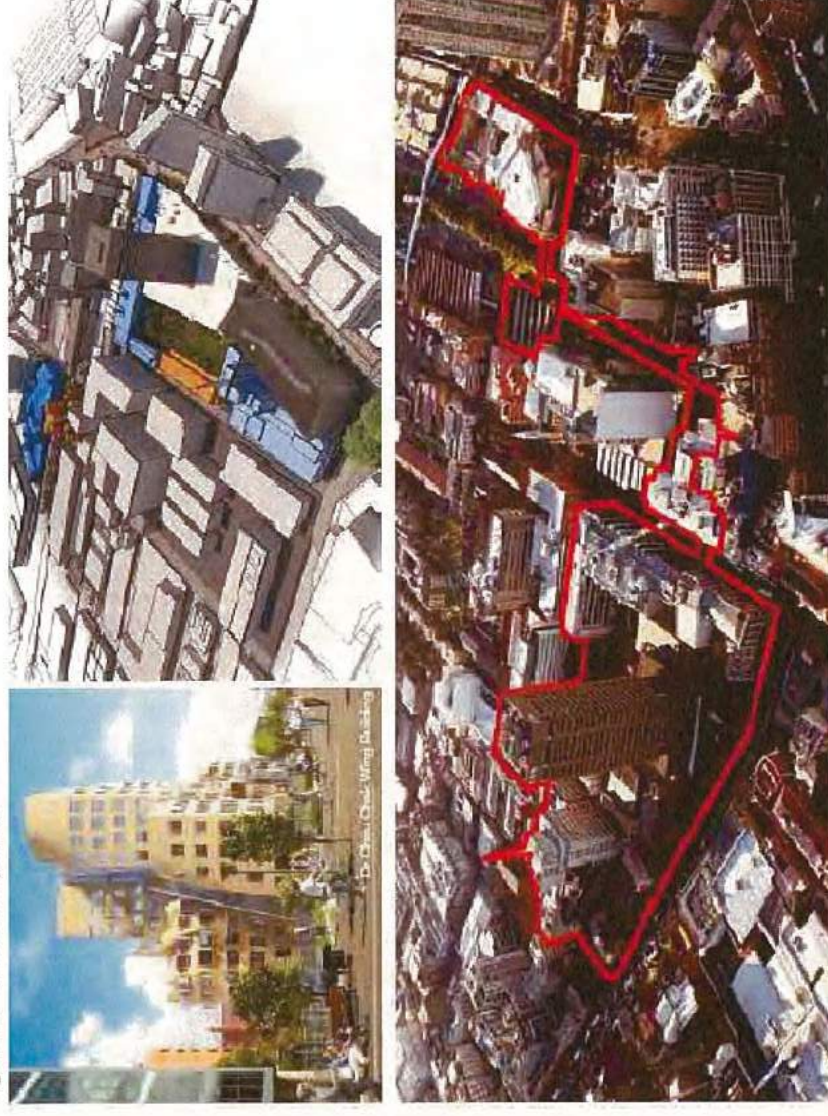
- ▶ Broadway Building (estimated completion 2014): New building to house the Faculty of Engineering and Information Technology
- ▶ Dr Chau Chak Wing Building (estimated completion 2014): New building for the UTS Business School
- ▶ Thomas Street Project (estimated completion 2014): This includes:
 - ▶ Alumni Green: A new Alumni Green
 - ▶ Library Retrieval System: Underground storage and retrieval facility for the library's physical collection
 - ▶ Thomas Street Building: New building

Accommodation Provided upon Completion

In addition to the accommodation provided above, the following works are yet to be completed. The target completion date is 2019.

- ▶ UTS Central (estimated completion 2016-2019): Major upgrades to Buildings 1 and 2 with the intention of giving a facelift to the entrance of the University
- ▶ Buildings 1, 3, 4 and 5: General refurbishment
- ▶ Library of the Future (estimated completion 2013-2016): The UTS library will relocate to Building 2 when the Library Retrieval System is completed

Figure 13 – UTS developments



4.4 Gap Analysis

The Gap Analysis compares the current offering of each of the properties against the property requirements of the business. This process reveals the following key aspects in relation to each site and the areas for improvement:

- ▶ The current improvements at each site in terms of:
 - ▶ how well they are utilised;
 - ▶ how well they meet the service delivery needs of the business;
 - ▶ capital works which need to be undertaken to meet Building Code requirements or should be undertaken to improve service delivery.
 - ▶ The appropriateness of the location of each site for the needs of the business.
- The Powerhouse Museum comprises a significant land holding within an inner CBD location. Findings from our investigations into the business service delivery and primary accommodation objectives (refer Section 3) together with our independent site analysis (refer Section 4.1- 4.3) reveal the following works are required to improve the competitiveness and overall appeal of the Museum:
- ▶ The Museum is isolated from the surrounding precinct and currently lacks visual presence, with the existing orientation fronting Harris Street, which is a busy vehicular thoroughfare with no retail presence. Greater integration with surrounding development and exposure for the Museum can be achieved by re-orientating the main entry to front Hay Street/ the Goods Line. This will result in an increased opportunity to broaden audiences and develop independent revenue streams.
 - ▶ The internal layout of the Powerhouse Museum is confusing and doesn't best display the Museums exhibitions. A designated area for each discipline with a logical pedestrian course for visitors to follow will improve the Museum experience.
 - ▶ The Museum accommodation is tired and detracts from the overall experience of the Museum whilst the office accommodation is in fair condition and the layout is inefficient for business operations. In addition, the current condition of the building comprises the Museums responsibility under the MAAS Act to display, conserve, maintain, secure and operationally manage its collections. The entire building needs refurbishing to lift the overall Museum presentation, experience, operational efficiency and to meet the obligations of the MAAS Act.
 - ▶ The Powerhouse Museum site is currently underutilised and can achieve greater built density through development of the forecourt and increased building heights where the Wran building is currently situated.
 - ▶ The Harwood Building site is significantly underutilised. The collection storage on this site is sub-optimal (refer to Section Two for detail) and presents OH&S issues. Further, completion of the Goods Line will present security issues with Macarthur Street becoming a pedestrian thoroughfare. Options to redevelop this site to its Highest and Best use to maximise utility and revenue for the Museum should be explored.

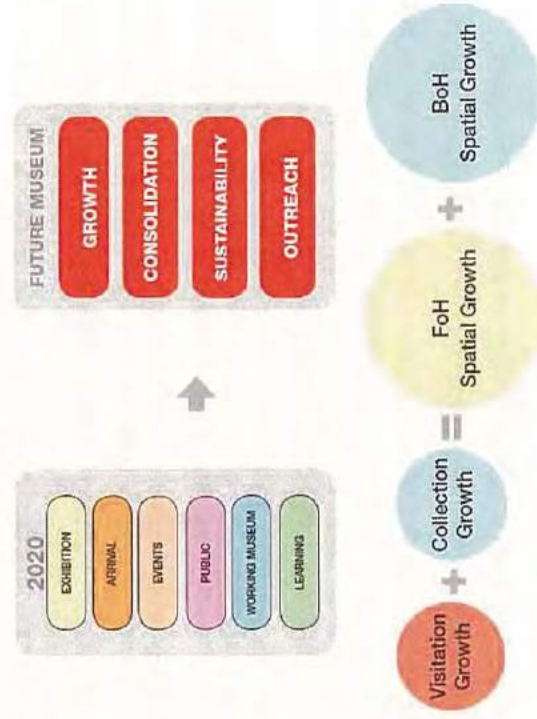
4.5 Spatial Analysis

In order to close the 'gap' between what the Powerhouse Museum provides today and what is required for successful operations going forward, FJMT has undertaken extensive analysis, in conjunction with MAAS executive to determine the spatial requirements of the Powerhouse Museum. The spatial analysis ensures that the proposed built form of Museum's accommodation will be able to meet the vision of the Museum in 2020 and beyond.

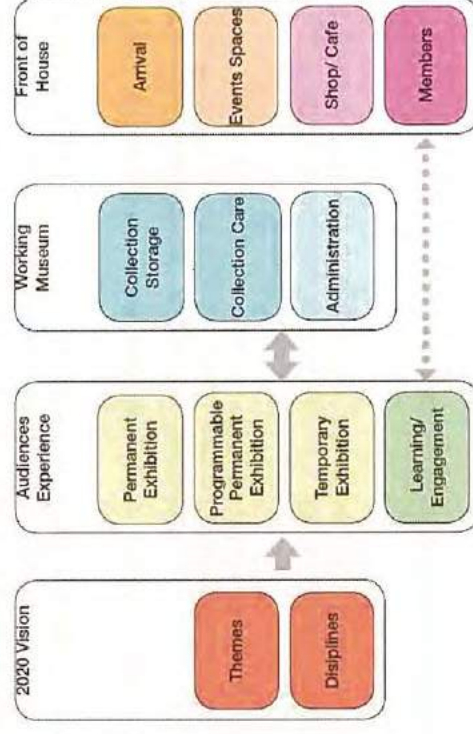
The "Museum Vision 2020" identifies the need for six distinct spaces within the Museum which are summarised in Figure 14 below. Appropriate provision of these spaces leads to the future growth and sustainability of the Museum and allows for visitation and collection growth which ultimately leads to a requirement for Front of House (FoH) and Back of House (BoH) increased areas within the Museum. Further detail is provided in FJMT's report which is annexed (Appendix One) with a summary of the findings provided below.

Figure 14 – Museum Vision – FJMT Spatial Analysis

Museum Vision - 2020 Vision and beyond



Museum Vision - 2020 Vision Spatial Relationship



From the Spatial Analysis, it was found that the following building areas are required to ensure the Museums needs are met into the future:

Figure 15 – FJMT Space Summary

Museum Vision - Space Summary

Public	6105m ²	Working Museum	7950m ²
Foyer/Event Space	2000m ²	Collection Store	3800m ²
Catering Kitchen	100m ²	Level 1	500m ²
Event Store	65m ²	Level 2	3300m ²
Theatre (350 seats)	400m ²	Conservation Lab	200m ²
Theatre (150 seats)	180m ²	Workshops	450m ² (1@300m ² + 1@150m ²)
Prefunction Space	200m ²	Research Library	500m ²
Shop	180m ²	Administration	3000m ²
Cafe (100 seats)	220m ²	Level 3	400m ²
Cafe Kitchen	50m ²	Level 4	1300m ²
Group and Family Space	1500m ²	Level 5	1300m ²
Classrooms (6x100m ²)	600m ²		
Bridge Link	400m ²		
Members Lounge	210m ²		
		Commercial	4500m ²
Galleries	15820m ²	Museum Parking (50 cars)	1500m ²
Galleries	12720m ²	Commercial	3000m ²
Heritage Refurbished Galleries	7170m ²	Level 6	1000m ²
New Galleries	5150m ²	Level 7	1000m ²
Media Lab	500m ²	Level 8	1000m ²
External Exhibition Roof Terrace	3000m ²		

4.6 The Commercial Real Estate Strategy

Utilising the 'Spatial Analysis' (refer Section 4.4) identified needs in the 'Gap Analysis' (refer Section 4.5) and 'Primary Accommodation Requirements' (refer Section 3.2), a Commercial Real Estate Strategy for the Powerhouse Museum has been devised. This Strategy focuses on:

- ▶ Delivering the physical requirements for the Museum (refer Section 4.5.1);
- ▶ Maximising the commercial opportunity of the property as a result of its location, surrounding development, town planning and size (refer Section 4.1-4.3);
- ▶ The ability for the Museum to generate independent revenue streams.

A high level summary of the Commercial Real Estate Strategy is provided below with supporting images. Further detail and diagrams presented in FJMT's report (refer to Appendix One).

4.6.1 The Powerhouse Museum

1. Re-orientation of the entry of the Museum to front Hay Street which will link the Museum with the city and optimise exposure to the Goods Line and the light rail which will link the Museum with Darling Harbour and Central Station. A new arrival hall will be located at the corner of Hay and McArthur Streets which will also double as function space.
2. A new Group Arrival area will be located at the corner of McArthur and Harris Streets, primarily to be used for school visits. This will allow the museum to be able to hold multiple functions simultaneously without disruption.

Figure 16 provides an image of the reoriented Arrival foyer and connectivity with the surrounding area under the Commercial Real Estate Strategy:

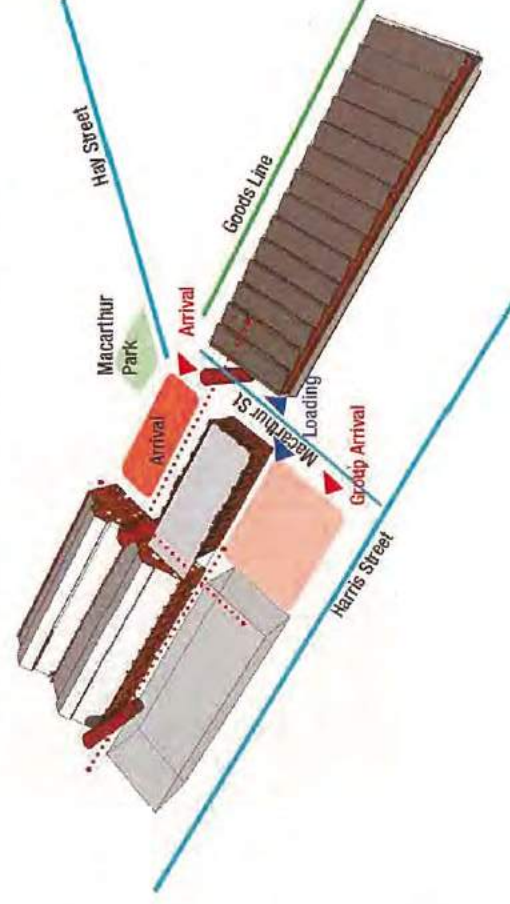
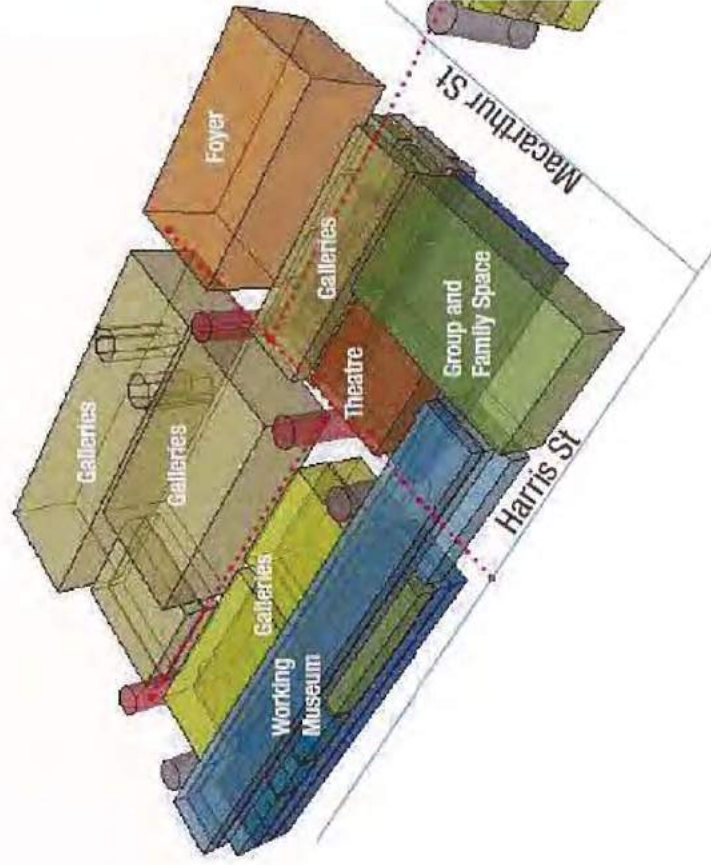


Figure 16 – Museum Vision – Arrival and Access Points

3. The office accommodation, public library and shared storage facility will be housed in a newly constructed building along Harris Street, replacing the existing Wran building. The new building will achieve a greater utilisation than the Wran building and provide a glass frontage to Harris Street which will allow for a visible working museum to exist and interact with the public on Harris Street. The office accommodation will be surplus to the Museum's needs, which allows the ability for MAAS to generate additional revenue from leasing three levels of office accommodation to a third party. The building envelope adopted is conservative to ensure Development Approval is achieved and the Museum is not faced with ongoing vacancies of the space as a result of developing too much space for the market to absorb. However, we highlight that if MAAS was able to secure a pre-commitment from a tenant seeking more space than three levels, then we would recommend a review and variation of the Development Approval.

Figure 17 provides an image of the new building to replace the existing Wran building which achieves far greater utilisation and provides a working Museum which interacts with the public on Harris Street:

Figure 17 – Museum Vision – Working Museum along Harris Street



4. Refurbishment of the existing Gallery space to provide permanent and temporary exhibitions. The Northern Annex will be refurbished and a lift constructed to allow for letting to external parties as low grade office accommodation or alternatively incubator space for students.

Figure 18 provides an image of the proposed Turbine Hall, stripped back to its Heritage Structure to allow for redevelopment of more functional areas:

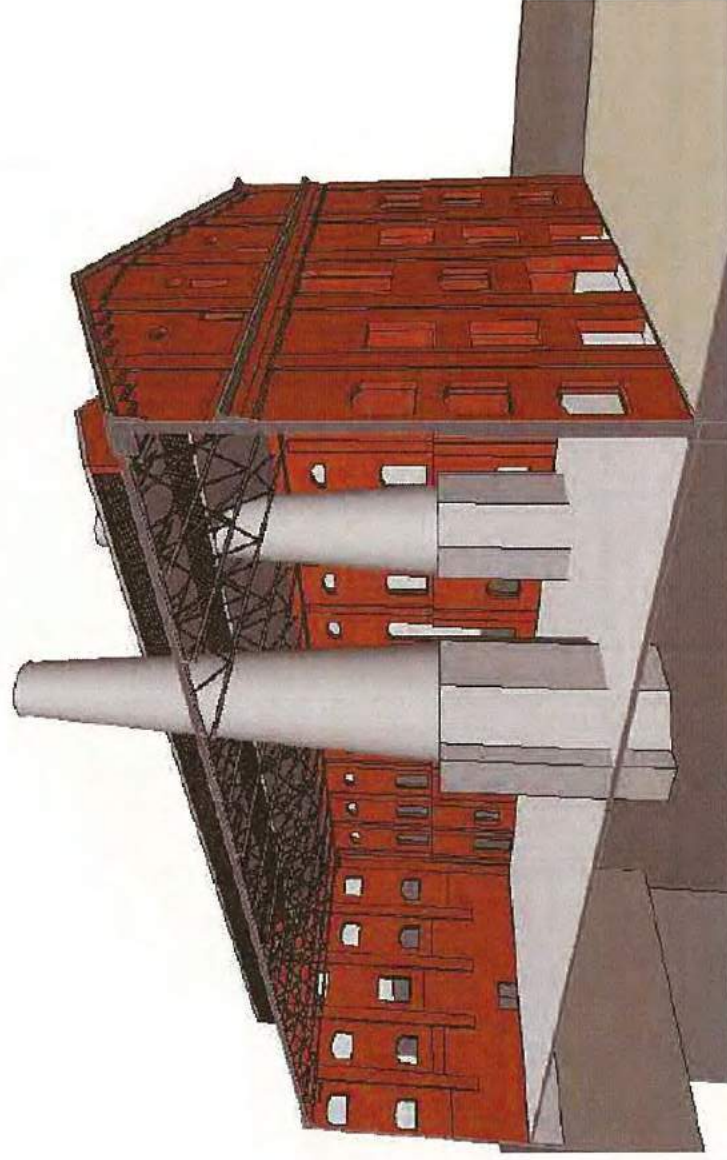


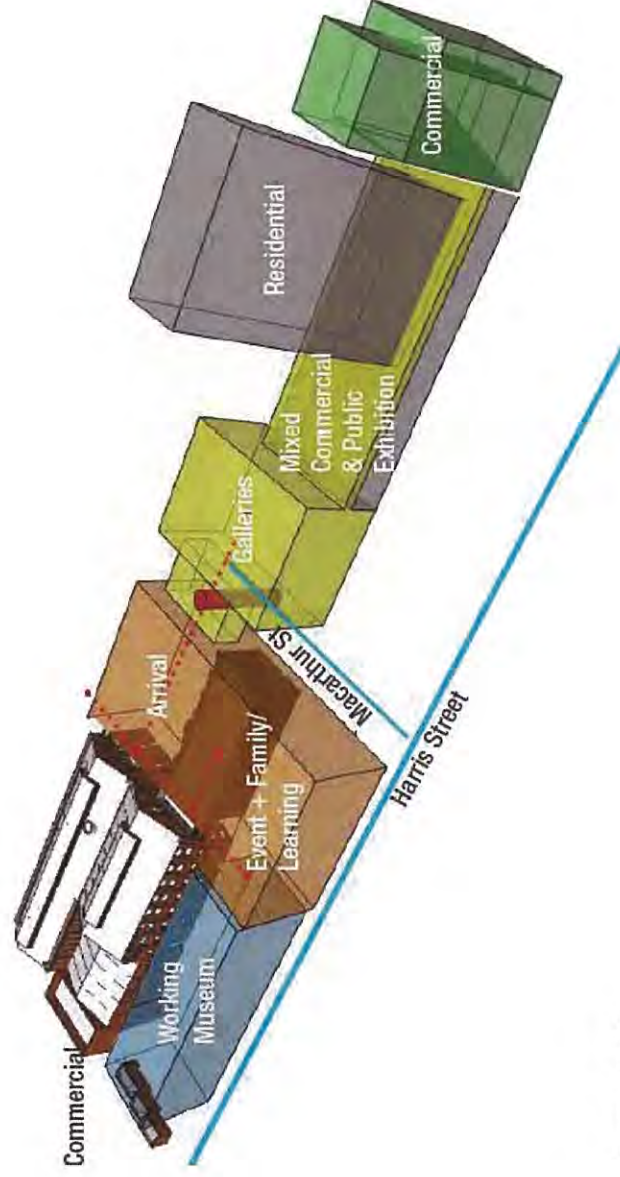
Figure 18 – Museum Vision – proposed Turbine Hall

4.6.2 The Harwood Site

1. Additional gallery space required by the Museum will be constructed on the corner of Hay and Macarthur Streets and a footbridge will be constructed over Macarthur Street at level one to link the two Museum buildings.
2. The remainder of the site will be sold to a developer who will construct:
 - a. The ground level of the site fronting the goods line will be redeveloped to provide retail accommodation, maximising the increased pedestrian patronage anticipated as a result of the operating goods line and additional precinct UTS student traffic.
 - b. A commercial/ educational development on the corner of Mary Ann Street, together with a residential podium with a 30 level residential tower above facing the Goods Line. The residential tower will incorporate an external exhibition roof top terrace open to the public, displaying MAAS collections. It is important to note that MAAS will have no role in the management and or sale of the residential and commercial developments. This development area will be sold to a developer. However, MAAS will need to engage with the developer to legally confirm rights to the Podium area which will be used as a sculpture garden.
3. The existing workshop in the Harwood building will be partially relocated into the Powerhouse building, with the remainder of the workshop which does not need to be located on the Museum site, relocated out to the Powerhouse Discovery Centre at Castle Hill.

Figure 19 reflects the Commercial Real Estate Strategy in totality.

Figure 19 – Commercial Real Estate Strategy



Source – FJMT

4.6.3 Planning Advice in relation to the Commercial Real Estate Strategy

In concluding our Commercial Real Estate Strategy, we have sought independent planning advice from JBA Urban Planning Consultants Pty Ltd ("JBA") to understand the process and timing required to achieve the proposed Strategy. JBA's advice forms Appendix Two of this report and key points are summarised below:

- ▶ In order to maximise the development potential of the site it is proposed that the permissible GFA from the northern part of the site, which is not needed for future development of the Museum and is therefore excess GFA, be transferred to the southern part of the site, in particular to the residential and commercial buildings.
- ▶ In order to achieve the transfer of floor space across the different lots, a single Development Application ("DA") would need to be lodged for the entire site. This could be in the form of a Stage 1 DA where the maximum parameters of the development are established, such as building envelopes and uses. The establishment of building envelopes and floor space distribution under the Stage 1 DA would facilitate the transfer of floor space without amending the current FSR controls of the site. (Separate Stage 2 DAs seeking approval for the detailed buildings within these envelopes could then be lodged for different elements of the redevelopment).
- ▶ It is estimated that finalisation of changes to the Sydney LEP 2012 in accordance with a Planning Proposal lodge for the site would take approximately 12 to 18 months to compete from date of lodgement.
- ▶ The relationship of the future redevelopment to The Goods Line will need to be carefully considered in light of potential shadow impacts. The effects of a redevelopment would need to demonstrate that The Goods Line still receives an adequate amount of sunlight.
- ▶ From a heritage perspective, in terms of the Harwood building being over 50 years old, the DA would need to justify why a comprehensive redevelopment of the site is acceptable. Considered heritage advice will be required to establish a defensible and coherent argument to seek a significant increase in height controls applying to the land.
- ▶ The notion of a taller building as proposed is not without merit in light of recent SICEEP approvals would not be out of context, however, matters must be worked through in terms of height limits and impact on surrounding development.
- ▶ The proposed residential and commercial uses on Harwood site are permissible uses in the B4 zone and will not require any change to the zoning controls.

4.6.4 Construction Costs

We have engaged Rider Levett Bucknell to provide construction costs to undertake the total proposed Commercial Real Estate strategy. This is inclusive of the Powerhouse Museum refurbishment and expansion. A summary of the total construction costs are provided in Table 7 below, with full cost reports provided in Appendix Three.

The construction costs which will be borne by MAAS, before any net returns are received from the developer for the sale of the development rights from the Harwood redevelopment are as follows:

Table 7 – Construction costs for total Commercial Real Estate Strategy

Powerhouse Refurbishment and Expansion	
	\$
Site preparation	3,560,000
Building Refurbishment	36,310,000
New Building (Wran)	171,140,000
Exhibition Fit-out Allowance	41,000,000
Service Infrastructure	3,135,000
Other (archaeology/ contamination removal)	1,000,000
Net Cost	256,145,000
Margin and Adjustments	
Staging costs	5,120,000
Authority Fees	3,915,000
Consultant Fees	39,775,000
Design Construction	22,870,000
Construction Contingency	24,575,000
Total Cost	352,400,000

The development costs that a private developer will incur in undertaking the proposed commercial real estate strategy on the Harwood site are as follows:

Harwood Building Redevelopment (residential & retail components)	
	\$
Site prep	2,300,000
basement Car park (200)	5,700,000
Podium	11,725,000
Residential Building	99,450,000
Service Infrastructure	2,720,000
Other (archaeology/ contamination removal)	2,500,000
Net Cost	<u>124,395,000</u>
Margin and Adjustments	
Authority Fees	1,865,000
Consultant Fees	15,780,000
Design Construction	10,655,000
Construction Contingency	7,635,000
Total Cost	160,330,000
Harwood Building Redevelopment (commercial)	
Site prep	995,000
basement Car park (30)	1,155,000
Commercial office building	32,240,000
Service Infrastructure	1,100,000
Other (archaeology/ contamination removal)	1,500,000
Net Cost	<u>36,990,000</u>
Margin and Adjustments	
Authority Fees	555,000
Consultant Fees	4,690,000
Design construction	3,165,000
Construction Contingency	2,270,000
Total Cost	47,670,000

The total construction costs of the Powerhouse Museum refurbishment and expansion is approximately \$352,400,000 (GST exclusive) whilst the total development costs of the Harwood redevelopment (excluding the air-bridge and Temporary Museum which is captured in the costs stated above) is approximately \$208,000,000(GST exclusive).

4.7 Financial Analysis of Powerhouse Museum Commercial Strategy

4.7.1 Modelling Analysis

In order to determine the viability of the Commercial Real Estate Strategy, a discounted cash flow analysis has been prepared of the proposed residential and commercial development on the Harwood Site. This method of analysis involves forecasting cash flows over an explicit time frame. Positive and negative cash flows are summed for each month to provide a net cash flow for each period. A 'present value' of these periodic net cash flows is then calculated at the discount rate or internal rate of return ("IRR"). The sum of the present values reflects the funds available for purchase of the in globo parcel of land, after adjustments for stamp duty and legal fees and represents the market value of the land.

The outcome of this analysis reflects the proceeds that MAAS can expect to receive from the sale of the Harwood site under the proposal outlined. It is envisaged these proceeds will be used to reduce the total cost of implementing the Commercial Real Estate Strategy. (The analysis excludes the cost of the Museum refurbishment and expansion, the Temporary Gallery and the air bridge, as these works will need to be funded by MAAS.)

We recognise the importance of MAAS being able to generate independent revenue streams to supplement visitor revenue into the future. Our proposed Commercial Real Estate Strategy assumes that MAAS will retain freehold ownership of the retail component of the development on the Harwood site. This would be completed and delivered back to the Museum at no additional cost and allows the Museum to let the retail properties out to third parties for a receive rental income into perpetuity. Accordingly, cost of constructing the retail component of the development factored into the residential analysis below, recognising the developer will directly incur this cost and not the Museum.

4.7.2 Revenues

We have assessed the expected Revenues from the redevelopment of the Harwood site based on current market rental and sales evidence in Ultimo, Sydney CBD and surrounds.

Residential

In determining the value of the residential apartments, we have utilised sales evidence of new residential developments in the vicinity including those which have occurred within the Central Park development at Chippendale and new developments in Barangaroo. Having regard to sales evidence of new apartments, we have assessed a rate of \$11,000/m² of saleable area. Approximately 200 car bays will be constructed for the residential carpark. It is typical that car parks sell as part of the total sale price for apartments of three bedrooms plus. Sales of studio apartments, one bedroom and two bedroom apartments sell carparks separately at an additional cost. We have adopted a sale rate of \$65,000, applied to 125 saleable car bays.

Commercial/ Mixed Use accommodation

In determining the value of the commercial/mixed use accommodation proposed (approximately 9,920m² net lettable area plus 30 car bays) we have adopted a rental rate of \$500/m² net, based on rental evidence of commercial uses located in CBD and surrounds. We have adopted a rental value for the 30 carparks of \$400 per calendar month after operating costs and based on analysed recent sales evidence and adopted a capitalisation rate for this building of 7.5%. This reflects a total capital value of approximately \$63,800,000.

Commercial Car park

We have adopted a rental value for approximately 165 carparks to be constructed as part of a commercial car park of \$400 per calendar month after operating costs and based on analysed recent sales evidence and adopted a capitalisation rate for the carpark of 8%. This reflects a total capital value of approximately \$9,900,000.

The residual analysis below is for the Harwood site only and therefore adopts market parameters and inputs that a developer will consider in evaluating the proposal. The total costs adopted are \$208,000,000 + GST, being the cost to develop the Harwood Site, excluding Museum components.

Key Variables and Financial Modelling Assumptions

The adopted assumptions for the financial modelling are set out in Table 8:

Table 8 – Hypothetical Development Assumptions and Inputs

Variable	EY Assumption / Input
Gross Revenue	We have used the following average sale rates to determine gross revenues for the proposed development: Residential Revenue - \$11,000/m ² Commercial Revenue – \$6,700/m ² Car parking Revenue (residential and commercial) - \$65,000 per car bay Commercial Carpark - \$60,000 per car bay (refer to Appendix Four for sales evidence to support adopted Gross Revenues)
Sales Rate:	Residential Apartments 75% presold, remaining apartments to sell 6 months post construction.
GST:	Auto Tax Rule.
Development Costs:	We have been provided with preliminary cost estimates prepared by RLB which have been relied upon in undertaking our analysis: Retail and 30 storey Residential development - \$160,330,000 + GST Commercial development - \$47,670,000 + GST (refer to Appendix Three for detailed cost plans)
Construction Timing:	Construction commences January 2016 for 24 months
Interest Rate & Financing:	We have assumed the project is 100% debt financed at 7.5%.
Acquisition Costs:	Stamp Duty: \$3,312,990 Legals: \$100,000
Marketing and Sales Expenses:	1.75% of gross realisation for the residential component 0.75% of gross realisation for the commercial/car parking components:
Rates and Holding Charges:	Land Tax and Rates - \$1,523,432 per annum
Targeted Internal Rate of Return:	Adopted 17.5% project IRR, commensurate with market conditions.

*Please note the revenue values do not reflect individual valuations of each dwelling

An extract of our hypothetical development or residual land value approach is provided Table 9:

Table 9 – Extract from Estate Master Development Feasibility Summary

Revenue	\$
Residential Revenue	295,210,000
Commercial Revenue	68,414,000
Commercial Carpark - \$60,000 per car bay	9,900,000
Less Selling Costs	7,100,780
Net Sale Proceeds	366,423,220
Less GST	26,837,273
Total Revenue (after GST paid)	339,585,947
Land Purchase Cost	61,000,000
Land Transaction Costs	3,440,490
Construction (Inc. Construct. Contingency)	171,291,000
Professional Fees	34,290,000
Statutory Fees	2,420,000
Land Holding Costs	3,190,196
Finance Costs	24,836,916
Total Costs	300,471,335

The cash flow analysis indicates a residual land value of \$61,000,000 being the projected funds received by MAAS for the sale of the development rights of the Harwood site. The internal rate of return reflected is 17.38%, which is considered appropriate due to the size and length of the project. In addition to this return from the Harwood site, MAAS also retains the freehold title of the retail component which has an estimated market value of approximately \$10,000,000 or \$600,000 per annum net in rent to the Museum.

Having regard to the total return available from the Museum, Table 10 provides a calculation to reflect the total cost of implementing the Commercial Real Estate Strategy to MAAS:

Table 10 – Extract from Estate Master Development Feasibility Summary

<i>Total Proceeds received</i>	\$
Harwood Development	61,000,000
<i>Less Cost of refurbishing and extending Powerhouse Museum site</i>	<i>352,400,000</i>
Total Costs	291,400,000

The above calculation demonstrates that in order to refurbish and expand the Powerhouse Museum, MAAS will need to secure approximately \$291,400,000, after receipt of proceeds from the Harwood site.

In addition, the Commercial Real Estate Strategy results in the Powerhouse Museum also receiving independent revenue streams of:

- ▶ Approximately \$560,000 per annum in retail revenue from the retail shops within the new Harwood redevelopment;
- ▶ Approximately \$200,000 per annum in retail revenue from the café and shop within the Powerhouse redevelopment;
- ▶ Approximately \$1,130,000 per annum in commercial office revenue from the surplus office accommodation within the Harris Street Museum operations building redevelopment.

This equals a total supplementary income of approximately \$1,900,000 per annum net for the Powerhouse Museum.

(Note: Our analysis does not reflect the uplift in proceeds from the Museums operations as a result of implementing the Commercial Real Estate Strategy. This is discussed in the Business Case prepared by Ernst & Young in relation to this project.)

4.8 Economic Benefits

The key anticipated economic benefits of the Commercial Real Estate Strategy for the Powerhouse Museum have been considered. The anticipated benefits of the project are significant and relate to improved delivery of the Museum's core requirements, improved compliance with building codes and OH&S standards, improved access, and an improved customer experience leading to improved social, economic and environmental benefits. These anticipated benefits are described in Table 11 below:

Table 11 – Expected benefits

Item	Benefit
Economic	▲ Increase in demand for services as a result of: ▲ Increase in consumer surplus gained as a result of increased visitation as well as an increased valuation of the visitor experience offered ▲ Improved accessibility ▲ Improved visitor experience ▲ Improved efficiency as a result of: ▲ Increased synergies ▲ Increased staff morale and reduced staff rotation costs ▲ More efficient internal orientation of the facility ▲ Reduced maintenance costs of ageing infrastructure and OH&S costs ▲ Efficient back of house areas and systems ▲ Increase in net surplus generated by the operations of the Museum ▲ Increase in tourism and tourism expenditure attracted to NSW ▲ Facilitation of more productive partnerships and collaboration with the arts and cultural industry, education facilities and community groups
Social	▲ Increase in the civic pride that the residents of NSW incur from the existence of the Museum ▲ Improved visitor experience as a result of modernised facilities and a program of exciting and unique exhibitions and events ▲ A more creative society through the increasing accessibility of arts and cultural services, particularly to the inner west of Sydney ▲ Increased quality of life and liveability of local areas as a result of increased accessibility to the arts and cultural industry and support of artists ▲ The promotion of social inclusion through increasing accessibility to facilities which promote wider community understanding of cultural difference and inspire cultural expression ▲ Improved learning outcomes through the modernization of learning facilities at the Museum ▲ Improved building security and safety for the collection, staff and visitors ▲ Improved ability to achieve NSW Government objectives
Environmental	▲ Improved environmental outcomes due to the development of a more efficient building which incorporates environmentally sustainable design initiatives

4.9 Potential Delivery Options

Based on the proposed works described above, there are three broad options which could potentially be utilised to deliver the project works. These options are discussed at a preliminary level as follows:

1. MAAS to undertake the entire project:

This scenario would involve MAAS developing the entire MAAS project (Powerhouse Museum reconfiguration and refurbishment and the Harwood Building redevelopment). Undertaking the entire development would be a significant project for MAAS, and would likely require the outsourcing of many key development roles (including construction and design). MAAS would develop detailed design specifications for the entire project in line with their objectives, and would then outsource the construction works to a builder. After completion, MAAS would maintain management of the Powerhouse Museum and outsource the management of the Harwood Building redevelopment to an experienced operator, but would retain ultimate control over the entire project. This option presents a high risk profile to MAAS, particularly in the areas of project management and retail/residential management.

We have analysed the pros and cons of this delivery option as follows:

Table 12 – Delivery Option 1

Advantages	Disadvantages
▶ MAAS would maintain control of the entire project. ▶ Delivery of the whole project is ensured, with connectivity between the refurbished Powerhouse Museum and new Harwood Building space (consistent design outcome). ▶ Preferred design outcomes achieved.	▶ Project would be a significant undertaking for MAAS who do not possess the appropriate skills for this scale of development. ▶ MAAS is not in the business of redeveloping major sites. ▶ Increased risk profile for MAAS

2. MAAS to pass all of the development responsibility to the private sector:

This scenario would involve MAAS passing responsibility of the entire project over to the private sector for delivery; essentially meaning that both the Powerhouse works and Harwood Building redevelopment would be completed by a private sector developer/ builder. It is envisaged that MAAS would provide specific designs and specifications for the Powerhouse Museum refurbishment and expansion, and more broad design principles for the Harwood Building redevelopment works. This would ensure the Museum related works are completed in line with MAAS requirements/objectives, while allowing for some flexibility for developers to develop an innovative and commercially viable project for the Harwood site. We note that compared to Option One, this option limits the level of control that MAAS will have over the successful delivery of the works. The private sector will also apply a development margin to the project, which will be a cost incurred by MAAS.

We have analysed the key advantages and disadvantages of this approach below:

Table 13 – Delivery Option 2

Advantages	Disadvantages
► Absolve MAAS of all development responsibility, therefore limited risk. ► Private sector is more experienced in development, which may lead to a more successful project outcome.	► Limited control over project outcomes on the Harwood site. ► Private Sector will apply a development margin to the project. This will be a cost incurred by MAAS not undertaking the works themselves.

3. MAAS and Private Sector to undertake Museum works and Harwood site redevelopment works separately:

This scenario is a hybrid of the first two approaches, and entails the Museum works being delivered by MAAS and the Harwood site redevelopment being delivered by the private sector. MAAS would maintain control over and deliver the Museum related refurbishment and expansion, while the private sector would be responsible for the delivery of the retail, residential and commercial components on the Harwood site.

As with scenario 1, MAAS would develop detailed designs and specifications for the Museum related works, and would then outsource the construction works to a builder through a tender process. With regard to the Harwood site redevelopment, MAAS could dictate the design specifications for the development of the temporary gallery, bridge and retail space (to ensure the design is in keeping with MAAS requirements and expectations), and develop broad design objectives for the residential and commercial development. The private sector would then deliver the redevelopment of the Harwood site which meets MAAS objectives.

The advantages and disadvantages of this approach are detailed in the table below.

Table 14 – Delivery Option 3

Advantages	Disadvantages
► Separation of the Museum refurbishment and extension and Harwood site redevelopment is more attractive to the private sector. ► MAAS maintains control of the Museum development, ensuring it is delivered in accordance with the Museums expectations and requirements. ► Element of control over the Harwood site redevelopment.	► Potential disconnect between the new building works and existing components. ► Potentially long construction period and two construction companies on site.

We believe this Delivery Option 3 presents the most effective method of delivering the Project. This approach would enable MAAS to maintain control over the delivery of its Museum building ensuring complete control over the staging and subsequent impact on the Museums operations during construction.

The additional benefit of this approach is the outsourcing of risk associated with the build to a third party. MAAS would also maintain a degree of control over the particular design of the Harwood Development ensuring its sensitivity to the surrounding Museum development. The development of Harwood site would involve engaging with the private sector under a selected procurement approach.

Potential Procurement Options

Assuming the Project is undertaken in line with Delivery Option 3 above, there are a number of potential procurement arrangements available. We recommend two separate procurement approaches for the delivery of Component A and Component B, due to the distinct variations between components. These approaches are detailed as follows.

Component A

The delivery of Component A would be best achieved through a traditional construction tender process. Given the Museum design will require particular specifications, the design and construct (D&C) model which allows for some flexibility in design, is considered unsuitable. MAAS should fully develop the design and specifications for the new buildings and then tender the building works, with a building contractor appointed on the basis of price and quality among other attributes. The new spaces within Component A have very specific design requirements due to the integration with heritage buildings. Therefore we envisage MAAS would develop very clear and detailed specifications around the design of the new spaces, and then tender the build for these works to a single builder.

Component B

Based on our review of potential development arrangements (provided within Appendix 6), as well as a review of the overall project objectives, we have considered the suitability of various options for the delivery of this component as summarised below:

- ▶ Private Public Partnership ("PPP"): As described within Appendix 6, PPP arrangements normally span a longer life-cycle than other arrangements, and usually involve a private consortium fully integrating the design, construction, financing, operational service delivery and maintenance of an asset. PPPs are typically most suited to infrastructure projects and larger scale projects. Therefore, this option is considered unsuitable for the Harwood site redevelopment, given the smaller scale of the project, and thus we have not considered it further in our analysis.
- ▶ Joint Venture ("JV"): Under a JV, a developer/operator would assume a development management role on the land and may fund all or part of the development on the property. In return, the developer or operator would be reimbursed for all costs of development through operating cash flows, and there would be a revenue, royalty or profit sharing split between MAAS and the developer. This option may be a suitable approach for the project, however would require MAAS to take an active role in the development and contribute some equity, and thus increase their risk profile. We believe that MAAS would not have an appetite for this increased risk profile, and therefore we have not considered this arrangement further.
- ▶ Project Development Agreement ("PDA"): We consider this arrangement to be the most suitable potential procurement option, whereby MAAS maintains a degree of control over the project with a modest risk profile; while the private sector takes all development risk for Component B.

More comprehensive analysis of a PDA as a preferred delivery option for Component B is provided in the following section.

Project Development Agreement

The intention of the PDA is to engage with the private sector to undertake the required works at a minimum risk to MAAS whilst maintaining a level of control over the site for the duration of construction.

A PDA can be structured in a variety of different ways according to the project being undertaken. We envisage a PDA for MAAS would include the following key components:

- ▶ The titles of the proposed residential and commercial components within 'Component B' would be transferred to the private sector once the development has been completed or a stipulated date (such as practical completion) has been reached.
- ▶ This transfer of title would be for the residential and commercial components only and would be undertaken on a freehold basis.

- ▶ The developer would undertake works on the site under a licence arrangement across the construction phase whilst ownership remained with MAAS, which would enable them to undertake all works and engage the required trades on the site at relevant points in time with the developer reasonable for bearing the cost and risk of construction.
- ▶ Once a preferred party has been selected for MAAS to engage with (typically through a tender process), an initial Heads of Agreement could be entered into with the more extensive negotiations associated with a Development Agreement to follow based on the initial agreed terms and conditions of the Heads of Agreement.
- ▶ The terms and conditions agreed between MAAS and the selected party may include provision for MAAS to provide input into the design of the development. This will ensure a preferred outcome is achieved for this space, particularly in terms of requirements around security and scale, with some flexibility allowed in the final design outcome.
- ▶ It is likely that the PDA will also outline the process for obtaining planning approvals and the role of both parties in gaining the required planning approvals. This is a particular risk in the context of Ultimo and accordingly may involve the private sector requesting MAAS to take responsibility for this. Our previous experience has indicated that while MAAS may assist in progressing the approval of necessary planning applications, there is considerable risk around planning being stalled as a result of site sensitivities, particularly around heritage issues. Accordingly, the private sector will be reluctant to take on the sole responsibility of planning without a degree of support from MAAS. The level of support must be carefully considered by MAAS, to ensure they balance the level of risk against the goal of ultimate project completion.
- ▶ The external podium gallery proposed would also be written into the PDA as a requirement for the private sector to complete along with the retail accommodation on the ground floor. Specific design guidelines for this space would also form part of the agreement.

Approach to Market

MAAS will need to carefully consider the strategy by which it will engage with the market in relation to both components of the Site. In specific relation to Component B (Harwood Building), we would expect that this would be undertaken via a two stage Expression of Interest and Request for Proposal process which will need to be very well considered and structured to achieve the objectives of MAAS.

4.10 Next Steps

In considering the future development of the Harwood Building, we detail below a non-exhaustive range of important transaction considerations which in our view should be further explored prior to the implementation of any transaction. From our experience, the more time that is spent up front to better understand and manage project risks, is time well spent.

Table 15 – Next Steps – Powerhouse Museum redevelopment

Transaction issues for Considerations	Comment
Transaction objectives	Transaction objectives and measures of success should be determined at the outset. The structure of the transaction should be built around achieving the objectives. For example, timing, risk management, synergies between site usages etc.
Transaction risks	Each transaction carries a range of risks; both in terms of their probability of occurrence and the magnitude of the consequence should the event occur. We advocate that a Project risk workshop be undertaken at the outset (and monitored throughout the life of the transaction).
Procurement options and preferred strategy	There are a range of procurement options which may be considered for application to the Project. Each option should be evaluated and a preferred strategy identified. We recommend that the preferred strategy/ies be tested via a soft market sounding.
Market sounding	It is common practice to interview a small number of suitably qualified developers/contractors prior to the commencement of the transaction process. This provides the benefit of not only gauging project interest (in an informal way) but also to understand the perspectives of the private sector in terms of risk, project appetite and structural considerations.
Sources of Funding	The ability to source the required debt and equity will be critical to the timely delivery of the Project, particularly to the proposed development of the Harwood site.
Transaction implementation (approach)	A well-conceived transaction strategy will need to be developed and professionally managed, ensuring the maximisation of the outcome within a fully transparent context, standing the test of external scrutiny.
Planning approval strategy	Planning risk is seen as a critical risk that needs to be understood with a clear strategy to minimise risk. Any lengthy appeals process and delays will be a major concern for interested parties/developers, given they are to assume planning risk for the Harwood site. De-risking the project as much as possible upfront will lead to a greater realization for MAAS. MAAS should engage with planning consultants as soon as practically possible in relation to the proposed development.
Community/stakeholder engagement	It is important that all stakeholder groups identified in this report are engaged from the outset of the process and managed throughout the life of the Project, ensuring they "come along for the journey".
Developer Competence	Ensure developer has sufficient scale and references/ examples of previous developments to deliver a development of this scale within the proposed time frames.
Construction timing	Need to ensure that the construction of the non-MAAS component does not delay the occupancy for of MAAS within the development.
Interface and Agreements between the Sites	The interface between the non-MAAS components of the site and the Powerhouse Museum itself will need to be considered. Similarly the access rights and obligations associated with the proposed link between the Powerhouse Museum site and the Harwood Building site will need to be managed effectively.
Management/control over the development and design outcome	Need to ensure that the procurement option provides the level of control required by MAAS to manage the desired design outcomes.

5. Sydney Observatory, Millers Point

1. Description of Sydney Observatory
2. Town Planning
3. Surrounding Development
4. Gap Analysis
5. Commercial Real Estate Strategy
6. Planning Advice
7. Next Steps

5.1 Description of Sydney Observatory

The Museum also incorporates Sydney Observatory, a heritage site overlooking Sydney Harbour, which functions as a museum of astronomy and a place to view the southern sky and stars. The Sydney Observatory is situated on Observatory Hill, accessed via Upper Fort Street, Millers Point, close to Sydney's Rocks District and the Harbour Bridge. This site comprises four separate buildings. The main Observatory building was completed in 1858 and in 1877 a western wing and a second domed chamber for telescopes was added. This is a two level sandstone building which provides public exhibition and viewing areas. In 1997, Sydney Observatory was refurbished and re-launched as a public observatory interpreting the history of astronomy in Australia, past and present.

The Messengers cottage comprises a single storey Victorian style building which is utilised for staff offices. The cottage provides four rooms together with a kitchen. The Signal building comprises a two level sandstone building which is partly utilised for small public group visits. A toilet block sits adjacent to the main Observatory building providing public amenities for the site. An open courtyard provides an area for functions with the capacity for a marquee to be erected to facilitate a cocktail function for 250 people, a banquet dinner for 160 people or a theatre viewing for 200 people. The property includes extensive gardens together with a small onsite gravel car park for staff use.

The significance of the sites Heritage does limit future development opportunities, however we note the recent planning changes to allow redevelopment at Barangaroo (refer to Section 5.3) which demonstrates an example of where a planning change was allowed to enable strategic development. We understand several proposals for redevelopment of various areas of the site including erecting a building in the courtyard and converting the Messengers cottage to a restaurant have been previously rejected, due to the risk of damaging the heritage nature of the site.

Photos of the site are provided in Figure 20 overpage:

Figure 20 – Photos of Sydney Observatory



Sky view of Observatory site



Sydney Observatory, main building



Courtyard used for function space



Signal Building



Toilet block and function courtyard, overlooking Sydney Harbour Bridge



View of Sydney Harbour Bridge from the site

5.2 Town Planning Ordinance

Local Environmental Plan

The relevant LEP is the Sydney LEP 2012. The following restrictions / conditions to the Sydney Observatory apply pursuant to the LEP:

Zoning: Zoning of the Sydney Observatory is "B8 Metropolitan Centre".

Heritage: The Sydney Observatory and Observatory Hill are heritage items referred to as "1934" and "1935" respectively (detailed below). The Observatory Hill precinct (including the Sydney Observatory) is a heritage conservation area.

Zoning

The objectives of the "B8 Metropolitan Centre" zone are:

- ▶ To recognise and provide for the pre-eminent role of business, office, retail, entertainment and tourist premises in Australia's participation in the global economy.
- ▶ To provide opportunities for an intensity of land uses commensurate with Sydney's global status.
- ▶ To permit a diversity of compatible land uses characteristic of Sydney's global status and that serve the workforce, visitors and wider community.
- ▶ To encourage the use of alternatives to private motor vehicles, such as public transport, walking or cycling.
- ▶ To promote uses with active street frontages on main streets and on streets in which buildings are used primarily (at street level) for the purposes of retail premises.
- ▶ The objectives of the "RE1 Public Recreation" zone are:
 - ▶ To enable land to be used for public open space or recreational purposes.
 - ▶ To provide a range of recreational settings and activities and compatible land uses.
 - ▶ To protect and enhance the natural environment for recreational purposes.
 - ▶ To provide links between open space areas.
 - ▶ To retain and promote access by members of the public to areas in the public domain including recreation facilities and waterways and other natural features.

Heritage

The Sydney Observatory is a listed heritage item ("1934") pursuant to the Sydney LEP 2012. The objectives of "Clause 5.10 Heritage Conservation" of the LEP provided within the Powerhouse Museum Town Planning Summary. It is also a listed heritage item on the National Trust of Australia register.

The significance of the Sydney Observatory lies in its ties to European culture. Its dominant location made it the site for a range of changing uses, all of which were important to stages in the development of the colony. These uses included milling (the first windmill), defence (fort), communications (the flagstaffs, first semaphore and first electric telegraph connection), astronomy, meteorology and time keeping. The surviving structures demonstrate Italianate architecture and high quality masonry work, which underpin the significance of the Observatory from an architectural perspective. The conservation plan for the Sydney Observatory is currently being reviewed.

5.3 Surrounding Development

The Sydney Observatory is located within the prominent leisure and entertainment precinct of Darling Harbour. There are a number of significant precincts and facilities in proximity to the Sydney Observatory, which include:

- ▶ Barangaroo (current development)
- ▶ The National Trust Centre (existing)
- ▶ Observatory Hill Environmental Education Centre ("EEC") (existing)
- ▶ Fort Street Public School (existing)

Figure 21 – The Sydney Observatory and Surrounds
Source: Google and EY 2014



An overview of each of the above, and their potential impact / opportunities for MAAS is provided below.

Barangaroo

Overview of Development

Barangaroo comprises 22 hectares of disused container wharves on the western edge of Sydney's CBD. It will be redeveloped over the next 10 to 20 years and will include waterfront walks and parks, commercial office towers and apartments, all of which will be serviced by new and extended transport infrastructure.

- ▶ The site has been divided into three redevelopment areas - the Headland Park, Barangaroo Central and Barangaroo South.
- ▶ Headland Park: Will comprise parkland and a public foreshore walk which will continue for the entire length of the site and on to Walsh Bay and Darling Harbour.
- ▶ Barangaroo South: The commercial and residential centre of the site.
- ▶ Barangaroo Central: A cultural and civic focal point for recreation, events and entertainment.

Current Status of Works

Construction of three commercial towers by Lend Lease began in Barangaroo South in 2013. One commercial tower, the Headland Park and several low rise residential buildings are expected to be completed in 2015. The estimated completion date for the Barangaroo precinct as a whole is 2025.

Accommodation Provided upon Completion

Upon completion, the Barangaroo precinct will provide the following accommodation:

- ▶ Headland Park: Parkland and an associated public foreshore walkway.
- ▶ Barangaroo South: Will comprise the first large scale, carbon neutral precinct in Australia. There will be a mix of uses, including commercial, residential and retail along with a new landmark hotel. On completion it will accommodate approximately 1,200 residents, 23,000 office workers and more than 2.9 hectares of public open space.
- ▶ Barangaroo Central: Ideas and plans for this area are currently being gathered, considered and debated.

5.4 Gap Analysis¹

The Sydney Observatory is situated in a unique, inner city location in Millers Point. Recognising the site is impacted by strict heritage control, we consider the following delivery ideas and potential development will improve the overall offering and revenue for the Museum:

- ▶ There is no food outlet on the site to attract and keep people there. We consider that this site would greatly benefit from an onsite café / restaurant to draw people onto the property and drive revenue.
 - ▶ The site needs to better integrate with surrounding development and broader Sydney events to maximise patronage and awareness.
- The Highest and Best use of this site is in its current form, as an Observatory site with heritage surrounds.

¹ The objectives of the Gap Analysis are detailed in Section 4.4.

5.5 Commercial Real Estate Strategy

The Commercial Real Estate Strategy for the Observatory site must recognise the strict heritage guidelines whilst delivering a retail opportunity for the site. The South-East corner of the site is currently fenced off as a service yard, utilised for parking and storage together with a seating area for visitors. This corner is free from the Fort footprint and no other heritage structure is apparent. This is considered the optimal position for a new structure given the strict heritage provisions which affect the remainder of the site.

A new structure providing café and function space in the south-east corner would open up the back garden area and afford views to the City. Images of this area are provided in Figure 22 below with "1" indicating the existing garden and outdoor seating area whilst "2" is the service yard and parking:

Figure 22 – The Sydney Observatory service yard and outdoor seating area



The aspects and connectivity from this south east corner together with the rest of the site and to the city are indicated in Figure 23 below:



5.6 Planning Advice in relation to the Commercial Real Estate Strategy

In concluding our Commercial Real Estate Strategy, we have sought independent planning advice from JBA Urban Planning Consultants Pty Ltd ("JBA") to understand the process and timing required to achieve the proposed Strategy. JBA's advice forms Appendix Two of this report and key points are summarised below:

- ▶ The site is zoned B8 zone which is the same zoning that applies to the majority of the Sydney CBD. Cafes and restaurant spaces would be permissible with development consent.
- ▶ There are no prescribed height limits or floor space ratios (development standards) applying to the Sydney Observatory. Accordingly, the proposed development will be subject to merit considerations such as heritage impacts and visual impacts upon the building and its settings.
- ▶ The Sydney Observatory is listed on almost every conceivable heritage listing or register. As a listed heritage item, development consent is required from Council for practically any level of development or alteration on the site. The listing of the Observatory on the State Heritage Register is more significant from an approval perspective as it enlivens the jurisdiction of the NSW Heritage Council.
- ▶ A development application (DA) will need to be lodged with the City of Sydney Council seeking approval for the proposed café/ restaurant use and any physical works associated with the proposal. It is likely that there will be a requirement for a copy of the DA to be forwarded to NSW Heritage Council. If NSW Heritage Council will not grant approval, development consent must be refused.
- ▶ It is expected that pre-DA negotiations will take approximately 3 months. Once the DA is lodged, an outcome is expected to take approximately 4-7 months to be determined.
- ▶ In conclusion whilst the main issue of seeking any approval development will be the heritage significance of the property, development on the Observatory site is permissible. A wide range of uses including café or restaurant spaces are permitted with consent from Council.

5.7 Next Steps

Investigate the opportunity to construct a café/restaurant onsite in the south-eastern corner of the property. This building could also be used for functions as an alternative to the temporary marquee and could provide a glass cantilever roof to allow viewing of the stars. We recognise this building would have to be sensitive to the stringent heritage controls over the site. Additional opportunities include:

- ▶ Maximising connectivity with Barangaroo, in particular creating a positive interface through a direct relationship with the Sydney Steps.
- ▶ Hold discussions with local land controllers, City of Sydney and Sydney Harbour Foreshore Authority, to maximise direction signage to the site.
- ▶ Increase utilisation of the Signal Station building for private function/ school space.
- ▶ Increase private events held on the site by extending the Marquee planning permit.
- ▶ Increase Sydney Observatory's involvement in public events, i.e. Vivid events in the surrounding gardens.

6. Powerhouse Discovery Centre

1. Description of the Powerhouse Discovery Centre
2. Town Planning Ordinance
3. Surrounding Development
4. Gap Analysis
5. Commercial Real Estate Strategy
6. Next Steps

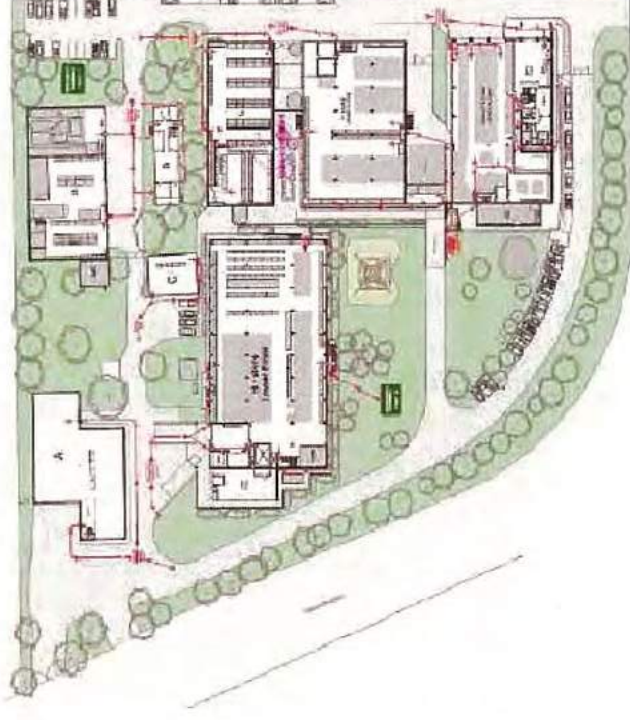
6.1 Powerhouse Discovery Centre

The Powerhouse Discovery Centre is located at 172 Showground Road, Castle Hill. In 2007 the Museum opened the Powerhouse Discovery Centre: Collection Stores at Castle Hill, which allows visitors to access around 50,000 items of the collection in storage and also learn about its care and maintenance.

The Powerhouse Discovery Centre will benefit from the construction of the North West Rail link which will improve public transport access for the wider Sydney community to the Museum. This site abuts the TAFE NSW Western Sydney Institute to its eastern boundary.

The site currently comprises seven buildings with Building D recently demolished and Building B and C to be demolished in July to allow for new construction. The site is accessed via on-grade bitumen driveways through-out the site. Building "E" allows public entry into the facility, comprising a large two level brick building used for public viewing of the collection storage together with the back of house offices. Building "E" was completed in 2004 and includes two small breakout areas for classes held at the Centre. Site plans of the Powerhouse Discovery Centre are provided below in Figure 24, while photos of the site are provided overleaf in Figure 25:

Figure 24 – Site Plans of Powerhouse Discovery Centre



Source: Powerhouse Museum Access Audit Report, 2009

Figure 25 – Photographs of the Powerhouse Discovery Centre



Building E – Public Entrance



Building E – Entry Foyer



Building E - Collection Display



Building E – Breakout area

To the rear of Building E is a more recently constructed toilet block and breakout area, largely utilised by school groups. The remaining buildings provide large warehouse style buildings utilised for storage of the collection.

A Shared storage and access facility (to be known as "Building I") is a current major project for the site and will provide a three level, 9,000m² storage facility with breakout areas and amenities. The facility will be occupied by in part by MAAS (ground level) together with Australian Museum and Sydney Living Museums on the upper levels. The project includes refurbishment of the existing Building A to provide shared workshop and laboratory facilities together with refurbishment of Building G to achieve more efficient storage for the collection.

Functions at the Discovery Centre

Table 16 outlines the capacity of the different function spaces currently available at the Discovery Centre:

Table 16 – Function Space – Discovery Centre				
Venue	Banquet	Cocktails	Theatre	Boardroom
Foyer (Display Store)	70	140	80	40
Resource Room (Display Store)	24	60	50	24
Discovery Centre Lawn	160	300	NA	NA

Upon completion of Building I, we understand in excess of \$45,000,000 will have been spent on construction of improvements on site since it was originally acquired in the 1970's. Replacement costs for each improvement would be in excess of this cost as a result of inflation on construction costs.

6.2 Town Planning Ordinance

Local Environmental Plan

The relevant LEP is The Hills LEP 2012. The following restrictions / conditions to the Powerhouse Discovery Centre apply pursuant to the LEP:
Minimum Lot Size: A permitted minimum lot size upon subdivision of 450 square metres.

Zoning: The Powerhouse Discovery Centre is zoned "SP2 Infrastructure (Information and Education)" (detailed below).

Maximum Building Height: None specified. Based on individual merits of each application and the surrounding character of the area.

Zoning

The objectives of the "SP2 Infrastructure (Information and Education)" zone pursuant to The Hills LEP 2012 are:

- ▶ To provide for infrastructure and related uses.
- ▶ To prevent development that is not compatible with or that may detract from the provision of infrastructure. Information and education facility means a building or place used for providing information or education to visitors, and the exhibition or display of items, and includes an art gallery, museum, library, visitor information centre and the like.

6.3 Surrounding Development

Castle Hill in Sydney's North West is a suburb undergoing much development. The following is a series of current developments and existing facilities in the Castle Hill area that are significant for the Powerhouse Discovery Centre:

- ▶ North West Rail Link Corridor Strategy (current development)
- ▶ Showground Station (current development)
- ▶ Land Rezoning in Baulkham Hills
- ▶ Showground Road Upgrade and Castle Hill Towers Shopping Centre extension (current development)
- ▶ TAFE NSW – Western Sydney Institute (existing)

Figure 25 – The Powerhouse Discovery Centre and Surrounds



An overview of each of the above developments/ surrounding land uses is provided below:

North West Rail Link Corridor Strategy

The North West Rail Link is an \$8.3 billion project to deliver a 23 kilometre, fully automated transit rail system in Sydney's North West. The project will deliver eight new railway stations and 4,000 commuter car parking spaces and incorporate twin 15 kilometre tunnels from Bella Vista to Epping. The North West Rail Link is expected to be operational by the end of 2019.

Accompanying the North West Rail Link project is the North West Rail Link Corridor Strategy that was finalised in 2013. It is a guide for development around the eight new stations and provides a strategic vision for how areas surrounding the stations could be developed to integrate new housing and employment opportunities over the next 25 years. The area surrounding new train stations is predicted to provide 28,800 new homes and 49,500 new jobs by 2036.

Showground Station

As part of the North West Rail Link project, a new station will be constructed at the corner of Carrington Road and Doran Drive adjacent to the Castle Hill Showground. The station will be underground with the concourse being located approximately 8 to 13 metres below street level, and the platforms 20 to 25 metres below street level.

Pursuant to the North West Rail Link Corridor Strategy (detailed above), the Showground precinct will include a new local centre near the station that could provide retail, restaurants, boutique offices, apartments and cultural facilities such as theatres and galleries. More intensive employment is predicted for some of the current industrial area, while Victoria Avenue remains as a bulky goods retail corridor. The showground will remain a regional recreational asset.

Showground Road Upgrade

Roads and Maritime Services ("RMS") has plans to upgrade Showground Road between Carrington Road and Old Northern Road, Castle Hill from a two lane to a four lane divided carriageway. Bus priority measures in the eastbound direction will be provided as part of the upgrade.

The upgrade will coincide with the expansion of Castle Towers Shopping Centre. A voluntary planning agreement between QIC, the developer of Castle Towers Shopping Centre, and RMS was endorsed in by The Hills Shire Council in May 2013. Work is estimated to commence in mid-2015.

TAFE NSW - Western Sydney Institute

The Hills College comprises two of the nine campuses of the Western Sydney Institute in Sydney's North West:

- ▶ The Baulkham Hills Campus, on Old Northern Road, Baulkham Hills
- ▶ Castle Hill Campus, on the corner of Showground and Green Roads, Castle Hill
- ▶ TAFE NSW - Western Sydney Institute is a decentralised educational institute and is one of the largest Institutes of TAFE NSW. The Institute annually enrolls more than 90,000 students and offers around 1,000 vocational education courses. The Institute employs approximately 1,450 full-time and 2,500 part time staff.

6.4 Gap Analysis²

The Powerhouse Discovery Centre comprises a significant land holding within an outer western suburb of Sydney. The site is improved with extensive purpose built storage facilities for the Museum collection with an additional, purpose built shared storage facility to be constructed on the northern boundary of the site (to be completed in 2016).

The site needs to drive greater storage density from its existing buildings given storage for the collection is nearing capacity.

6.5 Commercial Real Estate Strategy

The Highest and Best use of this site given its location, zoning and surrounding development together with the extensive level of infrastructure invested in the site is to remain as a storage facility for the Powerhouse. However, the site needs to increase the utility of the storage sheds by minimising its public offering.

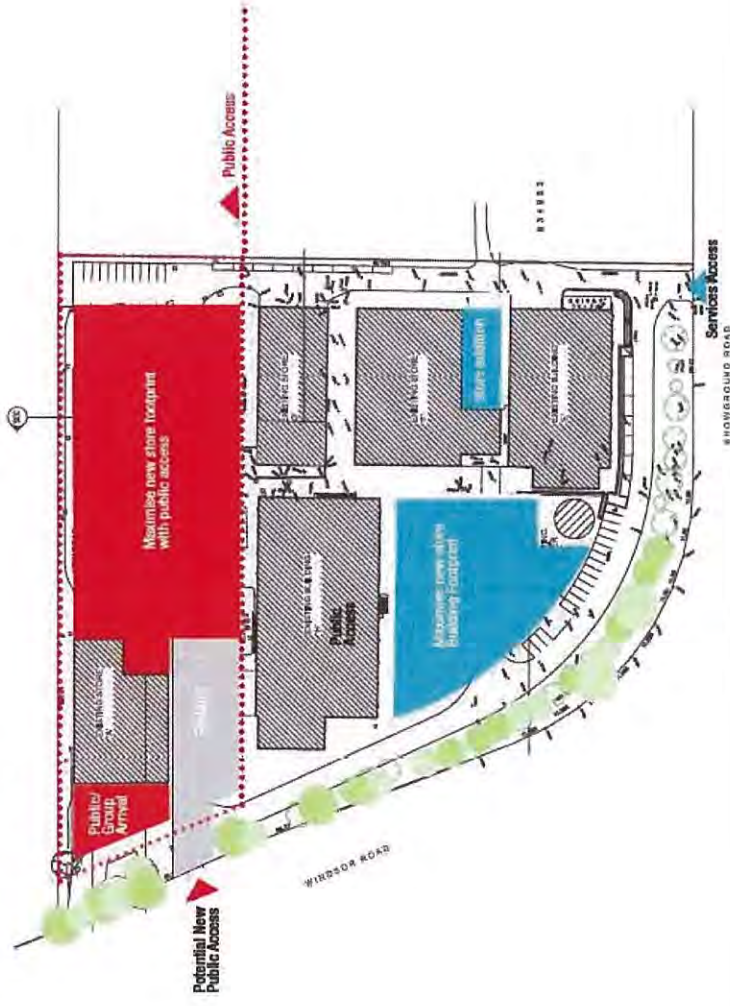
We consider the following changes to the site will maximise functionality and improve overall service delivery of the Museum:

- ▶ Greater utilisation of the existing storage on site to allow for collection expansion can be achieved by closing off the southern portion of the site to the public and increasing the density of the internal storage within each shed.
- ▶ The Shared Storage and Access Facility being constructed on the northern portion of the site has been designed to allow public viewing. Therefore, the northern portion of the site should be the only area open to the public. This will require public road access off Windsor Road and a group arrival area to be established.
- ▶ There is surplus land available for expansion space to the south-western corner of the site (west of Building E and F) which, at a future date can be utilised to provide an additional storage shed.

Figure 27 reflects the proposed uses through colour blocking with the blue section of the site dedicated to higher density storage for the collection and the red portion of the site open to the public.

² The objectives of the Gap Analysis are detailed in Section 4.4.

Figure 27 – Discovery site use blocking



Source: FJMT

In order to test that the Highest and Best use of the site is for storage, we have considered the price that could be achieved by selling the site vs. the cost of relocating to an alternate site and rebuilding the storage sheds.

Having regard to the location, size and zoning of the site, together with sales evidence of comparable sites, we consider that should the property be marketed it would achieve a sale price in the order of \$10,000,000 to \$12,000,000. (Appendix Four provides a schedule of sales evidence relied upon in arriving out our value estimate).

To purchase an alternate site of the same size in a lower cost suburb such as Smeaton Grange would cost in the order of \$4,400,000. (refer to Appendix Four for comparable sales evidence) The cost of replacing all of the storage sheds then needs to be added to the price of the new site. The estimated construction costs of constructing the existing buildings on the site, including the proposed Building I is in the vicinity of \$50,000,000 plus GST.

Accordingly, as a result of the high cost of reconstructing the entire purpose built infrastructure at an alternate site, it is not financially viable or operationally beneficial to relocate the Powerhouse Discovery Centre. As such, the Highest and Best use for this site is to remain "as is", with the changes made as noted above.

6.6 Next Steps

The Commercial Real Estate strategy for the Powerhouse Discovery Centre needs to succeed in maximising storage on the site. In order to do this the following development should be undertaken:

- ▶ Existing public offering and southern public entrance closed to public
- ▶ Close off public access to the existing storage facilities and increase density of storage inside of each shed.
- ▶ New public entry created at north-west corner of site
- ▶ Conclude development of new shared storage facility and facilitate public viewings in this building only.
- ▶ Going forward, there is opportunity to develop a new building to the south of Building H on vacant development land to expand collection storage onsite.

Appendix 1 – FJMT Architectural Response

Appendix 2 – JBA Planning Report

Appendix 3 – RLB Construction Cost Estimate

Appendix 4 – Rental & Sales Evidence

Appendix 5 – Feasibility Analysis

Appendix 6 – Procurement Options

Design and Construct

The design and construct (D&C) model is the traditional form of Government procurement. Under this model, MAAS sets clear and specific input based specifications for delivery of the project. These specifications are then put out to tender, with a contractor appointed on the basis of price and quality. A contractor is engaged to deliver the specifications for the project, without having involvement in the development of those specifications.

When the project is completed it is handed over to MAAS, which then operates and maintains the facility. Under traditional D&C procurement, the contractor is paid on the basis of progress or achieving milestones towards completing the work. That is, MAAS pays the construction cost of the Project in full upfront. D&C contracts are normally priced as lump-sum contracts, and aim to lock in an agreed price. However, as specifications are usually very tightly defined, actual costs can turn out significantly higher than tendered costs. Operating, maintenance and lifecycle costs are incurred directly by MAAS.

The D&C approach is well-suited to projects where the client's requirements are tightly specified before tender and do not change afterwards (i.e. where there has been a history of tendering for a program of similar Projects). Where requirements change, substantial claims for cost and time overruns can arise as these will be priced on a non-competitive basis.

A summary of the model is provided in the table below.

Design and Construct	
Risk Profile	▶ Most design and construction risks are transferred to the constructor, especially where there is a fixed price and fixed time contract. ▶ MAAS retains all ownership risks, together with operating and performance risks over the life of the asset (although some operating risks can be transferred to a contractor if a separate operating arrangement is entered into).
Advantages	▶ D&C approach is a well-understood, relatively straightforward model of delivering projects. ▶ Well suited to Projects where the client has extensive experience in delivering Projects of this size under a D&C model and managing the operations and maintenance components. ▶ Well suited to Projects where the requirements are tightly defined in advance, where there is little scope for innovation and where the Project is considered low risk. ▶ MAAS can benefit from having a single point of accountability for design and construction, which may lead to some administrative efficiency gains.
Disadvantages	▶ Disputes, claims and changes to the scope or design can develop as a result of cost overruns. ▶ Lack of opportunity for whole-of-life costing and innovation. The lack of focus on whole-of-life considerations may result in a suboptimal design, leading to issues during the operational phase. ▶ The tender period may be relatively lengthy if prospective bidders require time to assess design risk. ▶ The Project requires substantial budget allocation upfront, which could delay the implementation beyond alternative delivery methods.

Private Public Partnership (PPP)

Under the PPP model, the private sector partner would be responsible for the design, construction, maintenance, operating and financing of a project to provide the service required by MAAS.

PPP arrangements normally span a longer life-cycle than other arrangements, and usually involve a private consortium fully integrating the design, construction, financing, operational service delivery and maintenance of an asset. In return for these services, payment is made to the private partner by MAAS in the form of service payments, which begins once the provision of services commence. Generally the service payments would be designed to recover capital costs, fixed operating costs, lifecycle costs and financing costs (including debt service and equity returns). Under other procurement options, the equivalent capital costs will have already been paid upfront in full by MAAS. Under a PPP, in the instance that the building did not meet defined performance standards, this service payment would be subject to abatement under a defined KPI regime. Therefore, the private sector partner is incentivised to maintain the asset in good condition and not jeopardize future returns.

The private sector partner retains ownership rights (via leasehold interest) of the asset over a nominated concession period, and therefore enjoys the risks and rewards of ownership over the long-term. At the end of the contract term the asset reverts to MAAS in a pre-agreed condition.

The process for delivering a PPP generally is summarised as follows:

- ▶ MAAS defines the required output specification. PPPs involve the private sector bidding a fixed price against a well-defined output specification, project scope and contractual documents; thus reducing the possibility of 'out of scope' disputes / adjustments that can be associated with D&C and DBOM contracts.
- ▶ MAAS develops contractual documents. A competitive tender process is held, including Expressions of Interest phase to shortlist bidders to participate in a subsequent Request for Proposals phase to select preferred bidder / consortium (bids are on a fully financed basis).
- ▶ The preferred bidder commissions the asset and delivers operational service (with payment only commencing when service has commenced).
- ▶ MAAS pays a service charge to the private sector partner.
- ▶ The private sector partner applies service payments received to repayments of finance and meeting costs.

Private Public Partnership

- ▶ The private sector partner owns the asset and therefore enjoys the risks and rewards of ownership over the long-term. Repayment of capital (and profit) is over the long-term and is at risk to cost levels being greater than assumed.
- ▶ The private sector partner is typically responsible for designing, financing, constructing and operating the asset at the cost bid. It therefore has a material financial exposure to the majority of design, construction, operating and maintenance risks associated with the project on a whole-of-life basis. The private sector partner is incentivised to maintain the assets in good condition and not jeopardise future returns.
- ▶ Service payments are subject to the risk of the development successfully commissioning and operating, and only commence once the provision of services commence. The private sector takes the risk of the asset successfully commissioning on time and remaining in operation. Also, at the end of the concession period the asset must be returned to MAAS to a pre-agreed standard.

Risk Profile

Advantages

- ▶ Opportunities for significant risk transfer to the private sector.
- ▶ Design, construction and operations risk are transferred to the private sector, which is often able to more efficiently and effectively manage them, and provide innovation and added value to the project.
- ▶ MAAS can fund the project as a series of ongoing payments, rather than an upfront payment; making it more affordable.
- ▶ MAAS may elect to make a larger financial contribution upon construction completion, thus reducing the ongoing service payment.
- ▶ Promotes cost efficiencies as a result of the bidders' long-term involvement in the project.

Disadvantages

- ▶ PPPs are most suited to projects of significant scale and complexity.
- ▶ There is limited flexibility as the service specifications and conditions are agreed during procurement.
- ▶ Changes to design may require contract negotiations and the ability to make a variation needs to be addressed in the contract.
- ▶ PPP procurement generally involves very high bidding costs (for both MAAS and the bidders) and lengthy bidding processes.
- ▶ Requires developed skills on the part of MAAS (or consultants) for financial and technical assessment, tendering and management.

Joint Venture

A Joint Venture (JV) involves undertaking a commercial venture on the property with the assistance of another party. This party, usually a developer, assumes a project management role on the land and may fund all or part of the development on the property. In return, the developer or operator is reimbursed for all costs of development through operating cash flows, and then there is generally a revenue, royalty or profit sharing split between the landowner and developer.

A JV structure would require the involvement of an additional investment partner, and therefore result in a dilution of MAAS's equity stake in the site's redevelopment. JV's are used in real estate developments as a means of raising capital and spreading risks with the parties sharing the profits (or losses) of the venture. The involvement of a JV partner alters the level of ownership and project control enjoyed by MAAS.

The most favourable JV partner for the project would be an experienced developer who would bring a high level of development and project management expertise to the partnership. There are many variables associated with a JV agreement, however in this case, MAAS would most likely contribute the land component, with the developer required to perform the remaining functions; namely development management, marketing and disposal of the accepted design option.

Joint Venture

- Risk Profile
- ▶ The option presents intermediate risk to MAAS, since half of the development risk is transferred to another party.

Advantages

- ▶ An opportunity exists for MAAS to participate in any future upside achieved by the site's redevelopment, in return for taking on some of the risk associated with its redevelopment.
- ▶ An opportunity exists to negotiate and include favorable commercial terms into the JV agreement.
- ▶ MAAS would have a degree of control over the development process including the design concept.
- ▶ Financing the development through this model allows the risk associated with the site's redevelopment to be shared with multiple parties.
- ▶ A JV partner can be sourced through a competitive market tender.

Disadvantages

- ▶ MAAS would be exposed to development risks, which could be significant and difficult to mitigate.
- ▶ JV agreements can be more complex than standard D&C agreements, as the rights and responsibilities of each entity must be clearly defined to ensure proper performance and the desired outcome.
- ▶ If a JV partner is also acting as development manager, their expertise in this area will have to be relied upon.
- ▶ In addition to the equity contribution from the JV partner, they will also require the payment of a development management fee; often dependent on the project's complexity.

Project Development Agreement

A PDA is a fee for service contractual agreement between a landowner and a developer, with such an agreement permitting the development of the site without the developer taking a direct ownership interest. The intention of the PDA is to engage with the private sector to undertake the required works at a minimum risk to the landowner, whilst maintaining a level of control over the site for the duration of construction.

In the case of the Project, MAAS would contribute the site with the benefit of any associated planning or conceptual design work already undertaken. In order to progress the development project from the concept stage to completion and operation, the developer will contribute their specialist knowledge and expertise, which would usually include project management skills and capital. This developer contribution is usually given in return for an agreed development management fee and fixed percentage of the project's final selling or operating proceeds (usually a 50/50 split with the landowner). The arrangement varies from a JV in that returns to a developer are in the form of a fixed fee and a percentage of selling proceeds.

With specific regard to the site, implementation of a PDA as a delivery strategy would enable the Department to retain the services of an experienced developer; effectively outsourcing the redevelopment of the site to a specialist provider. As a result, ownership of the site and the opportunity to benefit from any resultant redevelopment upside would be retained, along with the ability to influence the final project outcome.

An alternate PDA approach would be for MAAS to divest the freehold of the site, and maintain control of the development through the conditions nominated within a development agreement.

Project Development Agreement

Risk Profile ► The option presents risk to MAAS, since they maintain total ownership interest.

Advantages

- Allows MAAS to leverage a developer's expertise, experience and capital to generate a greater profit from the site than would be likely by undertaking the project alone.
- Likely to be more attractive to a larger array of developers/operators (compared to other arrangements).

Disadvantages

- Involves MAAS taking on the majority of risk in the project and a high level of resource commitment.
- DAs can be more complex than standard sale or lease agreements as the rights and responsibilities of each entity must be clearly defined to ensure proper performance and the desired outcome.

About EY

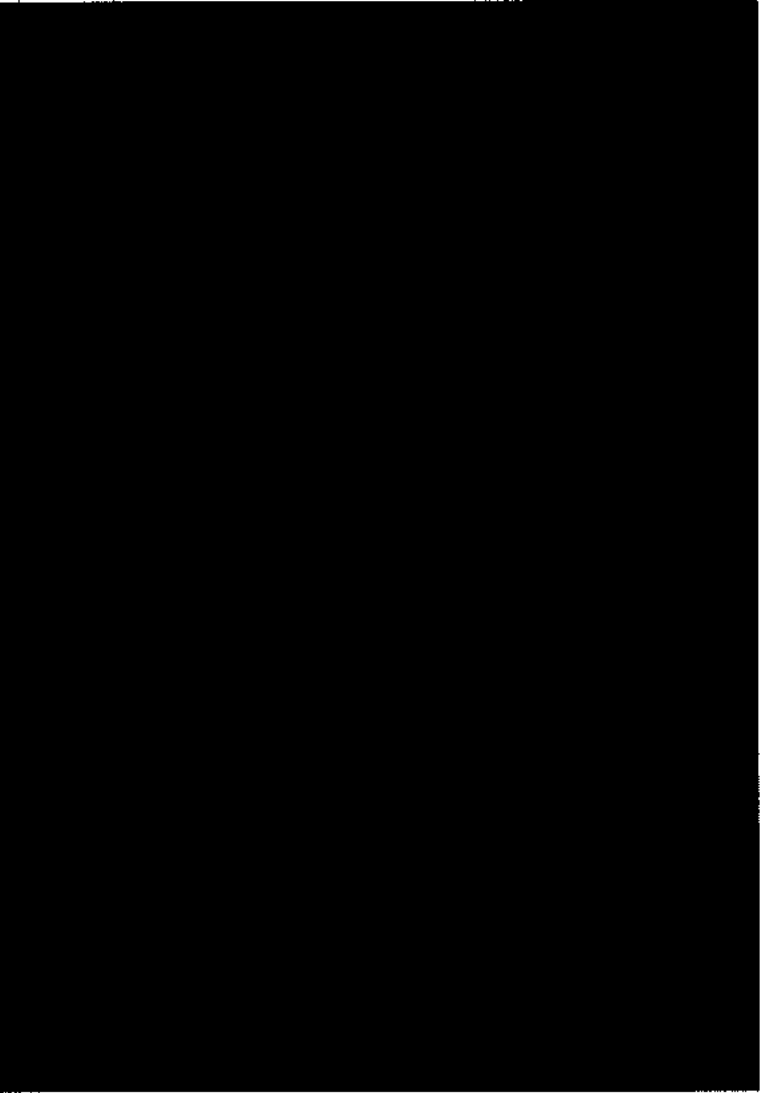
EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization, and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit ey.com.

The Museum of Applied Arts and Sciences

Ernst & Young

DESIGN VISION 8 AUGUST 2014



Contents

- A Executive Summary
- B The Powerhouse Museum, Ultimo
- C The Sydney Observatory, Millers Point
- D Powerhouse Discovery Centre and Storage, Castle Hill



Executive Summary

In consultation with MAAS and EY this report provides a design overview and establishes a framework and vision to guide the development potential for each of the 3 sites in support of the Commercial Strategy being prepared parallel by EY. The considered architectural approach outlines in this report will provide the physical and urban environment to maximise the cultural, commercial and public benefit of the Museum's key sites.

The initial review process has focused on the understanding of MAAS business and strategic planning objectives as they relate to current and future accommodation requirements of this Museum. It was then followed by a Gap Analysis, explored options for the architectural response and masterplan strategy for each of the sites that will maximise their commercial ability whilst preserving its unique culture and heritage. An integrated response for each site reflecting EY final Commercial Strategy is then outlined in this report so that the current buildings and any future proposed built form will support the MAAS business.



B Powerhouse Museum Ultimo

- Precinct Vision
- Museum Vision
- Gallery Renewal
- Collections on Show



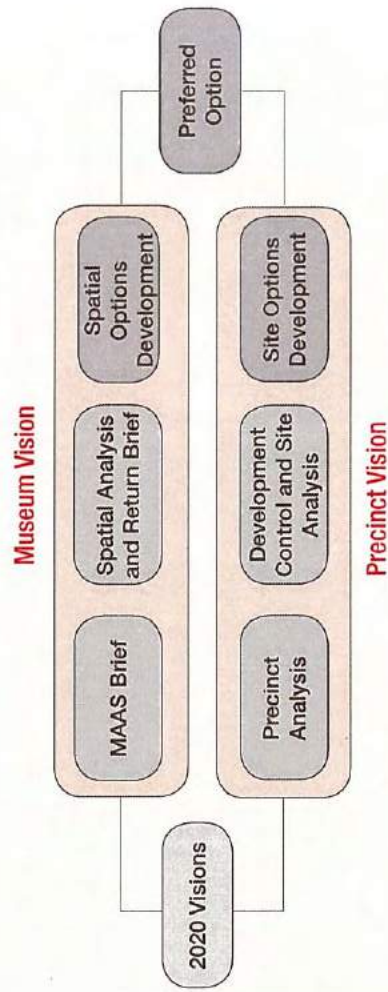
Museum Precincta connected and creative Sydney



Precinct and Museum Vision

- Delivers a contemporary and unique museum that will showcase the diversity of the collection within new and innovative spaces, and will include an interactive 'working museum' and visible storage collection.
- Better connectivity and integrate with surrounding precincts, activities, and development opportunities to drive revenue and visitor numbers at each location.
- Better engages the Museum with the public, encourages social interaction and improves the overall Museum 'experience'.
- Maximises the revenue opportunities from the site to ensure the Museum will receive an income stream into the future to supplement revenues received from the Museum.
- An imperative need to reverse MAAS' financial and operating issues. Provide financial sustainability for the MAAS.

Process



Precinct Vision - Existing Precinct

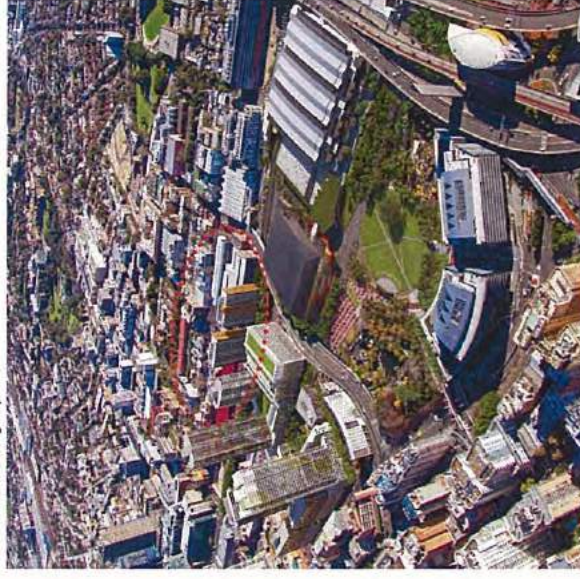


Height Reference Map in metres



Precinct Vision - Existing Precinct

SICCEP and Darling Square



UTS Masterplan



Dr Chau Chak Wing Building



Precinct Vision - Existing Precinct

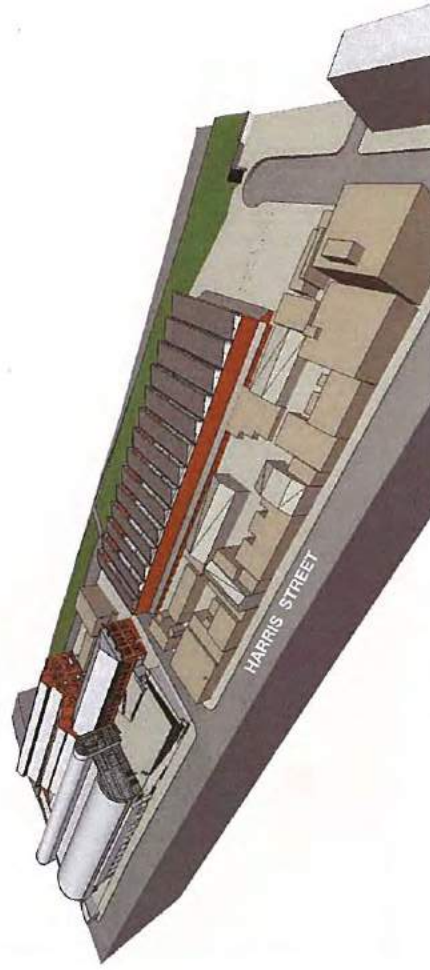


Sydney International Convention Centre Entertainment Precinct and Darling Square Reference

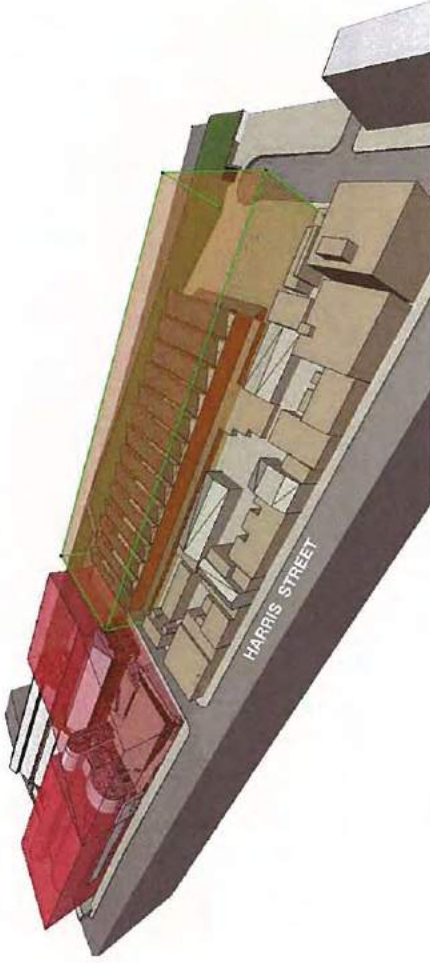
Precinct Vision - Existing Precinct



Precinct Vision - Existing Museum Site



Precinct Vision - Approximate LEP Envelope 28m



Precinct Vision - Proposed Opportunities



- 1 Core Museum / Exhibition
- 2 Entry / Arrival / Address
- 3 Education / Working Museum / Administration
- 4 Complementary Usage
- 5 Redevelopment Potential with Museum theme
- 6 Redevelopment Potential
- 7 The Goods Line Activation

Precinct Vision - Proposed Usage and Massing



Precinct Vision - Proposed Usage and Massing

- MAAS New Arrival, Exhibition, Learning and Public Facilities
- MAAS New 'Working Museum'



Precinct Vision - Proposed Usage and Massing

MAAS New Bridge Connection

MAAS New Exhibition Touring Halls

MAAS External Public Exhibition Space



Precinct Vision - Proposed Usage and Massing

Residential

Retail, MAAS Collection Store & Parking



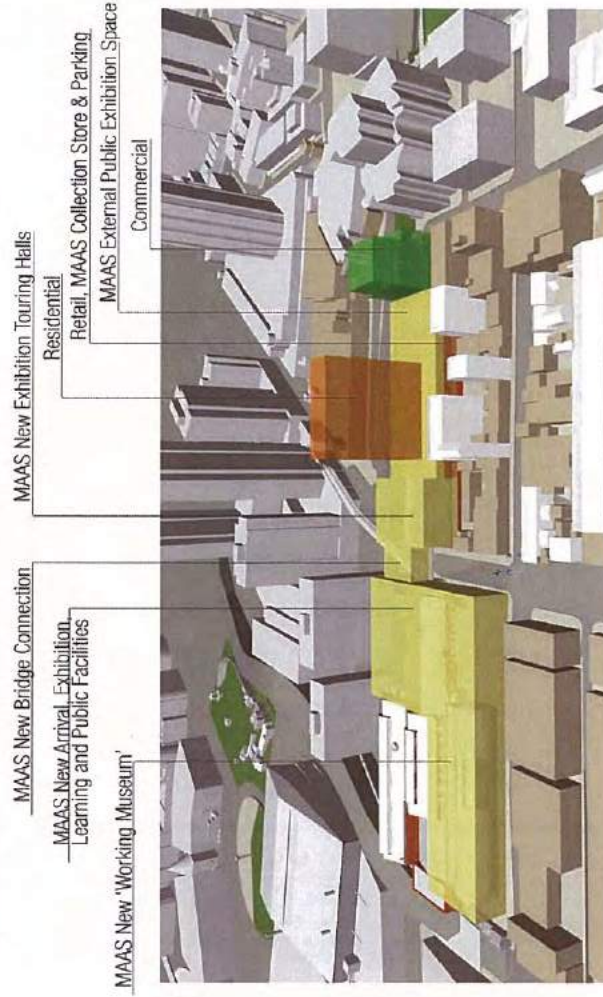
Precinct Vision - Proposed Usage and Massing



Commercial

Commercial

Precinct Vision - Proposed Usage and Massing Summary



MAAS New Bridge Connection

MAAS New Arrival, Exhibition, Learning and Public Facilities

MAAS New 'Working Museum'

MAAS New Exhibition Touring Halls

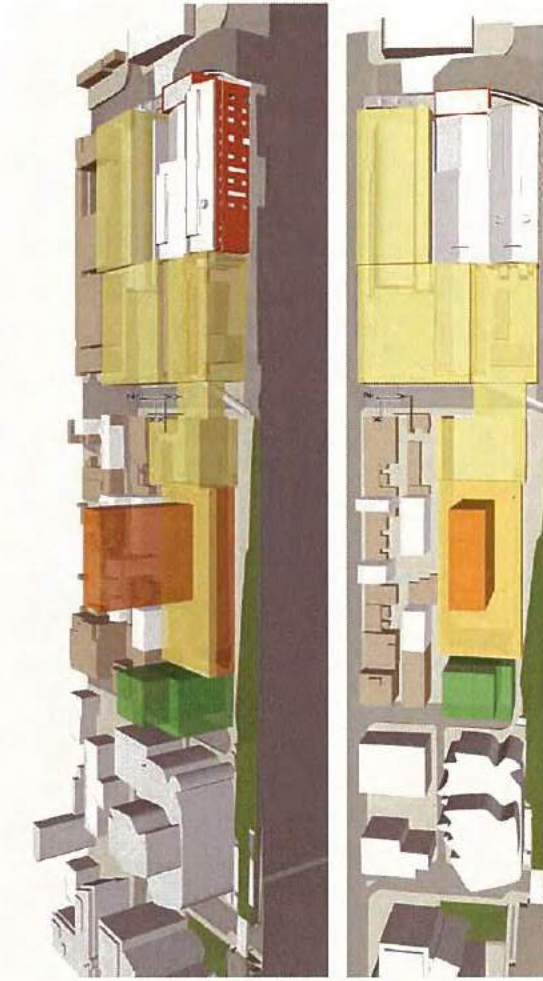
Residential

Retail, MAAS Collection Store & Parking

MAAS External Public Exhibition Space

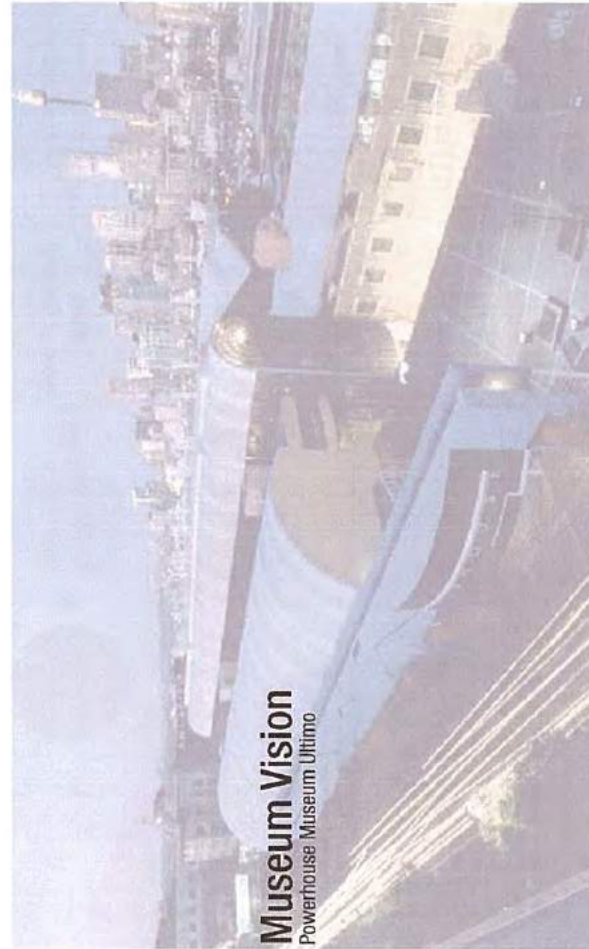
Commercial

Precinct Vision - Proposed Usage and Massing



Precinct Vision - Proposed Usage and Massing





Museum Vision - 2020 Vision

THEMES

- Our place in time - our past, present and future
- Our place in our state and our region, a focus on Asia
- Innovation and technological change
- Economic and environmental sustainability

DISCIPLINES

Technologies

Health and Medicine

Physical Sciences

Engineering

Architecture and the built environment

Design and decorative arts

Fashion

Contemporary culture

STRATEGIC AMBITIONS

Sustainability

Curiosity

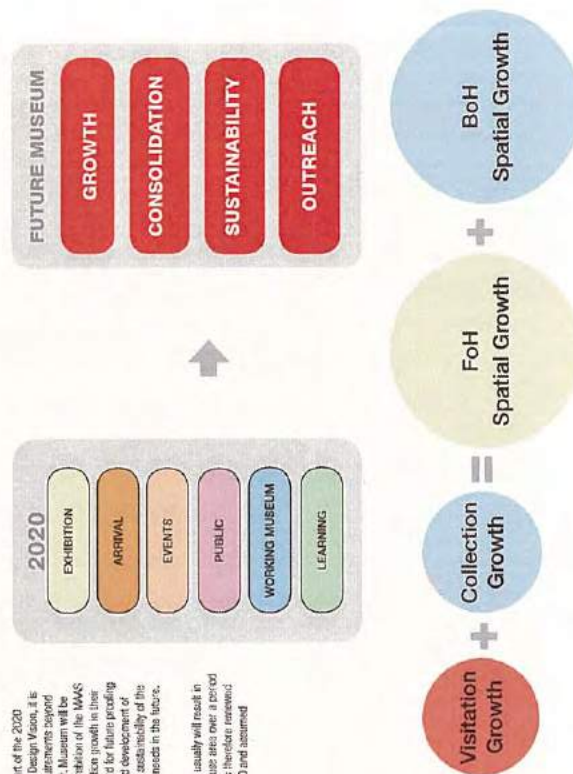
Creativity

Collaboration

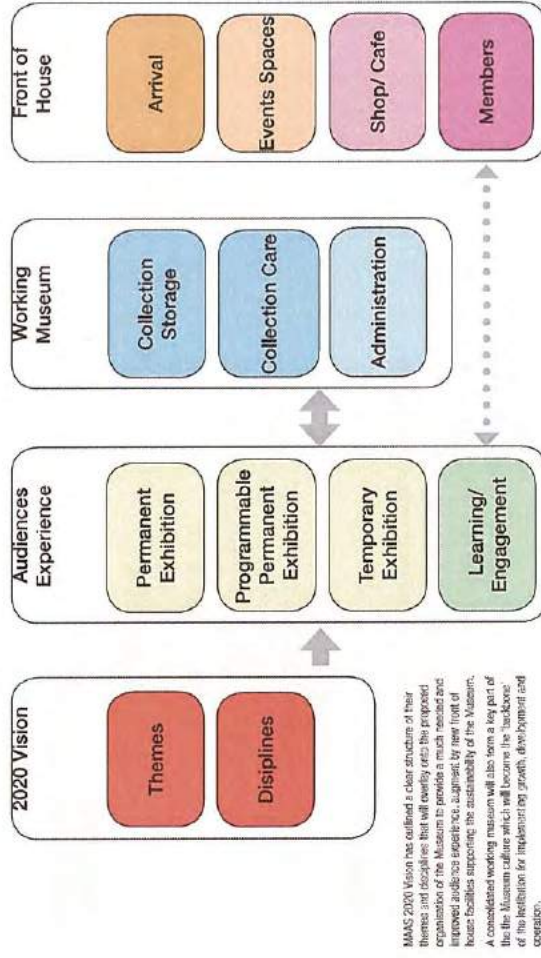
Museum Vision - 2020 Vision and beyond

MMAAS has outlined a spatial brief as part of the 2020 Vision. However, for the purposes of the Design Vision, it is important to consider future spatial requirements beyond 2020 which is only 3.5 years from now. Museum will be serving generations to come and the ambition of the MMAAS 2020 Vision should be to provide a framework for future growth and development. The design team has therefore reviewed the current spatial requirement of 2020 and assumed growth and separation capacity.

Visitation growth and collection growth usually will result in certain growth of Front and Back of House sites over a period time in the future. This design team has therefore reviewed the current spatial requirement of 2020 and assumed growth and separation capacity.

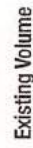
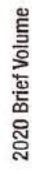


Museum Vision - 2020 Vision Spatial Relationship

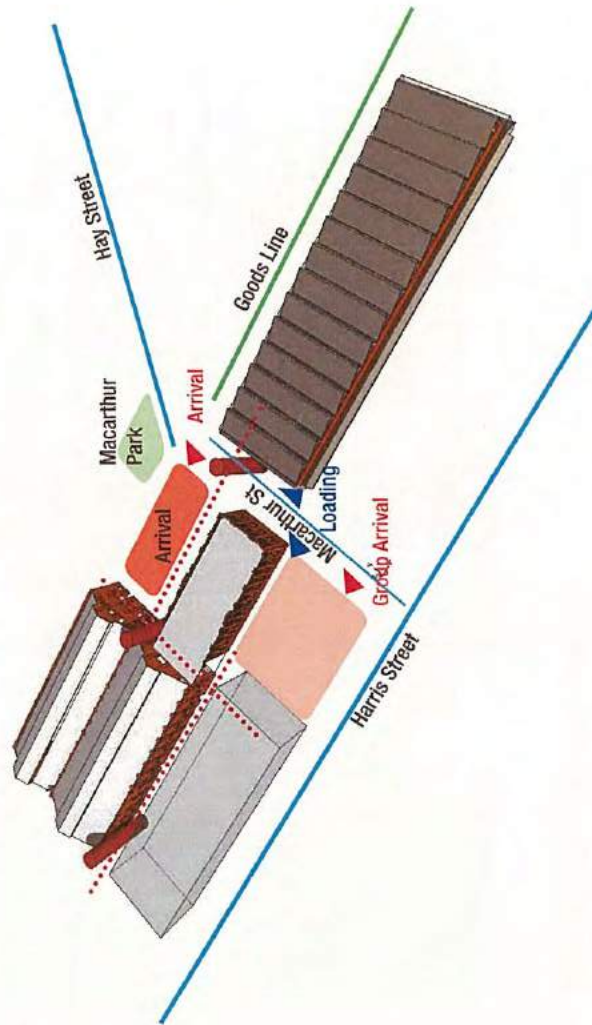


MMAAS 2020 Vision has outlined a clear structure of their themes and disciplines that will readily allow the proposed organization of the Museum to provide a much needed and improved audience experience, aligned by new 'front of house' facilities supporting the sustainability of the Museum. A consolidated working museum will also form a key part of the life of the Museum and will ensure the success of the institution for implementing growth, development and operation.

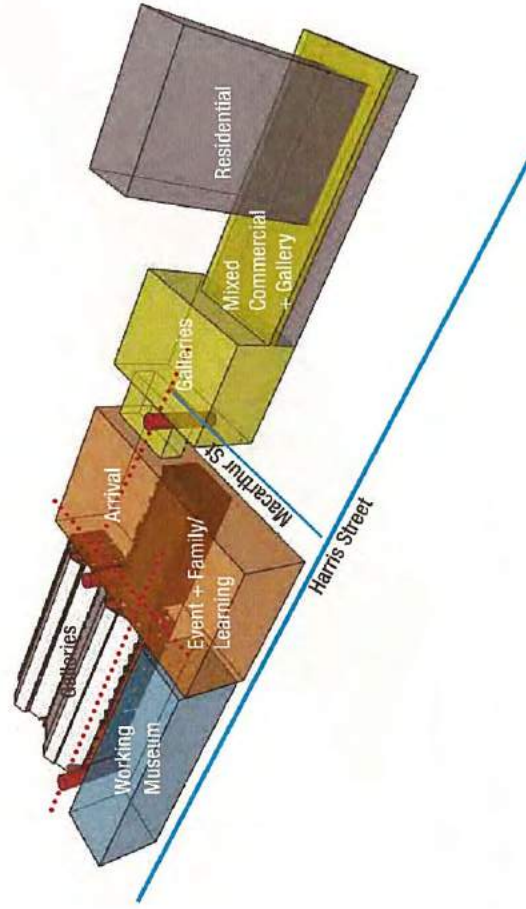
Museum Vision - 2020 Brief Verification



Museum Vision - Arrival, Access and Connectivity



Museum Vision - Functional Organisation



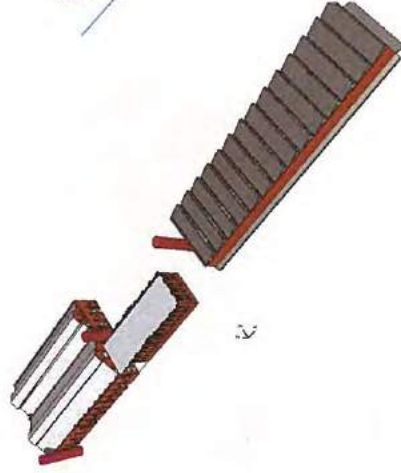
Museum Vision - Functional Organisation

- 1 Entry / Arrival / Address
- 2a Permanent Galleries
- 2b Temporary Galleries
- 2c External Galleries
- 3 Public Amenities (shop/cafe etc)
- 4 Group Arrival/ Orientation + Learning / Family
- 5 Working Museum

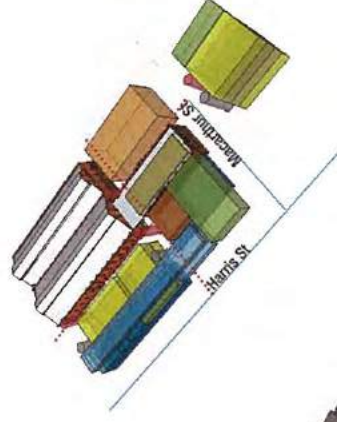


Museum Vision - Functional Organisation

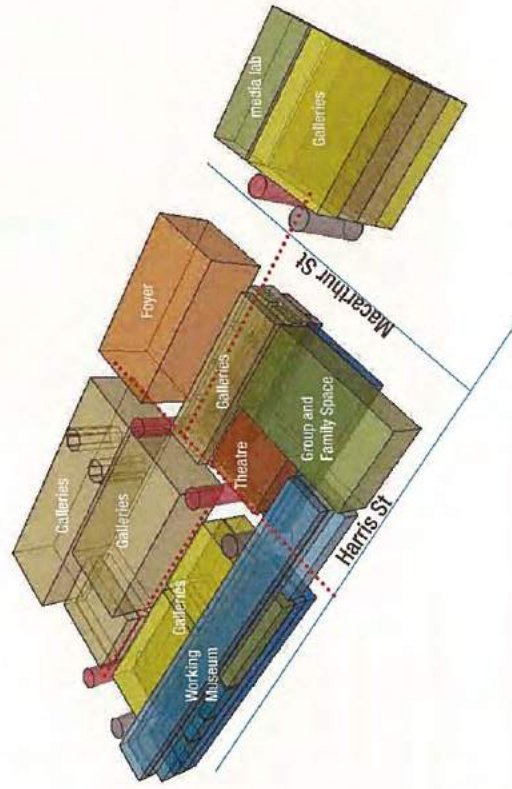
Existing



Proposed

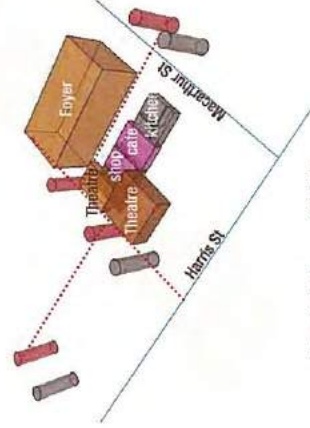


Museum Vision - Functional Organisation



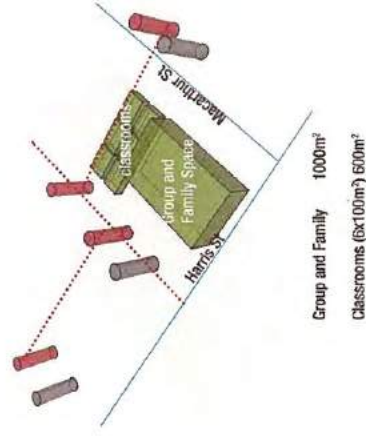
Museum Vision - Functional Organisation

Public



Foyer/Arrival	2000m ²
Catering Kitchen	100m ²
Event Store	65m ²
Theatre (350 seats)	400m ²
Theatre (150 seats)	180m ²
Shop	180m ²
Cafe (100 seats)	220m ²
Cafe Kitchen	50m ²

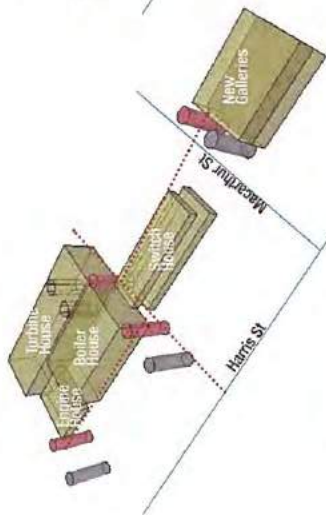
Learning and Family



Group and Family	1000m ²
Classrooms (6x100m ²)	600m ²

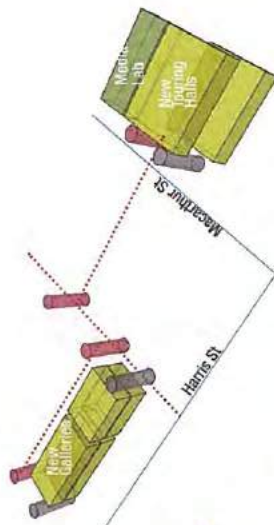
Museum Vision - Functional Organisation

Permanent Galleries



Heritage Refurbished Galleries	7170m²
Turbine House	2100m ²
Boiler House	2670m ²
Engine House	900m ²
Switch House	1600m ²
New Galleries	2400m²
Level 1	1200m ²
Level 2	1200m ²

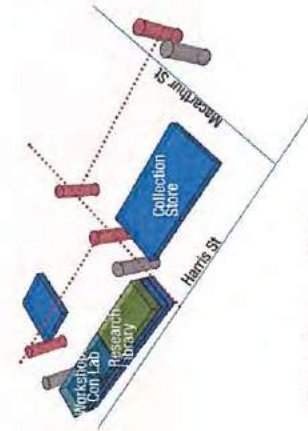
Temporary Galleries



New Galleries	4760m²
Level 1	2160m ² (107700m ² + 10450m ² + 101200m ²)
Level 3	1200m ² (107700m ² + 10450m ²)
Level 4	1200m ²
Media Lab	500m²

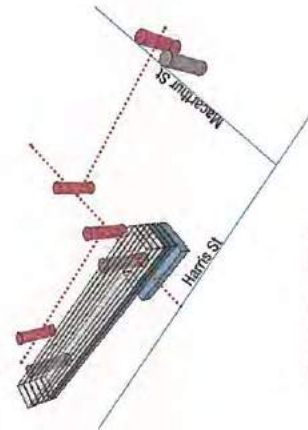
Museum Vision - Functional Organisation

Working Museum



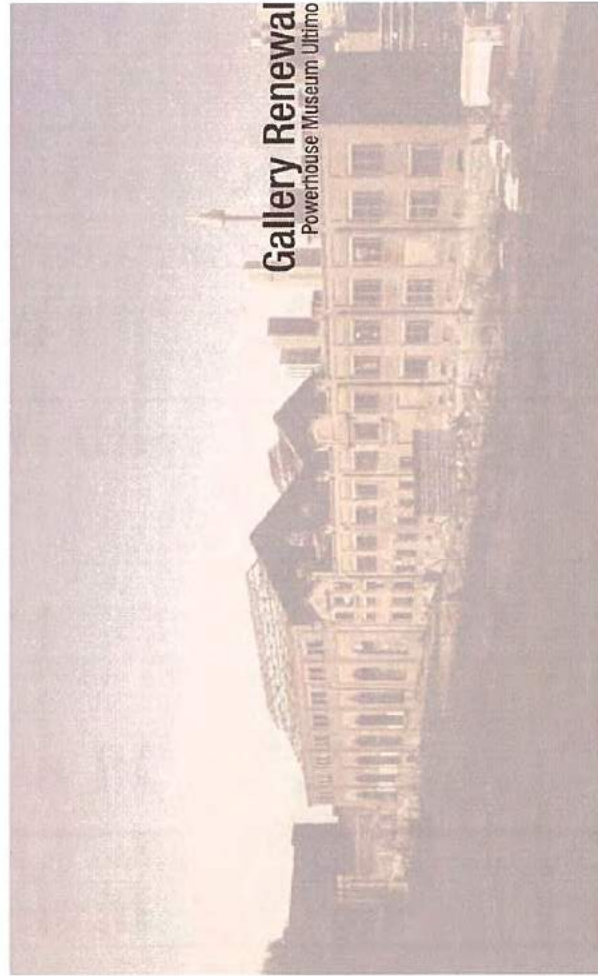
Collection Store	3800m²
Level 1	500m ²
Level 2	3300m ²
Conservation Lab	200m²
Workshops	450m ² (102300m ² + 102150m ²)
Research Library	500m ²

Administration



Administration	3000m²
Level 3	400m ²
Level 4	1300m ²
Level 5	1300m ²
Commercial	3000m²
Level 6	1000m ²
Level 7	1000m ²
Level 8	1000m ²

Museum Vision - Space Summary

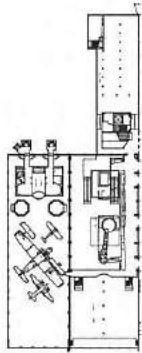
[illegible]

Gallery Renewal Existing Fabric

19th CENTURY HERITAGE

The origins of the museum is in the 19th Century and informed by its housing within the 1930s Ultra power station structure, one of the most important surviving industrial buildings in Sydney. The building is characterised by large rooms occupied by heavy masonry construction with its former usage integral to the image of the present museum.

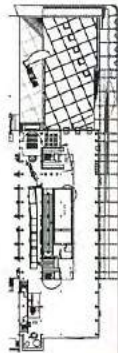
The original power station building provides a clear reference to the scale and nature of late nineteenth and twentieth century industry. This construction has significant mass formed by the on-site labor intensive and masonry craft that projects permanence and solidity.



20th CENTURY

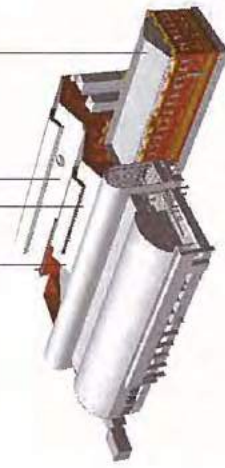
The 20th Century is represented by the opening of the Powerhouse Museum in the 1960s and the architecture created by David Chippindale. The great character of this development is primarily that of linking and circulation.

The architecture and materiality is one of standardisation, prefabricated components, steel, glass and cladding panels. It represents machine fabrication and a systems approach of and assembly of materials manufactured off-site. The automated process creates an alienation of the craft and the 'hand of the individual'.

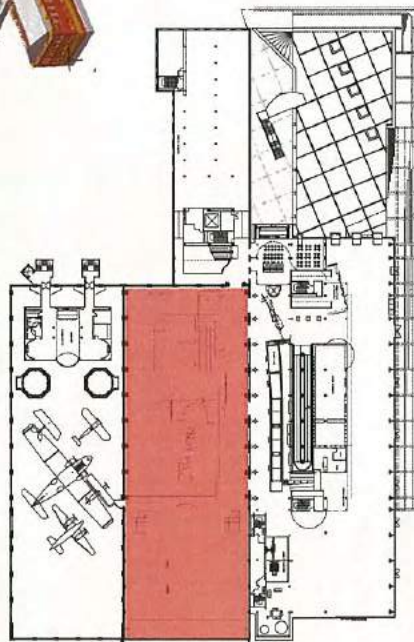


Gallery Renewal Existing Heritage Fabric

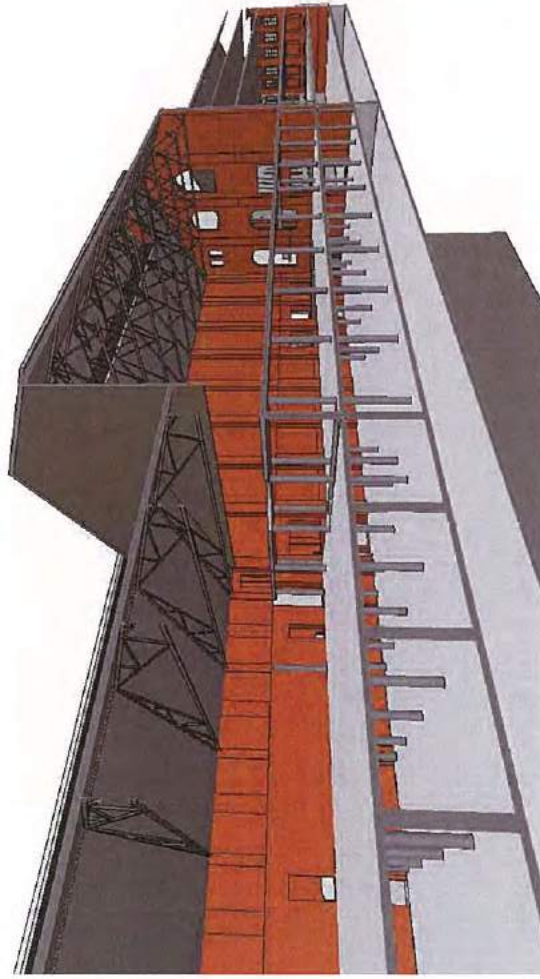
Engine House
Boiler House
Turbine House
Switch House



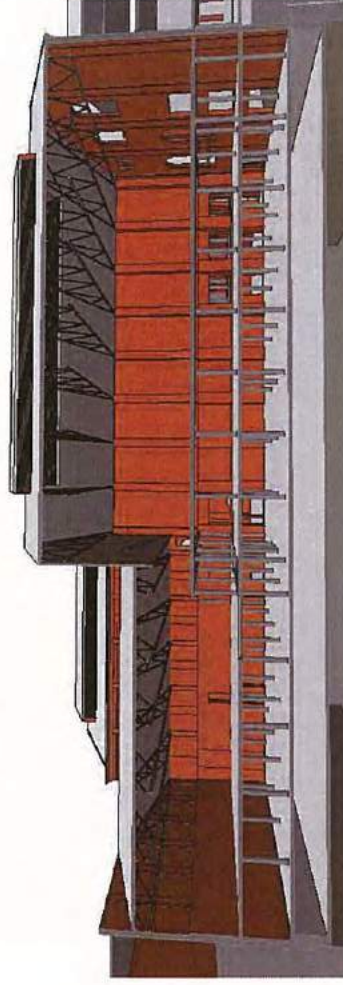
Gallery Renewal Existing Engine House and Boiler House



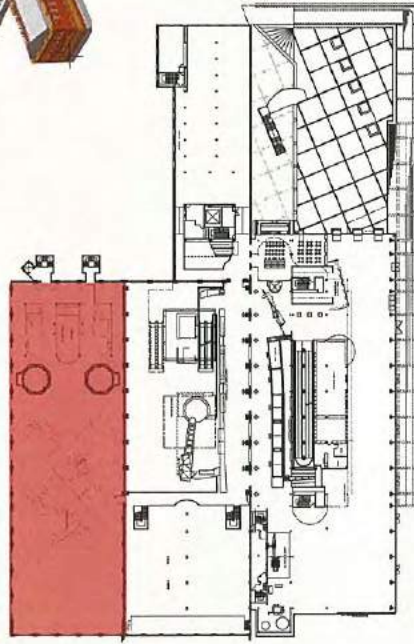
Gallery Renewal Existing Engine House and Boiler House



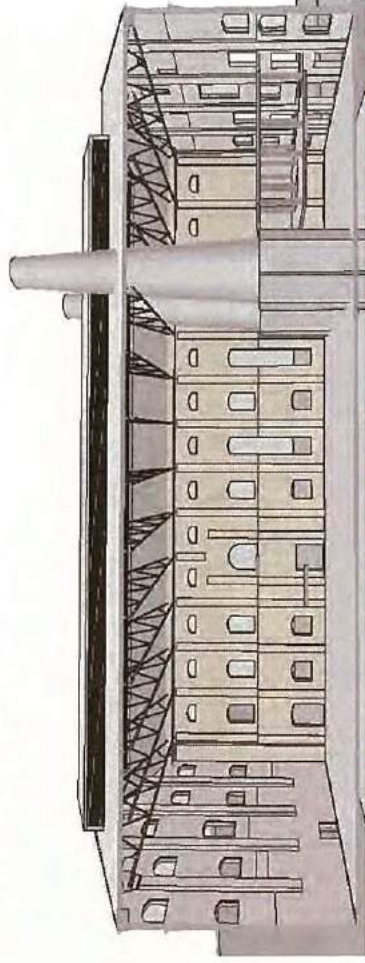
Gallery Renewal Existing Engine House and Boiler House



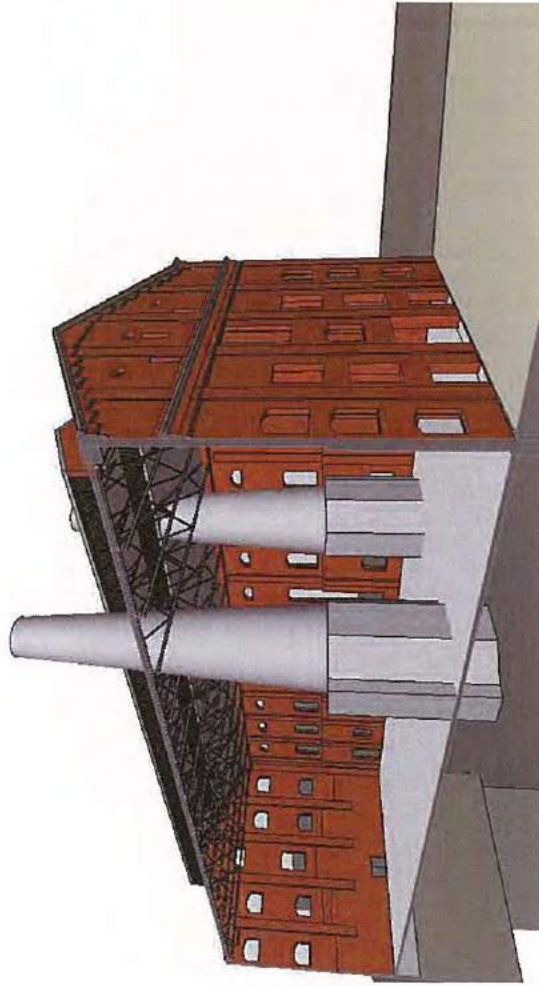
Gallery Renewal Existing Turbine House



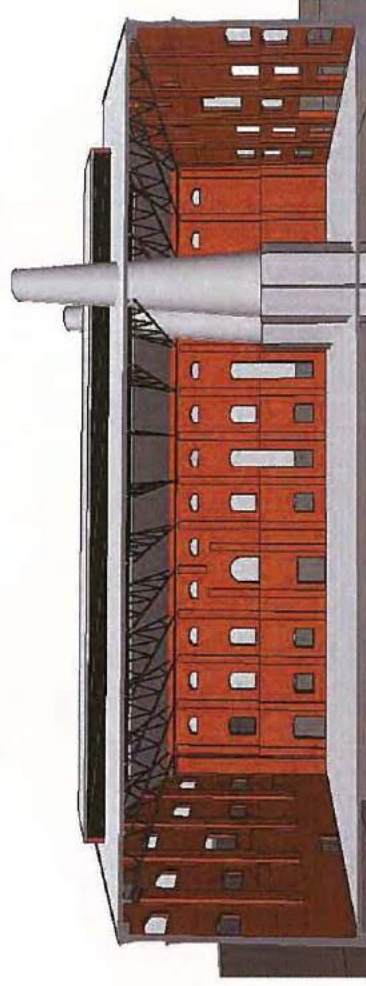
Gallery Renewal Existing Turbine House

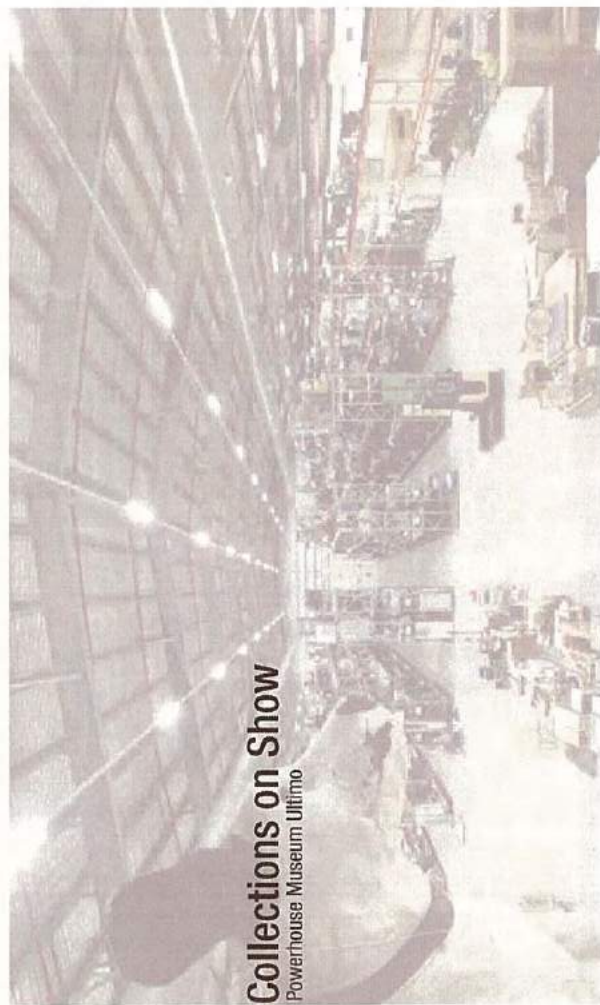


Gallery Renewal *Proposed Turbine House*



Gallery Renewal *Proposed Turbine House*

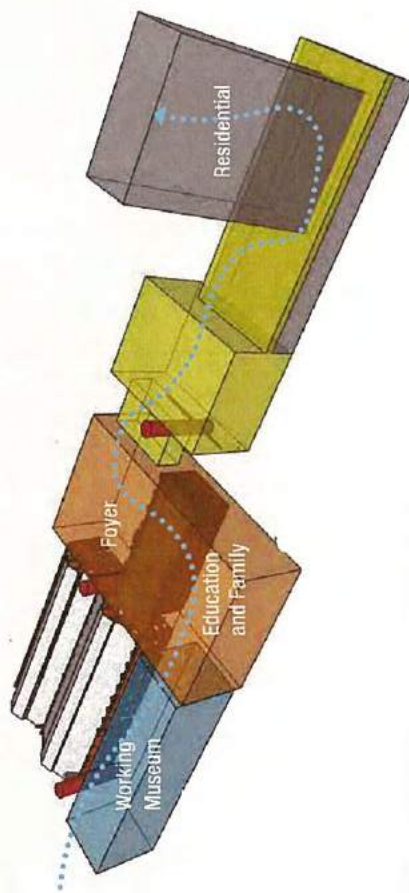




Collections on Show
Powerhouse Museum Ultimo

Collections on Show

Visible Storage Integrate to Museum experience, circulation paths and extend to public area of commercial development



Collections on Show International Precedents



Collections on Show International Precedents



Collections on Show International Precedents



Collections on Show International Precedents





Commercial

Residential

Mixed Commercial & Public Exhibition

Galleries

Arrival

Event + Family/ Learning

Working Muscum

Commercial

Macarthur St

Harris Street

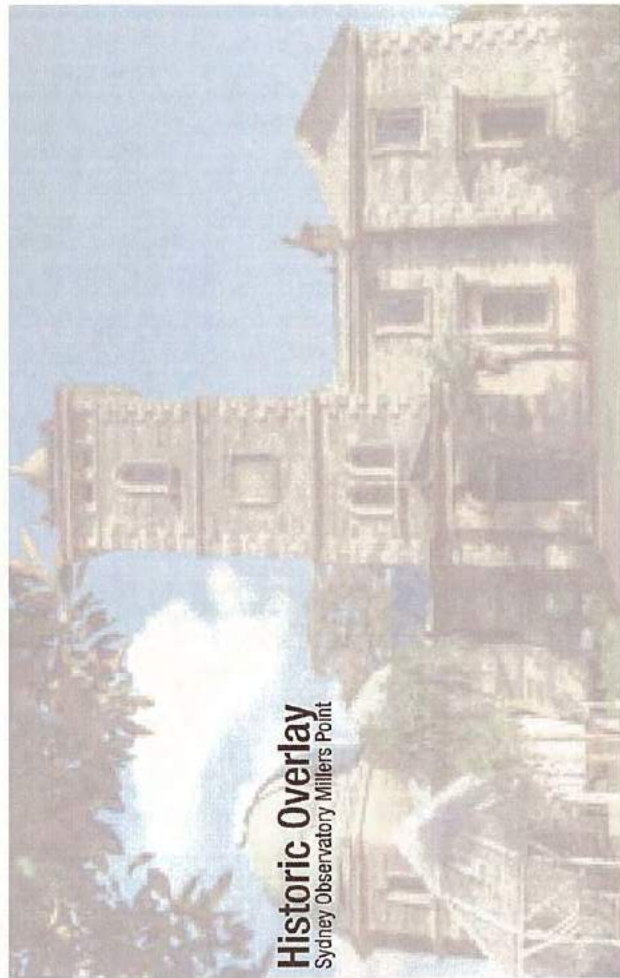
SYDNEY OBSERVATORY MILLERS POINT



Opportunities and Constraints

- Conservation Plan 2000
- Sydney Observatory 2002 James Spence Kerr
- Sydney Observatory Masterplan 2007
- Sydney LEP 2012 Central Sydney
- Barangaroo, in particular Barangaroo Central



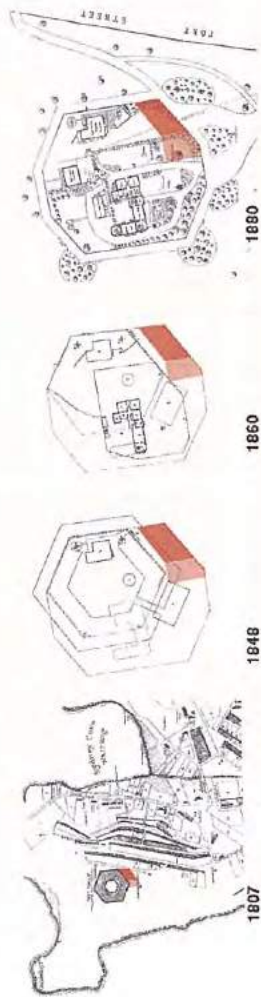


Historic Overlay
Sydney Observatory Millers Point

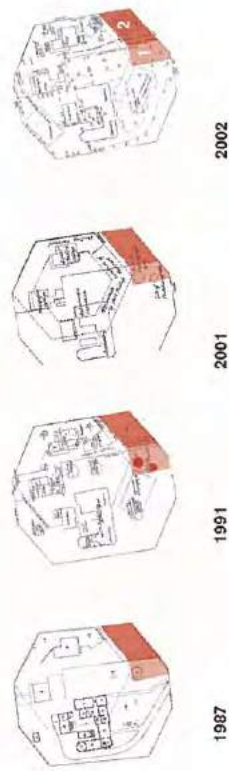
Historic Overlay *Heritage Fabric*



Historic Overlay Heritage Site Development



Historic Overlay Heritage Site Development



SITE 1 South East Garden

The site immediately east of the city was renewed and recommended in the Conservation Plan in 2002 by James Semple Kerr as the potential development site/Planned Site. The Photographs and Aerial Photographs show some of the buildings located here and it remains a site for new structures that would neither interfere with views of the Observatory nor the site itself.

In 2007 master plan document noted the site as an acceptable site for the "Old Dome" - an original scale, landscape. It is noted also by NSW Heritage Unit. The landscape, some and structures have been returned by Mosquito Heritage to the Museum store where they are awaiting conservation and a Heritage NSW approved structure on the Observatory site.

SITE 2 Yard

South East corner is currently fenced off as a service yard. There are sheds, parking bays and access path made. Throughout the history of the site, that corner is from the Fort bastion and no other heritage built structure above ground was separated. It has the potential to open up back to the garden ground but also can enjoy a view back to the City for any new facilities. Conservation Plan in 2002 by James Semple Kerr has acknowledged the future and use of this utilitarian yard to service the facility. Hence this site has the potential to become a development site to provide additional facilities to the Sydney Observatory without affecting the heritage fabric and views on the site.

It has however noted that in the Conservation Plan that the site "will contain out-surface sections of varying degrees of significance which should be understood before decisions can be made on the way the yard is to be developed in the future". It further notes:

Policy 26.1. Decisions on the way the first high level is to be located should be based on what is revealed by investigation in accordance with policies 50.1 and 50.2 (Investigation of development) and policies 54.1 and 54.2 (Excavation)

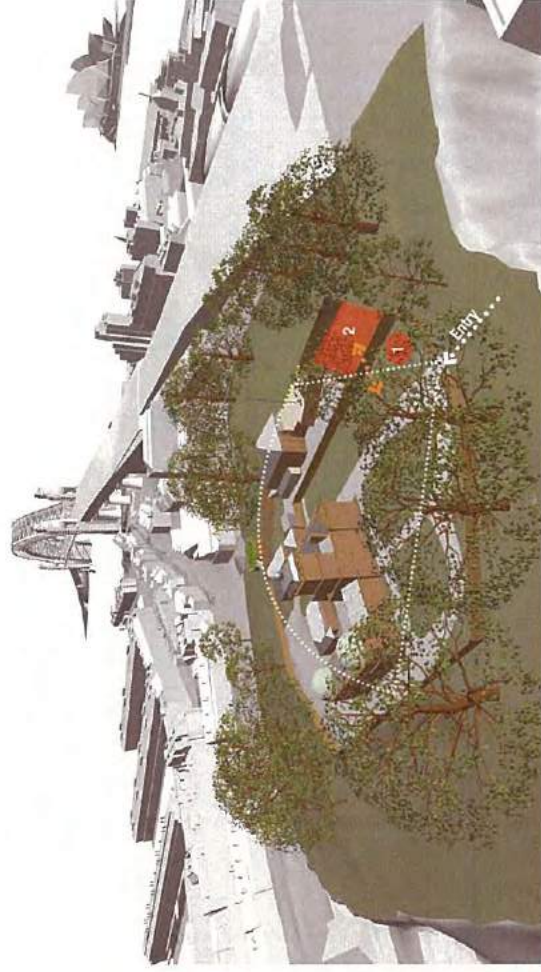
Potential Development Sites Existing Conditions

- SITE 1** Garden and outdoor seating area
- SITE 2** Service Yard with Parking

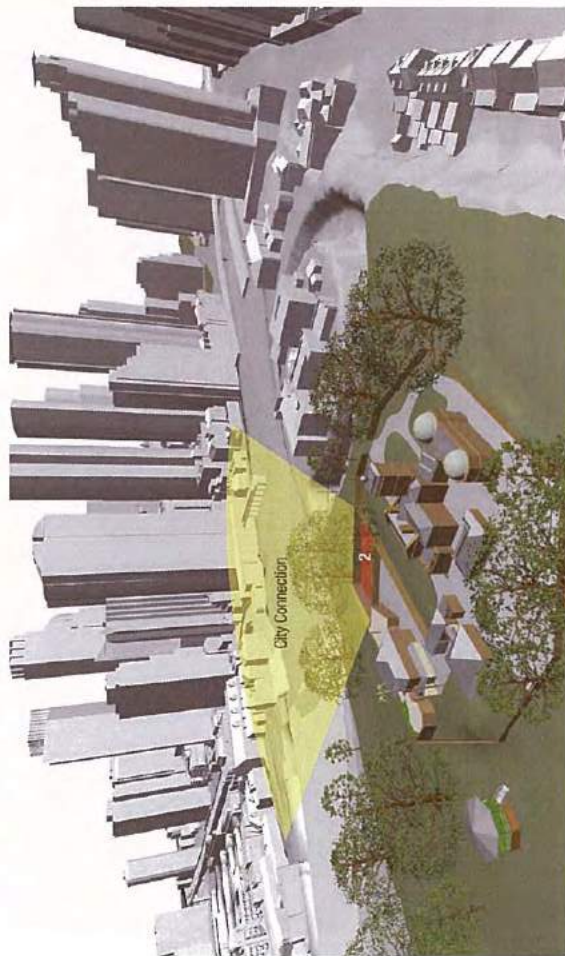


Potential Development Sites Aspects and Connectivity

No Interference to the Views of the Heritage Buildings



Potential Development Sites Aspects and Connectivity



Built Form Concept Landscape Building



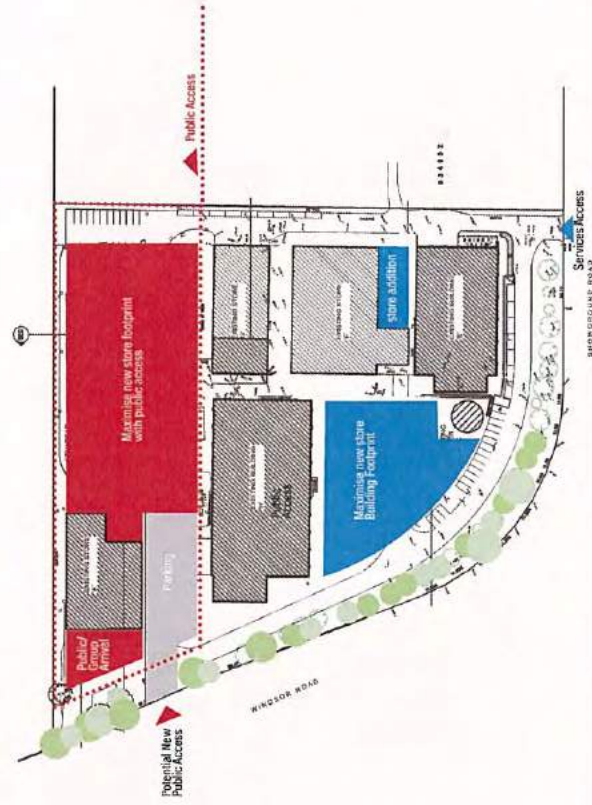
Powerhouse Discovery Centre and Storage, Castle Hill



Existing Facilities



Maximise Site Potential



Chicago, Illinois
1300 South Dearborn Street
Chicago, IL 60605-4059
Tel: (773) 707-7000
Fax: (773) 707-7001
Email: info@uchicago.edu
Website: <http://www.uchicago.edu>

Appendix B – Planning report



Planning Advice Powerhouse Museum Masterplan Study



500 Harris Street, Ultimo

Prepared on Behalf of Ernst & Young

July 2014 ■ 14451

Reproduction of this document or any part thereof is not permitted without prior written permission of JBA Urban Planning Consultants Pty Ltd.

JBA operates under a Quality Management System that has been certified as complying with ISO 9001:2008. This report has been prepared and reviewed in accordance with that system. If the report is not signed below, it is a preliminary draft.

This report has been prepared by:



Emma Kirkman

24/07/2014

This report has been reviewed by:



Andrew Duggan

24/07/2014

Contents

1.0	Introduction	1
1.1	Documents Reviewed	1
1.2	Limitations on Preparing Advice	1
2.0	The Site	2
2.1	Site Description	2
2.2	Surrounding Development	3
2.3	Heritage	3
3.0	Key Planning Controls	4
3.1	Sydney Local Environmental Plan 2012	4
3.2	Heritage Floor Space	5
4.0	Planning Approval Pathways	6
4.1	Proposal	6
4.2	Transfer of Permissible GFA across the entire site	6
4.3	Planning Proposal Process	7
4.4	Benchmark Timings	10
4.5	Previous Planning Proposal Examples	10
4.6	Planning Proposal Considerations	11
4.7	Development Application Process	12
5.0	Comments on Proposal	14

Figures

1	Site Allotments	2
2	Heritage Map Extract	3
3	Floor Space Ratio Map Extract	4
4	Height of Buildings Map Extract	5
5	Title Plan (red outline illustrating adjoining lot boundary)	6
6	Planning Proposal Process	9

Tables

Benchmark Timings of LEP Amendments in the City of Sydney	10
---	----



1.0 Introduction

This report has been prepared to inform the design process being undertaken by Ernst & Young and FJMT Architects in respect of the Powerhouse Museum at 500 Harris Street, Ultimo (the site).

We understand that a feasibility and masterplan study is being undertaken to inform the future development of the Museum, as well as propose complementary development that would provide long-term funding to facilitate the Museum's core functions. The complementary development would include both commercial and residential uses.

While the redevelopment of the Museum itself will be within the height controls for the site, the proposed complementary development will most likely seek to vary the height controls applying to the land. Accordingly, this report outlines the process and timing required to achieve the proposed masterplan.

This planning advice provides:

- Description of the site - Section 2.0;
- Review of the key planning controls applicable to the site, including zoning, height and FSR, under the Sydney Local Environmental Plan 2012 (Sydney LEP 2012), and consideration of the Heritage Floor Space system and its applicability – Section 3.0;
- Outline of the proposal and the process for achieving approval for additional height (and potentially FSR), including the steps and risks associated with a Planning Proposal and LEP amendment, benchmark timings against recent planning proposals in the City of Sydney, and likely deliverables / specialist consultants' inputs – Section 4.0;
- Commentary on possible achievable height limits, merit-based issues and arguments needed to present a defensible scheme – Section 5.0.

1.1 Documents Reviewed

In preparing this advice we have reviewed the following documents:

- Powerhouse Ultimo Presentation to Steering Committee 10 July 2014 prepared by FJMT;
- *Sydney Local Environmental Plan 2012* (Sydney LEP 2012); and
- UTS, Dr Chau Chak Wing Building Environmental Assessment Report prepared by RPS (March 2011).

1.2 Limitations on Preparing Advice

In preparing this advice we have not viewed a Section 149 certificate. This advice does not an exhaustive list of every relevant planning control or issue, rather the threshold issues that are relevant to establishing the parameters of a development scheme for the land.

We have based this advice on the Powerhouse Ultimo Presentation to Steering Committee (10 July 2014) prepared by FJMT Architects.

2.0 The Site

2.1 Site Description

The site is predominantly located at 500 Harris Street, Ultimo. The site comprises a number of allotments as detailed below and shown in **Figure 2** below:

- Lot 1 DP 770031
- Lot 1 DP 801428
- Lot 1 DP 781732
- Lots 1 and 3 DP 631345
- Lot 3 DP 216854
- Lot 37 DP 822345

It has a total area of approximately 22,900m² and a street frontage to Harris Street of approximately 165 metres.

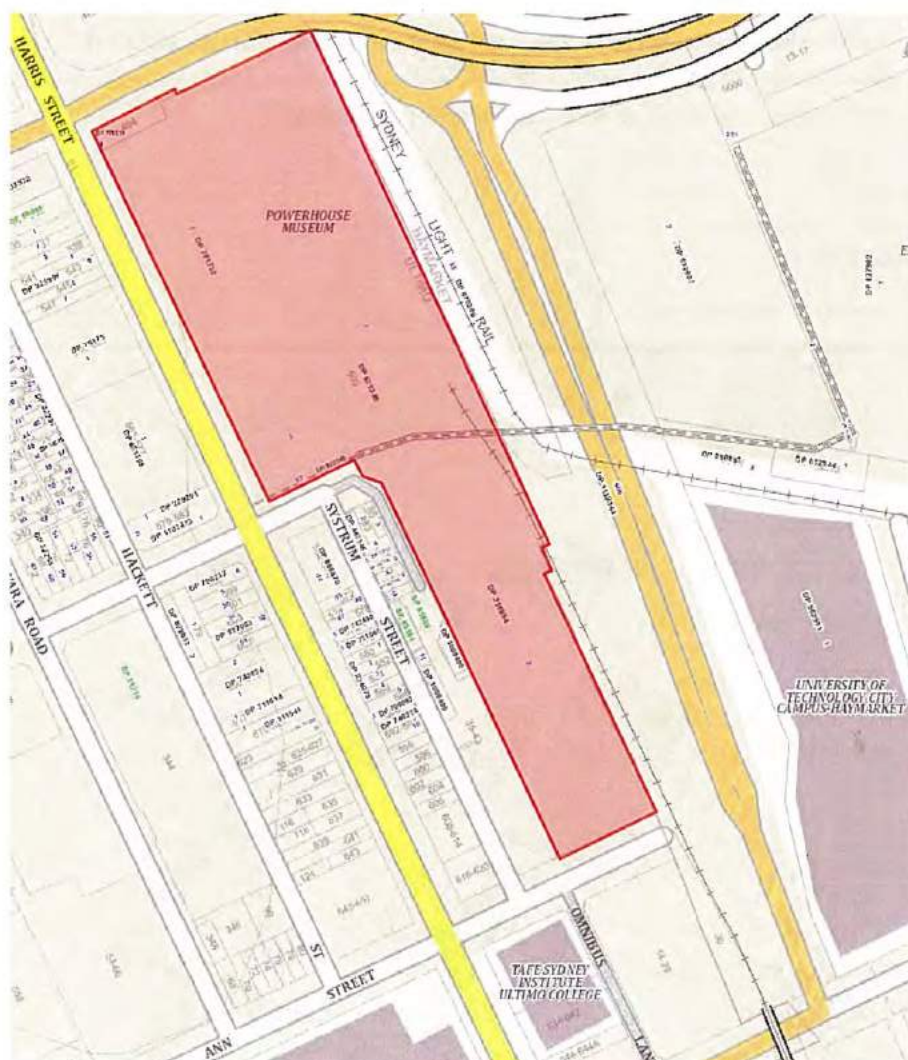


Figure 1 – Site Allotments
Source: SIX Maps

2.2 Surrounding Development

To the north west of the site, across William Henry Street, is the Ian Thorpe Aquatic Centre. To the north east of the site is Darling Harbour, currently being redeveloped as part of SICEEP. To the east of the site is the Sydney Entertainment Centre and car park (also to be redeveloped as part of SICEEP), and the Frank Gehry designed Dr Chau Chak Wing Business School (UTS).

Immediately behind the Museum, parallel to Harris Street is The Goods Line, a 250m long pedestrian and cyclist network linking Railway Square to Ultimo and Darling Harbour.

The Goods Line and the Business School are expected to be completed in late 2014.

2.3 Heritage

The site contains two heritage items and is located adjacent to a heritage conservation area in the south west as detailed below and shown in **Figure 3** below:

- Item no. I2030 – Former Ultimo Post Office including interior, 494 Harris Street Ultimo (State listing)
- Item no. I2031 – Powerhouse Museum former warehouse buildings, including interiors, 500 Harris Street Ultimo (local listing)
- C67 – Harris Street Ultimo conservation area (local listing)

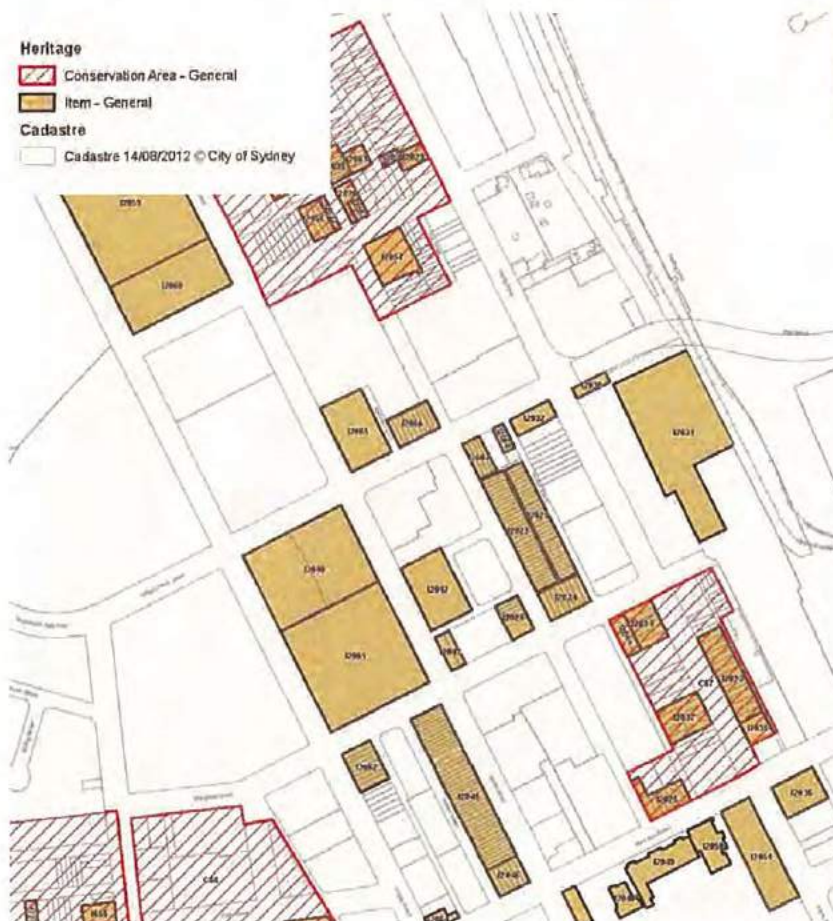


Figure 2 – Heritage Map Extract
Source: Sydney LEP 2012

3.0 Key Planning Controls

3.1 Sydney Local Environmental Plan 2012

3.1.1 Zoning and Permissible Uses

The site is zoned B4 Mixed Use under the Sydney LEP 2012. A range of uses are permitted with consent including:

- Hotel or motel accommodation;
- Retail premises;
- Residential accommodation;
- Shop top housing;
- Commercial premises; and
- Serviced apartments.

3.1.2 Floor Space Ratio

A maximum FSR of 4:1 applies across the site, with the exception of the north west allotment to which a maximum FSR of 1:1 applies, as shown in **Figure 4** below.



Figure 3 – Floor Space Ratio Map Extract
Source: Sydney LEP 2012

Surrounding Land

The land surrounding the site has a maximum FSR of less than 4:1. Only land to the immediate south and south east, across Mary Ann Street, has a higher FSR of 5:1. However, there is one allotment to the immediate south west which has an FSR of 6:1, and two allotments to the south west, across Harris Street, which have FSRs of 4.5:1 and 6.5:1.

3.1.3 Height

The maximum building height applying to the site is 28 metres, with the exception of the north west allotment to which a maximum building height of 6 metres applies, as shown in Figure 5 below.



Figure 4 – Height of Buildings Map Extract
Source: Sydney LEP 2012

Surrounding Land

The land surrounding the site has a maximum building height of less than 28 metres. Only land to the immediate south and south east, across Mary Ann Street, has a higher maximum building height of between 33 metres and 42 metres. However, there are two allotments to the immediate south west which have a maximum building height of 30 metres, and one allotment to the south west, across Harris Street, which has a maximum building height of 35 metres.

It is also noted that to the east of the site, as part of SICEEP, approval has been granted for a number of mixed-use towers that are significantly higher than the LEP controls for lands to the north, west and south of the site (see Section 5.1.1 below).

3.2 Heritage Floor Space

Clause 6.10 of the Sydney LEP 2012 provides a floor space incentive for the conservation and on-going maintenance of heritage buildings within Central Sydney (on land zoned B8 Metropolitan Centre). While the Powerhouse Museum is a heritage item and the proposal will result in its conservation and on-going maintenance, the site is not zoned B8 Metropolitan Centre and therefore the HFS provisions of the LEP do not apply.

4.0 Planning Approval Pathways

4.1 Proposal

The masterplan study identifies the future and complementary development of the Museum as follows:

- Arrival, exhibition, learning and public facilities at the centre of the site, facing Darling Harbour and The Goods Line;
- 'Working Museum' at the northern end of the site, fronting Harris Street;
- Bridge connection between the northern and southern parts of the site, providing access over Macarthur Street;
- Exhibition touring halls at the centre of the site;
- External public exhibition space, retail, collection storage and parking at the southern end of the site; and
- Residential building atop the Museum to the south of the site, and commercial building to the southern most part of the site fronting Mary Ann Street and The Goods Line.

4.2 Transfer of Permissible GFA across the entire site

Under clause 4.5 (3)(b) of the Sydney LEP 2012, for the purpose of applying a floor space ratio the site area is taken to be:

if the proposed development is to be carried out on 2 or more lots, the area of any lot on which the development is proposed to be carried out that has at least one common boundary with another lot on which the development is being carried out.

It is noted that while Macarthur Street appears to visually separate the northern and southern parts of the site it actually the case that Lot 1 DP 631345 (the northern part of the site) and Lot 3 DP 216854 (the southern part of the site) share a common boundary and therefore the total site area can be made inclusive of these lots (as well as those lots detailed in Section 2.2 above). The title plan in **Figure 5** illustrates the above arrangement.

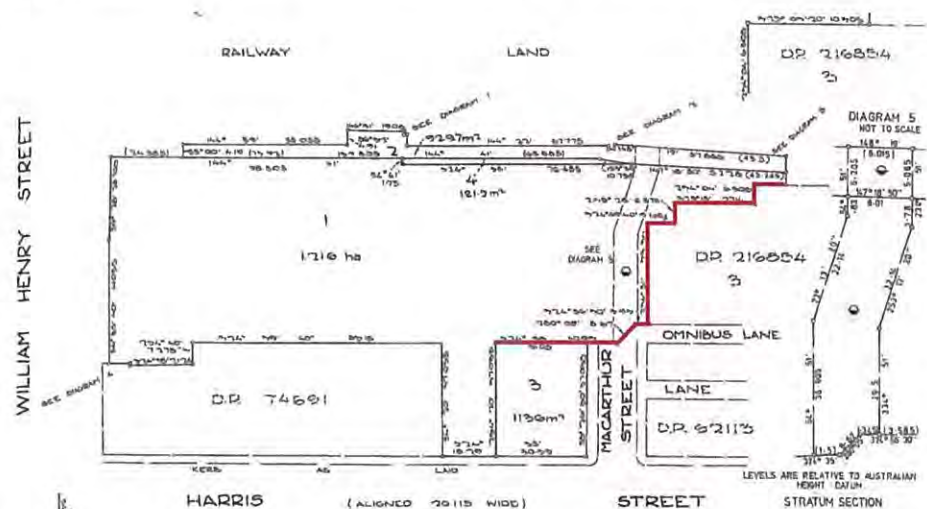


Figure 5 – Title Plan (red outline illustrating adjoining lot boundary)

The total site area is some 22,900m² and the proposed development as detailed in Section 4.1 above is some 78,600m². In accordance with the FSR of the site (4:1), the maximum permissible GFA is some 91,600m².

In order to maximise the development potential of the site it is proposed that the permissible GFA from the northern part of the site, which is not needed for the future development of the Museum and is therefore excess GFA, be transferred to the southern part of the site, in particular to the residential and commercial buildings.

Need for a single development application

In order to achieve the transfer of floor space across the different lots, a single Development Application (DA) would need to be lodged for the entire site. This could be in the form of a Stage 1 DA where the maximum parameters of the development are established, such as building envelopes and uses. The establishment of building envelopes and floor space distribution under this Stage 1 DA would facilitate the transfer of floor space without amending the current FSR controls for the site.

Separate Stage 2 DAs, seeking approval for the detailed buildings within these envelopes could then be lodged for different elements of the redevelopment. The transfer of floor space would not be permitted if only a single detailed DA was lodged for only a portion of the site without an approved Stage 1 DA, i.e. a DA only for the southern portion of the site.

The transfer of development potential would likely necessitate a significant increase in the maximum building height to accommodate the additional GFA and therefore an amendment to the Sydney LEP 2012 would be required via a Planning Proposal.

4.3 Planning Proposal Process

The Planning Proposal pathway to amend a LEP in NSW is shown in **Figure 6** below. This process would need to be followed to amend the Sydney LEP 2012 to permit a height increase to maximise the development potential of the site.

It is estimated that finalisation of changes to the Sydney LEP 2012 in accordance with a Planning Proposal lodged for the site would take approximately 12 to 18 months to complete from date of lodgement.

It is also noted that the masterplan prepared for the site does not provide sufficient detail to be lodged as a Planning Proposal. It is considered that the masterplan for the site needs to be more fully developed. At a minimum, the following consultant reports / plans would need to be prepared in support of a Planning Proposal:

- Building envelope plans;
- Indicative floor plans;
- Shadow analysis;
- Planning Justification Report;
- Urban design report;
- Heritage report;
- View and streetscape analysis; and
- Traffic Report (potentially).

The Planning Proposal is a document initially prepared by the proponent, including all of the above consultant reports/plans, and lodged with Council. Council staff will then assess the proposal and consider whether there is strategic merit in making the changes to the Sydney LEP 2012.

If supported, Council staff will prepare a formal Planning Proposal, which will be considered at a full Council meeting and also by the Central Sydney Planning

Committee (CSPC). Once resolved to have merit, the proposal will be forwarded to the Department of Planning and Environment (the Department) who further consider the proposal at what is called the 'Gateway Review'.

If deemed appropriate to proceed, the proponent may be required to undertake more detailed studies to form a final Planning Proposal. This final Planning Proposal will then be publically exhibited. Following completion of the exhibition period and any necessary responses to submission, the proposal will be forward to the Department for final sign off and legal drafting.

The Planning Proposal process has several key risk areas where the proposal may be disrupted and time delays could occur. These include:

1. Council and the CSPC may decide to not support the Planning Proposal.
2. The Department may resolve not to support the Planning Proposal even if supported by Council.
3. There is strong opposition during the public exhibition period and significant delays occur in attempted to resolve public or government agency concern.

Risk No. 1 is likely to be resolved prior to formal consideration of a Planning Proposal by Council or the CSPC. Significant concerns of Council can be negotiated prior to the formal Planning Proposal being reported to Council and the CSPC. If significant concerns arise though, this may result in an extended period before the proposal is supported and forwarded to the Department.

Risk No. 2 is unlikely in the event that Council support the Planning Proposal, but should be noted nonetheless as a potential risk item which can never be entirely ruled out.

Risk No. 3 will also potentially delay timing if significant concerns are raised by the general public or government agencies such as the Office of Environment and Heritage. The significance of this site and the surrounding heritage considerations would require delicate negotiations and upfront involvement of the NSW Heritage Council to avoid delays during the formal public exhibition.

Furthermore, due to the restrictions of the *City of Sydney Act 1988*, the LEP amendment is required to be considered by both Council and the CSPC, therefore resulting in additional time delays due to reporting cycles and meeting schedules.

There is a review mechanism where the Planning Assessment Commission (in the absence of any relevant Joint Regional Planning Panel in the City of Sydney), can review the decision of the Council/CSPC in respect of the planning proposal. Further advice on this point can be provided if and when as required.

Proponent Instigated LEP Rezoning Process (Guide)

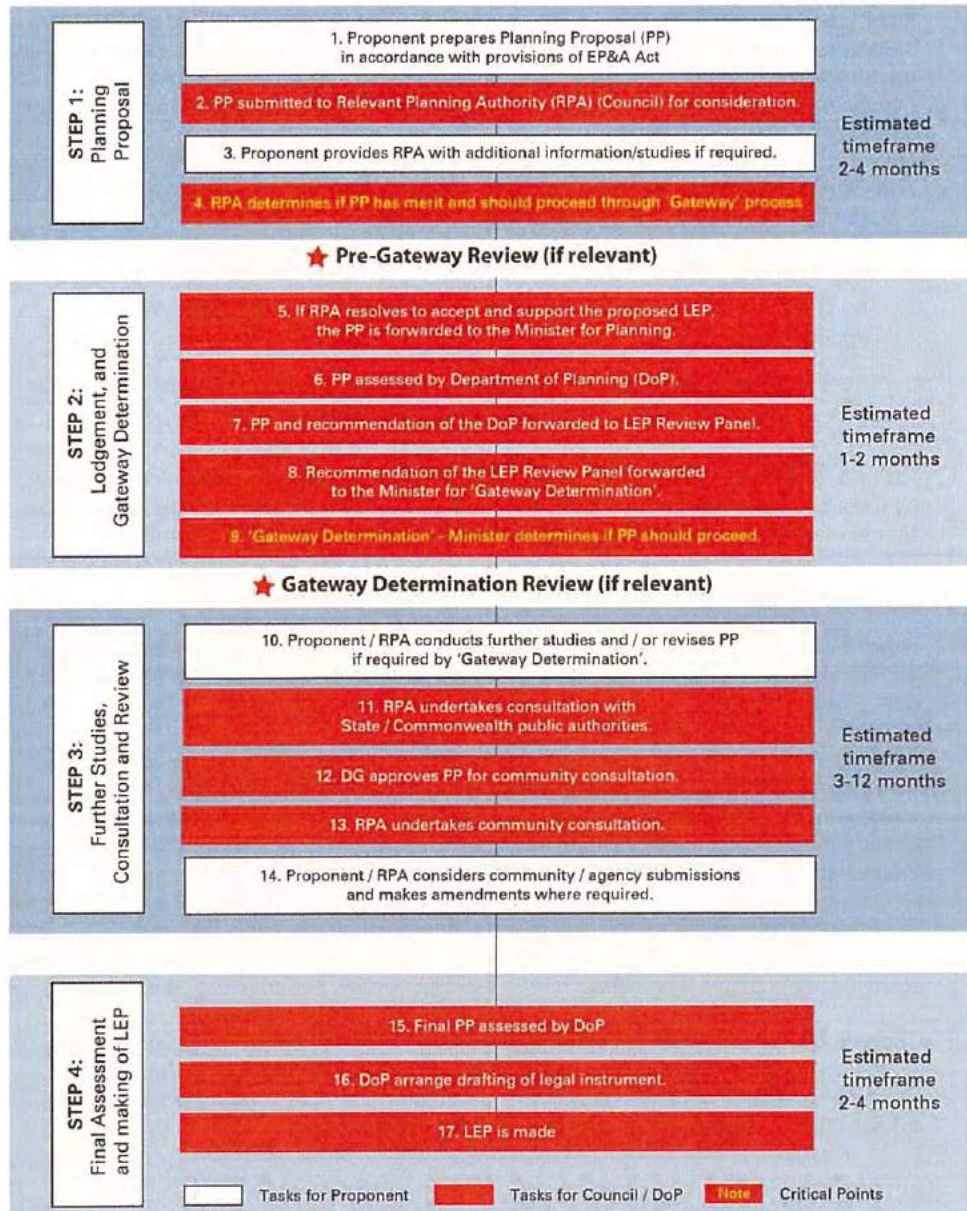


Figure 6 – Planning Proposal Process

4.4 Benchmark Timings for the City of Sydney

Table 1 below shows the timings of other significant LEP and recent amendments in the City of Sydney. The table shows that amendments to the LEP via a Planning Proposal can take upwards of 24 months. These benchmarks should be considered in light of the risk items outlined in Section 4.3 and the requirement for reporting of the Planning Proposal to both Council and the CSPC.

Table 1 – Benchmark Timings of LEP Amendments in the City of Sydney

Project	Action	When			
Money Box Building, Martin Place					
	Planning Proposal lodged	May 2009			
	Planning Proposal forwarded to the Department		October 2009		
	Gateway Determination			November 2009	
	LEP amendment is made				August 2010
Bay Street, Glebe					
	Planning Proposal lodged	July 2011			
	Planning Proposal forwarded to the Department		November 2012		
	Gateway Determination			November 2012	
	LEP amendment is made				December 2013
AMP, Circular Quay					
	Planning Proposal lodged	December 2012			
	Planning Proposal forwarded to the Department		June 2013		
	Gateway Determination			July 2013	
	LEP amendment is made				June 2014

4.5 Previous Planning Proposal Examples

4.5.1 AMP Sites – Bridge and Alfred Streets

In June 2013, Council and the CSPC approved an amendment to the Sydney LEP 2012 to permit AMP to 'capture' unrealised floor space (within permissible FSR limits) from buildings it owns on Loftus Street and transfer floor space to other landholdings on Bridge and Alfred Streets. An extra 22,500m² (approximately) of GFA will be transferred onto lands currently occupied by the existing Bridge Street AMP tower.

Despite no material increase in FSR (only a transfer of floor space across sites), AMP offered up significant monetary contributions to secure the Planning Proposal including:

- A cash contribution of 1% of the Capital Investment Value (subject to certain urban design deductions);
- A requirement to provide 40% of GFA as non-residential;
- Public Art up to a value of \$2 million; and

- Covenants and easements to provide for certain laneway and public space outcomes.

The VPA will have an estimated value of \$6.7 million.

Site-specific DCP controls were included in Section 6 of the Sydney Development Control Plan 2012 (Sydney DCP 2012). These controls provide relatively detailed controls on how the site can be redeveloped.

4.5.2 Bay Street, Glebe

In July 2013, Council supported an amendment to the Sydney LEP 2012 to facilitate the redevelopment of the former industrial buildings at 87 Bay Street, Glebe. The Planning Proposal sought to amend the FSR control from 1.5:1 to 3.85:1, and to amend the height control to allow for buildings up to 33 metres (approximately 9 storeys). The maximum development potential under these amended controls can only be achieved where:

- 0.75:1 floor space ratio is retained for non-residential purposes;
- A rate of 7.5% of all residential floor space is provided on-site as affordable housing;
- Nominated public domain improvements are provided; and
- Specific energy and water saving targets are achieved.

These benefits are secured through a site-specific VPA. Site-specific DCP controls were also included in Section 6 of the Sydney DCP 2012.

4.6 Planning Proposal Considerations

4.6.1 Public Benefit

As shown in the above examples it can be expected by Council that a public benefit is provided by the proponent to compensate for the additional development potential (i.e. the additional height on the southern portion of the site). Ordinarily, this public benefit is captured in a Voluntary Planning Agreement (VPA) which will require the developer to provide certain public benefits as a result of the increase in development potential on the site.

In light of the nature of the redevelopment, being for a museum, it could be argued that the redevelopment will already deliver significant public benefits. However, it would need to be clearly articulated in the Planning Proposal that the redevelopment of the museum can only be facilitated through the sale of residential floor space. A clear nexus between the two would need to be established to the Council. The public benefits of the expanded museum use would also need to be emphasised.

4.6.2 Built Form

The built form of the proposal would need to be considered in detail prior to approaching Council regarding an amendment to the Sydney LEP 2012. Rigorous assessment of the surrounding built form and how the proposal would fit with the existing and future context of the locality would need to be undertaken and shown in any documentation submitted with the Planning Proposal. Preliminary comments on the current scheme are provided in Section 5.0 below.

4.6.3 Overshadowing

The establishment of the maximum height of any tower on the site would need to consider both the surrounding built form context and the potential overshadowing impacts on surrounding public spaces and buildings. The Sydney DCP 2012 contains the following controls relating to the overshadowing of public spaces:

3.2.1.1 Sunlight to publicly accessible spaces

- (1) *Overshadowing effects of new buildings on publicly accessible open space are to be minimised between the hours of 9am to 3pm on 21 June.*
- (2) *Shadow diagrams are to be submitted with the development application and indicate the existing condition and proposed shadows at 9am, 12 noon and 2pm on 14 April and 21 June. If required, the consent authority may request additional detail to assess the overshadowing impacts.*

On 15 March 2013, the redevelopment of the Darling Harbour goods line was approved by Council (D/2012/1863). This redevelopment, known as The Goods Line, is currently under construction and involves the provision of a 500 metre long elevated public space. The Goods Line runs generally along the eastern boundary of the site. There is a portion of The Goods Line which is located on the subject site, generally at the terminus of MacArthur Street.

The relationship of the future redevelopment to The Goods Line will need to be carefully considered in light of potential shadow impacts. The effects of a redevelopment would need to demonstrate that The Goods Line still receives an adequate amount of sunlight.

4.6.4 Heritage, including the fabric of the development area

As identified in Section 2.3 there is one state listed and one locally listed heritage item on the site. The site is also immediately adjacent to the Harris Street Ultimo conservation area. As such, any built form and height control to be established as part of the Planning Proposal would need to consider the relationship of the building with the existing heritage items and conservation area.

In addition, Section 3.10 of the Sydney DCP 2012 also specifies controls for significant architectural building types which include warehouses and industrial buildings older than 50 years. These controls are quite restrictive in conserving the original fabric of warehouse buildings over 50 years old. It is assumed that the existing warehouse building on the site is over 50 years old and therefore Section 3.10 of the Sydney DCP 2012 applies. This needs to be confirmed and its implications considered by a heritage advisor.

Although development control plans are to be used as guidance in the assessment of DAs, it would need to be justified why a comprehensive redevelopment of the site is acceptable from a heritage perspective.

4.7 Development Application Process

There are a number of requirements in the Sydney LEP 2012 which will impact on the steps required to be taken in gaining development consent for the proposal, as well as the potential timing and costs associated with this process. These are detailed below and are in addition to the processes that are set out above for an LEP amendment.

4.7.1 Design Excellence

Clause 6.21 of the Sydney LEP 2012 requires the following developments to be the subject of a competitive design process:

- Development on land outside Central Sydney with a building height in excess of 25 metres;

- Development with a cost of more than \$100 million; or
- Development for which a site-specific Development Control Plan (DCP) is required to be prepared in accordance with Clause 7.20 of the Sydney LEP 2012 (see Section 4.7.2 below for details).

A competitive design process involves either an architectural design competition or an alternative design excellence process as set out in the City of Sydney Competitive Design Policy. Up to a 10% bonus on FSR or height is permitted for development which is the subject of a competitive design process.

4.7.2 Preparation of a Site Specific DCP

Clause 7.20 of the Sydney LEP 2012 requires a site-specific DCP to be prepared for development of a new building on land (outside of Central Sydney) that will result in a building with a height of greater than 25 metres or if the site has an area greater than 5,000m².

However, in accordance with Part 4 Division 2A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), if an environmental planning instrument (EPI), such as the Sydney LEP 2012, requires the preparation of a DCP before any particular or kind of development is carried out, that obligation may be satisfied by the making and approval of a staged development application.

A staged development application is defined as:

“a development application that sets out concept proposals for the development of a site, and for which detailed proposals for separate parts of the site are to be the subject of subsequent development applications. The application may set out detailed proposals for the first stage of development.”

Subsequent stages (i.e. detailed DAs) of a Stage 1 DA are required to be consistent with the Stage 1 DA. The preparation of site-specific DCP controls to accompany the Planning Proposal would satisfy the requirements of Clause 7.20.

However, there is a need to complete a Stage 1 DA on the site to facilitate the transfer of floor space. The Stage 1 DA would need to be lodged after the any LEP for height is gazetted and

4.7.3 Costs

The City of Sydney fee to lodge a major Planning Proposal in the City of Sydney is \$80,000. In addition to this, the consultant fees as outlined in Section 4.3, including architectural, planning, heritage and traffic inputs would (in our experience) be a minimum of \$250,000. This figure is based on previous experience undertaking Planning Proposals in the City of Sydney area.

Voluntary Planning Agreement

As part of a Planning Proposal to increase the development potential on the site, Council may require the applicant to enter into a VPA to provide public benefits in the form of additional contributions or works-in-kind. While this process may be completed as part of the Planning Proposal, the payments and works-in-kind determined under the VPA may be required to be paid and implemented as part of the DA process.

The extent of money and works-in-kind that may be required under a VPA is difficult to quantify at this early stage. As outlined in Section 4.6, it would be recommended that a strong case is put to Council justifying how the public benefits of the new museum space outweigh any private benefits of additional height on the site.

5.0 Comments on Proposal

5.1.1 Height

At this early stage there are no specific heights proposed for the residential and commercial buildings illustrated in the masterplan. Rather, the proposal identifies that in order to maximise the development potential of the site permissible GFA could be transferred from the northern to the southern part of the site which would result in an increase to the maximum LEP building height. It is understood that the preferred potential tower height is in the order of 30 storeys (this is some 100-120 metres).

As outlined in Section 4.6, there are a number of considerations which will need to be addressed in determining the height of the future residential proposal. These include:

- The height of surrounding buildings, including heights permissible under the Sydney LEP 2012 and any surrounding future proposals (such as the SICEEP redevelopment and any potential UTS redevelopment);
- The transition of building heights in relation to surrounding development, from future taller buildings in the south and south east to lower-scale buildings in the north and west;
- The relationship to existing heritage items on the site and the adjoining Harris Street Ultimo heritage conservation area;
- Any potential overshadowing impacts, particularly to public open space areas such as The Goods Line and surrounding residential buildings; and
- Any potential view impacts other residential buildings. This was an issue for Lend Lease in the assessment of SICEEP.

The notion of taller building as proposed is not without merit and in light of the recent SICEEP approvals would not be out of context, however the above matters (including those detail below in further detail) must be worked through in depth to establish a defensible and coherent urban design argument to establish an actual height which would be appropriate.

Shadow Analysis to open space including the Goods Line

One of the key factors which will guide the height of the future built form is the overshadowing on the approved Goods Line as a public space.

Most recently, the Dr Chau Chak Wing Business School (UTS) designed by Frank Gehry was approved by the Department. This building is currently under construction to the south of the site, and is 46.2 metres in height. The building will overshadow The Goods Line at 3.00pm during the summer and winter solstices and the equinox.

This building resulted in overshadowing on The Goods Line, but was deemed acceptable by the Department of Planning as:

The department has reviewed these impacts and notes that the shadows created by the building would not reduce the amount of daylight available at the adjoining premises, and within the public domain, below that recommended in the Urban Development Plan of Ultimo Pyrmont. Given the above, the department has concluded that the shadowing impacts generated by the project are typical of an inner city environment and are therefore acceptable.

The (now repealed) Urban Development Plan of Ultimo Pyrmont referred to in the Department's Assessment Report of the Dr Chau Chak Wing Business School (UTS) establishes the following control for sunlight to publically accessible locations:

- No overshadowing of more than 50% of public spaces between 10am and 2pm on 21 April and 21 August.

Without a clear understanding of the shadow impacts, it is difficult to provide definitive comments on the acceptability of the proposed height. The Sydney DCP controls outlined in Section 4.6 above should be used as a guide to identify the acceptability of overshadowing. Noting the inner city environment of the site, the following key dates and times should be assessed to understand the impacts on The Goods Line:

- 9am to 3pm on 21 June;
- 9am, 12 noon and 2pm on 14 April.

The determination of an appropriate height will need to be ascertained via a merit assessment. As such, when presented to Council, there will need to be clear justification for why the level of overshadowing is acceptable.

Heritage

The proposed residential envelope immediately adjoins a conservation area. Consideration of a potentially 30 storey building immediately adjoining a low scale conservation area is a critical issue. The conservation area has height limits as low as 9 metres (along Harris St). As a general rule, heights of buildings often transition down towards low scale conservation areas in order to establish context and scale to the conservation area. For example the cascading of height at the former Carlton United Brewery site from Broadway down to the conservation areas of Chippendale.

Considered heritage advice will be required to establish a defensible and coherent argument to seek a significant increase in the height controls applying to the land.

5.1.2 Land Use

The proposed residential and commercial uses on the southern part of the site are permissible uses in the B4 zone and will not require any change to the zoning controls.

Appendix C – Compliance with the MAAS Act

The table below identifies incidents within the Museum where water leaks were reported to Registration.

Table 1: Water leak reports

Location	Date	Objects involved
TH3 – Engineering Excellence (2011)	21 March 2011 30 August 2011 3 February 2012	L4891/1 Robot, Articulated Head, mixed media, made by the University of Western Sydney (Bankstown Campus) in collaboration with 'Stelarc'
BH1 - Transport	25 July 2011	None
SH2 – Love Lace	4 November 2011	L4753/1 Artwork, 'Lace', metal lace, plastic, by Deborah West, Australia, 2010
SH2 – Love Lace	9 November 2011	L4753/1-1 Artwork, 'Lace', metal lace, plastic, by Deborah West, Australia, 2010 L4791/1 Artwork, 'Are We Made of Lace?', 6 wall hanging panels, enamelled copper wire / acrylic / metal, by Lenka Suchanek, Canada, 2011
BH1 - Transport	15 June 2012	B583 Bicycle, 'The Dux', metal / leather, made by the Dux Cycle Company, Melbourne, Victoria, 1899, ridden around Australia by Donald Mackay, 1900
SH1 - Wiggles	14 December 2012	None
SH2 –Love Lace	14 December 2012	L4744/1-1 Artwork, 'Lace Symphony', knitted lace shawl, silk, by Catherine M Thomson, Canada, 2010
SH4 – 30 Years of HIV/AIDS	4 February 2013	PROP/HIV/3 Costume 'Condoman', used by Queensland Association for Healthy Communities
WB3 – Technologies that changed our minds	3 April 2013	H3408 Albion printing press
EH2 – Steam revolution	4 April 2013	B1406-1 Horse drawn Steam Fire Engine Pump, built by Merryweather, London, 1895
WB3 – Technologies that changed our minds	4 April 2013	2010/1/109 Computer, PDP-8, Perspex / metal / plastic / insulation, made by Digital Equipment Corporation (DEC), Maynard, Massachusetts, United States of America, 1965-1990 B2543 Internal combustion engine
WB3 – Technologies that changed our minds	24 June 2013	91/220-1 Jardinière, (1 of 2), pair, 'Palace ware', terracotta, designed and decorated by Stephen Bowers on a form made by Mark Heidenreich, Sydney, 1989 B2534 Aircraft engine, rotary air-cooled nine cylinder, Le Rhone, steel / copper, Societe Des Moteurs Le Rhone, France, 1918. H3408 Albion hand printing press, iron, manufactured by A Wilson & Sons, London, England, 1850 2010/1/109 Computer, PDP-8, Perspex / metal / plastic / insulation, made by Digital Equipment Corporation (DEC), Maynard, Massachusetts, United States of America, 1965-1990
WB3 – Technologies that changed our minds	28 June 2013	2009/65/1 Telescope, reproduction of Galileo's telescope, leather / wood / glass, made by Antiques of Science & Technology, Wakefield, Massachusetts, United States of America, 2009

PHM – Facilities brief

Introduction

This brief is prepared at the request of Elizabeth Stratford dated 29th July 2014.

The brief is provided to support the business case in relation to the Master Plan Bid.

The purpose of the brief is to introduce the issues related to the Powerhouse Museum building that the Facilities Department consider important to flag.

Air Conditioning Design Issues

The air conditioning central plant was designed in 1986 and commissioned in late 1987. At the time it was a radical and somewhat experimental design whereby chiller condenser water is re-used for building heating water instead of being rejected to a heat sink like a cooling tower. The condenser water leaving temperature is designed to be produced at 40 degrees which presents as a problem in 2014 that was not foreseen by the designers.

- The temperature selection of 40 degrees is not sustainable for two reasons, the type of chiller used is prone to increased refrigerant head pressures that directly increases electrical input energy operating costs up to 25% more than for a leaving water temperature at 35 degrees C. The running costs for the 40 degree C would increase billing charges by \$100,000 p/a. A cost analysis will be provided in the coming weeks.
- A downside exists when using heating water in the temperature range of 30 – 40 degree range is that it promotes the growth of mold and bacteria in the air side of the HVAC system. This phenomena presents as a major threat to the collection through cross contamination. Additionally, the mold grows on the air side of the heating coil causing a fouling that is extremely difficult to remove in multi row coils. Coil replacement is often the only option to restore air movement and approximately 15 of a total 80 coils have been replaced to date. The recommendation is to substantially change the central plant design and reheat the heating water up to 50 Degrees C to kill the mold. Indoor Air Quality (IAQ) testing confirms the high spore count concentrations.

Building Design Issues

There are a number of non-compliance and under design issues in the building.

Non Compliance:-

- The West Building public access ramps do not meet BCA code
- The Essential Services do not meet BCA 2012.
- The Disability access around the building does not meet code.
- There is a noticeable absence of a roof safety system to reach the more difficult roof top areas for maintenance purposes. This is estimated at \$400,000 to correct.

Under Performance

- The sewerage system is purging in the building causing unacceptable odour.
- Building Leaks. There are approximately 10 rain water building leaks that are repeatedly reported every year in the JIRA maintenance system. The leaks repeat because the either access to the external side is unsafe or because the box gutter design is undersized and subsequently under performs.
- The main color bond roof is corroding and will reach the perforation in approximately 10 years forcing a major refurbishment and or replacement within 10 years.

- The roof smoke vent louvers built into the same roof are corroding and will need a major overhaul or replacement within 10 years.
- The main side walls of the West Building are clad in architectural sheeting that is delaminating and needs replacing.
- The Emergency Warning and Communication system used to evacuate the building occupants also doubles as the public address system. The quality of the sound is terrible and barely unintelligible in many areas. It is recommended to install a quality standalone sound system.
- The main entrance doors at all entrance and exit points are centre opening sliding doors. They do not include air lock features and this design allows draughts and uncontrolled air entering the building subsequently the Museum Quality environment is eroded and the collection is detrimentally affected.
- The perimeter glazed wall fronting Harris St is badly acidified from vehicular pollution and needs to be replaced. This is a major cost as the glazing should be upgraded to double glazing for energy efficiency purposes.
- The paving in all court yards are uneven and wet weather affected and will need to be replaced within 5 years.

Energy Design Issues

To operate the plant at the “as built environment” design for Museum buildings is not affordable under the current funding constraints. The solution would be to proceed with the proposed co-gen plant that would provide the lower cost electrical supply and without network charge costs.

Or

Embark on a major energy management program to replace electrical consumers with modern high efficiency equipment. This would mean investing \$2M capital into a major energy efficiency program that would realize an upgrade of ageing plant with modern energy efficient technology. The billing charges will be reduced in the range of 18 - 20% with a simple payback in the range of 7 years.

Additionally, provide air locks to compartmentalize parts of the building to reduce infiltration air that is causing unwanted convection and vortex draughts.

Powerhouse Museum Annual billing charges:-

Table 2: Annual billing charges (\$000's)

YEAR	Electrical Billing	Gas Billing	Water Billing
2013	1,561	49	57
2012	1,269	39	52
2011	1,243	25	48
2010	1,138	32	64
2009	1,214	31	47

Appendix D – Strategic Gateway Review Report

GATEWAY REVIEW REPORT

Project:	Renewal of the Powerhouse Museum
Sponsor Agency:	Powerhouse Museum
Gateway Review:	Strategic Gate
Status of Report:	Final
Project Sponsor:	Rose Hiscock, Director Powerhouse Museum
Review Dates: (Planning/Interview/Report)	22, 29 and 30 August 2014
Gateway Review Team:	Sue Power, NSW Treasury Suellen Fitzgerald, Western Sydney Parklands and Parramatta Park Trusts Anna Cuthbertson, Johnstaff Pty Ltd Julian Bickersteth, International Conservations Services
Gateway Manager:	Elizabeth Williams, NSW Treasury

Background

The aim of this project is the proposed redevelopment of the Powerhouse Museum. This redevelopment is anticipated to deliver an economic and financial benefit for the Museum that provides future sustainability.

The driving force for the project is that the Museum:

- Has not received any significant investment since it opened in 1988
- Is unable to generate sustainable and diverse funding streams
- Has existing infrastructure has reached the end of its economic life and is no longer fit for purpose
- Has falling financial performance and visitation
- Is not taking advantage of the opportunities that are being presented from the SICEEP, Goods Line and broader Precinct Redevelopments.

The redevelopment opportunity was identified through the Museum of Applied Arts and Sciences Commercial Real Estate Strategy (Commercial Strategy) that was commissioned to address the operational issues which are directly impacting the Museum's ability to provide a competitive offering.

The strategy identified the following opportunities:

- Improve connectivity to the surrounding cultural precinct, Goods Line and the city
- Internal remodelling of the Museum to provide
 - Designated areas for the five key disciplines and logical circulation for visitors
 - Additional gallery space to accommodate an increasing array of temporary and blockbuster exhibitions
 - Collocating office spaces to engender greater synergies between teams
 - Designated area for school groups including separate access, meeting areas, workshop spaces and bathrooms
 - Appropriate theatre, function and foyer space to accommodate government, non for profit, corporate, business and school events and functions
- Remodel the collections space to provide storage conditions that are secure and environmentally controlled and that will be managed through an appropriate asset management system.

There are a series of quantitative and qualitative benefits identified for the project these include:

- Net benefits to NSW economy from induced tourism and tourism related expenditure
- Profit generated from operations
- Operational efficiencies
- Consumer surplus of attendees
- Non use value/civic pride
- Divestment of land
- Creative society
- Quality of life and improved liveability
- Integration and colocation benefits
- Improved learning outcomes
- Increased staff retention and morale.

The current position of the project in relation to Gateway Review Process is at the preliminary business case stage. This is the first Gateway Review to be undertaken for the project.

Conduct of the Review

A Strategic Review of the Renewal of the Powerhouse Museum was carried out on 22, 28 and 29 August at the Powerhouse Museum 500 Harris Street Ultimo.

The Gateway Review Team consisted of:

- Sue Power, NSW Treasury (Review Leader)
- Suellen Fitzgerald, Western Sydney Parklands and Parramatta Park Trusts
- Anna Cuthbertson, Johnstaff Pty Ltd
- Julian Bickersteth, International Conservations Services
- Elizabeth Williams, NSW Treasury (Review Manager).

The purpose of the review was to consider if sufficient procurement discipline is being applied to the development of the proposed project and to provide recommendations, where appropriate, on improvement opportunities.

The people interviewed by the Review Team are listed in Appendix A.

The documents reviewed by the Review Team are listed in Appendix B.

Findings of the Gateway Review Team

The findings include the Gateway Review Team's rating for each factor based on the following scale:

RED

It is the Gateway Review Team's opinion that this aspect poses a significant risk to the project and must be clarified or addressed before further consideration of the project is made.

AMBER

It is the Gateway Review Team's opinion that this aspect indicates a minor risk to the project and must be clarified or addressed as part of proceeding to the next stage of the project.

GREEN

It is the Gateway Review Team's opinion that this aspect has been given adequate consideration as not to jeopardise the success of progressing to the next stage of the project.

The Gateway Review Team's findings and observations in relation to each of the prescribed review topics are as follows:

1. Service Delivery

The Review indicated that there is a need for the project and that the proposed outcomes align with the Government's priorities and the Agency's plans.

The Review Team believe that the case for change was well articulated in the preliminary business case. However, the Review Team considers that the quality of the final business case would be improved by making clear and direct connections between the recently completed MAAS 2020 Vision, the proposed commercial strategy and the proposed infrastructure solution.

It is believed that a greater emphasis on the extraordinary collections held by the Institution and the opportunities for enabling their display for the benefit of the community would further support the case for change.

The Review Team consider the service delivery aspects of the project to be

GREEN

2. Affordability and Value for Money

The Review indicated that the preliminary business case does not clearly describe how the project is affordable.

The Review Team notes that the preferred option requires a \$350m investment from Government. Given the scale of funding required and the scope of this option, the Review Team considers that the final business case would be enhanced by providing options for staging the project.

It is recognised that the framework and demand for the project has been well established within the documentation, but multiple aspects would benefit from the inclusion of a staged delivery model.

For example, staging the Museum building works into distinct projects, identifying the funding opportunities and requirements for those projects and the benefits that will be realised from each project whilst aligning the project to the master plan.

The Review Team recommends that a value management study should be undertaken before the submission of a final business case.

The Review Team also recommends that the final business case would be strengthened by including and providing:

- Further clarity on the proposed commercial strategy that underpins the preferred option, including exploring all possible commercial options that might benefit the Museum.

The Review Team acknowledged the creative thinking displayed by the MAAS Executive in identifying potential revenue flows from non-traditional operations, but, having advanced down this path, encouraged the MAAS to be bolder with its commercial thinking to maximise the revenue benefits of such a unique opportunity

- Greater assessment and testing of the opportunities for maximising revenue streams
- Clarity around the inputs and outputs of how the investment in the financial appraisal have been brought together
- Clarity of the diverse funding streams that have been identified
- Greater articulation on the risks associated with not undertaking the proposal.

The Review Team consider the affordability and value for money aspects of the project to be **RED**

3. Sustainability

The Review indicated that the social, economic and environmental impacts associated with the project have been identified. These impacts are aligned with sustainability policies and are manageable.

The Review Team concluded that consideration of the long term sustainability of the Museum has been shown, but could be better articulated in the final business case, in particular the financial sustainability resulting from the preferred option.

The Review Team consider the sustainability aspects of the project to be **GREEN**

4. Governance

The Review indicated that a budget and program have been agreed but it is recognised that further funding is required to finalise the business case.

The Review Team consider that a Project Team with the appropriate skills and experience has been established. However, it is recommended that early procurement of project management expertise to bolster, guide and steer the capability of the project team is essential in finalising the business case. This is particularly important for the buildability component of the project.

The Review Team is impressed by the quality of the new Executive Team at MAAS, and is confident in its ability to show internal and external leadership and identify and act on gaps in its expertise. External interviewees confirmed the Review Team's confidence in the strength and energy of the Executive Team.

The Review Team believes that consideration should be given to:

- Inviting INSW onto the steering committee
- Establishing a trustee subcommittee to oversee the project.

The Review Team considers that the governance structure needs refinement with greater consideration given to accountability flows and the allocation of roles and responsibilities. For example, the Review Team is of the opinion that the project sponsor should be an individual and not an entity as outlined on page 59 of the preliminary business case.

The Review Team consider the governance aspects of the project to be **AMBER**

5. Risk Management

The Review indicated that the major risks of the proposed project have been identified and a framework for dealing with and managing risk requires further development.

The Review Team acknowledges that a substantial risk register has been developed for the preliminary business case and that further risk identification, monitoring and assessment (including mitigation strategies) will be undertaken as part of the final business case.

The Review Team consider that accurate forecasting of visitation numbers is critical to the financial and economic viability of the project.

The Review Team consider the risk management aspects of the project to be **GREEN**

6. Stakeholder Management

The Review indicated that stakeholders affected by the proposed project have been identified. These stakeholders are generally in favour of the project.

The Review Team notes that significant effort has been put into stakeholder management and consultation, which was reinforced during interview, and feels that it is important that this continues.

The Review Team considers that there is value for further Stakeholder engagement within the Department of Trade and Investment, including Arts NSW, to support and progress the final business case through the budget process. It is also considered that opportunity for community consultation and engagement should be explored.

The Review Team consider the stakeholder management aspects of the project to be **GREEN**

7. Change Management

The Review indicated that the implications of the proposed project on existing infrastructure, processes and people have only been partially considered.

The capacity of the Executive Team to manage the internal change was considered to be appropriate by the Review Team. However, it is recommended that a review to understand the full extent of the change effect before, during and after the proposed construction project needs to be completed.

The final business case requires the inclusion of a change management section which addresses the broad change agenda for the proposal.

In finalising the business case a change management plan should be developed.

The Review Team consider the change management aspects of the project to be

AMBER

Conclusions and Recommendations

Based on documentation reviewed and interviews conducted the Review Team recommend the issues raised in this report be addressed.

APPENDIX A: REVIEW INTERVIEWEES

The Reviewers are grateful to the following people that gave generously of their time at the interviews. Their contribution assisted the Reviewers in coming to an understanding of the project and the path that led to its formulation.

Person	Agency	Project Role
John Shine	MAAS	Chair, Trustee
Lisa Chung	MAAS	Trustee
David Riches	INSW	SICEEP Project Director
Rose Hiscock	MAAS	Director
Dolla Merrilees	MAAS	Director Curatorial Collections and Exhibitions
Michael Parry	MAAS	Director Public Engagement
Elizabeth Stratford	MAAS	Director, Corporate Resources, Chief Financial Officer
Peter Moreton	MAAS	Director Government Relations
Ross Hamilton	Ernst and Young	Partner Real Estate Advisory
Craig Mickle	Ernst and young	Partner Economics, Regulation and Policy
Nigel Oliver	UTS	Director Program Management Office
Debra Dawson	SHFA	Executive Director Darling Harbour Transition
Mary Darwell	Arts NSW	Executive Director
Christine Kwong	FJMT Architects	Principal
Jeff Morehen	FJMT Architects	Managing Director

APPENDIX B: DOCUMENTS REVIEWED

Document Title	Author	Date of Publication
Preliminary Business Case for the Renewal of the Powerhouse Museum	Museum of Applied Arts and Sciences	18 August 2014
FJMT Design Vision	FJMT	2014
Museum of Applied Arts & Sciences Commercial Real Estate Strategy	Ernst and Young	August 2014
Museum of Arts and Applied Sciences – Powerhouse Refurbishment and Expansion	Rider Levett Bucknall	July 2014
Planning Advice Powerhouse Museum Master plan Study	JBA Urban Design Consultants	July 2014
Summary of Commercial Returns	Estate Master	2014

Appendix E – Value Management Workshop findings

Museum of Applied Arts & Sciences



Powerhouse Museum

Value Management Review of Renewal Staging

September 2014

Prepared by



The Australian Centre for Value Management

Contents

<u>1.0. SUMMARY REPORT</u>	<u>1</u>
1.1. Introduction	1
1.2. Value Management Review	2
<u>2.0. BUILD SHARED KNOWLEDGE AND UNDERSTANDING</u>	<u>3</u>
2.1 Value and Value-for-Money	3
2.2 Powerhouse Renewal Value Factors	4
Purpose of MAAS	4
Purpose of Powerhouse Renewal Project	4
Intended Benefits	4
Important Features & Characteristics	4
2.3 Givens	5
2.4 Key Assumptions	6
<u>3.0 STRATEGY OVERVIEW</u>	<u>7</u>
3.1 Renewal Strategy	7
THE MUSEUM	7
THE HARWOOD BUILDING	8
3.2 Staging Options	11
3.3 What's the optimal packaging / sequence for staging the preferred option?	19
3.4 Key Work-streams to Progress Project Planning	20
<u>4.0. VMR CONCLUSIONS & ACTIONS ARISING</u>	<u>22</u>
<u>APPENDIX 1: WORKSHOP PARTICIPANTS</u>	<u>23</u>
<u>APPENDIX 2: WORKSHOP AGENDA</u>	<u>24</u>
<u>APPENDIX 3: INTRODUCTION TO VALUE MANAGEMENT</u>	<u>25</u>

1.0. Summary Report

1.1. Introduction

The Powerhouse Museum, located on Harris Street Ultimo, was opened in 1988, Australia's Bicentennial Year. It comprises several heritage and modern building elements to house a world class and unique collection.

Its mission is to be a leading museum of applied arts and sciences, inspiring and transforming our world.

This mission is being compromised through inability of the facilities to meet required standards of presentation and visitor amenity, with the museum experiencing a serious collapse in visitations and revenue. It is relying on an increasing level of government subsidy to meet its expenses.

The facilities have in large measure reached the end of their economic life and protection and preservation of the heritage elements further compromises financial viability and also creates an inability to upgrade parts of the museum to meet environmental control and Work Health and Safety (WHS) performance requirements as would any newer facility.

Without changes to the facilities the current trend in falling visitations and revenue will simply continue to exacerbate.

A strategy for redeveloping i.e. "renewal" of the museum, has been developed and tested in a preliminary business case. This examined a range of options and recommends a preferred strategy, that requires a substantial injection of capital to enable the investment to be realised.

The strategy identified the following opportunities:

- Improve connectivity to the surrounding cultural precinct, Goods Line and the city
- Internal remodelling of the Museum to provide:
 - Designated areas for the eight key disciplines and logical circulation for visitors;
 - Additional gallery space to accommodate an increasing array of temporary and blockbuster exhibitions;
 - Collocating office spaces to engender greater synergies between teams;
 - Designated area for school groups including separate access, meeting areas, workshop spaces and bathrooms;
 - Appropriate theatre, function and foyer space to accommodate government, non for profit, corporate, business and school events and functions; and
- Remodel the collections space to provide storage conditions that are secure and environmentally controlled and that will be managed through an appropriate asset management system.

The recent Gateway Review of the Preliminary Business Case rated the project as having been given adequate consideration to proceed to the next stage, except in relation to:

a) Affordability and Value for Money

"Given the scale of funding required and the scope of this option, the Review Team considers that the final business case would be enhanced by providing options for staging the project."



It is recognised that the framework and demand for the project has been well established within the documentation, but multiple aspects would benefit from the inclusion of a staged delivery model.

For example, staging the Museum building works into distinct projects, identifying the funding opportunities and requirements for those projects and the benefits that will be realised from each project whilst aligning the project to the master plan.

*The Review Team **recommends that a value management study** should be undertaken before the submission of a final business case.*

The Review Team also recommends that the final business case would be strengthened by including and providing:

- *Further clarity on the proposed commercial strategy that underpins the preferred option, including exploring all possible commercial options that might benefit the Museum. The Review Team acknowledged the creative thinking displayed by the MAAS Executive in identifying potential revenue flows from non-traditional operations, but, having advanced down this path, encouraged the MAAS to be bolder with its commercial thinking to maximise the revenue benefits of such a unique opportunity;*
- *Greater assessment and testing of the opportunities for maximising revenue streams;*
- *Clarity around the inputs and outputs of how the investment in the financial appraisal have been brought together;*
- *Clarity of the diverse funding streams that have been identified; and*
- *Greater articulation on the risks associated with not undertaking the proposal."*

b) Governance

"It is recommended that early procurement of project management expertise to bolster, guide and steer the capability of the project team is essential in finalising the business case. This is particularly important for the buildability component of the project."

1.2. Value Management Review

A Value Management Review was proposed to identify, test and validate staging options for the renewal of the Powerhouse Museum for analysis and input to the project's business case. This was held at the Powerhouse Museum on 24th September 2014. The list of participants is included at **Appendix 1**. The workshop agenda is included at **Appendix 2**.

ACVM facilitated the workshop and prepared this report of its outcomes.

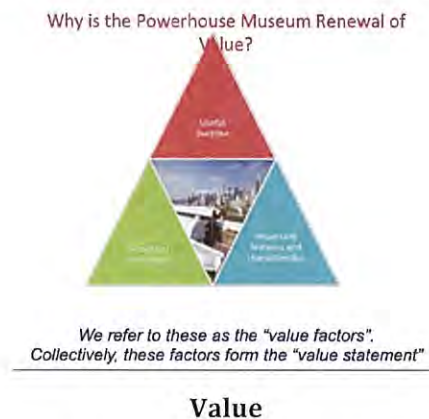
2.0. Build shared knowledge and understanding

This workshop session did not require any detailed project familiarisation as all the participants already had a detailed appreciation. Instead the session focused on the renewal concept and several draft staging approaches.

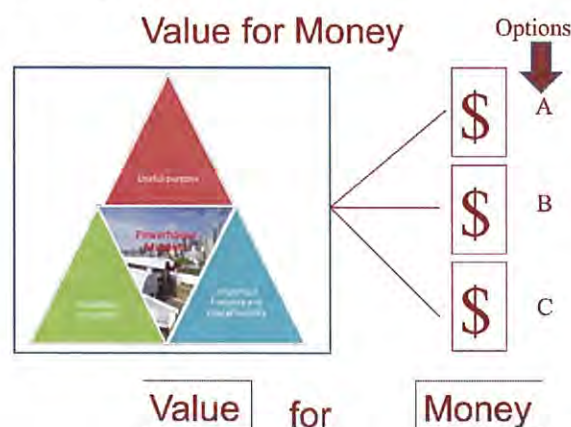
2.1 Value and Value-for-Money

One of the essential elements of the Value Management Process (as defined in the Australian Standard for Value Management - AS 4183-2007) is to identify the 'value factors' of an entity (in this case, the Powerhouse Renewal). These Value factors, taken together, form a "value statement" for the entity and are defined as the combination of the useful purposes fulfilled by that entity, the beneficial outcomes from fulfilling those purposes and those other features/characteristics of the entity that are of particular importance or consequence. These three factors – useful purposes, benefits and important characteristics – in combination, determine the value placed on the entity from multiple perspectives.

It is important to recognise that the perceptions of purpose, benefits and importance differ from person to person and, from organisation to organisation and so one task of this workshop was to capture those perceptions, and to facilitate shared understanding of them. This concept of value is illustrated in the following diagram.



The notion of value for money builds on this model of value, and is shown in the following diagram. A distinguishing aspect of this model is the separation of "value" from "money" meaning that a basis is provided to enable comparisons between options to determine which option (or combination of options) will provide the best value for the amount of money to be expended.



2.2 Powerhouse Renewal Value Factors

Purpose of MAAS

1. To be a catalyst for creative expression of curious minds.
2. To provide cultural leadership and be an integral part of Sydney's global brand.

Purpose of Powerhouse Renewal Project

3. To revitalise the museum's cultural significance and ability to make its collections accessible to the community.
4. To deliver a world-class contemporary Museum.
5. To reverse a downward trend in attendances and revenue.
6. To reposition the museum to realise more revenue diversity and business operating model to minimise reliance on government subsidy.
7. Ensuring fit-for-purpose facilities – for all aspects of the museum's functions and activities.

Intended Benefits

8. Increased patronage of the museum's exhibits and events.
9. Reduced level of government subsidy.
10. Increased revenue and sponsorships.
11. Enhanced reputation.
12. Protection, conservation and enhancement of the collection.
13. Increased visitation to the State.

Important Features & Characteristics

14. Re-establishing the museum's global standing.
15. Contributing to the knowledge economy as a learning facility.
16. Re-establishing the museum's standing within the State and across Australia.
17. Integrating the renewal of the museum into the Darling Harbour precinct.
18. Improving connectivity and accessibility.
19. Adopting a strategic approach to the redevelopment of the museum and its facilities.
20. Diversifying the museum's funding base.
21. Investing in future growth.
22. Realising the highest and best use of the museum's assets.
23. Taking a proactive approach to investment.
24. Actively reviewing the collection and sustaining its cultural and heritage value for the community.
25. Improving functionality, including flexibility of the facilities for accommodating and displaying the collection.
26. Improving safety and functionality of behind the scenes / supporting facilities – including storage, restoration, conservation and movement of exhibit items.



27. Increasing opportunities for collaboration with other museums and cultural organisations.
28. Creating a sustainable operating regime for the museum.
29. Capitalising on the opportunities presented with the Darling Harbour precinct's revitalisation and developments.
30. Realising and optimising commercial revenue opportunities.
31. Attracting sponsorships that support the museum financially and that enhance the collection's cultural value.
32. Optimising technologies in the museum.
33. Creating attractive career opportunities.
34. Improving operational efficiency.

Please note that these have been numbered for reference purposes only – they are not in any particular order of priority.

2.3 Givens

A further step in the process of building shared knowledge and understanding about the project was to determine those aspects of the project that could be taken as “given”. This helped to set parameters within which the workshop could proceed.

As an example of the kind of things that should be put forward during this exercise, the facilitator used planning for the Olympic games as a case in point. In planning and designing the games facilities, the opening date of the games is “given” and non-negotiable. By the time design commences, the site for the games is usually decided and, therefore, “given”. Some inclusions such as an athletics track and swimming pools are also “given” but others are optional and negotiable. The exact length of the track is “given” as is the length of the pool, but the number of seats and the configuration of the stadia were not given.

For the Powerhouse Renewal the following list was affirmed as the key givens that the strategy has to respond to. This is not an exhaustive list and will be added to and some challenged as the next planning steps are undertaken.

1. The location of the museum. *(i.e. it will remain in its present location.)*
2. The existing facilities. *(These include the key buildings in Ultimo, Sydney Observatory and a facility at Castle Hill as well as the train museum at Thirlmere.)*
3. The land and property assets available to use. *(The renewal is focused on those at Ultimo but as part of an overall asset management plan.)*
4. Heritage obligations to parts of the facilities. *(Key elements of the existing facilities will require ongoing heritage protection but with operational uses that are compatible with these obligations.)*
5. The collection. *(i.e. it may be added to, but items are not culled from the collection.)*
6. Falling attendances and revenue. *(NB: this existing trend is something that the renewal strategy is intended to challenge and reverse.)*
7. Precinct developments – Darling Harbour Live. *(Surrounding developments that will revitalise the whole precinct and affect how the Powerhouse museum relates to and addresses the new thoroughfares that visitors to the area will be using.)*



8. WH&S issues with the existing storage and workshop facilities & exhibition facilities and staff areas. *(These constrain some activities and use of the spaces adding to inefficiencies and risks that have to be managed.)*
9. Lack of commercial opportunities with the existing facilities. *(Inhibiting opportunities to source revenues to support the museum's operations.)*

2.4 Key Assumptions

1. The location for storing, conserving and managing the collection – Sydney Observatory, Thirlmere, Castle Hill + Powerhouse. *(A holistic approach and one that optimises how these are made effective use of.)*
2. The existing facilities provide insufficient resources to properly display, conserve, maintain, secure and operate the collection.
3. Facilities at Ultimo are not fit-for-purpose.
4. Some of the land / property can be sold off to help fund a redeveloped museum.
5. There will be increased compromise of core functions if the facilities are not renewed.
6. There will be a rate of visitation increase with renewed facilities and related revenue.

3.0 Strategy Overview

The group was taken through the features of the current strategy for renewal and was able to ask questions of clarification as this proceeded. Some preliminary staging options descriptions were tabled and also allowed for Q&A. This also included challenges to the envisaged staging approach and how these aligned with the earlier defined Value Factors.

3.1 Renewal Strategy

The preferred renewal strategy, that will deliver optimal value and value for money, is referred to as ***Option 6 Refurbish, re-orientate and renew Harwood*** in the Preliminary Business Case¹. According to the MAAS Commercial Strategy, to best meet the functional requirements of the Museum, the following is required:

- The existing Museum remains the main site for the Museum, however major renovations need to be undertaken to address the key concerns.
- The Harwood Building needs to be redeveloped to provide additional gallery space for the Museum with the remainder of the site redeveloped.
- New development needs to integrate with the adjoining Museum and be sensitive to surrounding development whilst maximising the commercial and subsequent revenue opportunities.

The Museum

The major works recommended within the Commercial Real Estate Strategy and Masterplan Concept Drawings include:

- Re-orientation of the entry of the Museum to front Hay Street, which will link the Museum with the city, optimise exposure to the Goods Line and the light rail, which will connect the Museum with Darling Harbour and Central Station;
- The existing building, which runs along Harris Street is remodelled to provide a glass frontage and to house offices, the public library and a new working shared storage facility – with the shared storage visible to Harris Street, attracting pedestrian and vehicular traffic to the museum; and
- Internally, the museum will be remodelled to provide:

Designated areas for the eight key disciplines and logical circulation for visitors;

Office areas to be co-located to drive greater synergies between teams;

Designated area for school groups with separate access/ exit options, meeting area, workshop spaces and bathrooms; and

Appropriate theatre / function / foyer space to accommodate the needs of the events component of the business and to cater for a multitude of clients including school groups, corporates, government and not-for-profits.

¹ The information presented in this section has been extracted from the Preliminary Business Case.



The Harwood Building

The Harwood Building will be redeveloped by the private sector to include the following:

- Site to be redeveloped to maximise its frontage to the patronage from the goods line and UTS student traffic;
- Additional gallery space is essential for the Museum and this will be constructed on the corner of Hay and Macarthur Streets. A footbridge will be constructed over Macarthur Street to integrate the two Museum buildings. The 'state of the art' exhibition and gallery space is expected to provide a significant increase in the capacity of the Museum to host temporary exhibitions – particularly 'blockbusters';
- The ground level of the site fronting the goods line will be redeveloped to provide retail accommodation, maximising the increased pedestrian patronage anticipated as a result of the operating goods line and additional precinct UTS student traffic;
- Above the podium, a 30-level residential tower will be constructed (STCA);
- A mixed use commercial development will be developed to front Mary-Ann Street²;
- The existing workshop in the Harwood building will be partially relocated into the Powerhouse building, with the remainder of the workshop, which does not need to be located on the Museum site, relocated out to the Powerhouse Discovery Centre at Castle Hill; and
- The car park that is currently held by the facility is sold to realise its market value (approximately \$9 million).

The redeveloped Harwood Building will have the capacity to accommodate other arts organisations seeking relocation, for example, Opera Australia and the Brandenburg Orchestra.

² It is important to note that the Museum will not own either the commercial or the residential space. This will become owned by the private developer.

Table 1: Advantages and disadvantages associated with Option 6: Refurbish, re-orientate and renew Harwood

Advantages	Disadvantages
Operational The refurbishments under the Base Case will facilitate compliance with core requirements under the MAAS Act, as collections will now be stored in conditions, which are relatively protected from the elements. Development of an iconic and purpose built facility which will result in international acclaim and recognition. Harwood Building will now host state of the art exhibition spaces. Facilities will now be integrated with the existing Darling Harbour redevelopment, Goods Line Redevelopment and city, increasing the attractiveness of the site to visitors. Financial sustainability Museum will secure access to funding from the private developer in return for the renewal of the Harwood site The Museum will secure access to sustainable and diversified funding streams by having access to rental revenues from the redeveloped Harwood site. The development of an iconic, purpose built facility will facilitate large increases in visitation numbers, as well as the attraction of blockbuster events to the facility on a more frequent basis. In turn this will generate increased revenues from donations, sponsorships and grants from Destination NSW. Visitation The development of a purpose built facility, which is integrated with the redeveloped Cultural Precinct will attract increasing visitation. The development of an iconic, purpose-built facility, as part of Sydney's redeveloped cultural precinct is likely to significantly assist in the development of more productive collaborations with international partners. The Museum will be able to attract and host 'blockbuster' events more frequently – every three years. Financial sustainability will facilitate the development of sufficient funding for a permanent exhibition renewal cycle, which is consistent with international benchmarks (i.e. renewal of the permanent exhibition every 6 to 7 years). This will generate long term interest from visitors, and maintain growing visitation over the long term.	Operational Change management strategies are required. MAAS will be required to go through a rigorous tender process in order to identify the appropriate private developer that will undertake the renewal of the Harwood Building site. Financial sustainability Cost of capital infrastructure is incurred. Risks Disruption to the operations of the museum during renewal process Project development risk – particularly, there is a risk that the development application is denied Private developers are not interested in an arrangement whereby the Museum gets to hold the retail component of the redeveloped Harwood site. Demand risk Visitation Retail rent Blockbusters and temporary exhibitions Private development Changes in service delivery (i.e. property ownerships), affecting the operations of the Museum Higher than expected development costs Lack of support for the expanded facility from stakeholders, education, community and arts and cultural groups



Under **Option 6**, the Museum would require \$350M³ (essentially covering the capital costs of the proposed works) in Government investment to secure the development of an iconic, 'state of the art' facility that will deliver significant economic and social returns to the state of NSW. A facility with diversified and sustainable funding streams over the following 20 years to enable the renewal of the permanent facility at a 'good practice' rate and a facility that will continue to provide a 'state of the art' customer offering over its life-cycle.

Summary results for the preferred option Option 6 (Refurbish, re-orientate and renew Harwood):

1. Generates a positive economic contribution to the State
2. Generates significant qualitative benefits, including:
3. Growing Museum audiences to 1.5 million visitors annually
4. Providing an iconic state of the art facility which will deliver significant social returns to the State
5. Enabling the State to further capitalise on the redevelopment of the cultural precinct
6. Contributes to the State meeting its NSW 2021 goals, particularly in respect of:
7. Increasing visitation and participation in arts and cultural activity
8. Increasing tourism in NSW
9. Increasing the economic contribution of the creative economy
10. Provides the Museum with a sustainable business model to reinvest in its permanent exhibitions, thus retain a competitive customer experience, without ongoing additional Government assistance.
11. If the NSW Government fails to intervene, it will incur significant costs in the long run, including added capital renewal and maintenance costs for the existing ageing facility:
12. Under the Base Case, the Museum will require an additional \$223 million (in discounted, FY15 terms) from the Government in order to simply maintain the 'status quo' (i.e. while not delivering better outcomes or the Community or providing the Museum with a sustainable business model)
13. Under the preferred option, the Government will be required to provide the Museum with \$350 million in funding. This is only \$127 million above the costs required to maintain the 'status quo'.

³ This is the estimate from the Preliminary Business Case so it is subject to change with the Final Business Case.



3.2 Staging Options

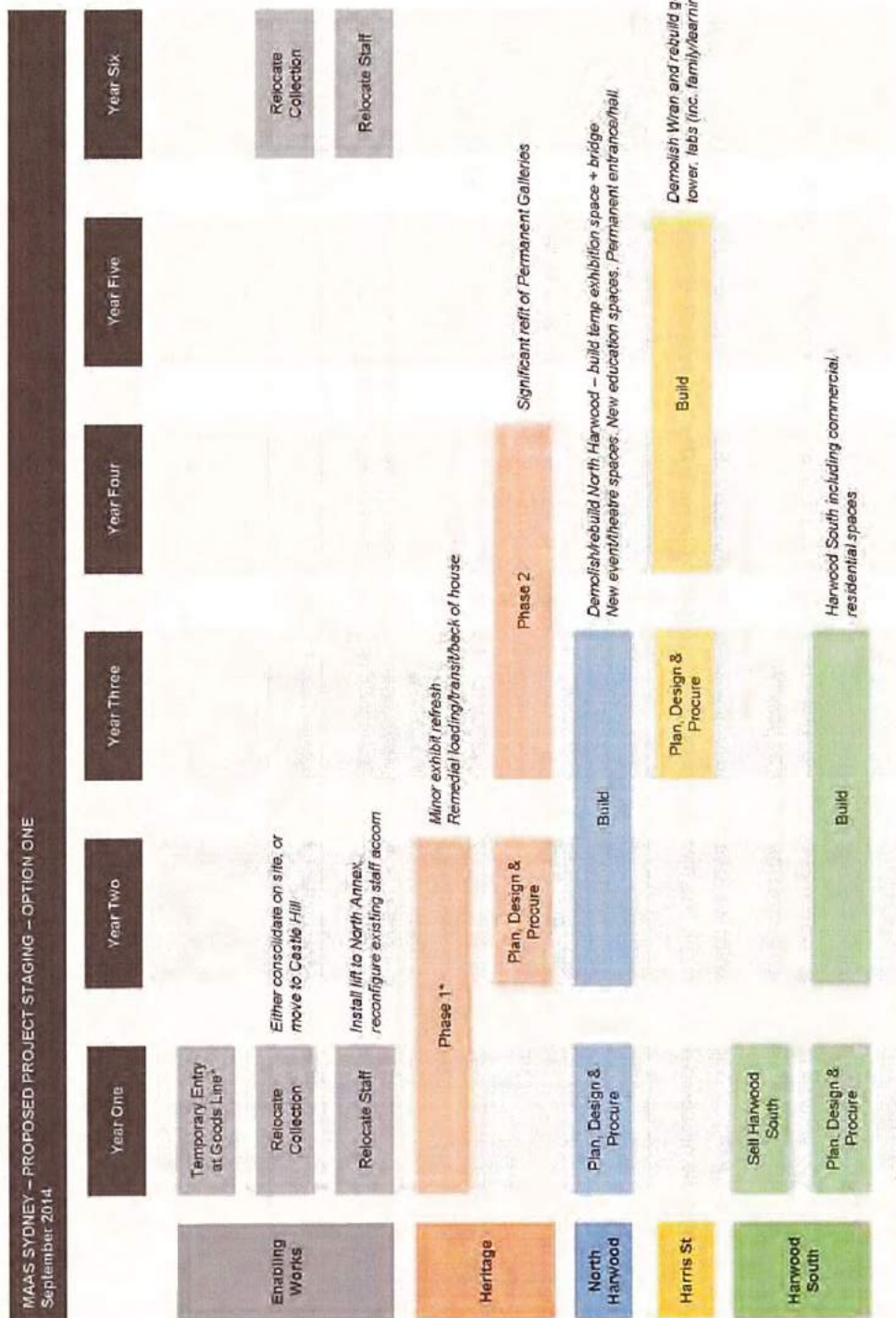
Three options for staging the preferred Option 6 were presented and discussed as follows:-

Staging Objectives (in order of importance)

1. Minimise disruption to business operations.
2. Complete development as soon as possible to return to "business as usual" & minimise risk of construction cost increases.
3. Receive additional revenue streams as soon as possible.

After achieving DA Approval, which we have been advised will take approximately 18 to 24 months, we consider there are three different options for staging the proposed development. The three Options are summarised in the Table One and evaluated in the Matrix overpage.

Option	Staging Description	Estimated Construction Time Frame
One	Stage One – Construct new foyer fronting MacArthur Park, Touring Hall and Bridge Stage Two – Refurbish the Heritage Buildings Stage Three – Replace Wran building and construct new group foyer learning spaces and theatres fronting Harris Street.	18 months
Two	Stage One – Refurbish the Heritage Buildings Stage Two – Construct new foyer fronting MacArthur Park Stage Three – Construct Touring Hall and Bridge Stage Four – Construct new group visitor foyer, learning spaces and theatres fronting Harris Street Stage Five – Construct new Harris Street building in replacement of Wran Building	24 months
Three	Stage One – Undertake total development concurrently.	12-18 months

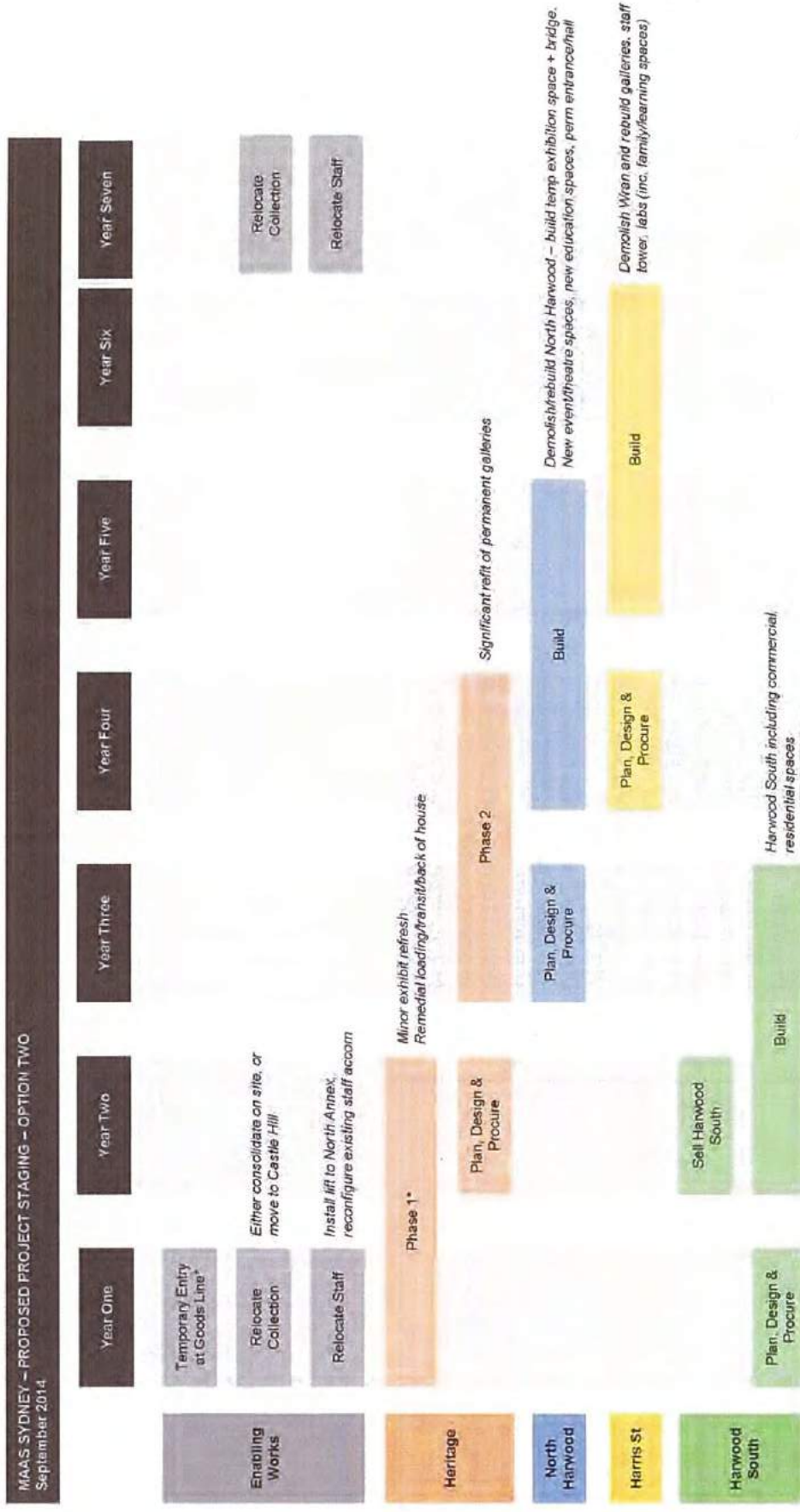


Positives	Negatives	Improvement ideas/suggestions
Option 1		
Stages 1, 2 & 3		
Stage 1 only⁴ - Improves some exhibition space and visitor facilities / front-of-house - It's a practical way to proceed - Creates opportunity to then demolish and monetise the balance of the site - Minimises operational disruption to day-to-day activities - Can isolate the works activities from normal operations - It addresses a number of the key value factors - Delivers some increase in funding – some improved diversification of income - Stage 1 is divisible – separate the commercial southern development of Harwood - Creates space that would encourage others to bring exhibits to the museum	- Must address entry via railway line because of imminent goods line public access by Dec - Doesn't fix key areas - Ongoing compromises to operations Would not enable sustainability (diversified income) - Leaves many WH&S issues in other facilities unresolved especially Harwood workshops - Doesn't resolve collections needs - Doesn't address collections, revenue & OH&S as well as teaching / learning - Having to relocate existing plant - Funds would be prioritised to urgent facility issues rather than sustainable improvements - High interim costs to move collection around etc.	- Consider use of the Wran building for storage of the collection – although there would be challenges in doing so - Consider taking storage of more of the collection to Castle Hill instead or as well (~\$2m+) - Could further split works to Harwood building and surrounds especially residential / commercial development – take it through DA process to achieve highest and best use to optimise value, including strata for ongoing ownership of the commercial elements - Consider early or later delivery of Harwood south commercial development to avoid impacts of surrounding developments on market conditions – includes need for alternative workshops+ +Include costs of base case issues such as critical OH&S and especially in heritage areas - consider staff being relocated into northern annex + lift - consider modifying part of Wran building for teaching space+ includes toilet facilities
Stages 1 & 2 only - new exhibition space - resolved remaining OH&S in heritage facilities – including fire regulations - theatres café and workshop spaces are addressed – aids improvements in teaching/learning role - some additional commercial revenue - enables more exhibit displays	- Staff relocations necessary - Collection off-site - Staff in interim accommodation - Neglected parts of the building that still need excessive maintenance funds - Interactive learning spaces not resolved	- Consider adding teaching space at end of existing Wran building - Consider phasing learning spaces into every phase / stage - Consider when to do the switch house

⁴ The workshop was also asked to consider pros and cons for each stage – on the basis that funding was not provided for any other stages.



Positives	Negatives	Improvement ideas/suggestions
Option 1		
All three stages		
- Fully functional education spaces are realised - Staff re-accommodated - Collection back on site and able to be maintained / conserved - Clarity of public circulation	- Possible approval timelines - Refurbishment is highly challenging and delivers less value-for-money	4. Consider heritage assessment of the Wran building 5. Consider how to integrate more use of technology

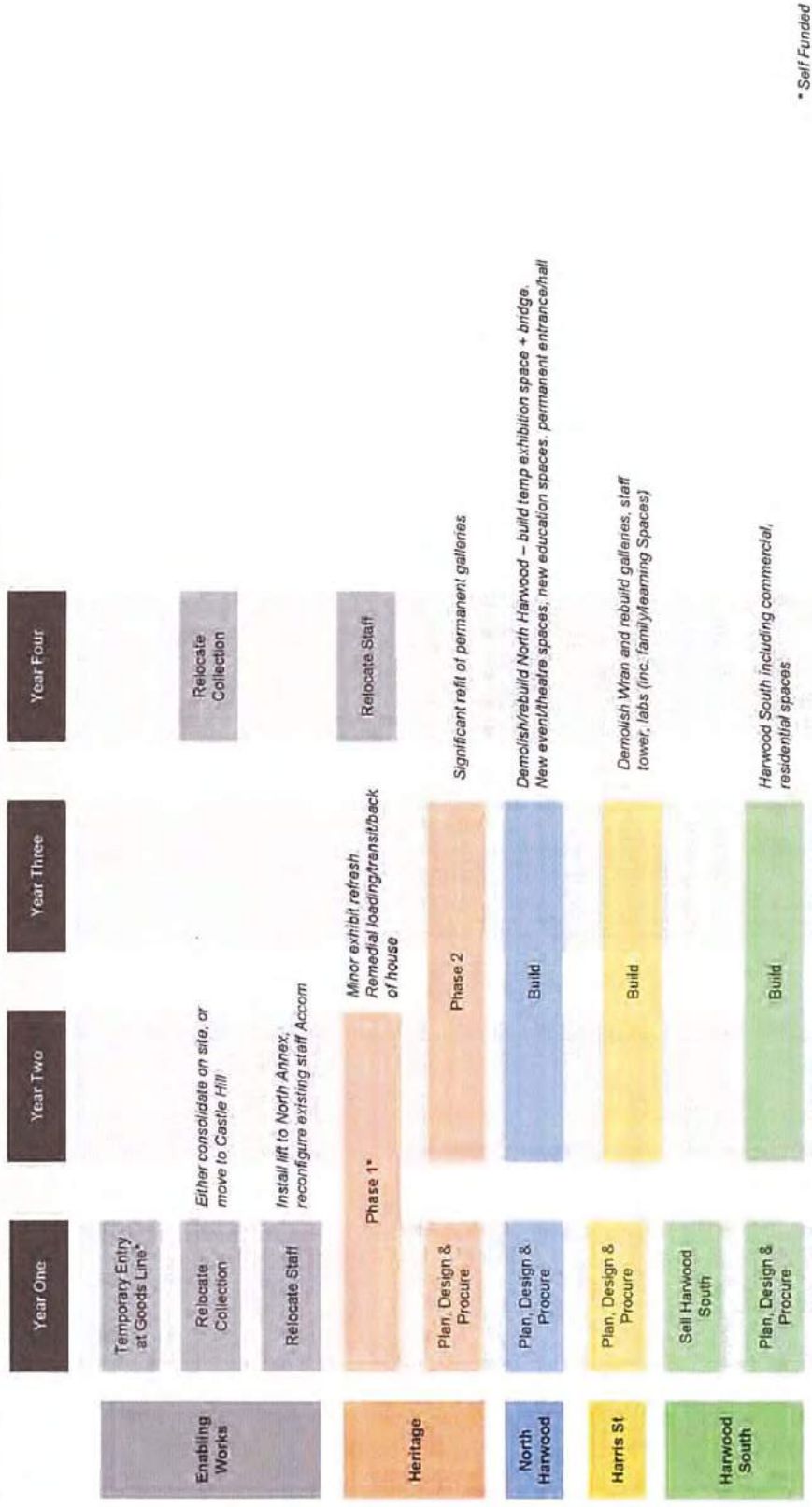




Positives	Negatives	Improvement ideas/suggestions
Option 2		
Stage 1 only Fixes some WH&S and building fabric issues	- Does not address priority value factors - Doesn't grow income - Doesn't resolve precinct access - Doesn't fix all WH&S issues especially in Harwood workshops - Potential embarrassment of having sub-standard facility and car park exposed to more public view - Mixed pedestrian and vehicular movements along the goods line corridor - Doesn't address switch house <i>Too many negatives – not a viable staging option</i> <i>Doesn't resolve entry or touring hall to attract visitors</i> <i>Fixing heritage obligations but doesn't fix the business</i>	- Consider moving out the collection as per option 1 - Consider early implementation of Harwood South commercial development



MAAS SYDNEY – PROPOSED PROJECT STAGING – OPTION THREE
September 2014





Positives	Negatives	Improvement ideas/suggestions
Option 3 • Sets timeframe to allow the business to operate optimally whilst key works are undertaken • Fully phased process rather than as separable stages • Possible economies in construction works • Enables staged handovers to enable fit-out for exhibits	To do it all at once – but it would force the business to close and breach contracts for forward booked exhibitions as well as dealing with ongoing staff costs. • Expectations for re-opening – extra resources to re-plan all exhibitions / exhibits • Some staff not required because have no exhibition skills • Have to move all collections out • Staff have to be relocated to work on planning for re-opening • Loss of reputation and visibility • International relationships • Long lead-time to re-plan major exhibits • Re-mobilisation is a highly resource intensive process • Increased risk that ramp-up of revenue when re-opening may not match expected funding needs – government subsidy would increase significantly • Loss of benefactors and donors	Staging at least keeps patrons interested and keen to come again when all works completed.



3.3 What's the optimal packaging / sequence for staging the preferred option?

The analysis of the above initial three options generated an improved package as follows:-

New Staging Option 4 of planning Option 6 becomes:	
Staging of Option 1 with following changes Stage 1: Address WH&S in heritage building earlier Split South Harwood off as a separable element Address the switch-house earlier Northern annex lift for staff to be decanted from Harwood Stage 2: Balance of the heritage Stage 3: Wran building and forecourt	8. Consider mixed solution some on-site and balance sent to Castle Hill 9. Need a workshops solution 10. Connection to the goods line

It was agreed that this staging option had the potential to deliver best value and best value for money. It responds to the higher priority value factors – addressing WS&H factors in areas of ongoing use at the same time as winning back visitors and generating increased revenue opportunities as early as practicable – including from the sale of some land fronting Harris Street.

The collection is managed by transferring items out of Harwood to Castle Hill and moving selected priority items into the Wran building as early as practicable to allow the sale of that site.

It will enable organisational and staff requirements to be sustained as the redevelopment takes place.

It was also agreed that this staging option should be subject to more detailed modelling and a refined description of the inclusions, exclusions and works packages through each stage.



3.4 Key Work-streams to Progress Project Planning

The participants identified the following principal work streams that the project team will need to define and action in the lead up to the next Business case and implementation plan.

Planning Development application Approvals – DA, Heritage, Air/Property Rights Update to asset plan to align with master planning	Question when best to look at architectural design development Focus on priority expenses to sustain safety / security
Procurement process for Harwood South Risk management strategy around commercial strategy	
Procurement process for balance of works <i>To be defined post workshop</i>	
Stakeholder planning / communications / marketing Presentation materials	
Business Operations Initiate transfer of collection items to Castle Hill to fully vacate the Harwood facility; Secure workshop facilities for ongoing care of the collection items; Staff Facilities and decanting Establish office space for decanting of staff	18 month program to relocate all of the collection
Exhibition Planning <i>To be defined post workshop</i>	Need a plan for usage of each space as its scheduled to be available – including exhibits and fit-outs etc.



Governance framework Establish PCG etc. Performance control and evaluation including benefits realisation	
Commercial Strategy <i>To be defined post workshop</i>	
Business Change Management <i>To be defined post workshop</i>	
Works Activities (tendering, contracting then demolitions and construction) <i>To be defined post workshop</i>	
Fundraising <i>To be defined post workshop</i>	



4.0. VMR Conclusions & Actions Arising

The main conclusions stated at the end of the workshop were as follows:

1. A viable staging approach has been identified – one that responds to the priority value factors of fixing the public experience and priority collection / exhibit items that can reinforce an increase in patronage and revenues to the museum.
2. It allows the museum to remain functional throughout and progressively enhances both the visitor and staff experience.
3. This staging approach also optimises the museum's contribution to funding of the renewal and minimises the government's required funding support.
4. The strategy is comprehensive and coherent and is expected to integrate with the asset management plan⁵ currently under development.
5. The key tasks have been recognised, including an update to the project's risks that will be undertaken in a separate workshop.
6. The implementation strategy can be revised to incorporate the staging requirements and associated resourcing, including the governance arrangements.
7. A revised proposed works sequence, development sketch plans and related cost plan and program budget can now confidently be developed for the next business case submission.

⁵ This will be based on the commercial real estate strategy but incorporate forward asset maintenance and renewals based on operational usage and asset life-cycle requirements.



Appendix 1: Workshop Participants

MAAS

Rose Hiscock rose.hiscock@phm.gov.au

Dolla Merrillees Dolla.Merrillees@phm.gov.au

Michael Parry Michael.Parry@phm.gov.au

Ernst & Young

Ross Hamilton ross.hamilton@au.ey.com

Craig Mickle craig.mickle@au.ey.com

Filipe Barros filipe.barros@au.ey.com

Emily Yackoub emily.yackoub@au.ey.com

Architects (francis-jones morehen thorp)

Christine Kwong ckwong@fjmt.com.au

ACVM Facilitators

Mark Neasbey	Director & Lead Facilitator	neasbey@acvm.com.au
--------------	-----------------------------	--

Alan Butler	Co-Facilitator	butler@acvm.com.au
-------------	----------------	--

Invited but unable to attend:

Elizabeth Stratford Elizabeth.Stratford@phm.gov.au

Peter Morton PeterMo@phm.gov.au

Adrian Renouf adrian.renouf@au.ey.com

Catherine Iliff catherine.iliff@au.ey.com

Jeff Morehen jmorehen@fjmt.com.au



Appendix 2: Workshop Agenda

11:30am	1.0 Workshop Welcome <i>(Strategic Context: why this group has been brought together, what we are expecting out of today and how the outputs will be used. - Gateway review feedback on strategic business case, necessity to define and test viable staging options, whilst sustaining and growing our business, business drivers / critical timings...)</i>	PH Exec - TBC
	2.0 Housekeeping, workshop objectives and process <i>Introductions – who is participating, their roles / perspective for the project</i>	Mark Neasbey (Workshop Facilitator)
	3.0 Value Factors The project's purposes, intended benefits and important features and characteristics. Givens and key planning assumptions.	Mark Neasbey (Workshop Facilitator)
	4.0 Overview of the current plan Overview of the preferred development solution including constraints and opportunities.	Architect team
	<i>Q&A WILL BE PROGRESSIVE</i>	
	5.0 Staging Options What are the opportunities / possibilities / musts? Generation of ideas: <i>Can we...by...?</i> <i>Evaluation and ranking of the ideas</i> Options packaging: melding of worthwhile ideas into staging options <i>What's the ideal sequence and timings? What key risks do we recognise with these?</i>	All
	6.0 Options Assessment Which option delivers best value-for-money? Why?	All
	7.0 Workshop Conclusions Key actions arising and directions to business case author(s).	All
5:30pm	Thank You and Workshop close	PH Exec - TBC

Appendix 3: Introduction to Value Management

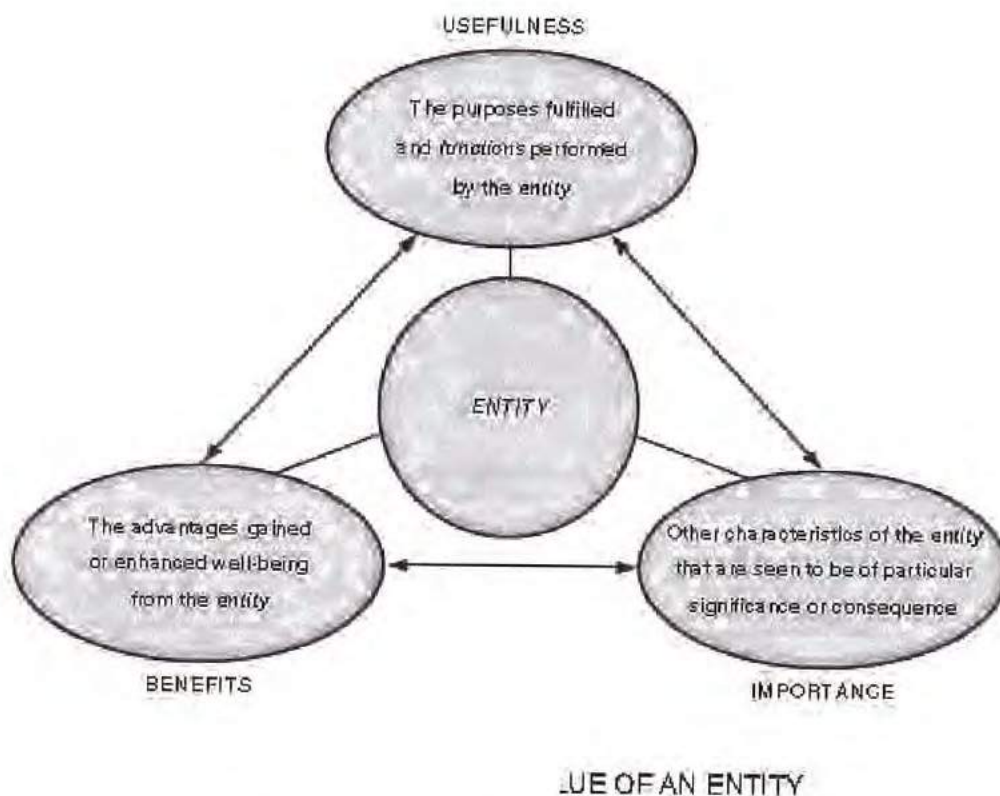
Definition:

Value Management is a structured and analytical process, which follows a prescribed Work Plan to achieve best value or, where appropriate, best value for money.

Guiding principles:

The term *value* is sometimes used as an abbreviation for *value for money*, monetary value or economic value.

The perceived usefulness, benefits and importance of an entity (i.e. those factors that determine its value) are interrelated and work in combination with each other:-



Within any group there are likely to be multiple perceptions of what is useful, beneficial and important about the subject of the Study. These multiple perceptions need to be recognized and captured in determining value.

Viewing an entity in the context of a broader system and exploring interrelationships may have substantial bearing upon the way in which the value of the entity is perceived and interpreted by stakeholders.

When comparing alternatives, value for money may be expressed as the relationship between

A measure of the value of the entity

A measure of the total cost of the entity

Value Management Studies depend upon specialists and others working together as a group, thereby gaining their collective knowledge, technical expertise and experience, plus the substantial additional advantages arising from their interaction and group dynamics.

A Value Management Study is likely to be more successful when group members:

- ◆ are involved throughout the whole of the Study's workshop stage;
- ◆ accept that the Study's overall interests are more important than sectional interests or personal concerns; and
- ◆ accept the group's commitment to the Study's objectives and outcomes.

It is essential that the Study group comprises members who:

- ◆ have the necessary breadth and depth of experience to achieve the Study objectives;
- ◆ have appropriate responsibility and authority; and
- ◆ are committed to work collaboratively.

In selecting group members, consideration should therefore be given to the following:

- ◆ personal commitment to interact openly with others;
- ◆ willingness to collaborate in pursuing best value or best value for money;
- ◆ receptiveness to new ideas;
- ◆ commitment to active participation throughout all stages of the Study;
- ◆ technical expertise required for the kind of entity being studied;
- ◆ knowledge and experience of the context and situation of the entity;
- ◆ appropriate responsibility and authority to make decisions affecting the entity; and
- ◆ credible representatives of stakeholder groups.

It is usual in Value Management to express functions in terms of active verbs and measurable nouns. Examples of verb-noun statements are:

'transfer energy'; 'teach children'; 'enable access'; 'contain liquid'; 'direct traffic'; 'shape metal'; 'coach netballers'; 'enhance image' and 'boost self-confidence'.

For a museum redevelopment these might include:-

'direct visitors'; 'protect exhibits'; 'provide security'; 'control access'; 'store exhibits'; 'maintain exhibits'; 'retrieve or transfer exhibits'; 'provide light'; 'provide privacy'; 'collect revenue'; 'present items for sale'; and so on.

Clarity around these functions allows for generation and testing of ideas and options for delivering or accommodating the functions of the museum.

Powerhouse Museum Renewal

The particular 'entity' that is being addressed in this VM is "Renewal of the Powerhouse Museum". So the relationship diagram of the value factors would look something like this:-

A draft set of value factors was gleaned from the projects background information.

These were used the workshop process to review and refine these statements as appropriate to ensure all relevant value information is defined – before staging options were tested.

Why is the Powerhouse Museum Renewal of Value?



We refer to these as the "value factors".
Collectively, these factors form the "value statement"

Appendix F – Staging options

A Value Management Workshop was conducted by the Australian Centre for Value Management on 24 September 2014.

As part of this process, the project team discussed and assessed a series of staging approaches for each of the short-listed project options.

- **Project Option 1 – Base Case** - We have prepared no staging approach for Project Option 1 as a result of the limited capital investment it involves
- **Project Option 4 – Refurbish and re-orientate** - We have prepared one staging approach for Project Option 4
- **Project Option 5 – Refurbish, re-orientate, remodel Wran and sell Harwood** - We have prepared one staging approach for Project Option 5
- **Project Option 6 - Refurbish, re-orientate, remodel Wran and renew Harwood (preferred option)** - Four staging options (Staging Options A, B, C and D) have been prepared for Project Option 6. The Value Management Workshop process found that Staging Option D is the preferred staging option.

Please note that in developing the staging options, we have assumed that:

- There is an 18 month DA Approval process commencing in June 2015 and ending in December 2016, after which construction can commence
- Before every separate Stage of works (apart from Stage 1), a new DA Approval process must be undertaken. Each process is expected to take approximately 12 months.
- In Year 1 of the staging timeline (i.e. 2015/16), enabling works are completed. This includes the installation of a temporary entry to the Goods Line, and relocation of staff and the collection
- In the final year of construction, staff and the collection are relocated.

This appendix provides added detail on each of the staging options prepared.

Base Case

As there is limited capital spend in the Base Case (approximately \$5 million), no staging plan has been established.

Option 4

Option 4 will be a two stage development, requiring two separate Development Approvals ("DA's").

Table 3: Staging Option 4

Stage	DA process	Steps	Construction timeline
1	The first step to undertake Option 4 will be to achieve a DA for 'Stage One' proposed works. We estimate that DA will be achieved in the first 18 months, (i.e. July 2015-January 2017).	Upon securing DA: • Construction of the new foyer to front Macarthur Park • Addressing the critical OH&S concerns in the Heritage buildings • Refurbishment of the Switch House. • Installation of a lift and reconfiguring the Northern Annex to provide functional office accommodation.	Stage One development will be undertaken over a 2 year period, concluding in January 2019
2	Concurrent to Stage One works being undertaken, the second DA will be secured. We envisage planning, design and achieving this DA will take 12 months, commencing in January 2018, with receipt of DA by January 2019	Upon securing DA: • Significant refit of the Permanent Galleries • Addressing remaining OH&S issues.	Stage 2 works are expected to be completed in January 2021.

Therefore, it is expected that under this staging approach:

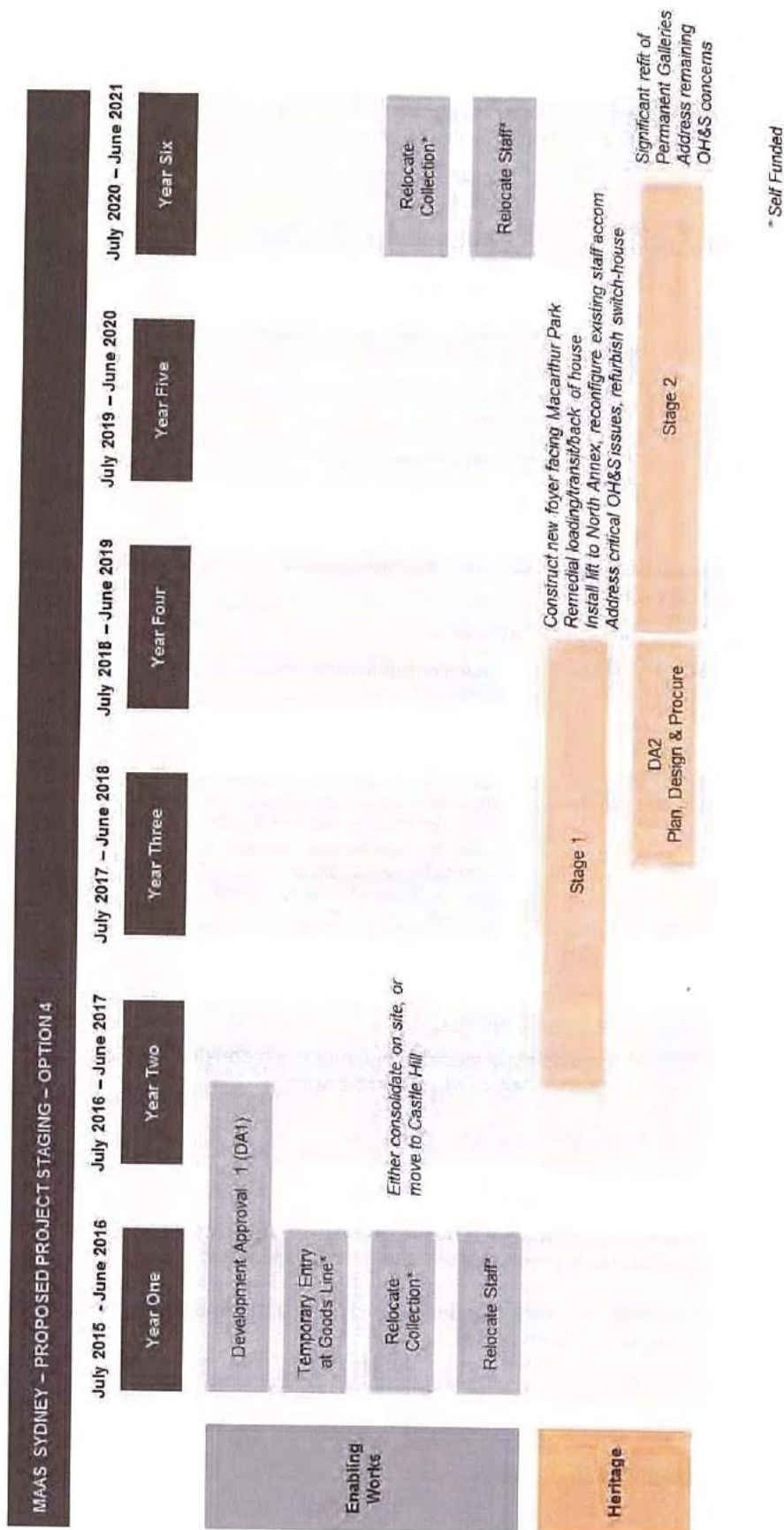
- The Museum will not be required to completely stop operations during construction. Instead, only parts of the facility will not be available to visitors at different stages
- The Museum will be fully operational again by July 2021 (i.e. the commencement of the 2021/22 financial year).

Works which need to be undertaken by the Museum whilst awaiting the Stage One DA include:

- Relocate those pieces of the collection which will be impacted by Stage One development (these can be consolidated elsewhere on site or relocated to the Castle Hill facility).
- Relocate employees that are currently housed in areas which are to be renewed to Castle Hill or elsewhere within the Powerhouse Museum facility.
- Planning of future exhibitions to be housed at the Powerhouse Museum, in preparation for completion of the development.

Figure 1 illustrates this staging approach.

Figure 1: Staging Option 4



Option 5

Option 5 will be a three stage development, requiring three separate Development Approvals ("DA's").

Table 4: Staging Option 5

Stage	DA process	Steps	Construction timeline
1	The first step to undertake Option 5 will be to achieve a DA for 'Stage One' proposed works. We estimate that DA will be achieved in the first 18 months, (i.e. July 2015-January 2017).	Upon receipt of DA: • Construction of the new foyer to front Macarthur Park • Addressing the critical OH&S concerns in the Heritage buildings (together with addressing the OH&S concerns relating to the loading area once the goods line is operational) • Refurbishment of the Switch House. • Installation of a lift and reconfiguration of the Northern Annex to provide functional office accommodation.	Stage One development will be undertaken over a two year period, concluding in January 2019.
2	Concurrent to Stage One works being undertaken, the second DA will be secured. We envisage planning, design and achieving this DA will take 12 months, commencing in January 2018 and receipt of DA by January 2019.	Upon receipt of the Approval: • Significant refit of the Permanent Galleries • Addressing remaining OH&S issues.	Stage 2 development will be completed in January 2021.
3	A third DA will be procured whilst Stage 2 works are being completed. This DA is expected to be secured by January 2020.	Upon receipt of the third DA: • Demolition of the Wran building • Construction of a new facility along Harris Street which will house the working Museum, office accommodation for the Museum staff and surplus office accommodation for leasing to a third party.	All construction will be completed by January 2022 upon which time staff and the collection can be relocated back into the Powerhouse Museum.

Therefore, it is expected that under this staging approach:

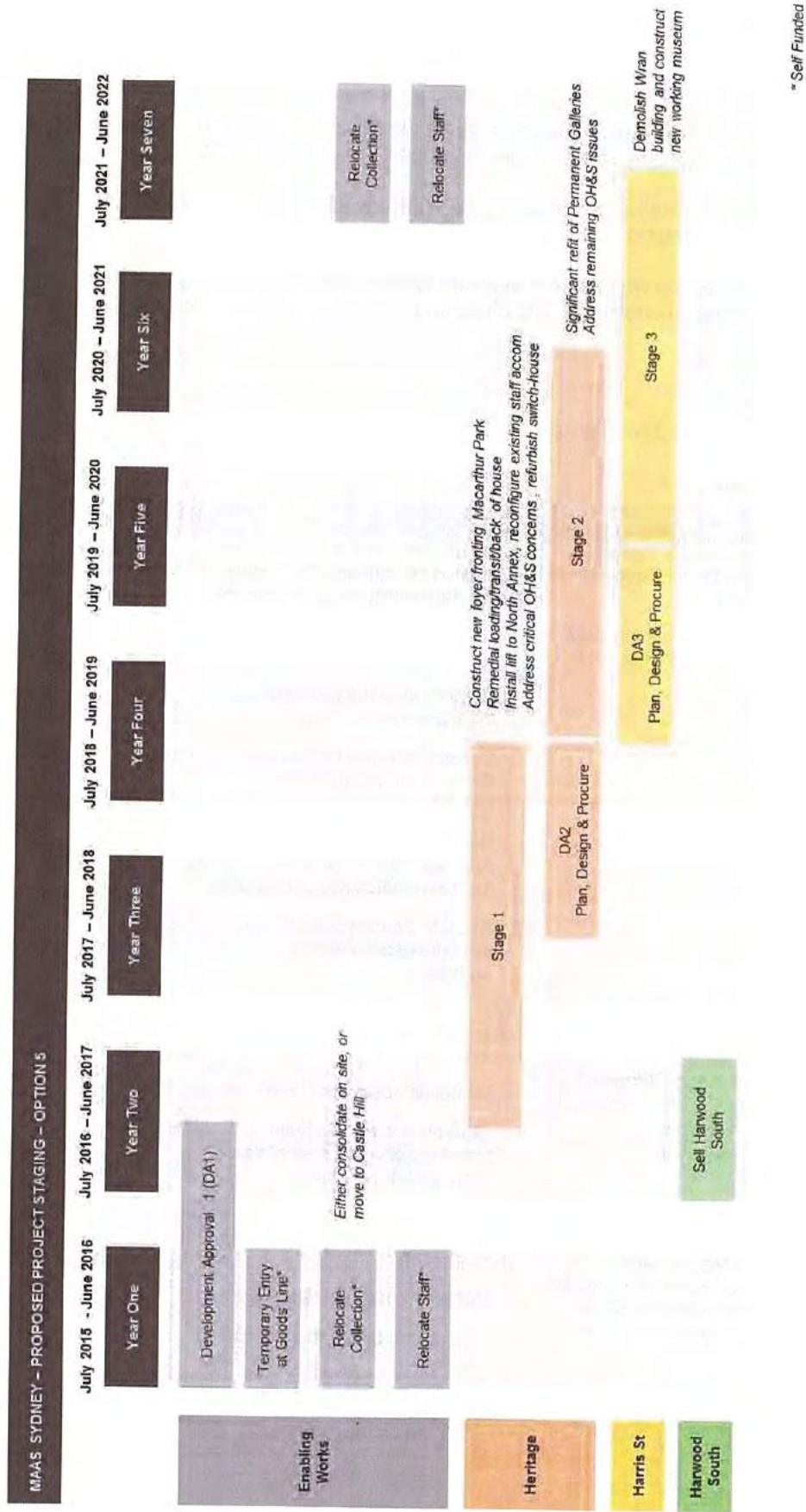
- The Museum will not be required to completely stop operations during construction. Instead, only parts of the facility will not be available to visitors at different stages
- The Museum will be fully operational again by July 2022.

Works which need to be undertaken by the Museum whilst awaiting the Stage One DA include:

- Relocate those pieces of the collection which will be impacted by Stage One development (these can be consolidated elsewhere on site or relocated to the Castle Hill facility.
- Relocate employees that are currently housed in areas which are to be renewed to Castle Hill or elsewhere within the Powerhouse Museum facility.
- Planning of future exhibitions to be housed at the Powerhouse Museum, in preparation for completion of the development.

Figure 2 illustrates this staging approach.

Figure 2: Staging Option 5



Option 6

As Option 6 was identified as the preferred project option, the Value Management Workshop, conducted by the Australian Centre for Value Management on 24 September 2014, was used to assess three potential staging options:

- **Option 6A** – A three stage development over 5 years which would enable the Museum to remain somewhat operational during construction, and fully operational by July 2022
- **Option 6B** – A five stage development over 6 years which would enable the Museum to remain somewhat operational during construction, and fully operational by July 2023
- **Option 6C** – A staging option whereby the Museum closes its doors for three years as all construction is completed in one stage. The Museum is expected to be fully operational again by July 2020.

Option 6A

Option 6A will be a three stage development, requiring three separate DA's.

Table 5: Staging Option 6A

Stage	DA process	Steps	Construction timeline
1a	The first step to undertake Option 6A will be to achieve a DA for 'Stage One' proposed works. We estimate that DA will be achieved in the first 18 months, (i.e. July 2015-January 2017).	Upon securing the first DA, which is anticipated by January 2017, Stage One of the development will involve: • Construction the new foyer to front Macarthur Park • Demolition of the Northern part of the Harwood building • Construction the Temporary Galleries and bridge connection to foyer. • Reconfiguration of the Northern Annex to install a lift and to provide functional office accommodation. • A minor refurbishment of the exhibition space will be undertaken.	Stage One (A) development will be undertaken over a two year period, concluding in January 2019.
1b	Concurrent to Stage One (A) works being undertaken, "Harwood South" will be sold and a second DA Application will be lodged. Planning and design for this DA will commence in January 2017 with approval expected by January 2018.	Upon DA, Stage One (B) works will commence immediately which involves: • Demolition of south Harwood • Commission for the South Harwood development of the proposed development.	Stage One (B) development will be undertaken over a two year period, concluding in January 2020
2	Concurrent to Stage One works being undertaken, a third DA application will also be secured. We envisage planning, design and achieving this DA will take 12 months, commencing in January 2018 with receipt of DA by January 2019.	Upon receipt of the Approval, Stage 2 works can commence immediately which involves: • Refit of Permanent Galleries • Addressing outstanding OH&S issues • Refurbishment of the Switch House.	Stage Two is expected to be completed in January 2021.

Stage	DA process	Steps	Construction timeline
3	A fourth DA will be procured whilst Stage Two works are being completed. This DA is expected to be secured by January 2020.	Upon receipt of the Approval, Stage Three works can commence immediately which involves: - Demolition of the Wran building - Construction of a new facility along Harris Street which will house the new group entry foyer working Museum, office accommodation for the Museum staff and surplus office accommodation for leasing to a third party.	All construction will be completed by January 2022 upon which time staff and the collection can be relocated back into the Powerhouse Museum.

Therefore, it is expected that under this staging approach:

- The Museum will not be required to completely stop operations during construction. Instead, only parts of the facility will not be available to visitors at different stages
- The Museum will be fully operational again by July 2022.

The same works as identified in Options 4 and 5 will need to be undertaken by the Museum whilst awaiting the Stage One DA.

A summary of the positives and negatives of implementing Option 6A are provided in the table below:

Table 6: Positives and negatives

Positives	Negatives
Stage 1	
- Improves some of the exhibition space which is expected to increase external exhibition interest. - Minimises operational disruption as works can be isolated from day to day activities. - Delivers some key value factors and improves diversification of income. - Creates the opportunity to demolish and monetize southern end of Harwood site. - Functional education spaces are created.	- Doesn't fix key issues up front which compromise ongoing operations. - Doesn't focus on enabling sustainability for the Museum through creating diversified income streams. - Doesn't address several of the OH&S issues throughout the remainder of the property, in particularly the Harwood building. - Does not address teaching and learning spaces. - Funds are being focused on urgent facility issues rather than sustainable improvements for the Powerhouse. - High interim costs associated with moving the collection around.
Stages 1 and 2	
- Provides new exhibition accommodation - Resolves remaining OH&S issues in the heritage facilities including fire regulations - Theatres, café and workshop spaces are addressed which aids improvements in teaching and learning roles. - Achieves some additional commercial revenue.	- Staff relocations will be necessary and interim staff accommodation will be required - Collections need to be relocated offsite - Neglected parts of the building still requiring excessive maintenance funds. - Interactive learning spaces not resolved.
Stages 1, 2 and 3	
- Fully functional education spaces are realized. - Staff can be relocated back on site. - Collection can be relocated back onsite and is able to be maintained/ conserved - Clarity of public circulation throughout Powerhouse Museum.	- Possible risks associated with approval timelines. - Refurbishment is highly challenging and delivers less value for money.



Option 6B

Option 6B will be a five stage development, requiring six separate Development Approvals ("DA's").

Table 7: Staging Option 6B

Stage	DA process	Steps	Construction timeline
1a	The first step to undertake Option 6B will be to achieve a DA for 'Stage One' proposed works. We estimate that DA will be achieved in the first 18 months, (i.e. July 2015-January 2017).	Upon DA approval, anticipated in January 2017, Stage One (A) of the development will involve: • Refurbishment of the heritage buildings • Significant refit of the permanent galleries • Refurbishment of the Switch House. • All OH&S issues will be addressed • Northern Annex will be reconfigured to provide functional office accommodation with a lift installed.	Stage One (A) development will be undertaken over a two year period, concluding in January 2019.
1b	Concurrent to Stage One (A) works being undertaken, Harwood south will be sold and a second DA Application will be lodged. Planning and design for this DA will commence in January 2017 with approval expected by January 2018.	Upon securing approval, Stage One (B) works will commence immediately which involves: • Demolition of the south Harwood site • Commission for the development of the proposed commercial/residential development extending along the Goods Line.	Stage One (B) development will be undertaken over a two year period, concluding in January 2020.
2	Concurrent to Stage One (A) & (B) works being undertaken, a third DA application will be secured. We envisage planning, design and achieving this DA will take 12 months, commencing in January 2018, with receipt of DA by January 2019.	Upon securing the DA, Stage 2 works will commence immediately which involve: • Construction of a new foyer fronting Macarthur Park • Minor refresh of the exhibition space • Installation of a lift to the Northern Annex and reconfiguration of existing staff accommodation	Stage Two will be undertaken over a two year period, concluding in January 2021.
3	A fourth DA will be secured whilst Stage Two works are being undertaken. This DA will be secured by January 2020.	Stage Three works involve: • Demolition of the North Harwood building • Renewal of the northern portion of the Harwood site into the Temporary Galleries with a footbridge linking into the proposed foyer.	Stage Three will be undertaken over a two year period, concluding in January 2022.
4	A fifth DA will be secured whilst Stage Three works are being undertaken. This DA will be secured by June 2021	Stage Four works involve construction of the new Group Foyer, learning spaces and theatres fronting Harris Street.	Stage Four development will be undertaken over one year, concluding in January 2022.

Stage	DA process	Steps	Construction timeline
5	A sixth DA will be procured whilst Stage Four works are undertaken. This DA will be secured by June 2022	Stage Four works involve: • Demolition of the Wran building • Construction of the new of a new facility along Harris Street which will house the working Museum, office accommodation for the Museum staff and surplus office accommodation for leasing to a third party.	All construction will be completed by January 2023 upon which time staff and the collection can be relocated back into the Powerhouse Museum.

Therefore, it is expected that under this staging approach:

- The Museum will not be required to completely stop operations during construction. Instead, only parts of the facility will not be available to visitors at different stages
- The Museum will be fully operational again by July 2023.

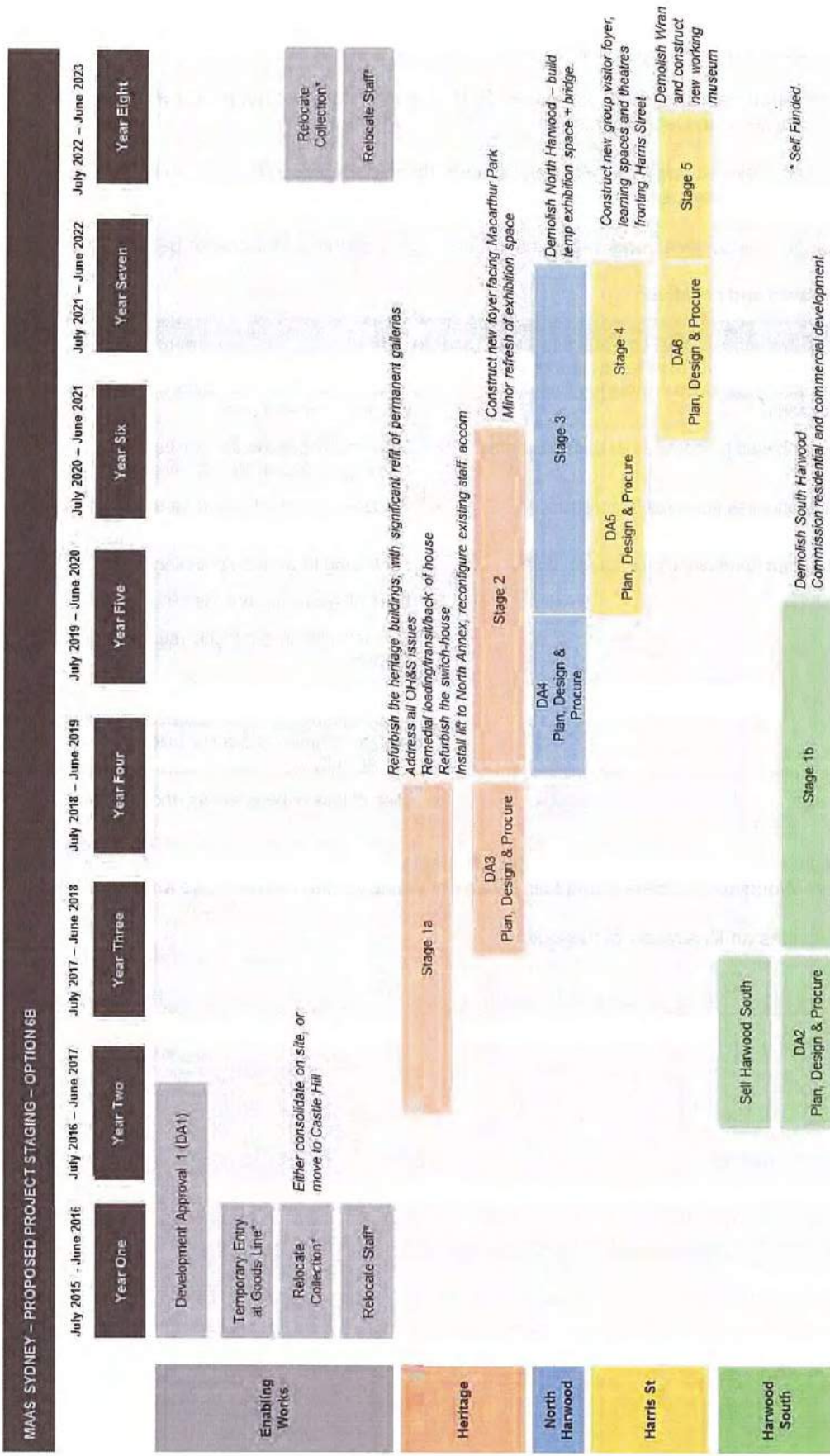
The same works as identified in Options 4 and 5 will need to be undertaken by the Museum whilst awaiting the Stage One DA.

However, given the number of issues not addressed in Stage 1, this staging option was not considered viable as part of the Value Management Workshop process:

- It doesn't resolve entry or touring hall to attract visitors from the Goods Line renewal until too late
- It addresses some heritage obligations, but doesn't fix the business early enough.

Figure 4 illustrates this staging approach:

Figure 4: Staging Option 6B



Option 6C

This Option proposes to undertake all development concurrently and will require the Museum to close completely during the construction period.

We anticipate upon receipt of a DA in January 2017, the total construction period would be three years, with completion in December 2020.

Planning of future exhibitions by MAAS can be undertaken during development, in preparation for completion of the development.

The summary of the positives and negatives of this staging option is in the table below:

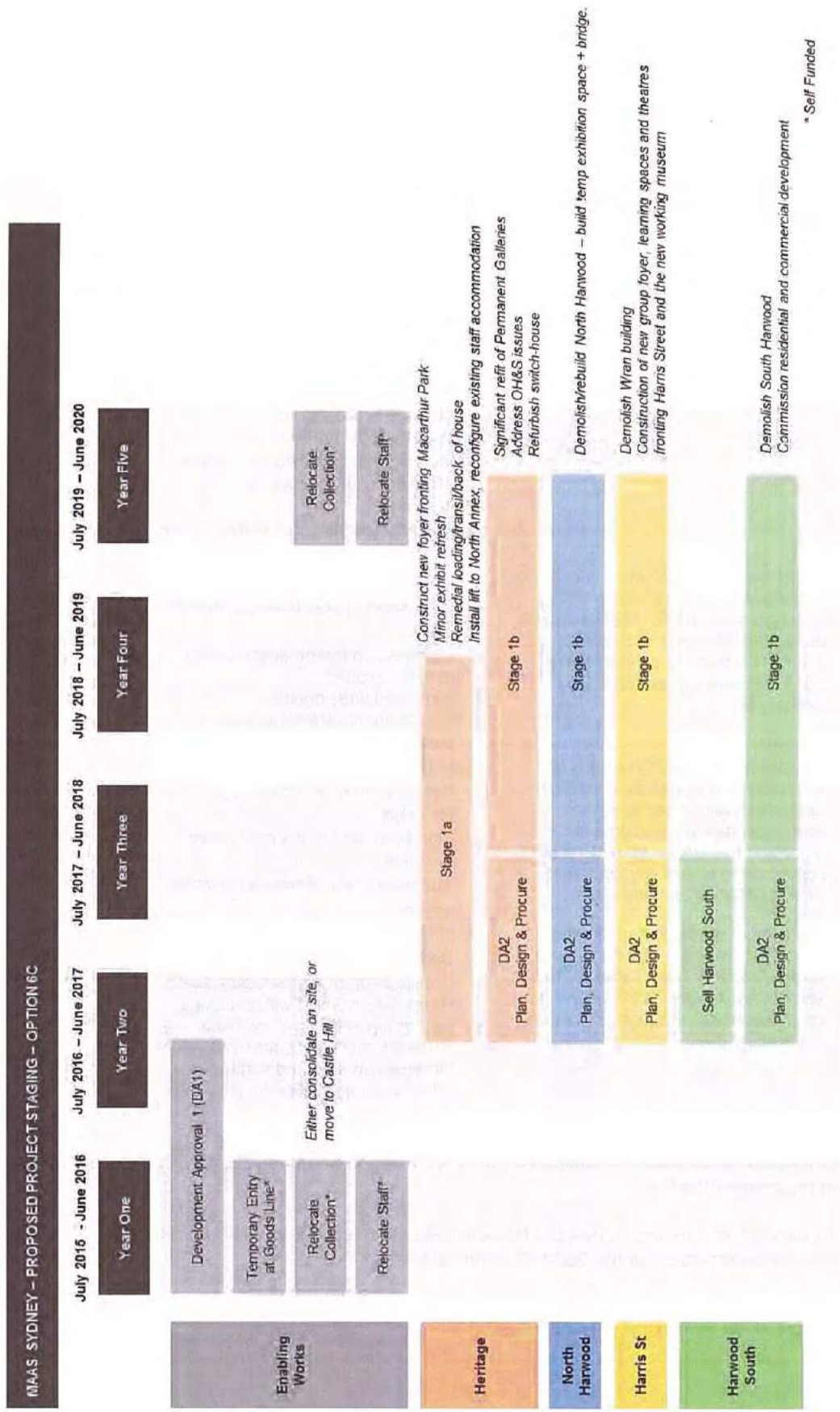
Table 8: Positives and negatives

Positives	Negatives
- Achieves a clear and set timeframe allowing works to be optimally undertaken without juggling Museum needs. - Allows fully phased process rather than separable stages. - Potential economies achieved in construction works and costs. - Enables staged handovers to enable fit-out for exhibits	- Forces the business to close and breach contracts for forward booked exhibitions as well as dealing with ongoing staff costs. - Extra staffing resources will be required for re-opening to re-plan all exhibitions. - All collections will have to be relocated off site. - All staff will have to be relocated offsite whilst continuing to work on planning for re-opening. - Loss of reputation and visibility - Re-mobilisation is a highly resource intensive process. - Increased risk that ramp up of revenue when re-opening may not match expected funding needs and government subsidy would need to increase significantly. - Risk of loss of benefactors and donors.

The significant negatives which were identified for staging Option 6C ensured that the Value Management Workshop process found that it was not viable for the Powerhouse Museum.

Figure 5, provides an illustration of this option:

Figure 5: Staging Option 6D



Option 6D

The conclusion of the Value Management Workshop found that the most appropriate Staging Option for the proposed development was a fourth Staging option, known as "Option 6D". Option 6D is outlined below and is the preferred Staging Option.

Option 6D will be a three stage development, requiring four separate Development Approvals ("DA's").

Table 9: Staging Option 6D

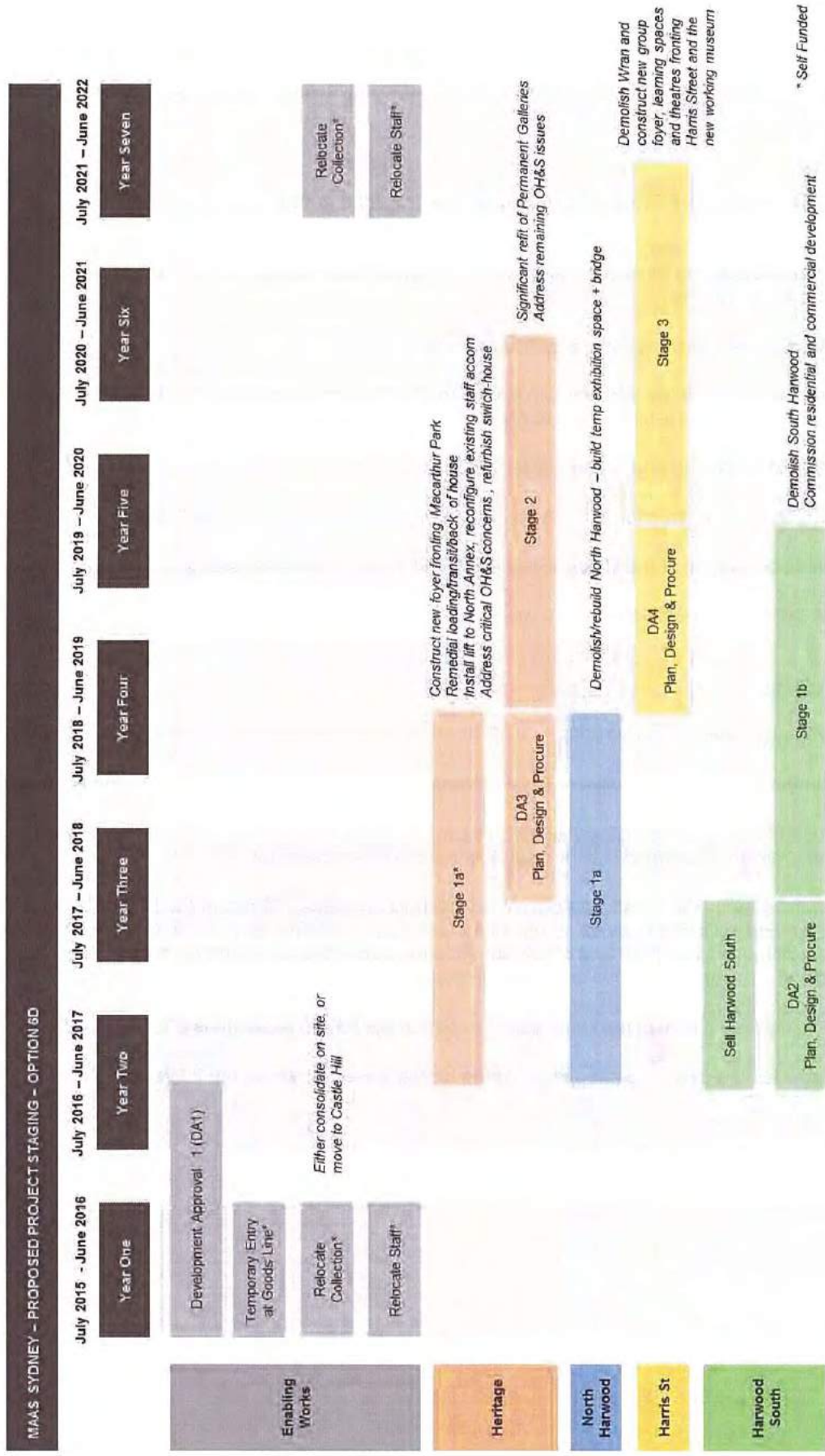
Stage	DA process	Steps	Construction timeline
1a	The first step to undertake Option 6D will be to achieve a DA for 'Stage One' proposed works. We estimate that DA will be achieved in the first 18 months, (i.e. July 2015-January 2017).	Upon DA approval: • Construction of the new foyer to front Macarthur Park • Demolition of the Northern part of the Harwood building to build the Temporary Galleries and bridge connection to foyer. • All critical OH&S issues in the heritage spaces to be addressed. • The Northern Annex to be reconfigured to provide functional office accommodation and a lift installed. • A minor refurbishment of the exhibition space.	Stage One (A) development will be undertaken over a two year period, concluding by January 2019.
1b	Concurrent to Stage One works being undertaken, Harwood South will be sold and a second DA Application will be lodged. Planning and design for this DA will commence in January 2017 with approval expected by January 2018.	Upon DA approval: • Demolition of the Harwood South site • Commission for the development of the proposed commercial/residential development extending along the Goods Line.	Stage One (B) development will be undertaken over a two year period, concluding by January 2020.
2	Concurrent to Stage One (A) & (B) works being undertaken, a third DA application will be secured. We envisage planning, design and achieving this DA will take 12 months, commencing in January 2018 and receipt of DA by January 2019.	Upon DA approval: • Refurbishment of the heritage buildings • Significant refit of the permanent galleries • Addressing any remaining OH&S issues.	Stage 2 will be undertaken over a two year period, concluding in January 2021.
3	A fourth DA will be procured whilst Stage Two works are being completed. This DA is expected to be secured by January 2020, allowing commencement of Stage Three works in February 2020.	Upon DA approval: • Demolition of the Wran building • Construction of a new facility along Harris Street which will house the new group entry foyer, working Museum, office accommodation for the Museum staff and surplus office accommodation for leasing to a third party.	All construction will be completed by January 2022 upon which time staff and the collection can be relocated back into the Powerhouse Museum.

The same works as identified in Options 4 and 5 will need to be undertaken by the Museum whilst awaiting the Stage One DA.

Under Option 6D, it is expected that the Powerhouse Museum will be fully operational by July 2022 (i.e. at the commencement of the 2022/23 financial year).

Figure 6 illustrates Staging Option 6D:

Figure 6: Staging Option 6D



Appendix G – Patronage numbers

This appendix provides an outline of the approach used to estimate the expected patronage to the Museum under each of the project options.

Base Case

Under the Base Case, in FY15, total patronage to the Museum is 490,091 people.

It is expected that the existing structural reforms and changes occurring at the Museum will attract potential customers to the Museum. Specifically, customers may be attracted to the Museum under the Base Case because of

- The establishment of a new MAAS Executive Team
- The development of a five year exhibition plan for the Museum which aims to attract a series of exciting and attractive exhibitions to NSW
- A renewal of marketing and public relations efforts
- A realignment of the direction of MAAs and its learning programs to the NSW School's curriculum
- Renewed compliance of the Museum with BCA and other compliance codes.

In the short term it is expected that there will be relatively small increases in patronage growth per annum:

- 5% per annum in FY17
- 2% per annum from FY18 to FY20.

However, in the long term, it is expected that patronage growth will come to an end because:

- The Museum remains without any significant capital reinvestment. Therefore existing problems with compromised core functions and sub-standard facilities continue
- As demonstrated in the Financial Assessment, without a renewed Museum the Base Case is only able to provide sufficient revenue to maintain the 'status quo' in the short term. Eventually the net position will turn into a deficit and reinvestment in the temporary and permanent exhibition will not be possible, reducing the incentive for customers to attend the Museum.

From FY21 onwards, it is expected that growth in patronage for the Museum is 0% per annum.

Table 11 provides the expected patronage figures for the Base Case over the 20 year evaluation period.

Project Option 4

Under Project Option 4, in FY15, total patronage to the Museum is 490,091 people.

Patronage growth over the 20 year evaluation period can be explained in 3 phases:

- Patronage growth during planning and construction
- Patronage growth immediately after construction
- Patronage growth in the long term

Patronage growth during construction

During the planning and construction it is expected that patronage:

- Will grow by approximately 5% in FY16. In FY16, it is anticipated that the Museum will be seeking DA approval, and therefore, it is unlikely that operations of the facility will be affected. Therefore, this 5% growth is consistent with what is expected under the Base Case in the same year
- Will decrease by 5% in FY17 (falling to approximately 488,000 people) when construction commences, and will remain flat (i.e. 488,000 per annum) throughout the entire construction period. Patronage is not expected to decrease more significantly as a result of the following mitigation strategies:
 - Planned staging approach, as outlined in Appendix F
 - Construction will be undertaken during less busier periods for the Museum, i.e. not during school holidays
 - Night time construction.

Patronage immediately after construction

Immediately after the construction of the Museum, it is expected that patronage:

- Patronage will grow by approximately 10% in the first year of operations (i.e. FY22). This is driven by:
 - The Museum is expected to grow from a relatively low patronage base after a number of years of staging and construction
 - The Museum will present refurbished and renewed facilities
- Patronage will continue to grow, but at a slower rate after the first year of operations, specifically:
 - 5% per annum from FY23 to FY25 - this continued growth is expected as a result of the Museum recovering from a relatively low patronage base
 - 2% per annum from FY26 to FY30 – this is in line with expected population growth for NSW

With the renewal of the Museum according to Project Option 4, there is scope for the attraction of 'blockbusters' to the facility. Under Project Option 4 it is expected that:

- A 'blockbuster' can be attracted once every five years, starting from FY22 (first year of operations post-construction)
- Each 'blockbuster' will attract approximately 150,000 people

Patronage in the long term

From FY31 it is expected that patronage to the Museum will stop growing. This is primarily driven by the results of the financial assessment which indicate that the Museum will be unable to renew its temporary exhibitions and permanent exhibition without more fundamental renewal.

Project Option 5

Under Project Option 5, in FY15, total patronage to the Museum is 490,091 people. Patronage growth over the 20 year evaluation period can be explained in 3 phases:

- Patronage growth during planning and construction
- Patronage growth immediately after construction
- Patronage growth in the long term

Patronage growth during construction

During the planning and construction it is expected that patronage:

- Will grow by approximately 5% in FY16. In FY16, it is anticipated that the Museum will be seeking DA approval, and therefore, it is unlikely that operations of the facility will be affected. Therefore, this 5% growth is consistent with what is expected under the Base Case in the same year
- Will decrease by 5% in FY17 (falling to approximately 488,000 people) when construction commences, and will remain flat (i.e. 488,000 per annum) throughout the entire construction period. Patronage is not expected to decrease more significantly as a result of the following mitigation strategies:
 - Planned staging approach, as outlined in Appendix F
 - Construction will be undertaken during less busier periods for the Museum
 - Night time construction.

Patronage immediately after construction

Immediately after the construction of the Museum, it is expected that:

- Patronage will grow by approximately 10% in the first two years of operations (i.e. FY23 – FY24). This is driven by:
 - The Museum is expected to grow from a relatively low patronage base after a number of years of staging and construction
 - The Museum will present refurbished and renewed facilities
 - The Museum will demolish and remodel the Wran building which will provide a glass frontage to Harris Street and a new working shared storage facility.
- Patronage will continue to grow, but at a slower rate after the first two years of operations:
 - 5% per annum from FY24 to FY26 - this continued growth is expected as a result of the Museum recovering from a relatively low patronage base
 - 2% per annum from FY27 to FY31 – this is in line with expected population growth for NSW.

Project Option 5 is likely to deliver longer term patronage growth than Project Option 4 because the Museum will have access to increasingly diverse sources of funding and will be able to renew its temporary exhibition and permanent exhibition (though not up to international benchmarks).

With the renewal of the Museum according to Project Option 5, there is increased (relative to Project Option 4) scope for the attraction of 'blockbusters' to the facility. It is expected that:

- A 'blockbuster' can be attracted once every four years, starting from FY23 (first year of operations)
- Each 'blockbuster' will attract approximately 150,000 people

Patronage in the long term

From FY32 it is expected that patronage to the Museum will stop growing. This is primarily driven by the results of the financial assessment which indicate that the Museum will be unable to renew its temporary and permanent exhibitions up to international benchmark levels.

Project Option 6D

Under Project Option 6D in FY15; total patronage to the Museum is 490,091 people.

Patronage growth over the 20 year evaluation period can be explained in 2 phases:

- Patronage growth during planning and construction
- Patronage growth after construction

Patronage growth during construction

During the planning and construction it is expected that patronage:

- Will grow by approximately 5% in FY16. In FY16, it is anticipated that the Museum will be seeking DA approval, and therefore, it is unlikely that operations of the facility will be affected. Therefore, this 5% growth is consistent with what is expected under the Base Case in the same year
- Will decrease by 5% in FY17 (falling to approximately 488,000 people) when construction commences, and will remain flat (i.e. 488,000 per annum) throughout the entire construction period. Patronage is not expected to decrease more significantly as a result of the following mitigation strategies:
 - Planned staging approach, as outlined in Appendix F
 - Construction will be undertaken during less busier periods for the Museum, i.e. not during school holidays
 - Night time construction.

Patronage after construction

For the purposes of the preferred project option, patronage estimates were developed using two existing benchmarks:

- Melbourne Museum
- Queensland Museum.

These Museums are considered state of the art, and it is expected that the renewal of the Museum according to Project Option 6D will enable the delivery of patronage levels which are in line with the existing market penetration rates of each of these Museums.

The table below provides the existing market penetration rates of each Museum:

Table 10: Benchmark penetration rates

Penetration rates	Melbourne Museum	Queensland Museum	Average
Local (state) population	8.2%	18.4%	13.3%
State student market	31.2%	7.5%	19.3%
Interstate tourists	0.1%	0.1%	0.1%
International tourists	7.4%	4.6%	6.0%

Therefore, using the average penetration rates of the 2 facilities and the expected growth in NSW residents, students, and tourists, total patronage to the Museum was estimated for FY34. This resulted in a total figure of 1.7 million customers in FY34.

MAAS acknowledges that reaching these benchmark market penetration rates is unlikely in the first year of operations post-construction, and therefore an escalating factor was applied to determine how patronage could grow in the years between the re-opening of the Museum (FY23) and FY34 when benchmark rates are expected to be reached.

Escalation of patronage was determined by:

- Considering the escalation in growth of patronage after the development of the Melbourne Museum
- Considering the historical growth rate of the Museum's patronage (previous to the last five years of downturn)

Considering these factors, it was determined that in the first year of operations post construction, patronage to the Museum would grow by approximately 128%. This is because:

- The Museum is expected to grow from a relatively low patronage base after a number of years of staging and construction
- The Museum will work on the development of a marketing and communications strategy which will attract increased patronage
- The renewal will peak interest in the facility when it is completed.

After the first years of operations, patronage will then fall - customer interest peaks in FY24 before bottoming out in FY25 as the allure of the new facility begins to wane. This is in line with what has been experienced at other renewed Museums.

Thereafter, patronage will grow by approximately 7% per annum (excluding blockbusters) until FY34. It is expected that growth will continue because the renewed facility will establish diverse and sustainable funding streams which can be reallocated to the renewal of the temporary and permanent exhibitions at a rate which is consistent with international benchmarks.

Blockbusters

With the renewal of the Museum according to Project Option 6D; there is increased scope for the attraction of 'blockbusters' to the facility. It is expected that:

- A 'blockbuster' can be attracted once every three years, starting from FY23 (first year of operations)
- Each 'blockbuster' will attract approximately 210,000 people. Increased capacity (relative to Project Options 4 and 5) will be possible as a result of the delivery of a 'state of the art' gallery space within the Harwood site.

Table 11: Patronage numbers

Year	Base Case		Option 4		Option 5		Option 6	
	Total	Growth	Total	Growth	Total	Growth	Total	Growth
FY15	490,091		490,091		490,091		490,091	
FY16	490,091	0.0%	514,596	5.0%	514,596	5.0%	514,596	5.0%
FY17	514,596	5.0%	488,866	-5.0%	488,866	-5.0%	488,866	-5.0%
FY18	524,887	2.0%	488,866	0.0%	488,866	0.0%	488,866	0.0%
FY19	535,385	2.0%	488,866	0.0%	488,866	0.0%	488,866	0.0%
FY20	546,093	2.0%	488,866	0.0%	488,866	0.0%	488,866	0.0%
FY21	546,093	0.0%	488,866	0.0%	488,866	0.0%	488,866	0.0%
FY22	546,093	0.0%	687,752	40.7%	488,866	0.0%	488,866	0.0%
FY23	546,093	0.0%	564,640	-17.9%	687,752	40.7%	1,324,669	171.0%
FY24	546,093	0.0%	592,872	5.0%	591,528	-14.0%	1,212,813	-8.4%
FY25	546,093	0.0%	622,516	5.0%	621,104	5.0%	878,132	-27.6%
FY26	546,093	0.0%	634,966	2.0%	652,159	5.0%	1,189,938	35.5%
FY27	546,093	0.0%	797,665	25.6%	815,202	25.0%	978,868	-17.7%
FY28	546,093	0.0%	660,618	-17.2%	678,506	-16.8%	1,114,904	13.9%
FY29	546,093	0.0%	673,831	2.0%	692,077	2.0%	1,458,444	30.8%
FY30	546,093	0.0%	687,307	2.0%	705,918	2.0%	1,384,708	-5.1%
FY31	546,093	0.0%	687,307	0.0%	870,036	23.2%	1,523,688	10.0%
FY32	546,093	0.0%	837,307	21.8%	720,036	-17.2%	1,875,378	23.1%
FY33	546,093	0.0%	687,307	-17.9%	720,036	0.0%	1,683,511	-10.2%
FY34	546,093	0.0%	687,307	0.0%	720,036	0.0%	1,701,629	1.1%

*Commencement of operations for the renewal options – i.e. Options 4, 5 and 6

Note that the shaded cells indicate when there is a blockbuster year for a particular option – this explains relatively high growth in a particular year, as well as the decline in total

Appendix H – Capital costs

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

Project Summary

BASIS OF ESTIMATE

The costs in this report are based upon square metre rate allowances applied to the Gross Floor areas provided by FJMT and are current as at July 2014.

* The following documents have been used in compiling this estimate:

- Spatial analysis workshop document dated 24 June 2014
- FJMT Emails dated 09/07/14, 07/07/14, 04/07/14, 26/06/14 & 24/07/14
- EY emails dated 01.10.14 & 03.10.14

* The Scope of Works for the Power House Museum Site is limited to the following:

- Demolition and removal of courtyard as well as miscellaneous structures and trees

- Refurbishment of the Turbine house, Engine House, Boiler house, Switch house, Post office and annex

- Construction of a Glass foyer structure that encapsulates the Switch house building and the existing rear courtyard

- Exhibition fitout and Furniture fittings and equipment allowances
- Allowances for services infrastructure have been included
- Allowance for Archeology, contaminated material and dealing with the potential Acid Sulfate soils have also been included.

* In compiling this estimate the following assumptions have been made:

- Works will be fully documented and competitively tendered in a competitive market.
- Unrestricted access to the site will be permitted during "normal" working hours.

ITEMS SPECIFICALLY EXCLUDED

In compiling this Indicative Budget Estimate, no allowance has been made for the following cost items.

Allowances for these items should be added as appropriate to establish the total project cost. If requested, we can provide assistance to assess these allowances.

- . Land and legal costs
- . Site investigation and test bores
- . Removal of asbestos and other hazardous materials in excess of the allowances noted
- . Work outside site boundaries
- . Diverting existing service infrastructure
- . Loose furniture, fittings and equipment in excess of the allowances noted
- . Exhibition fitout costs in excess of the allowances noted
- . Stand-by power generators
- . Special acoustic costs
- . Tenant incentive and/or relocation contributions
- . Tenant fitout
- . Staging/Phasing costs in excess of those noted
- . Any special or additional contributions sought by authorities for public or other facilities as a condition of development approval
- . Real Estate Agent's fees and leasing costs
- . Promotion/Marketing costs
- . Cost increases beyond July 2014
- . Finance costs and interest charges

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

Project Summary

ITEMS SPECIFICALLY EXCLUDED Cont'd

- . Goods and Services Tax
- . The Wran building remains unchanged
- . Harwood building has minor rectification works only

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

GFA: Gross floor area
Rates current at July 2014

Level	Zone	GFA m ²	Cost/m ²	Total Cost	Stage 1	Stage 2
A Site Preparation						
				\$290,000	290,000	
B Existing building Refurbishment						
B1	Turbine house	2,100	3,779	7,935,000		7,935,000
B2	Engine house & boiler house	3,460	4,590	15,880,000		15,880,000
B3	Switch house	3,900	4,227	16,485,000	16,485,000	-
B4	Post office	170	1,500	255,000		255,000
B5	Northern annex	350	1,500	525,000		525,000
B6	Allow lift access to Nth Annex			250,000	250,000	-
		9,980	\$4,141	\$41,330,000	16,735,000	24,595,000
C New building						
C1	Harris Street (Wran building)			Excl.		
C2	Add commercial space			Excl.		
C3	New glass foyer structure	3,000	8,350	25,050,000	25,050,000	
C4	Allowance for Harwood minor work			500,000	500,000	
C5	Bridge link			Excl.		
		3,000	\$8,517	\$25,550,000	25,550,000	-
D Exhibition / fitout ALLOWANCE						
				\$45,000,000		45,000,000
E Service infrastructure						
				\$2,205,000	1,000,000	1,205,000
F Other Allowances						
F1	Allowance for temporary fitout			1,190,000	1,190,000	
F2	Allowance for ESD initiatives			5,000,000	2,000,000	3,000,000
F3	Archeology			250,000	250,000	
F4	Contaminated material removal			500,000	250,000	250,000
F5	Acid sulfate soil disposal			250,000	250,000	
				\$7,190,000	\$3,940,000	\$3,250,000
Net Cost						
		12,980	\$9,366	\$121,565,000	\$47,515,000	\$74,050,000
Margin & Adjustments						
FUTURE COST INCREASES						
Staging Costs	2.0%			Excl.	950,300	1,479,700
Authority fees	1.5%				726,980	1,133,021
Consultant fees incl PM & exhibition	15.0%				18,880,000	11,501,158
Design Contingency	7.5%				10,850,000	6,607,166
Construction Contingency	7.5%				11,665,000	7,103,953
		12,980	\$12,885	\$167,250,000	\$65,375,002	\$101,874,998
Total Cost						

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

Item Details

Rates current at July 2014

	Item	Description	Unit	Qty	Rate	\$
A	Site Preparation					
	XP	SITE PREPARATION				
		1 Removal of sundry trees fences etc across site	Item			100,000
		2 Break up and remove pavements	m2	1000.00	25.0	25,000
		3 Demolish Wran building	m2	6600.00		Excl.
		4 Demolish forecourt and basement levels	m2	5000.00		Excl.
		5 Demolish cafe and out door play	Item			100,000
		Element XP total				225,000
	PR	PRELIMINARIES	Item			50,000
		Element PR total				50,000
	MA	BUILDERS MARGIN & OVERHEAD	Item			15,000
		Element MA total				15,000
		A Site Preparation Total				290,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
B	Existing building Refurbishment				
B1	Turbine house GFA 2,100 m2 Cost/m2 \$3,779				
AR	ALTERATIONS AND RENOVATIONS				
	1 Strip out mezanine	m2	1000.00	150.0	150,000
	2 Strip out services and finishes only to remainder	m2	1100.00	50.0	55,000
	Element AR total			98/m2	205,000
EW	EXTERNAL WALLS				
	1 No work to external envelop	Item			Excl.
	Element EW total				
NW	INTERNAL WALLS				
	1 50% of rate	m2	2100.00	82.0	172,200
	Element NW total			82/m2	172,200
NS	INTERNAL SCREENS AND BORROWED LIGHTS	m2	2100.00	50.0	105,000
	Element NS total			50/m2	105,000
ND	INTERNAL DOORS				
	1 50% of rate	m2	2100.00	23.0	48,300
	Element ND total			23/m2	48,300
WF	WALL FINISHES	m2	2100.00	65.0	136,500
	Element WF total			65/m2	136,500
FF	FLOOR FINISHES	m2	2100.00	185.0	388,500
	Element FF total			185/m2	388,500
CF	CEILING FINISHES	m2	2100.00	365.0	766,500
	Element CF total			365/m2	766,500
FT	FITMENTS	m2	2100.00	72.0	151,200
	Element FT total			72/m2	151,200
SE	SPECIAL EQUIPMENT	m2	2100.00	36.0	75,600
	Element SE total			36/m2	75,600
HS	HYDRAULIC SERVICES				
	1 50% of rate	m2	2100.00	38.0	79,800
	Element HS total			38/m2	79,800
MS	MECHANICAL SERVICES	m2	2100.00	1,200.0	2,520,000
	Carried forward				4,648,600

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
	Brought forward				4,648,600
B	Existing building Refurbishment Cont'd				
B1	Turbine house GFA 2,100 m2 Cost/m2 \$3,779 Cont'd				
	Element MS total		1,200/m2		2,520,000
FP	FIRE PROTECTION	m2	2100.00	200.0	420,000
	Element FP total		200/m2		420,000
LP	ELECTRIC LIGHT AND POWER	m2	2100.00	510.0	1,071,000
	Element LP total		510/m2		1,071,000
CM	COMMUNICATIONS	m2	2100.00	125.0	262,500
	Element CM total		125/m2		262,500
TS	TRANSPORTATION SYSTEMS	Item			Excl.
	Element TS total				
PR	PRELIMINARIES	Item			1,155,000
	Element PR total		550/m2		1,155,000
MA	BUILDERS MARGIN & OVERHEAD	Item			377,900
	Element MA total		180/m2		377,900
	B1 Turbine house Total				7,935,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
B	Existing building Refurbishment				
B2	Engine house & boiler house GFA 3,460 m2 Cost/m2 \$4,590				
AR	ALTERATIONS AND RENOVATIONS				
	1 Strip out services and finishes only	m2	3460.00	50.0	173,000
	Element AR total			50/m2	173,000
SB	SUBSTRUCTURE				
	1 Add footings to support new mezzanine	m2	3460.00	200.0	692,000
	2 Replace existing slab on ground as necessary	m2	1230.00	130.0	159,900
	Element SB total			246/m2	851,900
CL	COLUMNS	m2	3460.00	100.0	346,000
	Element CL total			100/m2	346,000
UF	UPPER FLOORS				
	1 Suspended floor slabs	m2	2460.00	300.0	738,000
	Element UF total			213/m2	738,000
EW	EXTERNAL WALLS				
	1 No work to external envelop	Item			Excl.
	Element EW total				
NW	INTERNAL WALLS				
	1 100% of rate	m2	3460.00	165.0	570,900
	Element NW total			165/m2	570,900
NS	INTERNAL SCREENS AND BORROWED LIGHTS	m2	3460.00	50.0	173,000
	Element NS total			50/m2	173,000
ND	INTERNAL DOORS				
	1 100% of rate	m2	3460.00	46.0	159,160
	Element ND total			46/m2	159,160
WF	WALL FINISHES	m2	3460.00	65.0	224,900
	Element WF total			65/m2	224,900
FF	FLOOR FINISHES	m2	3460.00	185.0	640,100
	Element FF total			185/m2	640,100
CF	CEILING FINISHES	m2	3460.00	365.0	1,262,900
	Element CF total			365/m2	1,262,900
	Carried forward				5,139,860

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
	Brought forward				5,139,860
B	Existing building Refurbishment Cont'd				
B2	Engine house & boiler house GFA 3,460 m2 Cost/m2 \$4,590 Cont'd				
FT	FITMENTS	m2	3460.00	72.0	249,120
	Element FT total			72/m2	249,120
SE	SPECIAL EQUIPMENT	m2	3460.00	36.0	124,560
	Element SE total			36/m2	124,560
HS	HYDRAULIC SERVICES				
	1 100% of rate	m2	3460.00	76.0	262,960
	Element H5 total			76/m2	262,960
MS	MECHANICAL SERVICES	m2	3460.00	1,200.0	4,152,000
	Element MS total			1,200/m2	4,152,000
FP	FIRE PROTECTION	m2	3460.00	200.0	692,000
	Element FP total			200/m2	692,000
LP	ELECTRIC LIGHT AND POWER	m2	3460.00	510.0	1,764,600
	Element LP total			510/m2	1,764,600
CM	COMMUNICATIONS	m2	3460.00	125.0	432,500
	Element CM total			125/m2	432,500
TS	TRANSPORTATION SYSTEMS	Item			Excl.
	Element TS total				
PR	PRELIMINARIES	Item			2,307,000
	Element PR total			667/m2	2,307,000
MA	BUILDERS MARGIN & OVERHEAD	Item			755,400
	Element MA total			218/m2	755,400
	B2 Engine house & boiler house Total				15,880,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
B	Existing building Refurbishment				
B3	Switch house GFA 3,900 m2 Cost/m2 \$4,227				
AR	ALTERATIONS AND RENOVATIONS				
	1 Strip out services and finishes only to remainder	m2	3900.00	50.0	195,000
	2 Demolish and remove top floor of the building	m2	1250.00	150.0	187,500
	Element AR total			98/m2	382,500
EW	EXTERNAL WALLS				
	1 Cosmetic repairs to envelop Allowance	Item			1,000,000
	Element EW total			256/m2	1,000,000
NW	INTERNAL WALLS				
	1 100% of rate	m2	3900.00	165.0	643,500
	Element NW total			165/m2	643,500
NS	INTERNAL SCREENS AND BORROWED LIGHTS	m2	3900.00	50.0	195,000
	Element NS total			50/m2	195,000
ND	INTERNAL DOORS				
	1 100% of rate	m2	3900.00	46.0	179,400
	Element ND total			46/m2	179,400
WF	WALL FINISHES	m2	3900.00	65.0	253,500
	Element WF total			65/m2	253,500
FF	FLOOR FINISHES	m2	3900.00	185.0	721,500
	Element FF total			185/m2	721,500
CF	CEILING FINISHES	m2	3900.00	365.0	1,423,500
	Element CF total			365/m2	1,423,500
FT	FITMENTS	m2	3900.00	72.0	280,800
	Element FT total			72/m2	280,800
SE	SPECIAL EQUIPMENT	m2	3900.00	36.0	140,400
	Element SE total			36/m2	140,400
HS	HYDRAULIC SERVICES				
	1 50% of rate	m2	3900.00	38.0	148,200
	Element HS total			38/m2	148,200
MS	MECHANICAL SERVICES	m2	3900.00	1,200.0	4,680,000
	Carried forward				10,048,300

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
	Brought forward				10,048,300
B	Existing building Refurbishment Cont'd				
B3	Switch house GFA 3,900 m2 Cost/m2 \$4,227 Cont'd				
	Element MS total		1,200/m2		4,680,000
FP	FIRE PROTECTION	m2	3900.00	200.0	780,000
	Element FP total		200/m2		780,000
LP	ELECTRIC LIGHT AND POWER	m2	3900.00	510.0	1,989,000
	Element LP total		510/m2		1,989,000
CM	COMMUNICATIONS	m2	3900.00	125.0	487,500
	Element CM total		125/m2		487,500
TS	TRANSPORTATION SYSTEMS	Item			Excl.
	Element TS total				
PR	PRELIMINARIES	Item			2,395,000
	Element PR total		614/m2		2,395,000
MA	BUILDERS MARGIN & OVERHEAD	Item			785,200
	Element MA total		201/m2		785,200
	B3 Switch house Total				16,485,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
D	Exhibition / fitout ALLOWANCE				
EX	EXHIBITION WORKS				
1	Permanent gallery exhibition works	m2	6400.00	5,000.0	32,000,000
2	Additional gallery to Boiler house	m2	800.00	5,000.0	4,000,000
3	DDT for Permanent exhibition to remain	m2	4500.00	(2,000.0)	(9,000,000)
4	Temporary gallery works	m2	3200.00	2,500.0	8,000,000
5	Reduction in Gallery space without Harwood & Wran building	Item			Excl.
	Element EX total				35,000,000
FU	FURNITURE FITTINGS & EQUIPMENT				
1	Administration, workshop etc Fitout & FF & E	m2	3700.00	1,500.0	5,550,000
2	Collection storage FF & E	m2	3000.00	500.0	1,500,000
3	Cafe, kitchen, shop etc FF & E	m2	560.00	900.0	504,000
4	Volunteer & Memebbers lounge	m2	345.00	300.0	103,500
5	Foyer FF & E	m2	1350.00	100.0	135,000
6	Group arrival	m2	462.00	100.0	46,200
7	Study centre, Auditorium, Classrooms	m2	1780.00	400.0	712,000
8	Media Black box	m2	500.00	500.0	250,000
9	Research library	m2	500.00	500.0	250,000
10	Family space	m2	810.00	300.0	243,000
11	Permanent Gallery FF & E	m2	6400.00	75.0	480,000
12	Temporary Gallery FF & E	m2	3200.00	75.0	240,000
13	Sundries / rounding	Item			(13,700)
	Element FU total				10,000,000
	D Exhibition / fitout ALLOWANCE Total				45,000,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

Item Details

Rates current at July 2014

	Item Description	Unit	Qty	Rate	\$
E	Service infrastructure				
XL	LANDSCAPING AND IMPROVEMENTS				
	1 Allowance for street scape works	Item		500,000	
	Element XL total			500,000	
XR	ROADS, FOOTPATHS AND PAVED AREAS				
	1 Allowance for works to pedestrian bridge	Item		Excl.	
	2 Allowance for works to Access road	Item		500,000	
	Element XR total			500,000	
XK	EXTERNAL STORMWATER DRAINAGE				
	1 Stormwater detention allowance	Item		200,000	
	Element XK total			200,000	
XD	EXTERNAL SEWER DRAINAGE	Item		50,000	
	Element XD total			50,000	
XG	EXTERNAL GAS	Item		10,000	
	Element XG total			10,000	
XW	EXTERNAL WATER SUPPLY	Item		10,000	
	Element XW total			10,000	
XE	EXTERNAL ELECTRIC LIGHT AND POWER				
	1 Substations allowance	Item		500,000	
	Element XE total			500,000	
XC	EXTERNAL COMMUNICATIONS	Item		10,000	
	Element XC total			10,000	
PR	PRELIMINARIES	Item		320,000	
	Element PR total			320,000	
MA	BUILDERS MARGIN & OVERHEAD	Item		105,000	
	Element MA total			105,000	
	E Service infrastructure Total			2,205,000	

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 4

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
F	Other Allowances				
F1	Allowance for temporary fitout				
YY	SPECIAL PROVISIONS				
	1 Temporary office fitout Northern annex	m2	520.00	1,000.0	520,000
	2 Temporary BOH workshop etc fitout	m2	300.00	1,500.0	450,000
	Element YY total				970,000
FU	FURNITURE FITTINGS & EQUIPMENT				
	1 Assume Furniture & equipment relocated for this move	Item			Excl.
	Element FU total				
PR	PRELIMINARIES	Item			175,000
	Element PR total				175,000
MA	BUILDERS MARGIN & OVERHEAD	Item			45,000
	Element MA total				45,000
	F1 Allowance for temporary fitout Total				1,190,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

Project Summary

BASIS OF ESTIMATE

The costs in this report are based upon square metre rate allowances applied to the Gross Floor areas provided by FJMT and are current as at July 2014.

* The following documents have been used in compiling this estimate:

- Spatial analysis workshop document dated 24 June 2014
- FJMT Emails dated 09/07/14, 07/07/14, 04/07/14, 26/06/14 & 24/07/14
- EY emails dated 03.10.14 & 01.10.14

* The Scope of Works for the Power House Museum Site is limited to the following:

- Demolition and removal of Wran building, forecourt and basement along Harris street as well as miscellaneous structures and trees
 - Refurbishment of the Turbine house, Engine House, Boiler house, Switch house, Post office and annex
 - Construction of a museum building on Harris street of approximately 16,200m² plus a Glass foyer structure that encapsulates the Switch house building and the existing rear courtyard
 - Exhibition fitout and Furniture fittings and equipment allowances
 - Allowances for services infrastructure have been included
 - Allowance for Archeology, contaminated material and dealing with the potential Acid Sulfate soils have also been included.
- * In compiling this estimate the following assumptions have been made:
- Works will be fully documented and competitively tendered in a competitive market.
 - Unrestricted access to the site will be permitted during "normal" working hours.

ITEMS SPECIFICALLY EXCLUDED

In compiling this Indicative Budget Estimate, no allowance has been made for the following cost items.

Allowances for these items should be added as appropriate to establish the total project cost. If requested, we can provide assistance to assess these allowances.

- . Land and legal costs
- . Site investigation and test bores
- . Removal of asbestos and other hazardous materials in excess of the allowances noted
- . Work outside site boundaries
- . Diverting existing service infrastructure
- . Loose furniture, fittings and equipment in excess of the allowances noted
- . Exhibition fitout costs in excess of the allowances noted
- . Stand-by power generators
- . Special acoustic costs
- . Tenant incentive and/or relocation contributions
- . Tenant fitout
- . Staging/Phasing costs in excess of those noted
- . Any special or additional contributions sought by authorities for public or other facilities as a condition of development approval
- . Real Estate Agent's fees and leasing costs
- . Promotion/Marketing costs
- . Cost increases beyond July 2014
- . Finance costs and interest charges

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

Project Summary

ITEMS SPECIFICALLY EXCLUDED Cont'd

- . Goods and Services Tax
- . Harwood building & associated bridge link

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

GFA: Gross floor area		Rates current at July 2014					
Level	Zone	GFA m ²	Cost/m ²	Total Cost	Stage 1	Stage 2	Stage 3
A	Site Preparation			\$3,560,000	500,000		3,060,000
B	Existing building Refurbishment						
B1	Turbine house	2,100	3,779	7,935,000		7,935,000	
B2	Engine house & boiler house	3,460	4,590	15,880,000		15,880,000	
B3	Switch house	3,900	4,227	16,485,000	16,485,000		
B4	Post office	170	1,500	255,000		255,000	
B5	Northern annex	350	1,500	525,000		525,000	
B6	Allow lift access to Nth Annex			250,000	250,000		
		9,980	\$4,141	\$41,330,000	16,735,000	24,595,000	-
C	New building						
C1	Harris Street (Wran building)	13,200	6,200	81,840,000			81,840,000
C2	Add commercial space	3,000	3,300	9,900,000			9,900,000
C3	New glass foyer structure	6,000	8,350	50,100,000	25,050,000		25,050,000
C4	Allowance for Harwood minor work			Excl.			
C5	Bridge link			Excl.			
		22,200	\$6,389	\$141,840,000	25,050,000	-	116,790,000
D	Exhibition / fitout ALLOWANCE			\$45,000,000		20,000,000	25,000,000
E	Service infrastructure			\$2,825,000	500,000	500,000	1,825,000
F	Other Allowances						
F1	Allowance for temporary fitout			1,190,000	1,190,000		
F2	Allowance for ESD initiatives			10,000,000	2,000,000	2,000,000	6,000,000
F3	Archeology			250,000	250,000		
F4	Contaminated material removal			500,000	250,000	100,000	150,000
F5	Acid sulfate soil disposal			250,000	250,000		
				\$12,190,000	3,940,000	2,100,000	6,150,000
Net Cost		32,180	\$7,668	\$246,745,000	46,725,000	47,195,000	152,825,000
Margin & Adjustments							
FUTURE COST INCREASES							
Staging Costs	2.0%			Excl.	934,500	943,900	3,056,600
Authority fees	1.5%			4,935,000	714,893	722,084	2,338,024
Consultant fees incl PM & exhibition	15.0%			3,775,000	7,256,159	7,329,148	23,734,694
Design Contingency	7.5%			38,320,000	4,172,291	4,214,260	13,638,449
Construction Contingency	7.5%			22,025,000	4,485,213	4,530,329	14,634,457
				23,650,000			
Total Cost		32,180	\$10,548	\$339,450,000	64,288,056	64,934,720	210,227,224

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

Item Details

Rates current at July 2014

	Item	Description	Unit	Qty	Rate	\$
A	Site Preparation					
	XP	SITE PREPARATION				
		1 Removal of sundry trees fences etc across site	Item			100,000
		2 Break up and remove pavements	m2	1000.00	25.0	25,000
		3 Demolish Wran building	m2	6600.00	250.0	1,650,000
		4 Demolish forecourt and basement levels	m2	5000.00	200.0	1,000,000
		5 Demolish cafe and out door play	Item			100,000
		6 Demolish part of Harwood building	m2	3000.00		Excl.
		Element XP total				2,875,000
	PR	PRELIMINARIES	Item			515,000
		Element PR total				515,000
	MA	BUILDERS MARGIN & OVERHEAD	Item			170,000
		Element MA total				170,000
		A Site Preparation Total				3,560,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
B	Existing building Refurbishment				
B1	Turbine house GFA 2,100 m2 Cost/m2 \$3,779				
AR	ALTERATIONS AND RENOVATIONS				
	1 Strip out mezanine	m2	1000.00	150.0	150,000
	2 Strip out services and finishes only to remainder	m2	1100.00	50.0	55,000
	Element AR total			98/m2	205,000
EW	EXTERNAL WALLS				
	1 No work to external envelop	Item			Excl.
	Element EW total				
NW	INTERNAL WALLS				
	1 50% of rate	m2	2100.00	82.0	172,200
	Element NW total			82/m2	172,200
NS	INTERNAL SCREENS AND BORROWED LIGHTS	m2	2100.00	50.0	105,000
	Element NS total			50/m2	105,000
ND	INTERNAL DOORS				
	1 50% of rate	m2	2100.00	23.0	48,300
	Element ND total			23/m2	48,300
WF	WALL FINISHES	m2	2100.00	65.0	136,500
	Element WF total			65/m2	136,500
FF	FLOOR FINISHES	m2	2100.00	185.0	388,500
	Element FF total			185/m2	388,500
CF	CEILING FINISHES	m2	2100.00	365.0	766,500
	Element CF total			365/m2	766,500
FT	FITMENTS	m2	2100.00	72.0	151,200
	Element FT total			72/m2	151,200
SE	SPECIAL EQUIPMENT	m2	2100.00	36.0	75,600
	Element SE total			36/m2	75,600
HS	HYDRAULIC SERVICES				
	1 50% of rate	m2	2100.00	38.0	79,800
	Element HS total			38/m2	79,800
MS	MECHANICAL SERVICES	m2	2100.00	1,200.0	2,520,000
	Carried forward				4,648,600

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
	Brought forward				4,648,600
B	Existing building Refurbishment Cont'd				
B1	Turbine house GFA 2,100 m2 Cost/m2 \$3,779 Cont'd				
	Element MS total		1,200/m2		2,520,000
FP	FIRE PROTECTION	m2	2100.00	200.0	420,000
	Element FP total		200/m2		420,000
LP	ELECTRIC LIGHT AND POWER	m2	2100.00	510.0	1,071,000
	Element LP total		510/m2		1,071,000
CM	COMMUNICATIONS	m2	2100.00	125.0	262,500
	Element CM total		125/m2		262,500
TS	TRANSPORTATION SYSTEMS	Item			Excl.
	Element TS total				
PR	PRELIMINARIES	Item			1,155,000
	Element PR total		550/m2		1,155,000
MA	BUILDERS MARGIN & OVERHEAD	Item			377,900
	Element MA total		180/m2		377,900
	B1 Turbine house Total				7,935,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
B	Existing building Refurbishment				
B2	Engine house & boiler house GFA 3,460 m2 Cost/m2 \$4,590				
AR	ALTERATIONS AND RENOVATIONS				
	1 Strip out services and finishes only	m2	3460.00	50.0	173,000
	Element AR total			50/m2	173,000
SB	SUBSTRUCTURE				
	1 Add footings to support new mezzanine	m2	3460.00	200.0	692,000
	2 Replace existing slab on ground as necessary	m2	1230.00	130.0	159,900
	Element SB total			246/m2	851,900
CL	COLUMNS	m2	3460.00	100.0	346,000
	Element CL total			100/m2	346,000
UF	UPPER FLOORS				
	1 Suspended floor slabs	m2	2460.00	300.0	738,000
	Element UF total			213/m2	738,000
EW	EXTERNAL WALLS				
	1 No work to external envelop	Item			Excl.
	Element EW total				
NW	INTERNAL WALLS				
	1 100% of rate	m2	3460.00	165.0	570,900
	Element NW total			165/m2	570,900
NS	INTERNAL SCREENS AND BORROWED LIGHTS	m2	3460.00	50.0	173,000
	Element NS total			50/m2	173,000
ND	INTERNAL DOORS				
	1 100% of rate	m2	3460.00	46.0	159,160
	Element ND total			46/m2	159,160
WF	WALL FINISHES	m2	3460.00	65.0	224,900
	Element WF total			65/m2	224,900
FF	FLOOR FINISHES	m2	3460.00	185.0	640,100
	Element FF total			185/m2	640,100
CF	CEILING FINISHES	m2	3460.00	365.0	1,262,900
	Element CF total			365/m2	1,262,900
	Carried forward				5,139,860

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
	Brought forward				5,139,860
B	Existing building Refurbishment Cont'd				
B2	Engine house & boiler house GFA 3,460 m2 Cost/m2 \$4,590 Cont'd				
FT	FITMENTS	m2	3460.00	72.0	249,120
	Element FT total			72/m2	249,120
SE	SPECIAL EQUIPMENT	m2	3460.00	36.0	124,560
	Element SE total			36/m2	124,560
HS	HYDRAULIC SERVICES				
	1 100% of rate	m2	3460.00	76.0	262,960
	Element HS total			76/m2	262,960
MS	MECHANICAL SERVICES	m2	3460.00	1,200.0	4,152,000
	Element MS total			1,200/m2	4,152,000
FP	FIRE PROTECTION	m2	3460.00	200.0	692,000
	Element FP total			200/m2	692,000
LP	ELECTRIC LIGHT AND POWER	m2	3460.00	510.0	1,764,600
	Element LP total			510/m2	1,764,600
CM	COMMUNICATIONS	m2	3460.00	125.0	432,500
	Element CM total			125/m2	432,500
TS	TRANSPORTATION SYSTEMS	Item			Excl.
	Element TS total				
PR	PRELIMINARIES	Item			2,307,000
	Element PR total			667/m2	2,307,000
MA	BUILDERS MARGIN & OVERHEAD	Item			755,400
	Element MA total			218/m2	755,400
	B2 Engine house & boiler house Total				15,880,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
B	Existing building Refurbishment				
B3	Switch house GFA 3,900 m2 Cost/m2 \$4,227				
AR	ALTERATIONS AND RENOVATIONS				
	1 Strip out services and finishes only to remainder	m2	3900.00	50.0	195,000
	2 Demolish and remove top floor of the building	m2	1250.00	150.0	187,500
	Element AR total			98/m2	382,500
EW	EXTERNAL WALLS				
	1 Cosmetic repairs to envelop Allowance	Item			1,000,000
	Element EW total			256/m2	1,000,000
NW	INTERNAL WALLS				
	1 100%of rate	m2	3900.00	165.0	643,500
	Element NW total			165/m2	643,500
NS	INTERNAL SCREENS AND BORROWED LIGHTS	m2	3900.00	50.0	195,000
	Element NS total			50/m2	195,000
ND	INTERNAL DOORS				
	1 100% of rate	m2	3900.00	46.0	179,400
	Element ND total			46/m2	179,400
WF	WALL FINISHES	m2	3900.00	65.0	253,500
	Element WF total			65/m2	253,500
FF	FLOOR FINISHES	m2	3900.00	185.0	721,500
	Element FF total			185/m2	721,500
CF	CEILING FINISHES	m2	3900.00	365.0	1,423,500
	Element CF total			365/m2	1,423,500
FT	FITMENTS	m2	3900.00	72.0	280,800
	Element FT total			72/m2	280,800
SE	SPECIAL EQUIPMENT	m2	3900.00	36.0	140,400
	Element SE total			36/m2	140,400
HS	HYDRAULIC SERVICES				
	1 50% of rate	m2	3900.00	38.0	148,200
	Element HS total			38/m2	148,200
MS	MECHANICAL SERVICES	m2	3900.00	1,200.0	4,680,000
	Carried forward				10,048,300

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
				Brought forward	10,048,300
B	Existing building Refurbishment Cont'd				
B3	Switch house GFA 3,900 m2 Cost/m2 \$4,227 Cont'd				
	Element MS total		1,200/m2	4,680,000	
FP	FIRE PROTECTION	m2	3900.00	200.0	780,000
	Element FP total		200/m2	780,000	
LP	ELECTRIC LIGHT AND POWER	m2	3900.00	510.0	1,989,000
	Element LP total		510/m2	1,989,000	
CM	COMMUNICATIONS	m2	3900.00	125.0	487,500
	Element CM total		125/m2	487,500	
TS	TRANSPORTATION SYSTEMS	Item			Excl.
	Element TS total				
PR	PRELIMINARIES	Item			2,395,000
	Element PR total		614/m2	2,395,000	
MA	BUILDERS MARGIN & OVERHEAD	Item			785,200
	Element MA total		201/m2	785,200	
	B3 Switch house Total				16,485,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
D	Exhibition / fitout ALLOWANCE				
EX	EXHIBITION WORKS				
1	Permanent gallery exhibition works	m2	6400.00	5,000.0	32,000,000
2	Additional gallery to Boiler house	m2	800.00	5,000.0	4,000,000
3	DDT for Permenent exhibition to remain	m2	4500.00	(2,000.0)	(9,000,000)
4	Temporary gallery works	m2	3200.00	2,500.0	8,000,000
5	Reduction in Gallery space without Harwood building	Item			Excl.
Element EX total					35,000,000
FU	FURNITURE FITTINGS & EQUIPMENT				
1	Administration,workshop etc Fitout & FF & E	m2	3700.00	1,500.0	5,550,000
2	Collection storage FF & E	m2	3000.00	500.0	1,500,000
3	Cafe, kitchen, shop etc FF & E	m2	560.00	900.0	504,000
4	Volunteer & Memebbers lounge	m2	345.00	300.0	103,500
5	Foyer FF & E	m2	1350.00	100.0	135,000
6	Group arrival	m2	462.00	100.0	46,200
7	Study centre, Auditorium, Classrooms	m2	1780.00	400.0	712,000
8	Media Black box	m2	500.00	500.0	250,000
9	Research library	m2	500.00	500.0	250,000
10	Family space	m2	810.00	300.0	243,000
11	Permanent Gallery FF & E	m2	6400.00	75.0	480,000
12	Temporary Gallery FF & E	m2	3200.00	75.0	240,000
13	Sundries / rounding	Item			(13,700)
Element FU total					10,000,000
D Exhibition / fitout ALLOWANCE Total					45,000,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

Item Details

Rates current at July 2014

	Item	Description	Unit	Qty	Rate	\$
E	Service infrastructure					
	XL	LANDSCAPING AND IMPROVEMENTS				
		1 Allowance for street scape works	Item		500,000	
		Element XL total			500,000	
	XR	ROADS, FOOTPATHS AND PAVED AREAS				
		1 Allowance for works to pedestrian bridge	Item		Excl.	
		2 Allowance for works to Access road	Item		500,000	
		Element XR total			500,000	
	XK	EXTERNAL STORMWATER DRAINAGE				
		1 Stormwater detention allowance	Item		200,000	
		Element XK total			200,000	
	XD	EXTERNAL SEWER DRAINAGE				
			Item		50,000	
		Element XD total			50,000	
	XG	EXTERNAL GAS				
			Item		10,000	
		Element XG total			10,000	
	XW	EXTERNAL WATER SUPPLY				
			Item		10,000	
		Element XW total			10,000	
	XE	EXTERNAL ELECTRIC LIGHT AND POWER				
		1 Substations allowance	Item		1,000,000	
		Element XE total			1,000,000	
	XC	EXTERNAL COMMUNICATIONS				
			Item		10,000	
		Element XC total			10,000	
	PR	PRELIMINARIES				
			Item		410,000	
		Element PR total			410,000	
	MA	BUILDERS MARGIN & OVERHEAD				
			Item		135,000	
		Element MA total			135,000	
	E Service infrastructure Total					2,825,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 5

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
F	Other Allowances				
F1	Allowance for temporary fitout				
YY	SPECIAL PROVISIONS				
	1 Temporary office fitout Northern annex	m2	520.00	1,000.0	520,000
	2 Temporary BOH workshop etc fitout	m2	300.00	1,500.0	450,000
	Element YY total				970,000
FU	FURNITURE FITTINGS & EQUIPMENT				
	1 Assume Furniture & equipment relocated for this move	Item			Excl.
	Element FU total				
PR	PRELIMINARIES	Item			175,000
	Element PR total				175,000
MA	BUILDERS MARGIN & OVERHEAD	Item			45,000
	Element MA total				45,000
	F1 Allowance for temporary fitout Total				1,190,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Project Summary

BASIS OF ESTIMATE

The costs in this report are based upon square metre rate allowances applied to the Gross Floor areas provided by FJMT and are current as at July 2014.

* The following documents have been used in compiling this estimate:

- Spatial analysis workshop document dated 24 June 2014
- FJMT Emails dated 09/07/14, 07/07/14, 04/07/14, 26/06/14 & 24/07/14
- EY emails dated 03.10.14 & 01.10.14

* The Scope of Works for the Power House Museum Site is limited to the following:

- Demolition and removal of Wran building, forecourt and basement along Harris street as well as miscellaneous structures and trees
 - Refurbishment of the Turbine house, Engine House, Boiler house, Switch house, Post office and annex
 - Construction of a museum building on Harris street of approximately 16,200m² plus a Glass foyer structure that encapsulates the Switch house building and the existing rear courtyard
 - Exhibition fitout and Furniture fittings and equipment allowances
 - Allowances for services infrastructure have been included
 - Allowance for Archeology, contaminated material and dealing with the potential Acid Sulfate soils have also been included.
- * In compiling this estimate the following assumptions have been made:
- Works will be fully documented and competitively tendered in a competitive market.
 - Unrestricted access to the site will be permitted during "normal" working hours.

ITEMS SPECIFICALLY EXCLUDED

In compiling this Indicative Budget Estimate, no allowance has been made for the following cost items.

Allowances for these items should be added as appropriate to establish the total project cost. If requested, we can provide assistance to assess these allowances.

- . Land and legal costs
- . Site investigation and test bores
- . Removal of asbestos and other hazardous materials in excess of the allowances noted
- . Work outside site boundaries
- . Diverting existing service infrastructure
- . Loose furniture, fittings and equipment in excess of the allowances noted
- . Exhibition fitout costs in excess of the allowances noted
- . Stand-by power generators
- . Special acoustic costs
- . Tenant incentive and/or relocation contributions
- . Tenant fitout
- . Staging/Phasing costs in excess of those noted
- . Any special or additional contributions sought by authorities for public or other facilities as a condition of development approval
- . Real Estate Agent's fees and leasing costs
- . Promotion/Marketing costs
- . Cost increases beyond July 2014
- . Finance costs and interest charges

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Project Summary

ITEMS SPECIFICALLY EXCLUDED Cont'd

- . Goods and Services Tax

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

GFA: Gross floor area
Rates current at July 2014

Level	Zone	GFA m ²	Cost/m ²	Total Cost	Stage 1a \$	Stage 1b \$	Stage 2 \$	Stage 3 \$
A	Site Preparation			\$4,300,000	1,000,000			3,300,000
B	Existing building Refurbishment							
B1	Turbine house	2,100	3,779	7,935,000			7,935,000	
B2	Engine house & boiler house	3,460	4,590	15,880,000			15,880,000	
B3	Switch house	3,900	4,227	16,485,000			16,485,000	
B4	Post office	170	1,500	255,000			255,000	
B5	Northern annex	350	1,500	525,000			525,000	
B6	Allow lift access to Nth Annex			250,000	250,000			
		9,980	\$4,141	\$41,330,000	\$250,000		\$41,080,000	
C	New building							
C1	Harris Street (Wran building)	13,200	6,200	81,840,000				81,840,000
C2	Add commercial space	3,000	3,300	9,900,000				9,900,000
C3	New glass foyer structure	6,000	8,350	50,100,000	25,050,000			25,050,000
C4	Harwood site	6,000	6,200	37,200,000	37,200,000			
C5	Bridge link	400	5,000	2,000,000	2,000,000			
		28,600	\$6,330	\$181,040,000	\$64,250,000			\$116,790,000
D	Exhibition / fitout ALLOWANCE			\$45,000,000	15,000,000		10,000,000	20,000,000
E	Service infrastructure			\$3,135,000	500,000		500,000	2,135,000
F	Other Allowances							
F1	Allowance for temporary fitout			1,190,000	1,190,000			
F2	Allow to retain Harwood facade			800,000	800,000			
F3	Allowance for ESD initiatives			10,000,000	2,000,000		2,000,000	6,000,000
F4	Archeology			250,000	250,000			
F5	Contaminated material removal			500,000	500,000			
F6	Acid sulfate soil disposal			250,000	250,000			
				\$12,990,000	\$4,990,000		\$2,000,000	\$6,000,000
		38,580	\$7,460	\$287,795,000	\$85,990,000		\$53,580,000	\$148,225,000
	Net Cost							
	Margin & Adjustments							
	FUTURE COST INCREASES							
	Staging Costs			Excl.				
	Authority fees	2.0%		5,755,000	1,719,800	-	1,071,600	2,963,600
	Consultant fees incl PM & exhibition	1.5%		4,400,000	1,315,647	-	2,019,774	1,064,579
	Design Contingency	15.0%		44,690,000	13,353,817	-	8,500,706	22,835,477
	Construction Contingency	7.5%		25,700,000	7,678,445	-	4,887,906	13,133,649
		7.5%		27,635,000	8,254,328	-	5,254,499	14,126,173
	Total Cost			\$395,975,000	\$118,312,037		\$75,314,485	\$202,348,478

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Item Details

Rates current at July 2014

	Item	Description	Unit	Qty	Rate	\$
A	Site Preparation					
	XP	SITE PREPARATION				
		1 Removal of sundry trees fences etc across site	Item			100,000
		2 Break up and remove pavements	m2	1000.00	25.0	25,000
		3 Demolish Wran building	m2	6600.00	250.0	1,650,000
		4 Demolish forecourt and basement levels	m2	5000.00	200.0	1,000,000
		5 Demolish cafe and out door play	Item			100,000
		Element XP total				2,875,000
	PR	PRELIMINARIES	Item			515,000
		Element PR total				515,000
	MA	BUILDERS MARGIN & OVERHEAD	Item			170,000
		Element MA total				170,000
		A Site Preparation Total				3,560,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
B	Existing building Refurbishment				
B1	Turbine house GFA 2,100 m2 Cost/m2 \$3,779				
AR	ALTERATIONS AND RENOVATIONS				
	1 Strip out mezanine	m2	1000.00	150.0	150,000
	2 Strip out services and finishes only to remainder	m2	1100.00	50.0	55,000
	Element AR total			98/m2	205,000
EW	EXTERNAL WALLS				
	1 No work to external envelop	Item			Excl.
	Element EW total				
NW	INTERNAL WALLS				
	1 50% of rate	m2	2100.00	82.0	172,200
	Element NW total			82/m2	172,200
NS	INTERNAL SCREENS AND BORROWED LIGHTS	m2	2100.00	50.0	105,000
	Element NS total			50/m2	105,000
ND	INTERNAL DOORS				
	1 50% of rate	m2	2100.00	23.0	48,300
	Element ND total			23/m2	48,300
WF	WALL FINISHES	m2	2100.00	65.0	136,500
	Element WF total			65/m2	136,500
FF	FLOOR FINISHES	m2	2100.00	185.0	388,500
	Element FF total			185/m2	388,500
CF	CEILING FINISHES	m2	2100.00	365.0	766,500
	Element CF total			365/m2	766,500
FT	FITMENTS	m2	2100.00	72.0	151,200
	Element FT total			72/m2	151,200
SE	SPECIAL EQUIPMENT	m2	2100.00	36.0	75,600
	Element SE total			36/m2	75,600
HS	HYDRAULIC SERVICES				
	1 50% of rate	m2	2100.00	38.0	79,800
	Element HS total			38/m2	79,800
MS	MECHANICAL SERVICES	m2	2100.00	1,200.0	2,520,000
	Carried forward				4,648,600

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
	Brought forward				4,648,600
B	Existing building Refurbishment Cont'd				
B1	Turbine house GFA 2,100 m2 Cost/m2 \$3,779 Cont'd				
	Element MS total		1,200/m2		2,520,000
FP	FIRE PROTECTION	m2	2100.00	200.0	420,000
	Element FP total		200/m2		420,000
LP	ELECTRIC LIGHT AND POWER	m2	2100.00	510.0	1,071,000
	Element LP total		510/m2		1,071,000
CM	COMMUNICATIONS	m2	2100.00	125.0	262,500
	Element CM total		125/m2		262,500
TS	TRANSPORTATION SYSTEMS	Item			Excl.
	Element TS total				
PR	PRELIMINARIES	Item			1,155,000
	Element PR total		550/m2		1,155,000
MA	BUILDERS MARGIN & OVERHEAD	Item			377,900
	Element MA total		180/m2		377,900
	B1 Turbine house Total				7,935,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
B	Existing building Refurbishment				
B2	Engine house & boiler house GFA 3,460 m2 Cost/m2 \$4,590				
AR	ALTERATIONS AND RENOVATIONS				
	1 Strip out services and finishes only	m2	3460.00	50.0	173,000
	Element AR total			50/m2	173,000
SB	SUBSTRUCTURE				
	1 Add footings to support new mezzanine	m2	3460.00	200.0	692,000
	2 Replace existing slab on ground as necessary	m2	1230.00	130.0	159,900
	Element SB total			246/m2	851,900
CL	COLUMNS	m2	3460.00	100.0	346,000
	Element CL total			100/m2	346,000
UF	UPPER FLOORS				
	1 Suspended floor slabs	m2	2460.00	300.0	738,000
	Element UF total			213/m2	738,000
EW	EXTERNAL WALLS				
	1 No work to external envelop	Item			Excl.
	Element EW total				
NW	INTERNAL WALLS				
	1 100% of rate	m2	3460.00	165.0	570,900
	Element NW total			165/m2	570,900
NS	INTERNAL SCREENS AND BORROWED LIGHTS	m2	3460.00	50.0	173,000
	Element NS total			50/m2	173,000
ND	INTERNAL DOORS				
	1 100% of rate	m2	3460.00	46.0	159,160
	Element ND total			46/m2	159,160
WF	WALL FINISHES	m2	3460.00	65.0	224,900
	Element WF total			65/m2	224,900
FF	FLOOR FINISHES	m2	3460.00	185.0	640,100
	Element FF total			185/m2	640,100
CF	CEILING FINISHES	m2	3460.00	365.0	1,262,900
	Element CF total			365/m2	1,262,900
	Carried forward				5,139,860

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
	Brought forward				5,139,860
B	Existing building Refurbishment Cont'd				
B2	Engine house & boiler house GFA 3,460 m2 Cost/m2 \$4,590 Cont'd				
FT	FITMENTS	m2	3460.00	72.0	249,120
	Element FT total			72/m2	249,120
SE	SPECIAL EQUIPMENT	m2	3460.00	36.0	124,560
	Element SE total			36/m2	124,560
HS	HYDRAULIC SERVICES				
	1 100% of rate	m2	3460.00	76.0	262,960
	Element HS total			76/m2	262,960
MS	MECHANICAL SERVICES	m2	3460.00	1,200.0	4,152,000
	Element MS total			1,200/m2	4,152,000
FP	FIRE PROTECTION	m2	3460.00	200.0	692,000
	Element FP total			200/m2	692,000
LP	ELECTRIC LIGHT AND POWER	m2	3460.00	510.0	1,764,600
	Element LP total			510/m2	1,764,600
CM	COMMUNICATIONS	m2	3460.00	125.0	432,500
	Element CM total			125/m2	432,500
TS	TRANSPORTATION SYSTEMS	Item			Excl.
	Element TS total				
PR	PRELIMINARIES	Item			2,307,000
	Element PR total			667/m2	2,307,000
MA	BUILDERS MARGIN & OVERHEAD	Item			755,400
	Element MA total			218/m2	755,400
	B2 Engine house & boiler house Total				15,880,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
B	Existing building Refurbishment				
B3	Switch house GFA 3,900 m2 Cost/m2 \$4,227				
AR	ALTERATIONS AND RENOVATIONS				
	1 Strip out services and finishes only to remainder	m2	3900.00	50.0	195,000
	2 Demolish and remove top floor of the building	m2	1250.00	150.0	187,500
	Element AR total			98/m2	382,500
EW	EXTERNAL WALLS				
	1 Cosmetic repairs to envelop Allowance	Item			1,000,000
	Element EW total			256/m2	1,000,000
NW	INTERNAL WALLS				
	1 100%of rate	m2	3900.00	165.0	643,500
	Element NW total			165/m2	643,500
NS	INTERNAL SCREENS AND BORROWED LIGHTS	m2	3900.00	50.0	195,000
	Element NS total			50/m2	195,000
ND	INTERNAL DOORS				
	1 100% of rate	m2	3900.00	46.0	179,400
	Element ND total			46/m2	179,400
WF	WALL FINISHES	m2	3900.00	65.0	253,500
	Element WF total			65/m2	253,500
FF	FLOOR FINISHES	m2	3900.00	185.0	721,500
	Element FF total			185/m2	721,500
CF	CEILING FINISHES	m2	3900.00	365.0	1,423,500
	Element CF total			365/m2	1,423,500
FT	FITMENTS	m2	3900.00	72.0	280,800
	Element FT total			72/m2	280,800
SE	SPECIAL EQUIPMENT	m2	3900.00	36.0	140,400
	Element SE total			36/m2	140,400
HS	HYDRAULIC SERVICES				
	1 50% of rate	m2	3900.00	38.0	148,200
	Element HS total			38/m2	148,200
MS	MECHANICAL SERVICES	m2	3900.00	1,200.0	4,680,000
	Carried forward				10,048,300

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Item Details

Rates current at July 2014

	Item	Description	Unit	Qty	Rate	\$
		Brought forward				10,048,300
B	Existing building Refurbishment	Cont'd				
B3	Switch house	GFA 3,900 m2 Cost/m2 \$4,227 Cont'd				
		Element MS total		1,200/m2		4,680,000
FP	FIRE PROTECTION		m2	3900.00	200.0	780,000
		Element FP total		200/m2		780,000
LP	ELECTRIC LIGHT AND POWER		m2	3900.00	510.0	1,989,000
		Element LP total		510/m2		1,989,000
CM	COMMUNICATIONS		m2	3900.00	125.0	487,500
		Element CM total		125/m2		487,500
TS	TRANSPORTATION SYSTEMS		Item			Excl.
		Element TS total				
PR	PRELIMINARIES		Item			2,395,000
		Element PR total		614/m2		2,395,000
MA	BUILDERS MARGIN & OVERHEAD		Item			785,200
		Element MA total		201/m2		785,200
		B3 Switch house Total				16,485,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
D	Exhibition / fitout ALLOWANCE				
EX	EXHIBITION WORKS				
	1 Permanent gallery exhibition works	m2	6400.00	5,000.0	32,000,000
	2 Additional gallery to Boiler house	m2	800.00	5,000.0	4,000,000
	3 DDT for Permenent exhibition to remain	m2	4500.00	(2,000.0)	(9,000,000)
	4 Temporary gallery works	m2	3200.00	2,500.0	8,000,000
	Element EX total				35,000,000
FU	FURNITURE FITTINGS & EQUIPMENT				
	1 Administration,workshop etc Fitout & FF & E	m2	3700.00	1,500.0	5,550,000
	2 Collection storage FF & E	m2	3000.00	500.0	1,500,000
	3 Cafe, kitchen, shop etc FF & E	m2	560.00	900.0	504,000
	4 Volunteer & Memebers lounge	m2	345.00	300.0	103,500
	5 Foyer FF & E	m2	1350.00	100.0	135,000
	6 Group arrival	m2	462.00	100.0	46,200
	7 Study centre, Auditorium, Classrooms	m2	1780.00	400.0	712,000
	8 Media Black box	m2	500.00	500.0	250,000
	9 Research library	m2	500.00	500.0	250,000
	10 Family space	m2	810.00	300.0	243,000
	11 Permanent Gallery FF & E	m2	6400.00	75.0	480,000
	12 Temporary Gallery FF & E	m2	3200.00	75.0	240,000
	13 Sundries / rounding	Item			(13,700)
	Element FU total				10,000,000
	D Exhibition / fitout ALLOWANCE Total				45,000,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Item Details

Rates current at July 2014

Item	Description	Unit	Qty	Rate	\$
E	Service infrastructure				
XL	LANDSCAPING AND IMPROVEMENTS				
	1 Allowance for street scape works	Item		500,000	
	Element XL total			500,000	
XR	ROADS, FOOTPATHS AND PAVED AREAS				
	1 Allowance for works to pedestrian bridge	Item		250,000	
	2 Allowance for works to Access road	Item		500,000	
	Element XR total			750,000	
XK	EXTERNAL STORMWATER DRAINAGE				
	1 Stormwater detention allowance	Item		200,000	
	Element XK total			200,000	
XD	EXTERNAL SEWER DRAINAGE				
		Item		50,000	
	Element XD total			50,000	
XG	EXTERNAL GAS				
		Item		10,000	
	Element XG total			10,000	
XW	EXTERNAL WATER SUPPLY				
		Item		10,000	
	Element XW total			10,000	
XE	EXTERNAL ELECTRIC LIGHT AND POWER				
	1 Substations allowance	Item		1,000,000	
	Element XE total			1,000,000	
XC	EXTERNAL COMMUNICATIONS				
		Item		10,000	
	Element XC total			10,000	
PR	PRELIMINARIES				
		Item		455,000	
	Element PR total			455,000	
MA	BUILDERS MARGIN & OVERHEAD				
		Item		150,000	
	Element MA total			150,000	
E Service infrastructure Total				3,135,000	

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Item Details

Rates current at July 2014

	Item Description	Unit	Qty	Rate	\$
F	Other Allowances				
F1	Allowance for temporary fitout				
YY	SPECIAL PROVISIONS				
	1 Temporary office fitout Northern annex	m2	520.00	1,000.0	520,000
	2 Temporary BOH workshop etc fitout	m2	300.00	1,500.0	450,000
	Element YY total				970,000
FU	FURNITURE FITTINGS & EQUIPMENT				
	1 Assume Furniture & equipment relocated for this move	Item			Excl.
	Element FU total				
PR	PRELIMINARIES	Item			175,000
	Element PR total				175,000
MA	BUILDERS MARGIN & OVERHEAD	Item			45,000
	Element MA total				45,000
	F1 Allowance for temporary fitout Total				1,190,000

MUSEUM OF ARTS AND APPLIED SCIENCE - POWER HOUSE REFURBISHMENT & EXPANSION - OPTION 6

Item Details

Rates current at July 2014

	Item Description	Unit	Qty	Rate	\$
F	Other Allowances				
F2	Allow to retain Harwood facade				
	AR ALTERATIONS AND RENOVATIONS				
	1 Allowance for temporary facade retention	m2	1300.00	500.0	650,000
	Element AR total				650,000
	PR PRELIMINARIES	Item			120,000
	Element PR total				120,000
	MA BUILDERS MARGIN & OVERHEAD	Item			30,000
	Element MA total				30,000
	F2 Allow to retain Harwood facade Total				800,000

MUSEUM OF ARTS AND APPLIED SCIENCE - HOWARD - RESIDENTIAL (30 STOREY TOWER WITH HERITAGE FACADE RETAINED)

Project Summary

BASIS OF ESTIMATE

The costs in this report are based upon square metre rate allowances applied to the Gross Floor areas provided by FJMT and are current as at July 2014.

* The following documents have been used in compiling this estimate:

- Spatial analysis workshop document dated 24 June 2014
- FJMT Emails dated 09/07/14, 07/07/14, 04/07/14 & 26/06/14.
- EY email dated 03.10.2014

* The Scope of Works for the Residential site is limited to the following:

- Retention of existing howard building façade with strip out and demolition of remainder
- Construction of a basement carpark approx 6,000m²
- Construction of 12m podium which includes Retail, carparking and the sculpture garden
- Construction of a residential building of approx 26,100m²
- Allowances for services infrastructure have been included
- Allowance for Archeology, contaminated material and dealing with the potential Acid Sulfate soils have also been included.

* In compiling this estimate the following assumptions have been made:

- Works will be fully documented and competitively tendered in a competitive market.
- Unrestricted access to the site will be permitted during "normal" working hours.

ITEMS SPECIFICALLY EXCLUDED

In compiling this Indicative Budget Estimate, no allowance has been made for the following cost items.

Allowances for these items should be added as appropriate to establish the total project cost. If requested, we can provide assistance to assess these allowances.

- . Land and leagal costs
- . Site investigation and test bores
- . Removal of asbestos and other hazardous materials in excess of the allowances noted
- . Work outside site boundaries
- . Diverting existing service infrastructure
- . Loose furniture, fittings and equipment
- . Stand-by power generators
- . Special acoustic costs
- . Tenant incentive and/or relocation contributions
- . Tenant fitout
- . Staging/Phasing costs
- . Any special or additional contributions sought by authorities for public or other facilities as a condition of development approval
- . Real Estate Agent's fees and leasing costs
- . Promotion/Marketing costs
- . Cost increases beyond July 2014
- . Finance costs and interest charges
- . Goods and Services Tax

MUSEUM OF ARTS AND APPLIED SCIENCE - HOWARD - RESIDENTIAL (30 STOREY TOWER WITH HERITAGE FACADE RETAINED)

Total Cost Summary

GFA: Gross floor area
Rates current at July 2014

Level	Zone	GFA m ²	Cost/m ²	Total Cost
A	Site Preparation			\$2,300,000
B	Basement Carpark (200 cars)	6,000	\$950	\$5,700,000
C	Podium			
	C1 Retail	1,500	1,550	2,325,000
	C2 Above ground parking	5,000	750	3,750,000
	C3 Sculpture Garden			4,650,000
	C4 Artwork allowance			1,000,000
		6,500	\$1,804	\$11,725,000
D	Residential building	30,600	\$3,250	\$99,450,000
E	Service infrastructure			\$2,720,000
F	Fitout works			
	F1 Retail Fitout - by tenant			Excl.
G	Other Allowances			
	G1 Allow for facade retention			1,825,000
	G2 Archeology Allowance			1,000,000
	G3 Contaminated material removal			1,000,000
	G4 Acid sulfate soil removal			500,000
				\$4,325,000
	Net Cost	43,100	\$2,929	\$126,220,000
Margin & Adjustments				
	FUTURE COST INCREASES			Excl.
	Authority fees	1.5%		1,890,000
	Consultant fees incl PM	12.5%		16,015,000
	Design Contingency	7.5%		10,800,000
	Construction Contingency	5.0%		7,750,000
	Total Cost	43,100	\$3,774	\$162,675,000