SYDNEY OPERA HOUSE VEHICLE AND PEDESTRIAN SAFETY PROJECT

ARCHITECTS STATEMENT

ISSUE 00 / 02 JUNE 2010
FOR SYDNEY OPERA HOUSE TRUST

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ARCHITECTURE URBAN DESIGN LANDSCAPE EXHIBITIONS INTERIORS

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existing loading/unloading arrangements
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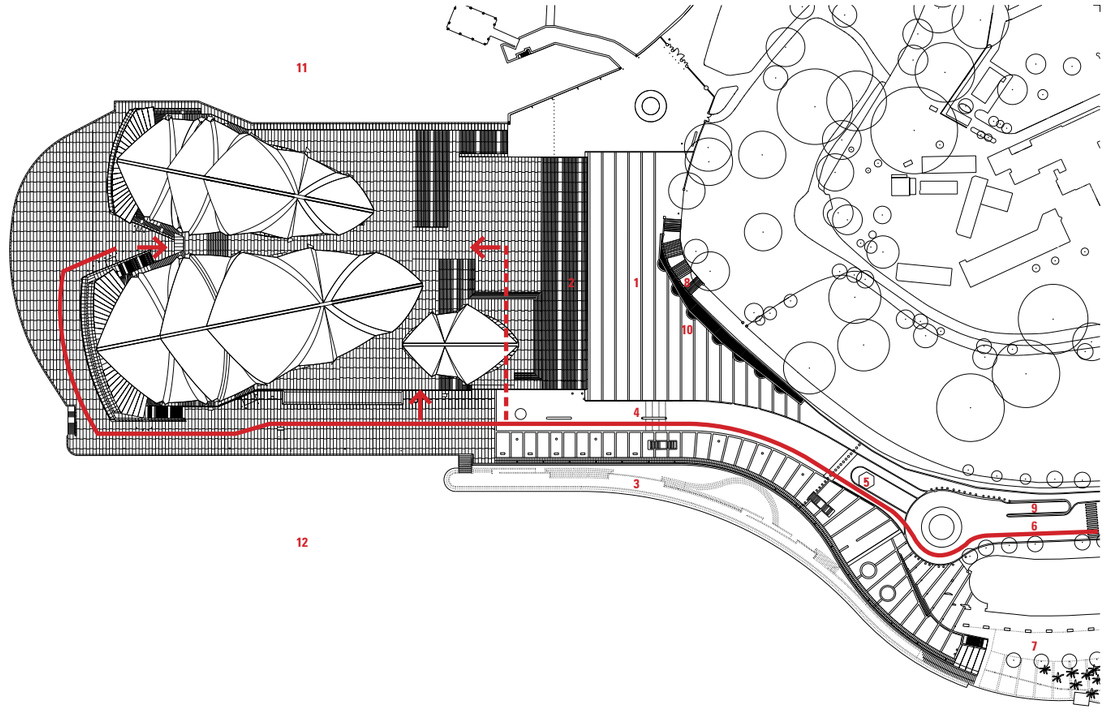


The Vehicle and Pedestrian Safety Project [VAPS] addresses longstanding issues of pedestrian safety arising from pedestrian and vehicle conflict on the Sydney Opera House forecourt. The existing loading and unloading arrangements require a large number of heavy vehicles to daily traverse extensive areas of the existing forecourt amid a large volume of pedestrians.

The project is also consistent with future Opera Theatre Renewal proposals. Operational efficiency will improve as loading may be carried out at any time of the day or night as the dock is acoustically seperate from the venues and dock access is seperate from the pedestrian Forecourt.

VAPS will minimise intrusion of heavy vehicles into the forecourt through construction of a new underground loading dock. Johnson Pllton Walker were commissioned to design -

- access for above ground vehicles from a ramp within the Sydney Opera House Forecourt,
- an underground loading dock below the forecourt and arrivals concourse
- extension of existing and new lift services from the existing floor levels to the new loading dock level
- two underground corridors linking the dock area with the lifts

The scope of work excludes, but is designed to integrate with -

- diversion of the Bennelong Stormwater Drain
- the New Roadway Works
- Future Strategic Building Plan works including those related to the VAPS Project

In addition to a State and National Heritage Listed icon, the Sydney Opera House was inscribed in the UNESCO World Heritage List in 2007, recognising that the building represents a masterpiece of human creative genius of outstanding universal value.

The Sydney Opera House Plan of Management (2005), sets out a statutory and management framework ensuring the National and World Heritage values of the Sydney Opera House are protected and conserved.

The Plan is underpinned by -

- *Utzon Design Principles (2002); and*
- *Sydney Opera House: A Plan for the Conservation of the Sydney Opera House and its Site, (3rd Edition 2003) – known as Conservation Management Plan (CMP).*
- *Sydney Opera House Strategic Building Plan*

All three documents recognise the benefits of facilities located in areas excavated below, and with access from, the Forecourt and setout guidance for implementation. This Architects Statement describes compliance with these documents.

This Architects Statement was prepared to assist the process of Heritage Impact Assessment and it outlines -

> The Brief
> The Design Process
> The Design
> The Design in relation to the Utzon Design Principles
> The Design in relation to the The Conservation Management Plan
> A Schedule of Materials and Finishes
> Architectural drawings

BRIEF

Design Consultancy Agreement
In 2009, Johnson Pilton Walker were engaged by the Sydney Opera House Trust to design and document for planning approval and Design and Construct Tender the scope of the Vehicle and Pedestrian Safety Project at the Sydney Opera House.

This engagement is a variation to the existing Design Consultancy Agreement – between JPW and the Sydney Opera House Trust for which the Client Brief comprises:

> Sydney Opera House Utzon Design Principles (May 2002);
> Facility and Design Briefs;
> 'A Revised Plan for the Conservation of the Sydney Opera House and its Site' (as endorsed by the SOHT in 2003);

Preliminary Scope
Preliminary briefing documents for VAPS defined the scope of the project in broad terms including -

> a vehicle ramp/tunnel portal near the Macquarie St roundabout and adjacent to the Tarpeian Wall-
> an underground loading dock located partly below the Sydney Opera House forecourt and partly below the Sydney Opera House with Security, Amenities and Garbage Store at a level to suit the proposed future New Opera Theatre Scenery Assembly Area and Scenery Store
> extension of existing and new lift services from the existing floor levels to the new loading dock level
> two underground corridors linking the dock area with the lift services

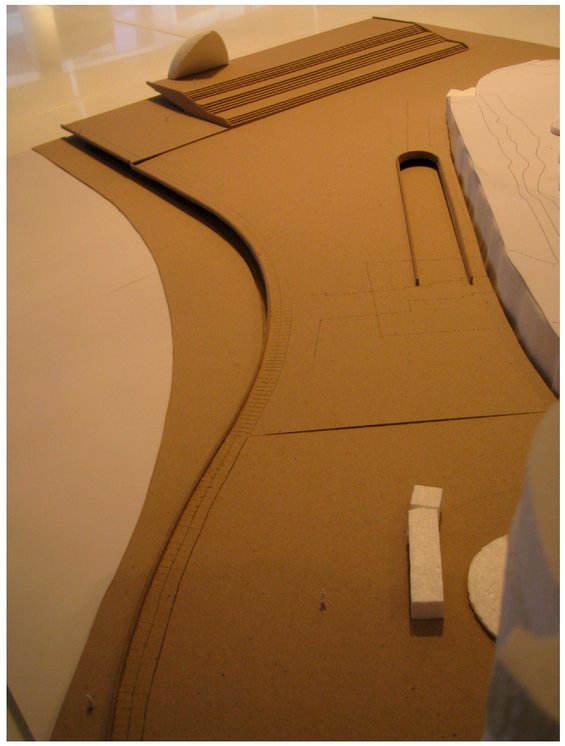
User Functional Brief
User Functional Brief [Rev. 05] sets out detailed user requirements for a two staged project.

Other requirements of the project are to consider the relationship of these works with -

> a separate proposal to replace the existing kerbed roadway across the Forecourt with a flush paved shared vehicle/pedestrian zone
> a separate proposal to divert the Bennelong Stormwater drain to facilitate both the proposed future New Opera Theatre and the underground loading dock

Project Area
The project area includes -

> the majority of the Sydney Opera House Forecourt, and the unexcavated area below, from the Opera House's Monumental Stairs to its southern boundary at the Botanic Gardens Gate, along the Tarpeian Wall to Macquarie St and East Circular Quay. The forecourt and lower concourse were built in the 1980's Public Works Department project - *Circular Quay Project - Opera House Forecourt + Lower Concourse*
> Approximately half of the Arrivals Concourse and the unexcavated areas below
> Selected areas within and below the Opera House interior to provide vertical connections with the new Loading Dock
> Areas within and around the Pedestrian Access Tunnel to the Sydney Opera House Carpark, built in the early 1990s to serve the Opera House and owned on separate title by the Government of NSW.



Background
Richard Johnson and Johnson Pilton Walker were closely involved with Jorn Utzon's work at the Sydney Opera House following his re-engagement in 2000. Richard Johnson assisted with the preparation of the Utzon Design Principles and assisted Jorn Utzon with his input into the 3rd edition of the Conservation Management Plan by Dr. James Semple-Kerr. Utzon Architects and Johnson Pilton Walker, Architects in Collaboration, have completed a number of projects at the Sydney Opera House including -

> Utzon Room [Reception Hall Refurbishment]
> Western Colonnade
> Western Foyers; Bennelong Lift and Box Office Escalators
> New Opera Theatre [Sketch Design]

Johnson Pilton Walker also completed the Box Office Toilet Refurbishment

Design Process
Earlier strategic proposals for access from the forecourt to an underground loading dock have been developed in this Concept Design stage through careful study of the existing building, site and surrounds and analysis of the impact of change.

A collaborative process has involved client, engineer, design team and architect. The design has been further informed by more detailed client functional and technical briefs, stakeholder consultation and working sessions with Project Team and Engineering and Services Consultants.

Physical models and 3D CAD models have been used extensively thus far. This approach will continue throughout all stages of the project and will broaden to include material samples, component prototypes and full size prototypes.

This follows processes setout in the Utzon Design Principles.

Option Studies
Broad and extensive option studies have been undertaken for the following aspects of the project -

> Vehicle Access to Underground Loading Dock including
  » Access from Forecourt
  » Access from Harbour Tunnel
  » Access from within Sydney Opera House Carpark
  » Access from Botanic gardens
  » Access from Macquarie St
> Access Ramp Location and Alignment within the Forecourt
> Dock Location and arrangement of associated turning space for 19M Articulated Vehicles
> Circulation arrangements linking the dock with the remote lift locations and associated dock alignment

DESIGN CONCEPT

"One of the great features of the Opera House is the approach, the openness, the fluidity of people's movement through the house."

Jørn Utzon

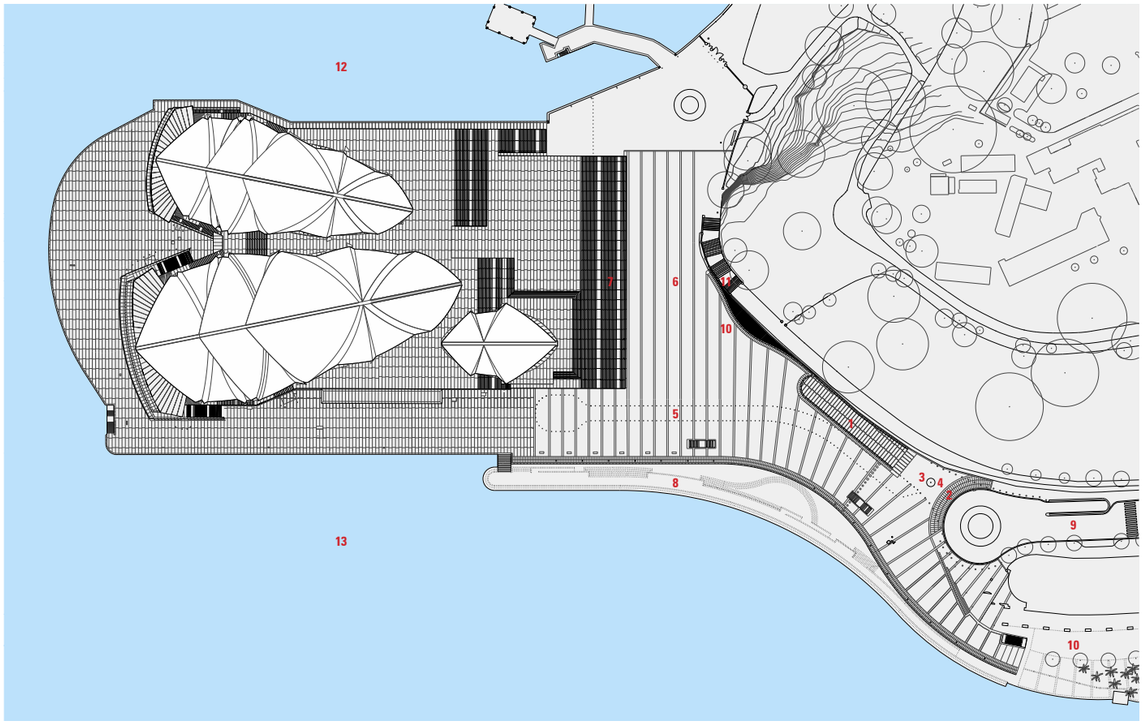
Approach to Sydney Opera House

Maintain maximum openness and fluidity of approach to Sydney Opera House from East Circular Quay and the city

Enhance the quality of the southern area of the Sydney Opera House site as a threshold between the city and the public areas of the Sydney Opera House

Proposed Site Plan

1 Ramp
2 Kerb Crossing
3 Manoeuvring Area
4 New Guardhouse
5 Shared Pedestrian/Vehicle Zone
6 Forecourt
7 Monumental Stair
8 Lower Concourse
9 Macquarie St
10 East Circular Quay
11 Tarpeian Way
12 Farm Cove
13 Sydney Cove



The pedestrian approach from the city is a key feature of Utzons intended arrival sequence. The new ramp and shared pedestrian/ vehicle zone will improve the sense of openness and fluidity in the visitors approach to the Sydney Opera House.

From the southern site boundary at Macquarie St and the northern end of East Circular Quay, the width of the approach reduces between the Tarpeian Wall and the western edge of the Forecourt above the Lower Concourse before expanding into the full width of the Forecourt.

Removal of the existing kerbed roadway creates a broad paved area at the same level with the Forecourt between the southern boundary and the start of the ramp which marks arrival and provides pedestrian safety through a properly defined kerb crossing and the required vehicle manoeuvring area.

As the opposing curves of the Tarpeian Wall and the western edge of the Forecourt compress the pedestrian approach, the existing kerbed roadway with its associated traffic treatments also significantly reduces the effective pedestrian width.

The new entry ramp is immediately against the Tarpeian Wall and the direction of the majority of heavy vehicle traffic to the ramp and away from the Forecourt allows the replacement of the kerbed roadway with a shared pedestrian/vehicle zone for the remaining vehicles with flush paving treatment continuous across the zone.

The shared zone offsets the intrusion of the new ramp and increases the effective and perceived width of the pedestrian approach, and provides maximum openness and fluidity before the ramp continues underground and the Forecourt expands to its full width stretching from Sydney Cove to Farm Cove in front of the Monumental Stairs.

The existing guardhouse in its existing size and location is a significant intrusion in the important view of the Sydney Opera House on approach. The location, size, form and material of the new guardhouse will reduce the visual impact of this necessary function. The location of the ramp against the Tarpeian Wall requires the guardhouse, a simple cylindrical volume of reduced and minimum dimensions in bronze and matching glass, to be located much closer to the Tarpeian Wall.

The location of the ramp will require diversion of most of the in-ground services serving the Sydney Opera House as well as works within the Sydney Opera House Carpark Pedestrian Access Tunnel.

DESIGN CONCEPT

"This plateau also functions as a gathering place, a town square and outdoor auditorium."

"This outdoor auditorium created by the grand staircase is of course part of the townscape and is also very dependent upon what goes on elsewhere in the city. Because as you sit on these stairs you look towards the city, and you have the city and its buildings as a background to whatever happens on the forecourt."

Jørn Utzon

Forecourt as Civic Space and Venue
Roof floats above Plateau of Podium and Forecourt

Maintain maximum amenity and area of Forecourt as a significant public space in the city and also for use as performance venue; and

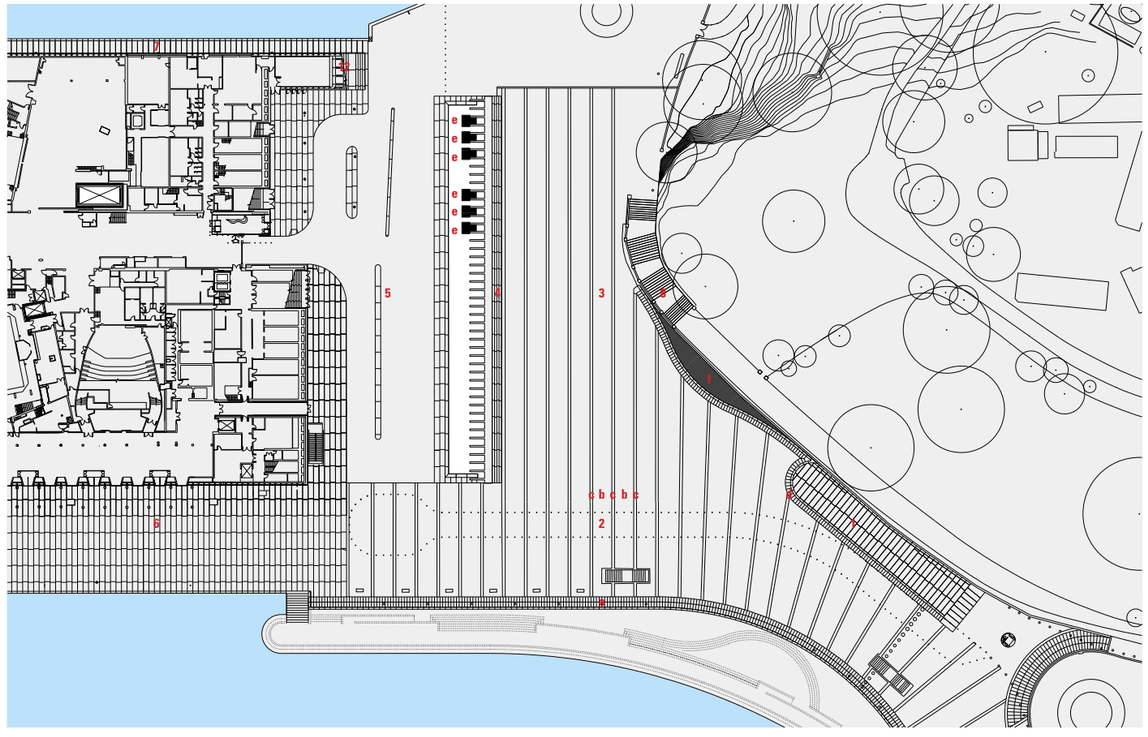
Improve presentation of the Sydney Opera House, amenity of Forecourt and setting of the heritage Tarpeian Wall through removal of intrusive items and reduction of clutter

Minimize intrusion of heavy vehicle portal and new guardhouse into Forecourt

Proposed Forecourt Plan

1 Ramp Entry
2 Shared Pedestrian/Vehicle Zone
3 Forecourt
4 Monumental Stair
5 Vehicle Concourse
6 Western Boardwalk
7 Eastern Boardwalk
8 Tarpeian Way

a Existing Parapet -
Granite Paving Slabs; Precast Crushed Granite Upstand and Bronze Handrail
b Paving - Granite Setts
c Paving - Granite Slab Bands
d New Parapet - matches existing
e New Outside Air Intakes - Solid bronze grilles
f Consolidated Services Zone -
Solid Bronze Grilles over Intakes + Discharges



The forecourt and podium, both as a man-made headland or plateau over which the roof shells float and the performances take place, as well as forming an outdoor auditorium, are central in Utzons vision.

The impact of the new ramp on the Forecourt as part of this man-made headland is minimised and the ramp entry and new works are integrated into the Forecourt and podium through geometry, material, module and detail.

The alignment of the ramp follows the curve of the Tarpeian Wall and the grades of the ramp are maximised to shorten the opening in the Forecourt. The existing form, shape and functional area of the Forecourt is maintained.

The intrusive marble planters against the Tarpeian Wall are removed and a low sloping precast crushed granite upstand which frames the ramp entry will extend towards the Tarpeian Wall steps. The upstand defines the southern edge of the Forecourt and de-clutters the area by concealing and consolidating existing services including intakes and exhausts with forecourt infrastructure and lighting for the Tarpeian Wall.

The entry and Forecourt edge upstand will be unified with the Sydney Opera House Forecourt and podium through harmony and uniformity in geometry, material, dimension and detail.

The circular and sinuous plan layout of the ramp entry and the upstand reflects the opposing line of the western forecourt edge, the Tarpeian Wall and the larger outline of the Sydney Opera House Boardwalk and Forecourt.

The ramp paving will be either closed joint, fully bedded, precast crushed granite panels identical in dimension and detail to the existing Boardwalk and podium paving or an in-situ finish in the same crushed granite aggregate and matrix with an exposed finish divided into panels of identical dimensions with solid bronze inlays. A prototyping and testing process will be used to find the solution which best meets aesthetic and functional requirements.

The walls and parapet of the ramp and upstand will be in open jointed precast crushed granite panels identical in material, finish, module and detail to the podium cladding and the western parapet edge of the Forecourt above the Lower Concourse. A solid bronze handrail attached to the parapet, with integrated lighting, will also match the existing handrails.

A single row of 1200x600 gang sawn granite slabs, laid below the precast upstand and ramp parapet will mirror the double row of granite slabs against the western edge of the Forecourt and will frame the reinstated granite setts of the Forecourt.

The western area of the Forecourt above the Lower Concourse will be unified with the rest of the Forecourt by removal of the existing road and continuity of the existing bands of single granite paving slabs across the new shared pedestrian/vehicle zone.

Visual intrusion into the Forecourt of mechanical services and egress associated with the dock is avoided. Outside air intakes for the new dock are discreetly located in the Vehicle Concourse, exhaust discharged below the Eastern Boardwalk, while new egress points are located in the lower part of external ramp area. New solid bronze grilles in custom detail will be installed over the existing intakes and exhausts below the Tarpeian Wall.

Fixed outdoor furniture such as seating and other fixtures need to be addressed consistently across the whole of the public areas of the Sydney Opera House and have not been addressed as part of this project.

DESIGN CONCEPT

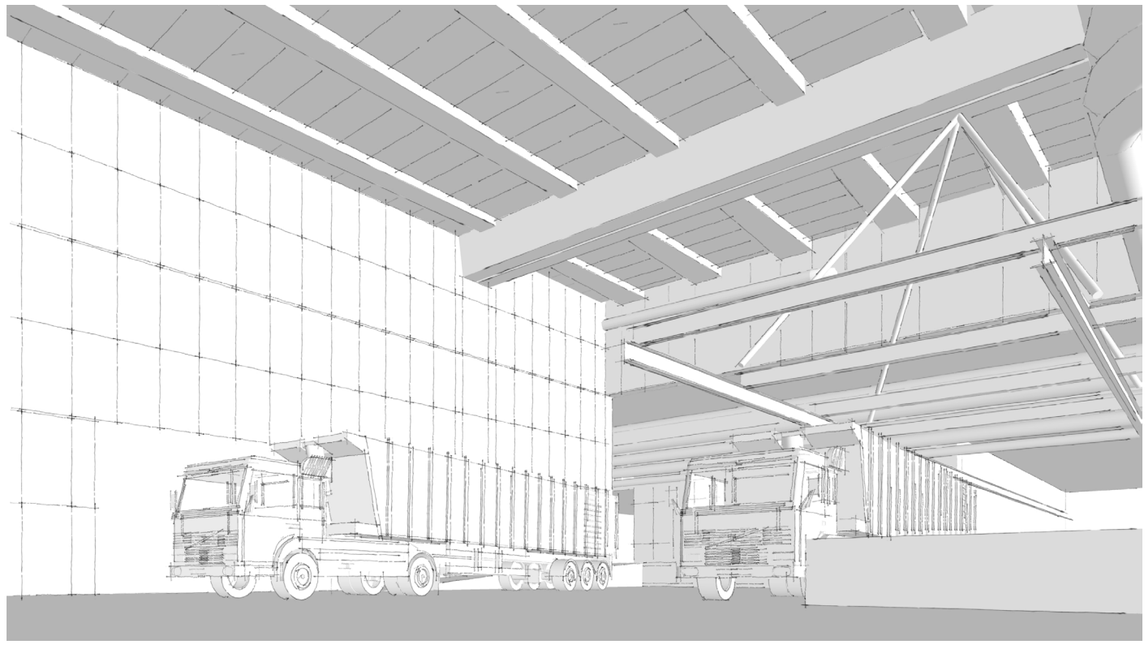
"You find a similar situation in Gothic Cathedrals, where the structure is also the architecture. The same is seen in Chinese and Islamic architecture, although with different expressions."

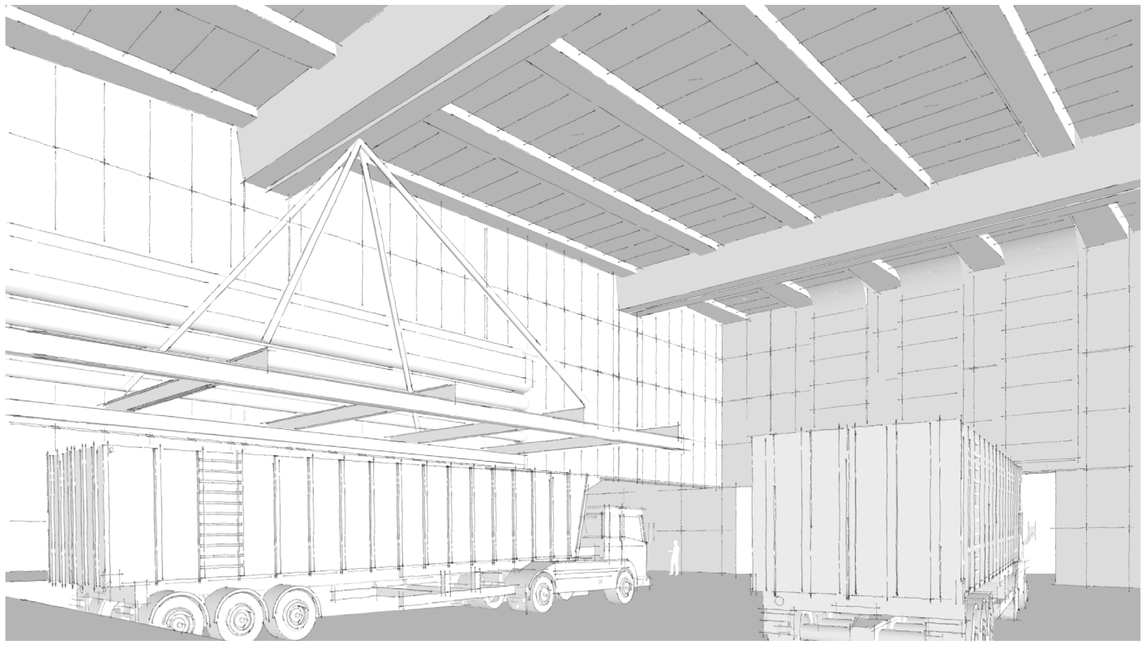
"This resulted in a building where all spans are clearly expressed by ribs and folds."
Jørn Utzon

Loading Dock Identified as Sydney Opera House Space through structural expression

Primacy and clarity of new concrete structure of loading dock as dominant architectural quality

Key common characteristics of existing and new concrete structure identify the new as inherently of the Sydney Opera House while also a later addition by a different architect

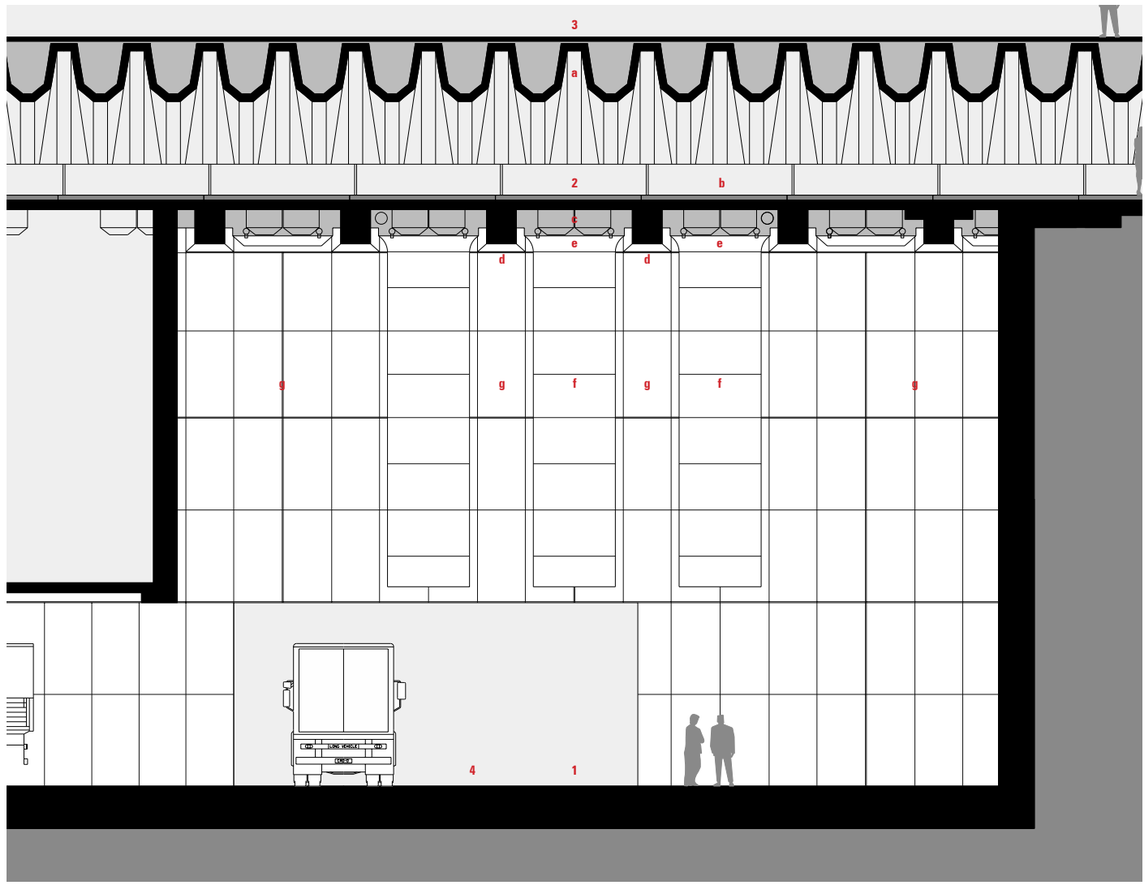




Delivery Dock South Elevation

1 Delivery Dock
2 Vehicle Concourse
3 Monumental Stair
4 Ramp Beyond

a Folded Slab Concourse Beams [Original]
b Precast Crushed Granite Upstands [Original]
c In-Ground Tie Beams [Original]
d Shaped North/South Beams in Precast Forms
e Compressed Fibre Cement Panels. Clear Seal Finish
f Outside Air Intakes
g Off-form Concrete Wall. Kiem Mineral Seal Finish.



Utzon's architecture is characterised by beautiful and inventive concrete structures which tested the limits of engineering and construction technology of the time. The dock area will be one of the largest spaces in the building and will be integrated with the architecture of the Opera House through the dominant quality of refined and expressed concrete structure.

The layout of the primary space, the delivery dock, located below the existing arrivals concourse with a number of connected secondary spaces is the result of studies of operational flows and appropriate location:-

Significant concrete structure is required in the main area to provide vast clear spans of 40M x 20M for truck turning paths and resist hydrostatic pressures on the floor slabs and 13M high walls.

A series of beams spanning north-south will be formed at vehicle concourse level between existing in-ground tie beams which restrain the foot of the folded concourse beams. To avoid undermining the existing in-ground tie beams, the beams will be shaped horizontally and vertically at their end spans to follow the changing profiles of the tie beams to maintain appropriate strength and will be cast in integrated precast forms.

Through rhythm, alignment, changing profile, all dictated by the existing building, and crisp definition through use of precast forms the structure will echo the folded slab concourse beams above and orientate the space within the Sydney Opera House.

Girder beams, conventionally formed in-situ, provide intermediate support at 1/4 and 3/4 points. This is aligned with the proposed use of future Level -015 spaces above the Dock through definition of a central space, with flexible secondary areas to the north and south.

The concrete structure will be of the highest possible order through craft, workmanship, careful selection of raw materials and a sample, prototype and shop drawings process.

All concrete will be approximately 1/2 white cement and 1/2 Portland cement and sealed with a mineral sealer.

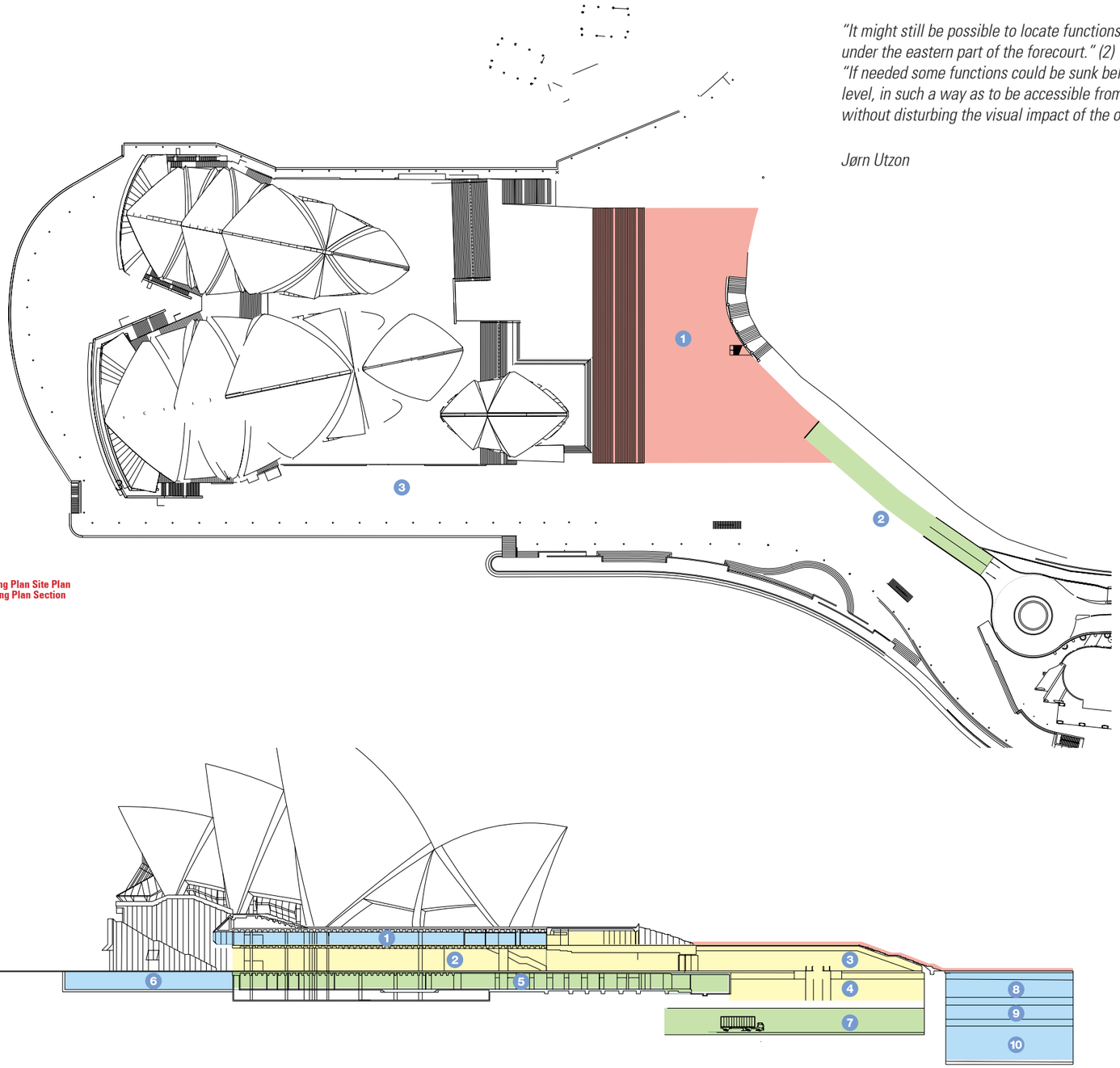
Ply forms for walls will be set out to follow the building module and pour joints and beam and wall junctions will be carefully treated and detailed.

Compressed fibre cement panels, clear sealed and carefully detailed, will conceal the underside of the in-ground tie beams and sprinkler and services reticulation at high level. Elsewhere, in keeping with the existing service areas of the Sydney Opera House, services will generally be exposed and painted, carefully and neatly installed and setout.

Outside air will be drawn into the dock directly and discreetly through the Level +012 structure at its intersection with the foot of the folded concrete slab concourse beams, supporting the Monumental Stairs above, behind the existing upstanding tilted precast crushed granite panels.

A new services trench directly below the Eastern Boardwalk will provide the new dock with an exhaust discharge point into the existing void below the Eastern Boardwalk and behind the open jointed precast panels of the eastern sea wall.

New egress points will be provided from the dock onto the ramp beyond the roller shutter in addition to egress paths provided by extending existing stairs from within the building to the new dock level.



Above: Strategic Building Plan Site Plan
Below: Strategic Building Plan Section

"It might still be possible to locate functions underground under the eastern part of the forecourt." (2)
"If needed some functions could be sunk below the forecourt level, in such a way as to be accessible from the forecourt, but without disturbing the visual impact of the original layout." (1)

Jørn Utzon

Strategic Building Plans + Masterplans
Ensure the appropriateness of the design as an incremental step towards realisation of broader strategic building plans and masterplans including the future New Opera Theatre and a possible future space above the loading dock with vehicle access from the ramp.

The VAPS project implements the underground loading dock [see Section to left - 7], ramp [Plan - 2] and tunnel proposed in the Strategic Building Plan [2001].

The Strategic Building Plan also proposes a visitor/patron drop-off [See Section - 4], directly below the existing Vehicle Concourse, above the Dock and served by the same ramp. The design allows this to be built in future with minimum intervention. Care has been taken to ensure that the character of the structure above the dock is appropriate for a future public space and can be extended consistently to the full length of the proposed drop-off. Further, the structure has been designed to maximise the available height between the dock and structure over to provide maximum future flexibility.

The dock level is also set to serve the New Opera Theatre sketch proposal for a scenery storage area below rehearsal areas at existing Ground level +012, with 11M clear height below a 1M allowance for materials handling equipment and a 2M allowance for structure. Aspects of the new dock have also been planned to provide benefits for the potential future construction programme and cost.

The Forecourt Masterplan sets out a broad strategy to complete Utzons vision of the site as a man-made headland by extending the precast crushed granite paving panels across the forecourt and towards East Circular Quay and thereby unifying the forecourt and podium in a common material, finish and detailing.

Construction of the dock, entry, the roadway works and Bennelong Stormwater diversion as well as all the associated services diversions will require removal of the majority of the forecourt and arrivals concourse finishes.

The VAPS project will reinstate the existing paving finishes or new finishes to match existing but is designed to suit the future implementation of this Masterplan. New slabs required over the tunnel and the new precast panels to southern forecourt edge are at levels to suit the future implementation of the Forecourt Masterplan to extend precast crushed granite paving across the Forecourt.

UTZON DESIGN PRINCIPLES

The design complies with the Sydney Opera House Utzon Design Principles [May 2003] in the following ways:

Design Principle	Compliance
THE FUTURE **Keep the approach, the openness and fluidity of movement** *"One of the great features of the Opera House is the approach, the openness, the fluidity of people's movements through the house, and once you clutter this you have a problem."*	The fundamental reason for the project is to improve the visitors experience of the approach to the Opera House by removing as many vehicles as possible.
Accommodate new approach and back of house for events under Forecourt *"It might still be possible to locate functions underground under the eastern part of the forecourt." (2)* *"If needed some functions could be sunk below the forecourt level, in such a way as to be accessible from the forecourt, but without disturbing the visual impact of the original layout." (1)*	The project creates significant space below ground including under the forecourt for suitable functions such as loading and unloading facilities, associated functions such as garbage collection and plant. Access is provided from the Forecourt while maintaining its original layout.
ORIENTATION AND MOVEMENT **Simple, easily understood tour** *"In the Sydney Opera House you are aware of your orientation at all times. It is important that each number of the audience has a simple, easily understood tour, from the entrance to his or her seat and out again." (2)10*	The pedestrian approach to the Opera House from the city is the first stage of the audience tour and orientation. The new arrangement of the vehicle ramp, the replacement of the road with a shared pedestrian zone, maintains the character of this first stage while providing improved clarity and simplicity. The orientation of the visitor to the Opera House is improved by the removal of the existing guardhouse and provision of a smaller guardhouse in a less intrusive location.
COUNTERPOINT **Referring to the paving:** *"...its uniformity with the cladding will help to give the rock-like character desired for the base, as a contrast and anchor to the soaring roofs." (3)*	The new external works maintain the uniformity of the Forecourt through the selected materials. In precast crushed granite and matching granite paving, the project is integrated with the existing Forecourt and podium.
ADDITIVE ARCHITECTURE - GEOMETRY **Surfaces comprehended because of geometric order** *"All large surfaces are easily read or comprehended because of the geometric order." (2)*	All large soffit and wall areas in the project will be easily understood as their expansive surfaces will reflect the geometric order of their construction - the beams of the soffit following the order of the building, infill panels between the beams and the pattern of the ply form panels imprinted on the walls aligned with the building grid

Design Principle	Compliance
STRUCTURAL EXPRESSION **Structural expression and architecture** *"The Architecture with the ribs is much more expressive than if the shells had been cast in-situ, with the resulting flat constructed surfaces." (2)*	The exposed beams, aligned north/south between the existing in-ground tie beams, will express the structure of the space and provide relief to this large soffit.
"The Sydney Opera House has the same ambience as large cathedrals." (1)1 *"You find a similar situation in Gothic Cathedrals, where the structure is also the architecture. The same is seen in Chinese and Islamic architecture, although with different expressions." (2)*	The primary architectural character of the delivery dock will be the expression of the significant concrete structure required to provide the clear spans for truck turning and resist the hydrostatic pressure on the slabs and walls.
Plateau beams express forces *"This effect was also developed for the base or plateau... as I wanted an open area with a ceiling of structural ribs. These ribs are shaped so they elegantly express the forces within the structure." (2)*	The precast soffit beams invoke the "plateau" beams above through their alignment north/south, their rhythm and spacing which follows the existing in-ground tie beams component of the "plateau beams" and their shaping which also follows the shaping of the tie beams.
Sculptural effect *"The soffit of the podium will form the first impression of the building from this approach. This surface... shows the marked sculptural effect of the concrete folded beams spanning 165'." (3)*	The shaping of the soffit beams will provide a subtle sculptural effect
Spans expressed by ribs and folds *"This resulted in a building where all spans are clearly expressed by ribs and folds." (2)*	The cross-sectional proportions selected will give the beams a rib-like character
Materials define geometric concept *"The concrete stands with on even and precise surface and the sharp and straight edges clearly define the geometric concept." (3)*	The integrated precast forms of the shaped soffit beams will ensure crisp precise edges and will clearly define their geometry.
Simplicity in number of materials *"The finish on paving steps and skirting is identical with the finish on the cladding. It is a fine non-slip and durable finish entirely suitable for pedestrians and traffic..." (3)*	The project uses a minimum number of materials, all of which are drawn from materials used in the original building - primarily concrete, precast crushed granite, and bronze.

Design Principle	Compliance
COLOUR **Natures colours** *"In my project for the Sydney Opera House I had what you would call nature's colours on the exterior" That was the general idea-concrete, granite and ceramics. (2)*	The materials and colour generally follow the existing pallette of natural concrete, reconstructed granite precast elements and bronze to the exterior and maintain the regimen of exposed concrete structure internally.
LIGHT **Generally indirect with custom designed fittings** *Referring to public and working areas: "Lighting in these areas will be generally of an indirect nature although there will be situations where specially designed direct lighting fittings will be necessary." (3)*	These principles will be integral to the development of the lighting scheme in the developed design stage.
Sculptural effect accentuated by light *"Here, the soffit of the podium will form the first impression of the building from this approach, this surface emphasised by lighting, shows the marked sculptural effect of the concrete folded beams." (3*	
Concealed handrail lights *"The podium and podium steps will be lit through a system of lights concealed in the handrails." (3)* *Referring to roadway under podium:* *"A special system of low level lighting has been developed which will produce a safe and attractive system of lighting to enable the mixing of pedestrians and vehicles." (3)*	
PROCESS > **Full-size mock-ups - as both design and construction tool** > **Models** > **Mock-up to solve problems** > **Work in collaboration with manufacturer**	The design development, documentation and construction will follow Jorn Utzon's process of design, which integrates drawings, models, samples, prototypes, materials, research and close collaboration with manufacturers.

The following policies are relevant -

UTZON, HALL AND THE APPROACH TO CHANGE **Policy 1.1** All work on the Sydney Opera House should be carried out within the framework of Jørn Utzon's design principles as endorsed in 2002.	Complies. See statement related to Design Principles.
Policy 1.2 The following fabric and attributes are essential to Utzon's concept for the Sydney Opera House and should be retained in any future development:... d. the supporting structural systems throughout the building; f. the open and uncluttered character of the forecourt and grand stair by which the raised podium is gained; h. the retention of a 'natural' palette of materials for external fabric.	d. Complies. Structural systems maintained. f. Complies. See statements related to *Approach to Sydney Opera House*; *Forecourt as Civic Space and Venue* *Forecourt as integral with Podium as plateau above which the Roof floats* h. Complies. See statement related to Design Principles - Colour
Policy 1.5 Major works within the auditoria and podium are acceptable where technical advance, expert advice, design quality, adequate resources and meticulous construction can be combined to create performance and service facilities that will improve function and reinforce or enhance the significance of the Sydney Opera House, provided that: • the work is planned in the context of an overall plan for the place; • the scheme is developed in accordance with Policy 56.1 on the management of change.	Complies. See statement related to Strategic Building Plan.
Policy 1.6 Entire new spaces, including access and delivery systems, may be created by excavating areas below existing facilities, forecourt, vehicle concourse and boardwalks, provided the supporting mechanical services and access systems are designed to be minimal visual intrusions into the surrounds of the building.	Complies. See statements related to *Approach to Sydney Opera House*; *Forecourt as Civic Space and Venue* *Forecourt as integral with Podium as plateau above which the Roof floats*
SETTING - Open and uncluttered setting **Policy 3.3** Objects should only be permitted on the forecourt, lower forecourt sea wall path, boardwalk, podium deck and steps, if they do not interrupt or intrude upon the open and uncluttered character of the place, or if they are absolutely necessary for the safety of visitors.	Complies. The works are designed to address and improve the safety of pedestrians while at the same time integrating the works into, and de-cluttering, the Forecourt.
SETTING - Forecourt pedestrian and vehicle paths **Policy 4.2** The long term objective should be a complete separation of pedestrian and heavy vehicle traffic accessing the Opera House.	Complies. The works separate heavy vehicle traffic from pedestrians with the exception of the kerb crossing zone at Macquarie St entry.
EXTERIOR - Podium "platform", boardwalk and forecourt **Policy 11.1** The exterior platform of the podium, the boardwalk and the forecourt are important open spaces which set off the Opera House and should be kept free of permanent structures or wheeled vehicles. Furniture should be kept to a minimum and should not intrude aggressive tonal or colour contrasts with the surrounding built form. Temporary structures for occasional celebrations or manifestations should be designed to be erected, used and dismantled without damage or alteration of the fabric.	Fixed outdoor furniture such as seating and other fixtures need to be addressed consistently across the whole of the public areas of the Sydney Opera House and have not been addressed as part of this project.
EXTERIOR - Paving and cladding of podium and boardwalk **Policy 13.1** The existing paving and cladding system of precast and etched pink reconstituted granite slabs of monumental size should be retained.	Complies. The new ramp paving and wall finish will be in precast and etched pink reconstituted granite. This is an incremental step towards the Forecourt Masterplan to re-finish the Forecourt in this material. Elsewhere, the works reinstate existing paving and finishes.
EXTERIOR - The forecourt and lower forecourt **Policy 15.1** The fan pattern granite setts or cobbles and the high quality solid granite strips and paving on the forecourt and lower forecourt should be retained and conserved.	
Policy 15.2 The roadway of granite setts should be renewed in a way that will stand up to the wear and tear imposed by Opera House traffic, and retain the visual effect of driving across an open pedestrian space. Any design solution should: • retain the same materials, colours and textures; • incorporate more appropriate 'traffic calming' features; • reinforce pedestrian direction (and safety) when crossing to the podium steps.	Complies. Direction of heavy traffic to the dock will reduce the wear and tear on the new setts. The flush paved design of the new shared vehicle and pedestrian zone, with paving materials, colours and textures continuous across the zone, will increase the visual effect of driving over an open pedestrian space.

Policy 15.3 Any scheme for providing facilities under the Forecourt should: • retain the existing level of the Forecourt; • co-ordinate and minimise above ground intrusions; • record the surviving nineteenth century fabric of the storm water drain before diversion; • provide for paving designed to be consistent with the character of adjacent Podium and Boardwalk paving as well as accommodating changed structural requirements.	Complies. New slabs required over the tunnel and the new precast panels to southern forecourt edge are at levels to suit the future implementation of the Forecourt Masterplan to extend precast crushed granite paving across the Forecourt. Reinstated existing paving and finishes are generally at existing levels, except where minor regrading is required to the precast edges above. Above ground intrusions are minimised and coordinated.
LIGHTING - Forecourt and podium steps **Policy 21.1** Any adaptation or development of the general illumination of the forecourt area should: • be sufficient to relate the night form of the Opera House to its peninsular setting but not of a level that would compete with the shell illumination; • continue to be set at a height and so baffled that glare is eliminated from the eyes of pedestrians; • render the colour of natural materials as accurately as possible; • employ the minimum equipment necessary for the job and locate it as unobtrusively as possible.	Lighting studies will investigate - > locating renewed lighting to the Tarpeian Wall in the zone between the precast upstand at the Forecourt edge and the Tarpeian Wall. > assessing whether ambient light from existing fixtures and new lighting concealed in the handrail at the edge of the ramp opening will provide sufficient light levels on the ramp paved surface.
CHARACTER AND TREATMENT OF INTERNAL SPACES **New areas** **Policy 25.1** In accord with policy 1.6 (additional on-site facilities), entirely new spaces may be created by excavation. Where the new spaces are to have a visual or significant sequential relationship with existing Hall designed spaces they should be fitted out to the corresponding design regime. Where no such relationship exists, the new spaces may be fitted out in a contemporary idiom appropriate to the proposed use.	Complies. The primary delivery dock area has no significant visual relationship or adjacency to existing Hall designed spaces. It is significant as one of the largest spaces in the Opera House. Through the primacy and architectural quality of the concrete structure it shares an essential character with the Opera House. Secondary spaces, such as corridors, stairwells, plantrooms and such, will be fitted out in the design regime established by Hall for such spaces.
SPACES WITHIN THE PODIUM **Central vehicle passage as delivery space** **Policy 37.1** Except for the Bennelong restaurant service door to the boardwalk, the central vehicle passage should remain the only vehicle access and goods' entry point in the building. (Unless some future development of the building allows lower level heavy vehicle access. In which case the present central vehicle passage could be opened to public access.)	Complies.
HOUSEKEEPING - Signs **Policy 46.3** Exterior signs should be kept to the minimum and, as far as possible, given common design and graphic characteristics.	Signage will be documented in later stages of the design and documentation process and will be subject to a seperate approval application.
MANAGING THE PROCESS OF CHANGE - Excavation **Policy 53.1** Work involving excavation, or investigation of sub surface objects, should be planned and executed in accordance with the requirements of the Heritage Act 1977 and advice of the NSW Heritage Office.	Will comply.
MANAGING THE PROCESS OF CHANGE **Sequence and advice in developing proposals** **Policy 56.1** Continuity of relevant and experienced heritage conservation advice should be provided as part of the process by which changes to the Sydney Opera House and its setting are developed and executed. The timing of this advice is important. For major projects it should be drawn upon: • initially, at the concept stage; • during the development and refinement, or alteration, of the proposal; • for a formal statement of heritage impact, or its equivalent, in response to the completed development application; • to keep a watchful eye on work actually underway.	Future stages of design process as well as constrcution process are to comply.

SCHEDULE OF MATERIAL AND FINISHES

	Floor	Walls	Ceiling / Soffit	Other
Forecourt	Generally new or reinstated granite setts in fan patterns between rows of gang sawn granite slabs	Not Applicable	Not Applicable	South Edge of Forecourt and to Edge of Ramp - Granite sett paving edged with granite paving slabs and precast crushed granite upstand to match existing with bronze handrail to match existing where required.
Guardhouse	To Suit	External Walls in Bronze and Bronze Glass	Bronze Roof	
Entry Ramp External	TBC - To match existing precast crushed granite panels in material, finish and unit size,	Off form concrete, board form where visible, clad with open jointed precast crushed granite panels	Baffle of suspended bronze tubes to soffit of covered section	
Arrivals Concourse	Reinstate existing, or new to match existing, precast crushed granite panels and bitumen	Protect existing	Protect existing	Solid bronze grilles to air intakes
Entry Ramp Internal	Monolithic concrete floor finish	Off-form concrete and blockwork. Paint finish.	Off-form Class 2 concrete beams and soffit. Clear seal.	Exposed services - carefully setout and installation, painted.
Delivery Dock	Monolithic concrete floor finish	Class 2 off-form concrete. 1/2 white cement and 1/2 Portland cement. Two coats of Keim mineral sealer.	Class 2 off-form girder beams. Integral Precast form finish to north/south beams. Both 1/2 white cement and 1/2 Portland cement. Two coats of Keim mineral sealer. CFC suspended infill panels between beams. Clear seal.	
Truck Turning Bay	As for Delivery Dock	As for Delivery Dock	Off-form Class 2 concrete beams and soffit. Clear seal.	
Side Loading Dock	As for Delivery Dock	As for Delivery Dock	As for Delivery Dock	Gantry and support structure - Carefully detailed, wet paint finish.
Rear Loading Dock	As for Delivery Dock	As for Delivery Dock	As for Truck Turning Bay	
Container Storage	As for Delivery Dock	As for Delivery Dock	Off form soffit. Clear seal. Suspended discontinuous demountable pre-finished acoustically absorbent panels	Gantry and support structure - Carefully detailed, wet paint finish.
Lift 22+ 23 Lobby	As for Delivery Dock	As for Delivery Dock	As for Container Storage	
Lift 12 Corridor	As for Delivery Dock	As for Delivery Dock	As for Container Storage	
Lift 12 Lobby	As for Delivery Dock	As for Delivery Dock	As for Container Storage	
Garbage Collection	Concrete. Two-pack epoxy finish	In-situ concrete or blockwork. Two-pack epoxy finish	Suspended tile ceiling system. Washable, scrubbable, soil and scratch resistant.	Coved skirting.
Dock Control	Vinyl or carpet to match SOH Standard	In-situ concrete or blockwork. Paint finish	As for Garbage Collection	
WC	Ceramic Tiles to match SOH Standard	Ceramic Tiles to match SOH Standard	Suspended Plasterboard Ceiling	Fittings to match SOH Back Of House Standard
Mechanical Plantroom	Monolithic concrete floor finish	In-situ concrete or blockwork. Paint finish	Off-form Class 2 concrete. Clear seal.	
Lift 21 Shaft at Ground	Not Applicable	Concrete. Boarded form finish.	Not Applicable	
Lift 22 + 23 Shaft at Ground	Not Applicable	Off-form concrete. Paint finish.	Not Applicable	
Rebuilt Stair BS09 at Basement	Monolithic concrete floor finish.	Concrete. Boarded form. Paint finish.	Off-form concrete. Clear Seal.	
Rebuilt Stair G6S05 at Ground and Basement	Monolithic concrete floor finish.	Off-form concrete. Paint finish.	Off-form concrete. Clear Seal.	
New Stairs	Monolithic concrete floor finish	Off-form concrete. Paint finish.	Off-form concrete. Clear Seal.	
Egress Corridors at Basement 3 + 4	Monolithic concrete floor finish	Off-form concrete and blockwork. Paint finish.	Off-form concrete, clear seal or 2-way 2HR fire rated ceiling system.	

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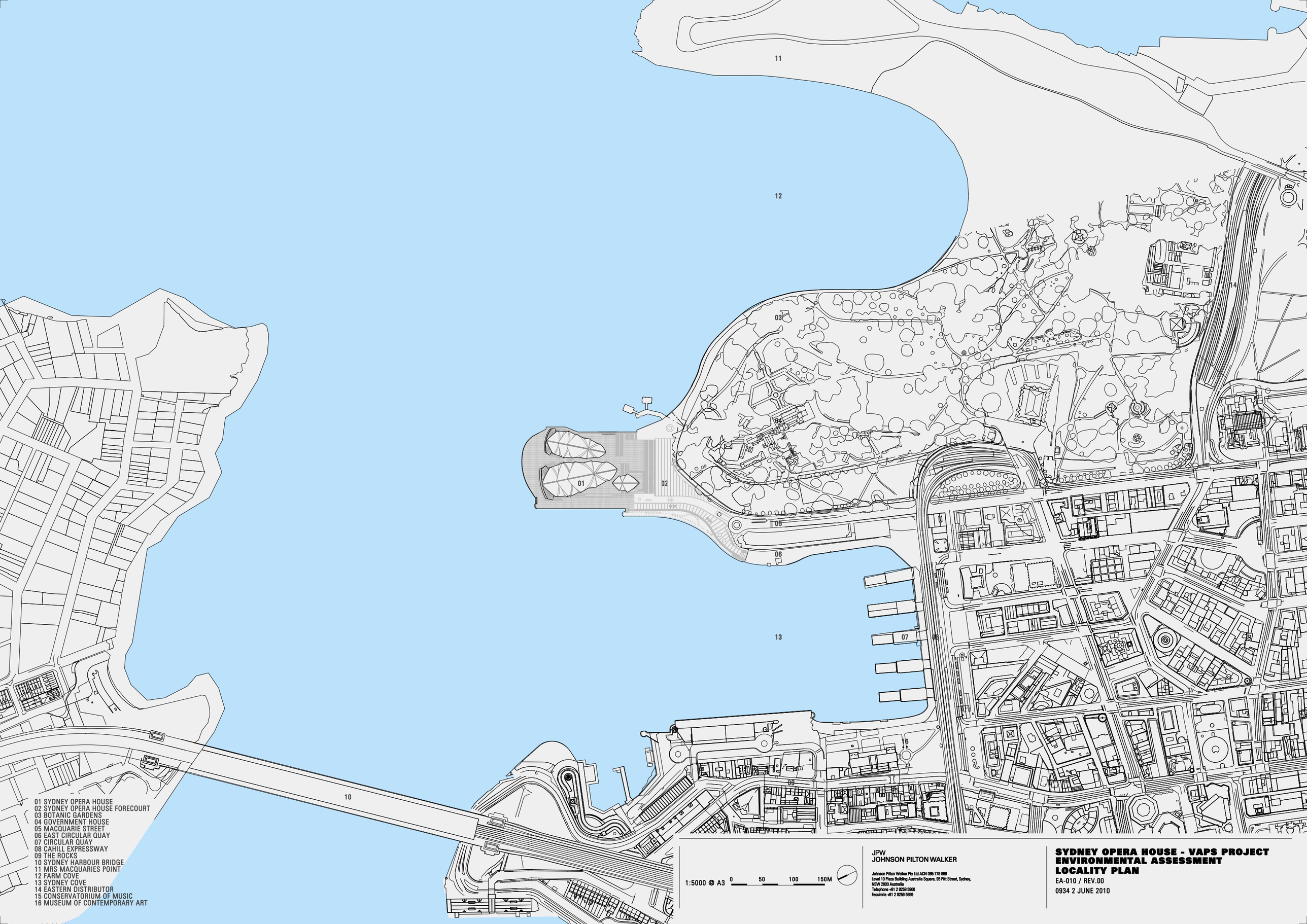
APPENDIX

ARCHITECTURAL DRAWINGS & PHOTOMONTAGES

	EA-010	Locality Plan
	EA-050	Site Plan Existing
	EA-055	Site Plan Proposed
PLANS	EA-100	Basement 4 (Level -038')
	EA-130	Basement 1 (Level +/-001')
	EA-140	Ground (Level +012')
	EA-200	Basement 4 (Level -038') Reflected Ceiling Plan
SECTIONS	EA-300	Section X70_N
	EA-305	Section X48_N
	EA-310	Section X38_N
	EA-315	Section X30_N
	EA-320	Section X09_N
	EA-325	Section Y21_E
	EA-330	Section Y25_E
	EA-335	Section Y29_E
	EA-340	Section Y34_E & Proposed Vehicle Ramp
DETAIL SECTIONS	EA-406	Vehicle Ramp Section B Proposed
	EA-415	Vehicle Ramp Section D Proposed
	EA-420	Vehicle Ramp Section E Proposed
	EA-440	Vehicle Ramp Section JJ Proposed and Pedestrian Tunnel
DOCK ELEVATIONS	EA-450	Delivery Dock Elevation North
	EA-455	Delivery Dock Elevation East
	EA-460	Delivery Dock Elevation South
	EA-465	Delivery Dock Elevation West
PHOTOMONTAGES	EA-900	Existing Image 01 - From Macquarie St Roundabout
	EA-905	Proposed Image 01 - From Macquarie St Roundabout
	EA-910	Existing Image 02 - From Monumental Stairs
	EA-915	Proposed Image 02 - From Monumental Stairs
	EA-920	Existing Image 03 - From Monumental Stairs Detail
	EA-925	Proposed Image 03 - From Monumental Stairs Detail



01 SYDNEY OPERA HOUSE
02 SYDNEY OPERA HOUSE FORECOURT
03 BOTANIC GARDENS
04 GOVERNMENT HOUSE
05 MACQUARIE STREET
06 EAST CIRCULAR QUAY
07 CIRCULAR QUAY
08 CAHILL EXPRESSWAY
09 THE ROCKS
10 SYDNEY HARBOUR BRIDGE
11 MRS MACQUARIES POINT
12 FARM COVE
13 SYDNEY COVE
14 EASTERN DISTRIBUTOR
15 CONSERVATORIUM OF MUSIC
16 MUSEUM OF CONTEMPORARY ART

1:5000 @ A3

0 50 100 150M

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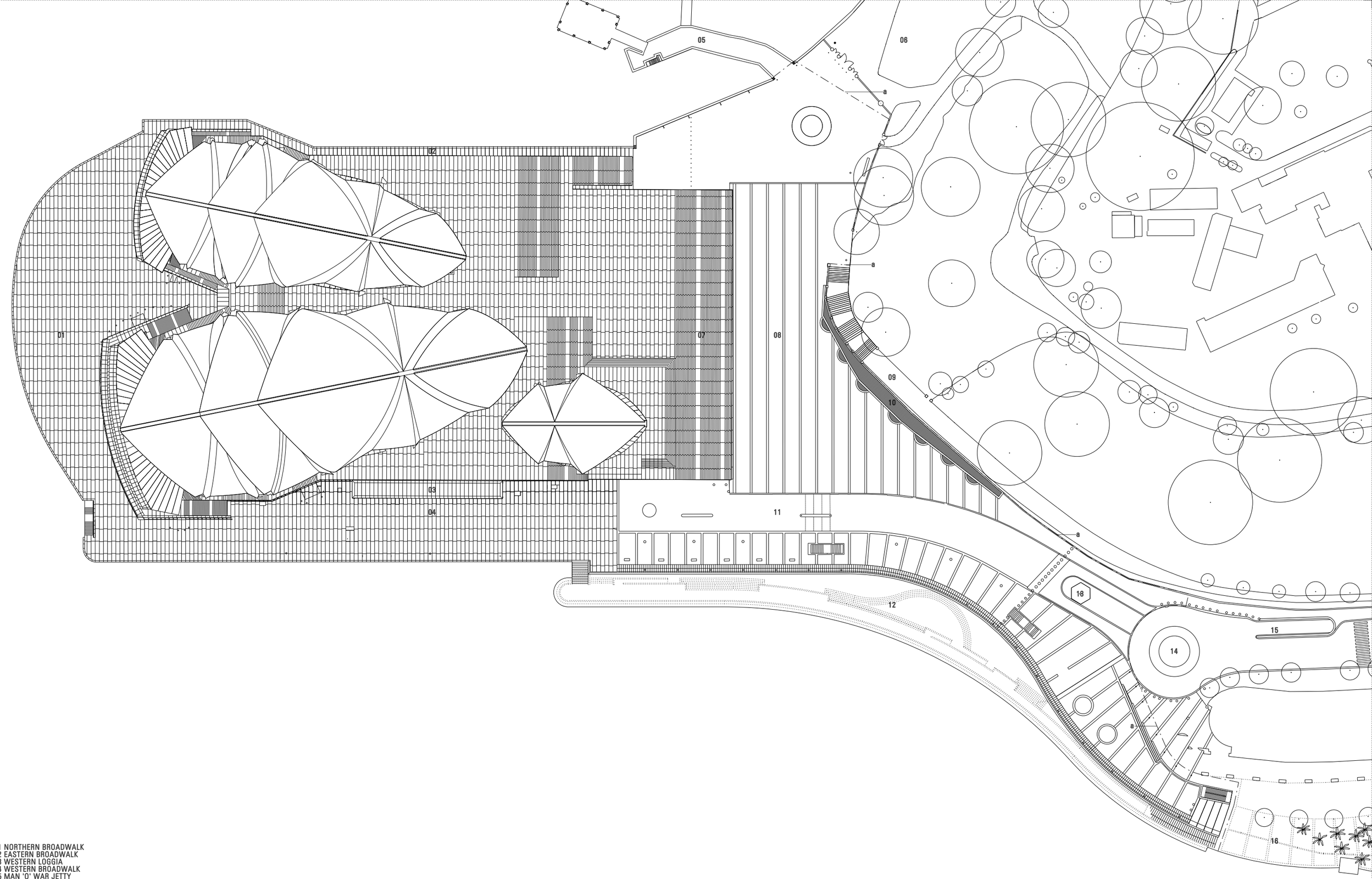
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
LOCALITY PLAN

EA-010 / REV.00

0934 2 JUNE 2010



01 NORTHERN BROADWALK
02 EASTERN BROADWALK
03 WESTERN LOGGIA
04 WESTERN BROADWALK
05 MAN 'O' WAR JETTY
06 BOTANIC GARDENS
07 MONUMENTAL STAIR
08 FORECOURT
09 TARPEIAN WAY
10 EXISTING SERVICES ZONE INCLUDING SOH CARPARK AIR INTAKE
11 EXISTING ROADWAY
12 LOWER CONCOURSE
13 EXISTING GUARDHOUSE
14 MACQUARIE STREET ROUNDABOUT
15 SOH CARPARK ENTRANCE
16 EAST CIRCULAR QUAY

a Boundary

1:1000 @ A3 0 10 20 30M

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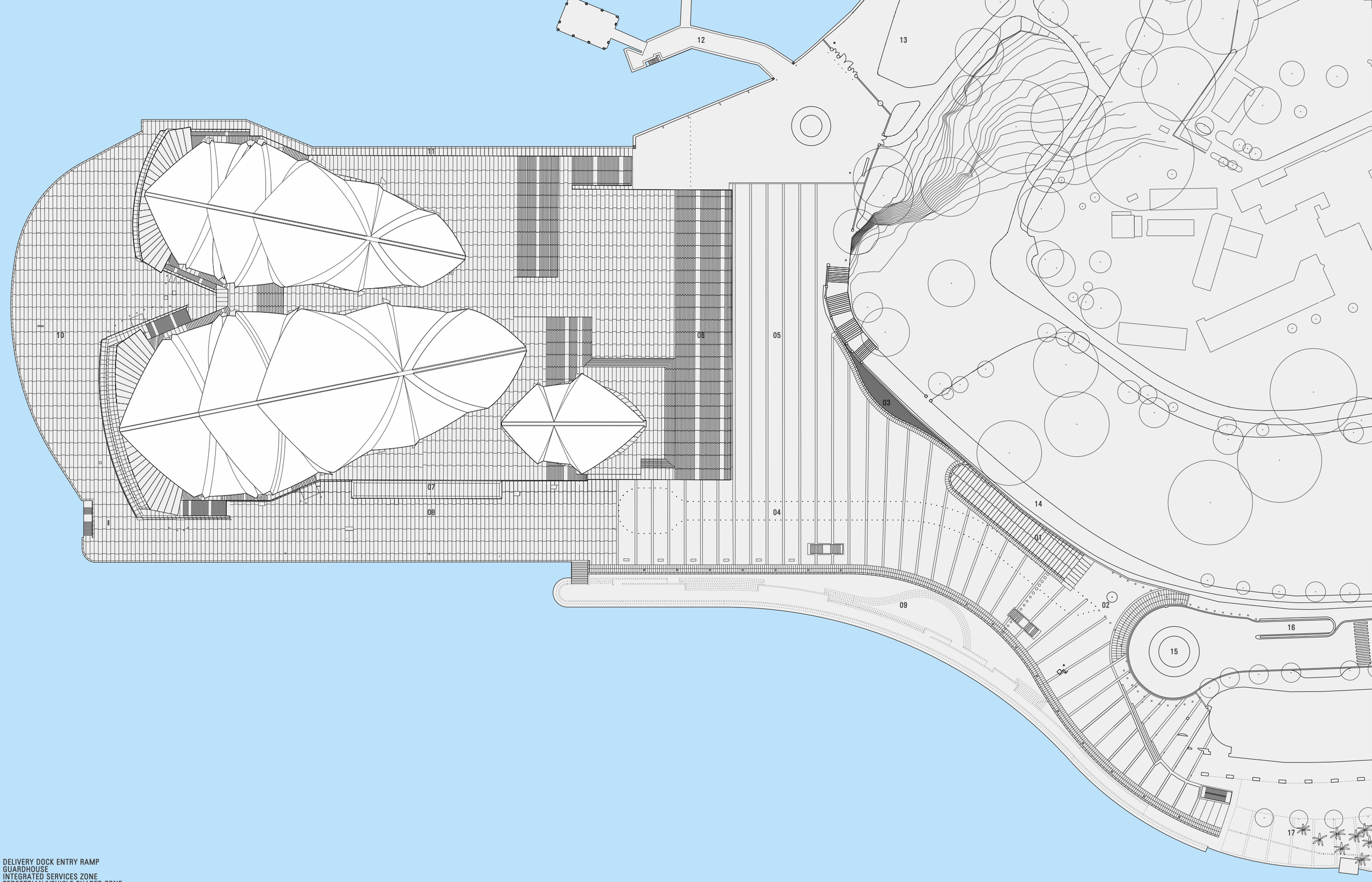
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
SITE PLAN EXISTING
EA-050 / REV.00
0934 2 JUNE 2010



01 DELIVERY DOCK ENTRY RAMP
02 GUARDHOUSE
03 INTEGRATED SERVICES ZONE
04 PEDESTRIAN/VEHICLE SHARED ZONE
05 FORECOURT
06 MONUMENTAL STAIR
07 WESTERN LOGGIA
08 WESTERN BROADWALK
09 LOWER CONCOURSE
10 NORTHERN BROADWALK
11 EASTERN BROADWALK
12 MAN 'O' WAR JETTY
13 BOTANIC GARDENS
14 TARPEIAN WAY
15 MACQUARIE STREET ROUNDABOUT
16 SOH CARPARK ENTRANCE
17 EAST CIRULAR QUAY

1:1000 @ A3

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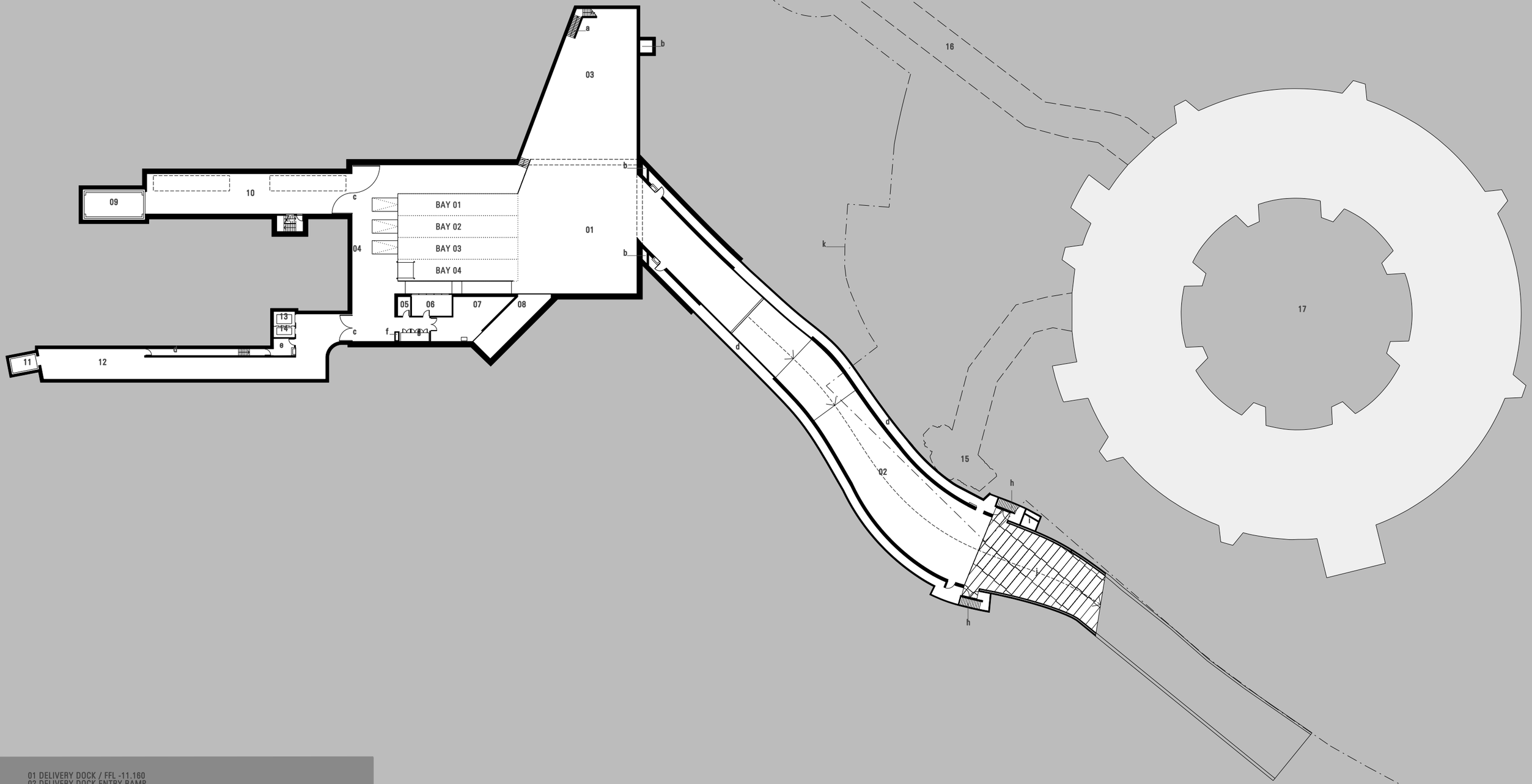
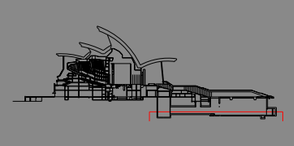
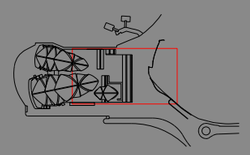
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
SITE PLAN PROPOSED
EA-055 / REV.00
0934 2 JUNE 2010



01 DELIVERY DOCK / FFL -11.160
02 DELIVERY DOCK ENTRY RAMP
03 TRUCK TURNING BAY
04 REAR LOADING DOCK
05 TOILET
06 DOCK CONTROL
07 GARBAGE COLLECTION
08 GARBAGE COMPACTOR
09 LIFT 21 TEMPORARY SCENERY LIFT
10 CONTAINER STORAGE / FFL -10.060
11 LIFT 12
12 LIFT 12 CORRIDOR / FFL -10.060
13 LIFT 22
14 LIFT 23
15 EXISTING SOH CARPARK
VENTILATION INTAKE SHAFT
16 EXISTING SOH CARPARK
VENTILATION EXHAUST TUNNEL
17 EXISTING SOH CARPARK

a Stair to Mechanical Plantroom
b Tunnel Exhaust Riser
c Security Door
d Fire Isolated Corridor
e Egress Stair
f Riser
g Cool Store
h Fire Egress
i Kitchen Exhaust
j Ramp Finish to match Precast Crushed Granite Panels
k Boundary





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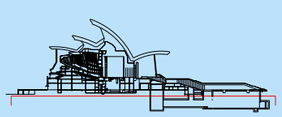
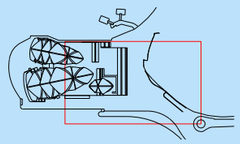
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
BASEMENT 4 (LEVEL -038')

EA-100 / REV.00
0934 2 JUNE 2010

01 VOID BELOW EASTERN BROADWALK
02 EXHAUST DISCHARGE TRENCH
03 MECHANICAL PLANT ROOM / FFL -6.060
04 LIFT 21 TEMPORARY SCENERY LIFT
05 VOID OVER DELIVERY DOCK
06 CORRIDOR
07 LIFT 22
08 LIFT 23
09 VOID
10 LIFT 12
11 RAMP
12 SOH CARPARK PEDESTRIAN ACCESS
13 VOID BELOW WESTERN BROADWALK
14 LOWER CONCOURSE

a Lower Concourse Kitchen Exhaust
b Fire Isolated Corridor & Future NSWFB Access
c Boundary





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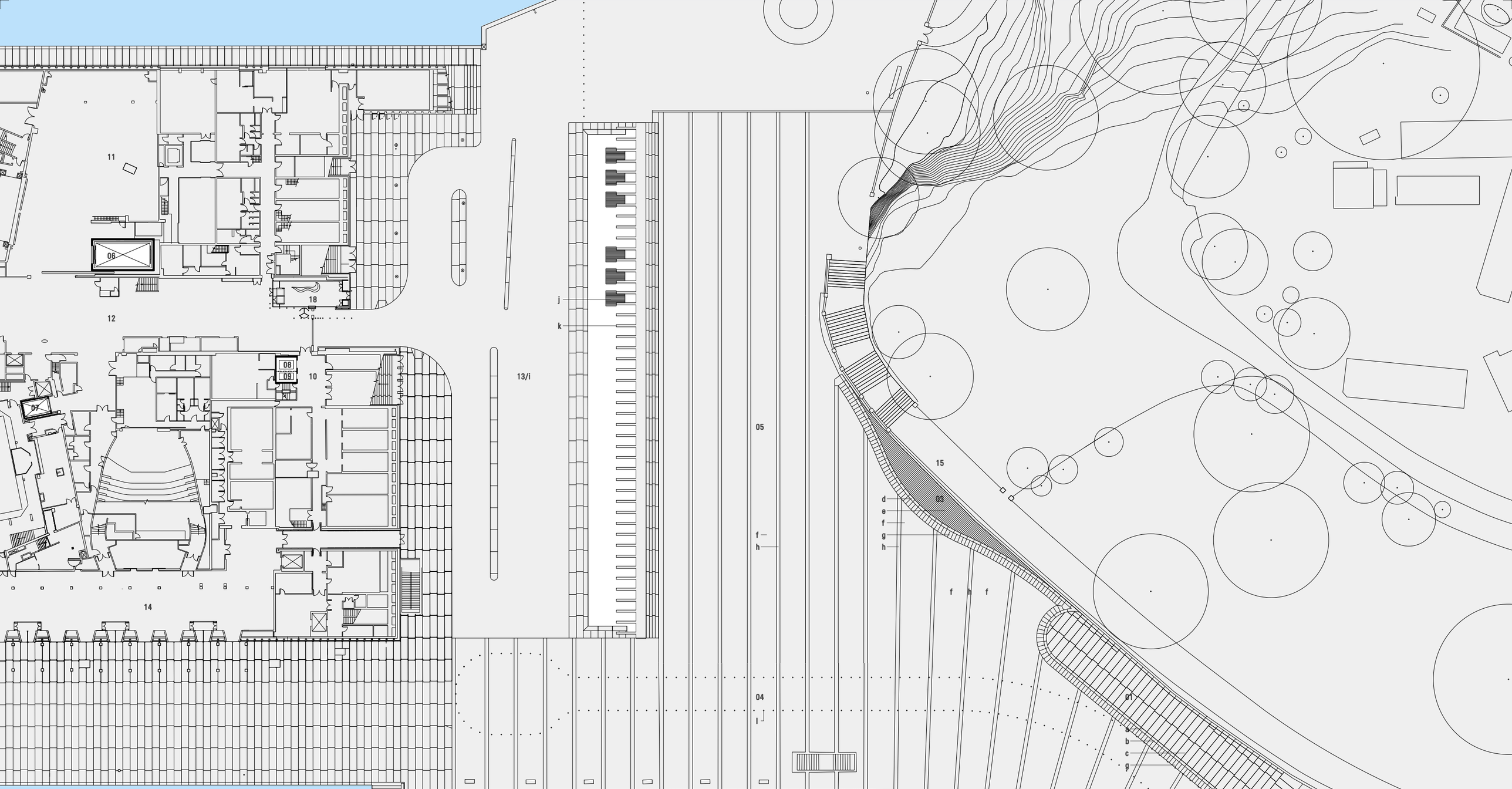
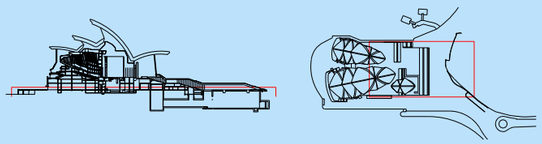
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
BASEMENT 1 (LEVEL +/-001')

EA-130 Y REV.00
0934 2 JUNE 2010



01 ENTRY RAMP
02 GUARDHOUSE
03 INTEGRATED SERVICES ZONE
04 PEDESTRIAN/VEHICLE SHARED ZONE
05 FORECOURT - EXISTING FFL 3.680 APPROX
06 LIFT 21 TEMPORARY SCENERY
07 LIFT 12
08 LIFT 22
09 LIFT 23
10 LIFT 22/23 LOBBY
11 SET CHANGING AREA
12 CENTRAL PASSAGE
13 VEHICLE CONCOURSE
14 WESTERN FOYER
15 TARPEIAN WAY
16 LOWER CONCOURSE
17 MACQUARIE STREET ROUNDABOUT
18 STAGE DOOR

a Precast Crushed Granite Wall Panels
b Precast Crushed Granite Parapet & Bronze Handrail
c Ramp Finish to match Precast Crushed Granite
d Precast Crushed Granite Upstand
e Solid Bronze Grille
f Siena Granite Setts
g Siena Granite Slabs
h Calca Granite Slabs
i Reinstate Existing Finishes
j Outside Air Intake/Solid Bronze Grilles
k Existing Folded Slab Concourse Beams
l Bronze Disc Inlays, Drainage Points, Indicator Lights
m Reinstate Existing Bollards
n New Bollards



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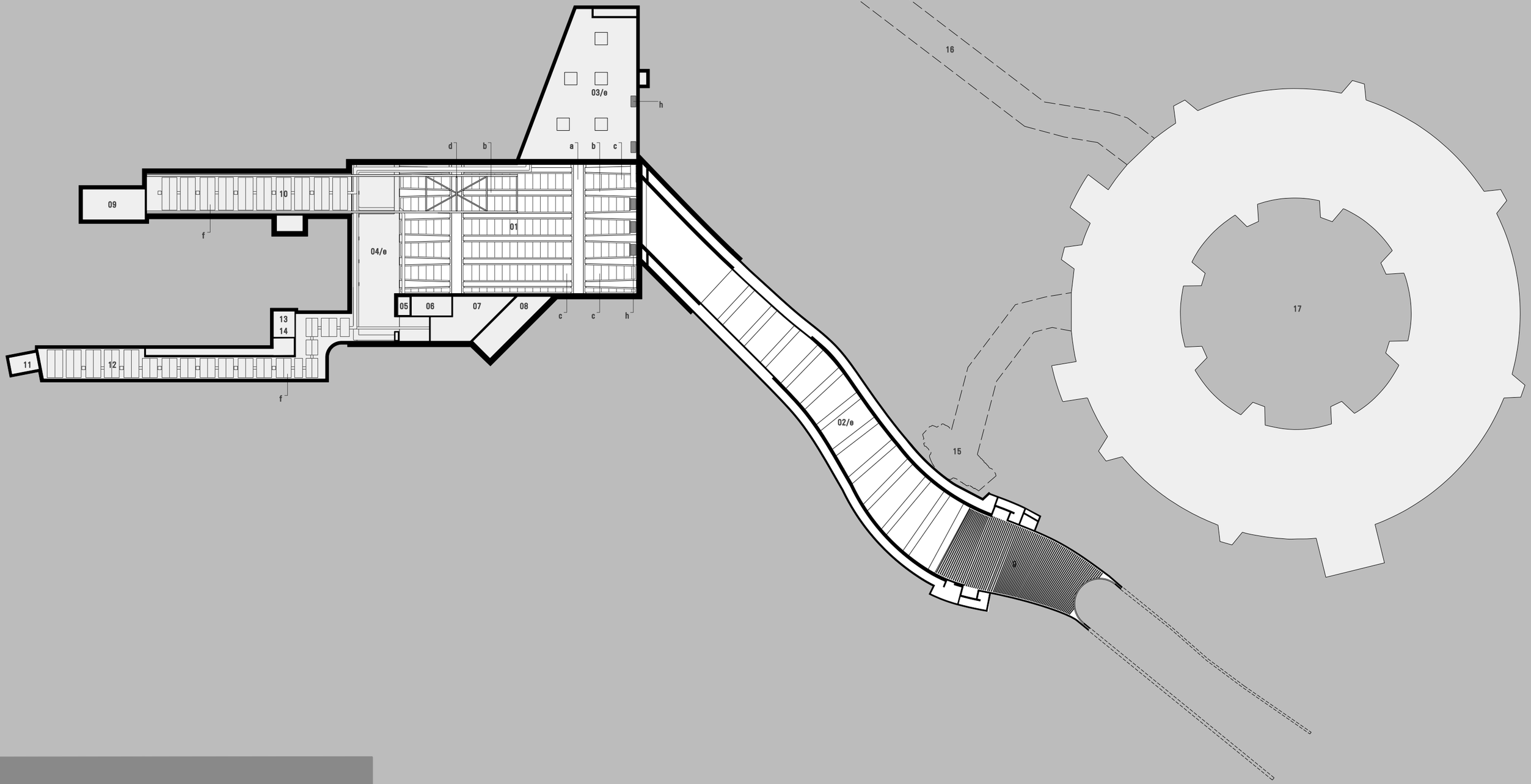
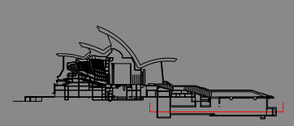
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
GROUND (LEVEL +012')

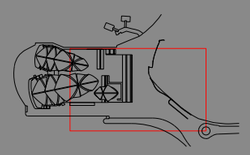
EA-140 / REV.00
0934 2 JUNE 2010



01 DELIVERY DOCK
02 DELIVERY DOCK ENTRY RAMP
03 TRUCK TURNING BAY
04 REAR LOADING DOCK
05 TOILET
06 DOCK CONTROL
07 GARBAGE COLLECTION
08 GARBAGE COMPACTOR
09 LIFT 21 TEMPORARY SCENERY LIFT
10 CONTAINER STORAGE
11 LIFT 12
12 LIFT 12 CORRIDOR
13 LIFT 22
14 LIFT 23
15 SOH CARPARK VENTILATION INTAKE SHAFT
16 SOH CARPARK VENTILATION EXHAUST TUNNEL
17 SOH CARPARK

a Girder Beams Off-form Concrete Class 2
b Shaped Beams Precast Forms
c Compressed Fibre Cement Panels, Integrated Services
d Gantry Support
e Concrete Soffit Clear Seal
f Suspended Discontinuous Accoustic Panels
below Clear Sealed Concrete Soffit & Services
g Suspended Bronze Tube Baffle
h Outside Air Intakes





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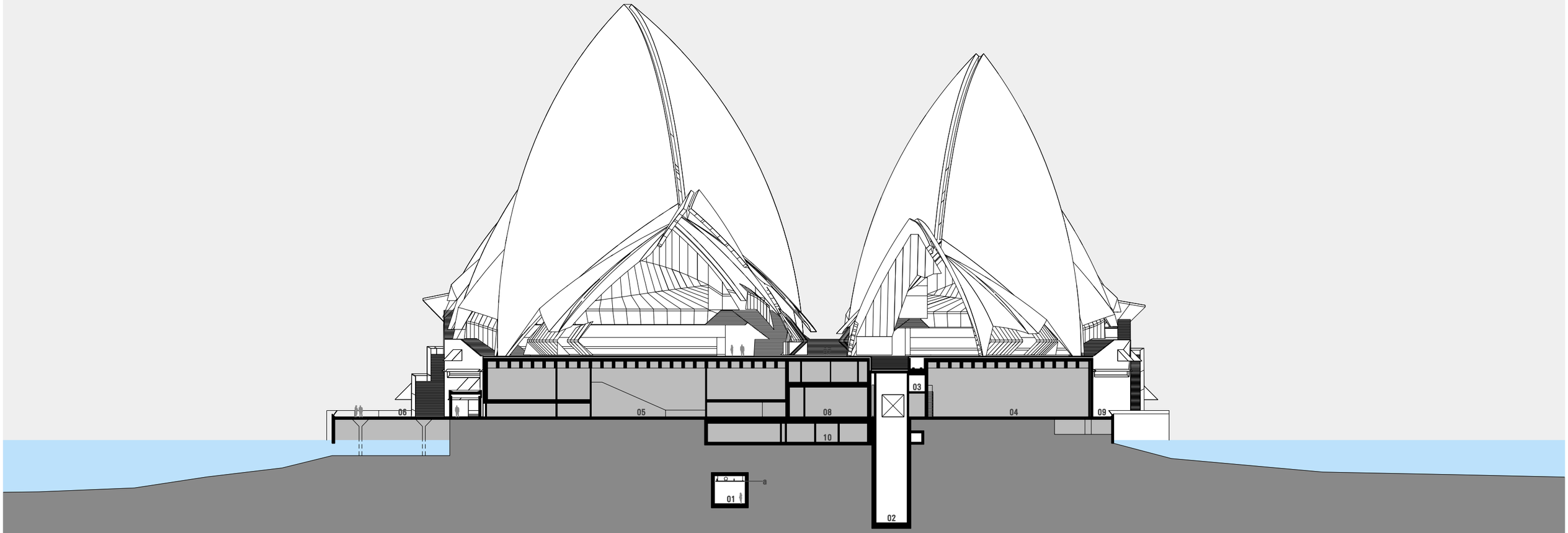
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
BASEMENT 4 (LEVEL -038')
REFLECTED CEILING PLAN

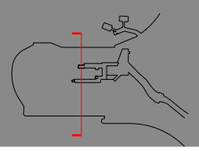
EA-200 / REV.00

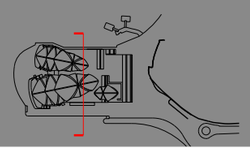
0934 2 JUNE 2010



01 CORRIDOR TO LIFT 12 / FFL -10.060
02 LIFT 21 TEMPORARY SCENERY
03 LIFT 21 MOTOR ROOM
04 SET CHANGING AREA
05 PLAYHOUSE
06 WESTERN BROADWALK
07 PODIUM
08 CENTRAL PASSAGE
09 EASTERN BROADWALK
10 CORRIDOR

a Suspended Discontinuous Accoustic Panels
below Clear Sealed Concrete Soffit & Services





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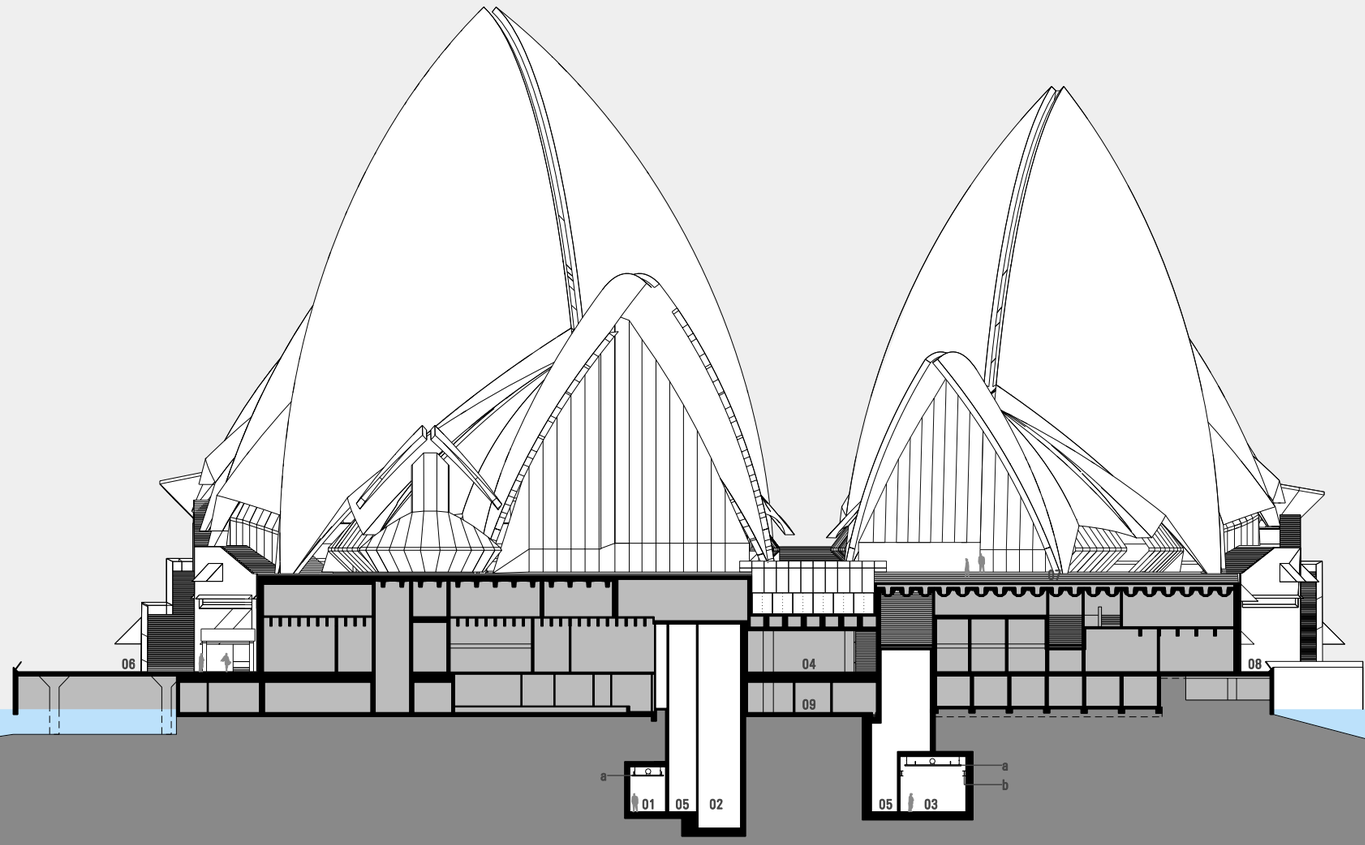
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
SECTION X70_N

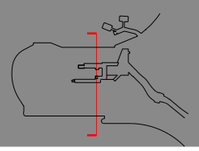
EA-300 / REV.00

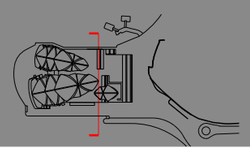
0934 2 JUNE 2010



01 CORRIDOR TO LIFT 12 / FFL -10.060
02 LIFT 22 & 23
03 CONTAINER STORAGE / FFL -10.060
04 CENTRAL PASSAGE
05 STAIR
06 WESTERN BROADWALK
07 PODIUM
08 EASTERN BROADWALK
09 CORRIDOR

a Suspended Discontinuous Accoustic Panels
below Clear Sealed Concrete Soffit & Services
b Gantry





1:600 @ A3 0 6 12 18M

JPW
JOHNSON PILTON WALKER

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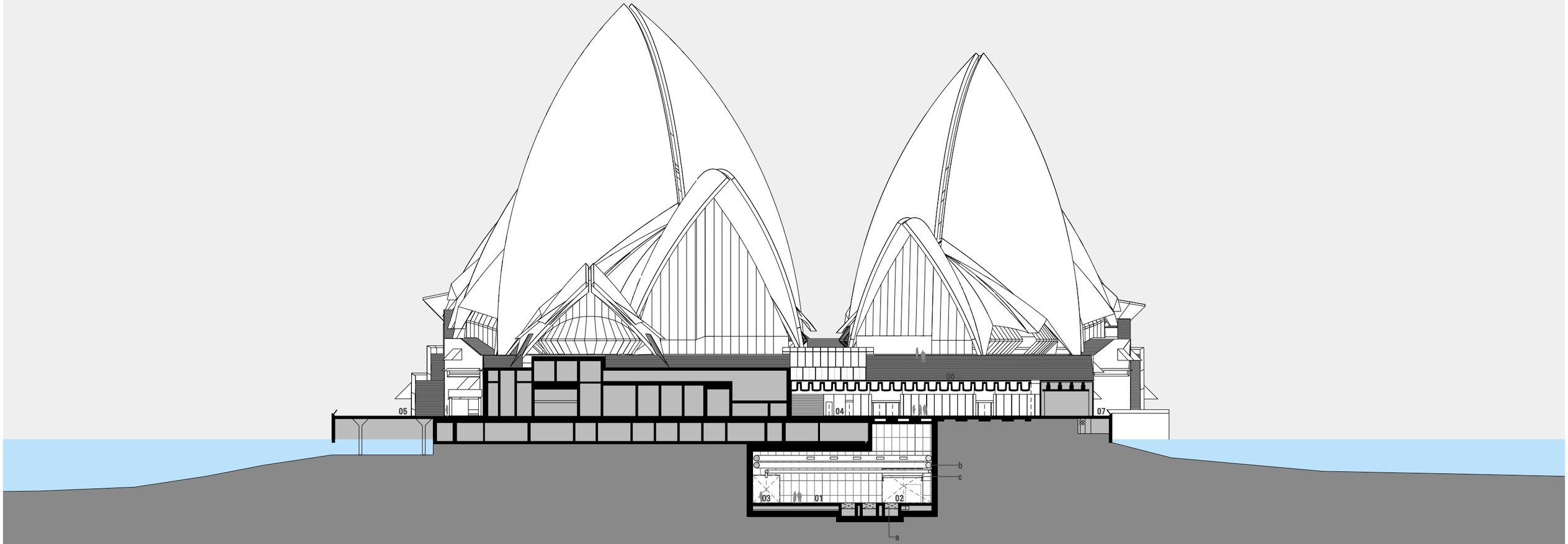
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
SECTION X48_N

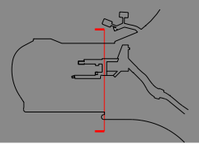
EA-305 / REV.00
0934 2 JUNE 2010

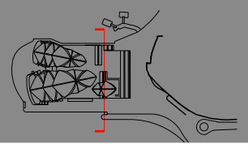


SEE EA-450 FOR DETAIL.

01 REAR LOADING DOCK / FFL -10.060
02 CONTAINER STORAGE BEHIND
03 LIFT 22 & 23 LOBBY BEHIND
04 VEHICLE CONCOURSE - EXISTING FFL 3.680 APPROX.
05 WESTERN BROADWWALK
06 PODIUM
07 EASTERN BROADWALK

a Dock Levellers
b Mechanical Services
c Gantry





1:600 @ A3 0 6 12 18M

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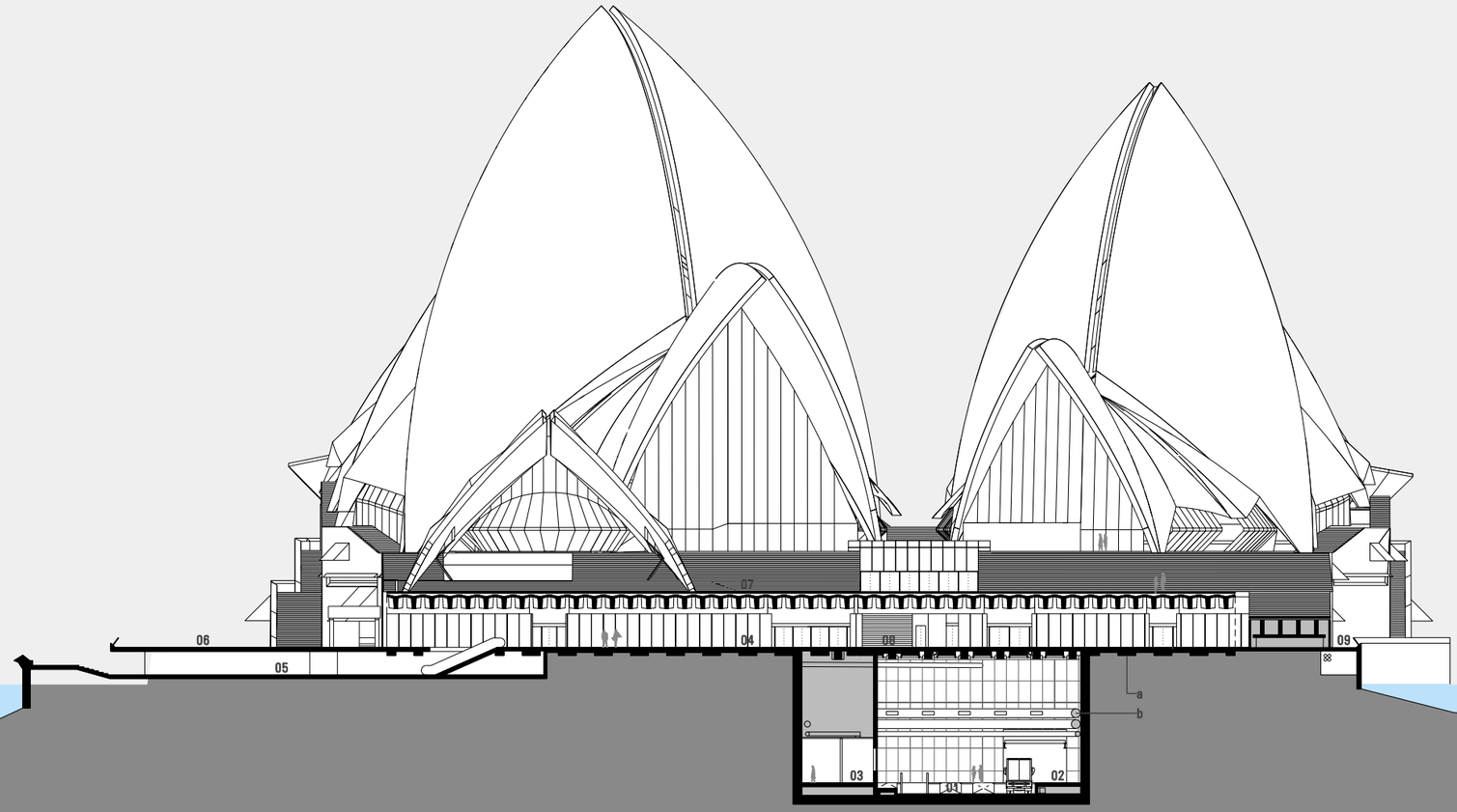
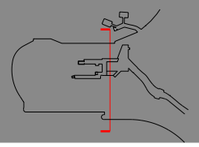
ENVIRONMENTAL ASSESSMENT
SECTION X38_N
EA-310 / REV.00
0934 2 JUNE 2010

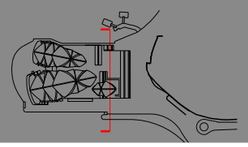


SEE ALSO EA-460

01 DELIVERY DOCK / FFL -11.160
02 SIDE LOADING DOCK / FFL -10.060
03 DOCK CONTROL / FFL -10.060
04 VEHICLE CONCOURSE - EXISTING FFL 3.680 APPROX.
05 LOWER CONCOURSE
06 WESTERN BROADWALK
07 PODIUM
08 CENTRAL PASSAGE BEYOND
09 EASTERN BROADWALK

a Existing In Ground Tie Beams
b Mechanical Services
c Gantry





1:600 @ A3
[1:300 @ A1]

0 6 12 18M

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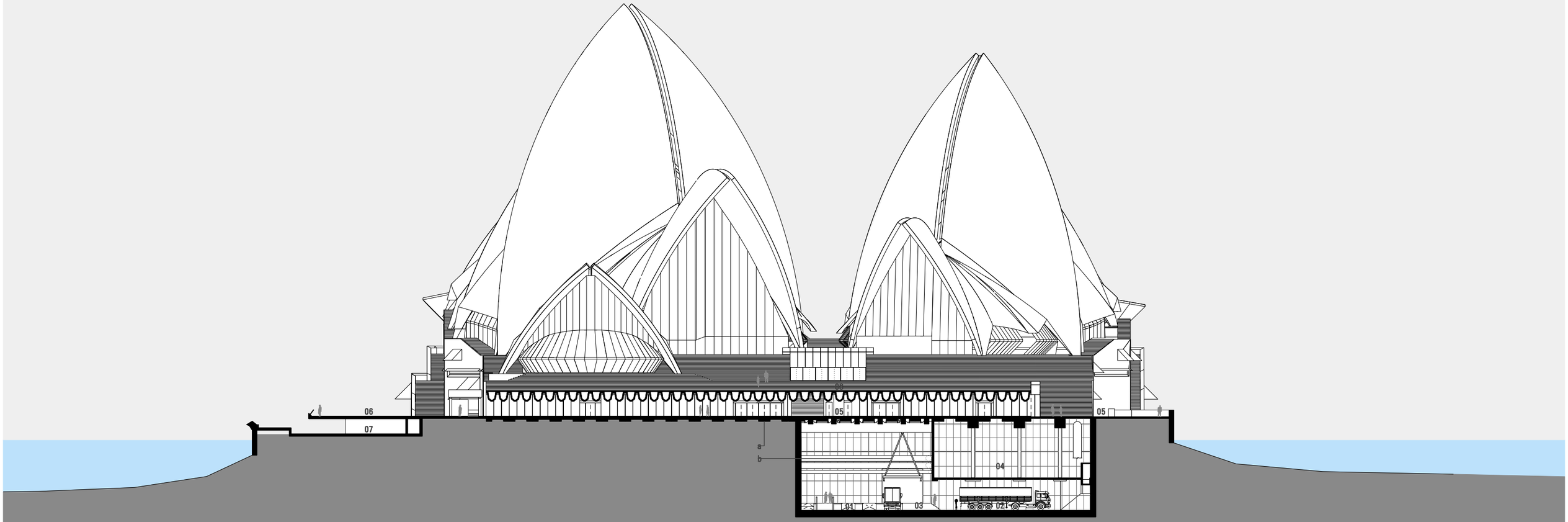
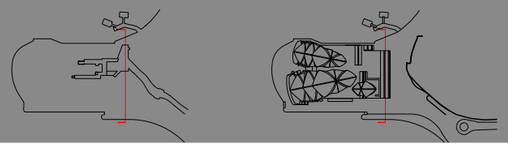
ENVIRONMENTAL ASSESSMENT
SECTION X30_N
EA-315 / REV.00
0934 2 JUNE 2010



SEE ALSO EA-460

01 DELIVERY DOCK / FFL -11.160
02 TRUCK TURNING BAY
03 SIDE LOADING DOCK
04 MECHANICAL PLANT ROOM / FFL -6.060
05 VEHICLE CONCOURSE - EXISTING FFL 3.680 APPROX.
06 FORECOURT
07 LOWER CONCOURSE
08 PODIUM

a Existing In Ground Tie Beams
b Gantry Support



1:600 @ A3 0 6 12 18M

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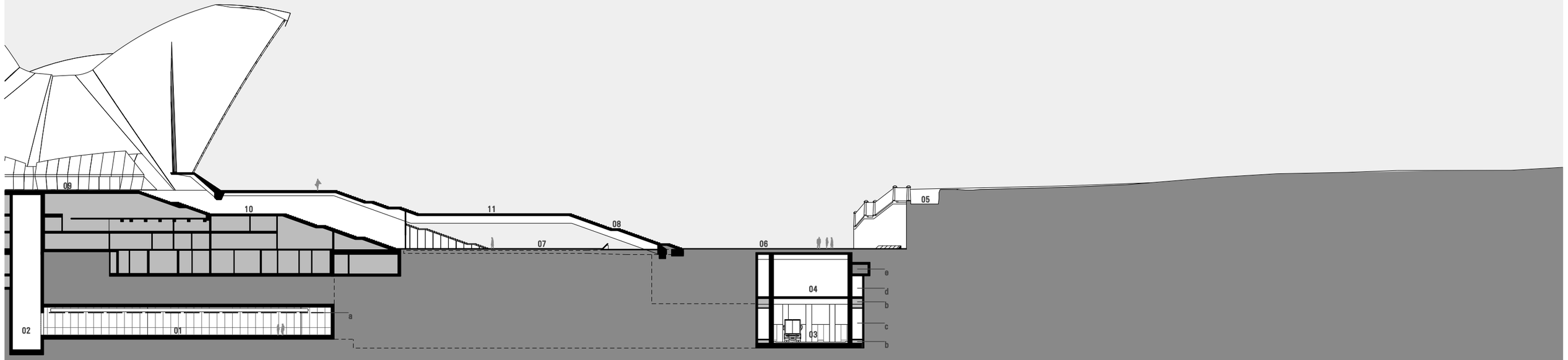
ENVIRONMENTAL ASSESSMENT
SECTION X09_N
EA-320 / REV.00
0934 2 JUNE 2010



01 CORRIDOR TO LIFT 12 / FFL -10.060
02 LIFT 12
03 VEHICLE RAMP
04 FUTURE PUMP ROOM
05 TARPEIAN STAIR
06 FORECOURT
07 VEHICLE CONCOURSE
08 MONUMENTAL STAIR
09 CONCERT HALL, SOUTHERN FOYER
10 BOX OFFICE FOYER
11 PODIUM

a Suspended Discontinuous Accoustic Panels
below Clear Sealed Concrete Soffit & Services
b Tunnel Exhaust
c Egress
d Egress & Future NSWFB Access
e Bennelong Stormwater Diversion

1:600 @ A3 0 6 12 18M

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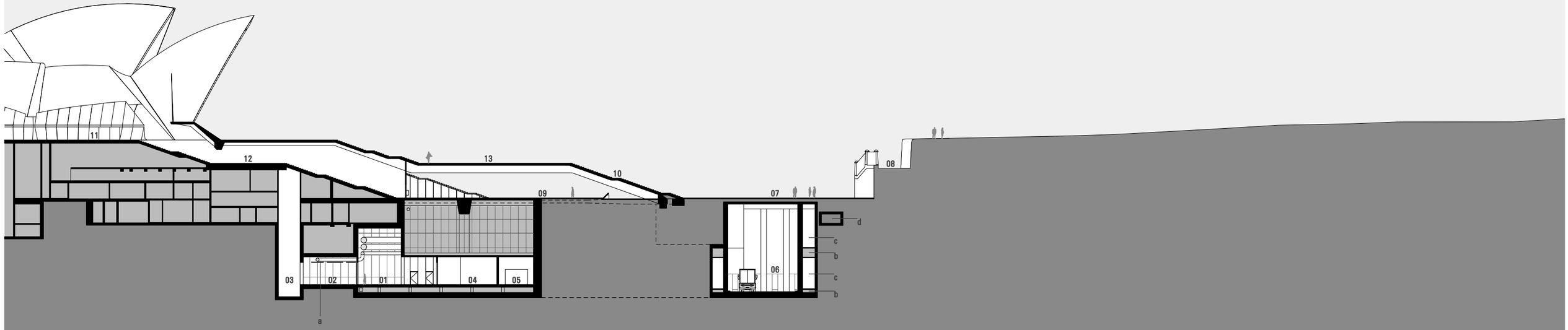
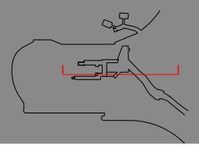
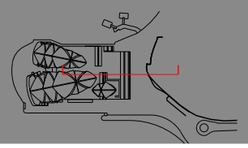
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
SECTION Y21_E
EA-325 / REV.00
0934 2 JUNE 2010



01 REAR LOADING DOCK / FFL -10.060
02 LIFT 22 LOBBY
03 LIFT 22
04 GARBAGE COLLECTION
05 COMPACTOR ROOM
06 VEHICLE RAMP
07 FORECOURT
08 TARPEIAN STAIR
09 VEHICLE CONCOURSE
10 MONUMENTAL STAIR
11 CONCERT HALL, SOUTHERN FOYER
12 BOX OFFICE FOYER
13 PODIUM

a Suspended Discontinuous Accoustic Panels
below Clear Sealed Concrete Soffit & Services
b Tunnel Exhaust
c Fire Egress
d Bennelong Stormwater Diversion





1:600 @ A3 0 6 12 18M

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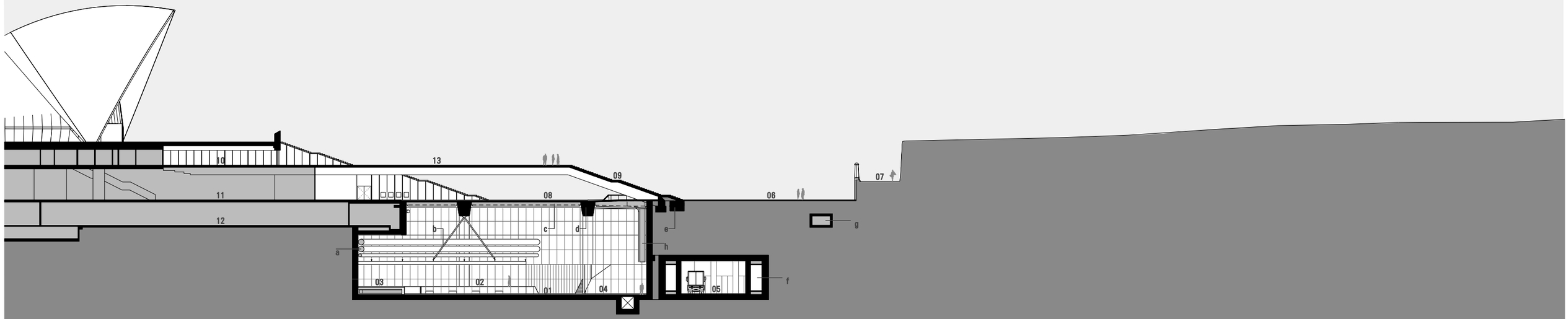
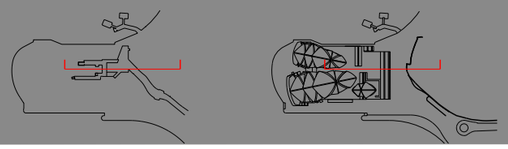
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
SECTION Y25_E
EA-330 / REV.00
0934 2 JUNE 2010



SEE ALSO EA-465

01 DELIVERY DOCK / FFL -11.160
02 SIDE LOADING DOCK / FFL -10.060
03 REAR LOADING DOCK
04 TRUCK TURNING BAY
05 DELIVERY DOCK ENTRY RAMP
06 FORECOURT
07 TARPEIAN STAIR
08 VEHICLE CONCOURSE - EXISTING FFL 3.680 APPROX.
09 MONUMENTAL STAIR
10 BOX OFFICE FOYER
11 CENTRAL PASSAGE
12 CORRIDOR
13 PODIUM

a Mechanical Services Oval Ductwork
b Gantry Support
c Shaped Beams Precast Forms
d Girder Beams Off-form Concrete Class 2
e Monumental Stair Footing
f Fire Egress
g Bennelong Stormwater Diversion
h Ouside Air Intakes



1:600 @ A3 0 6 12 18M

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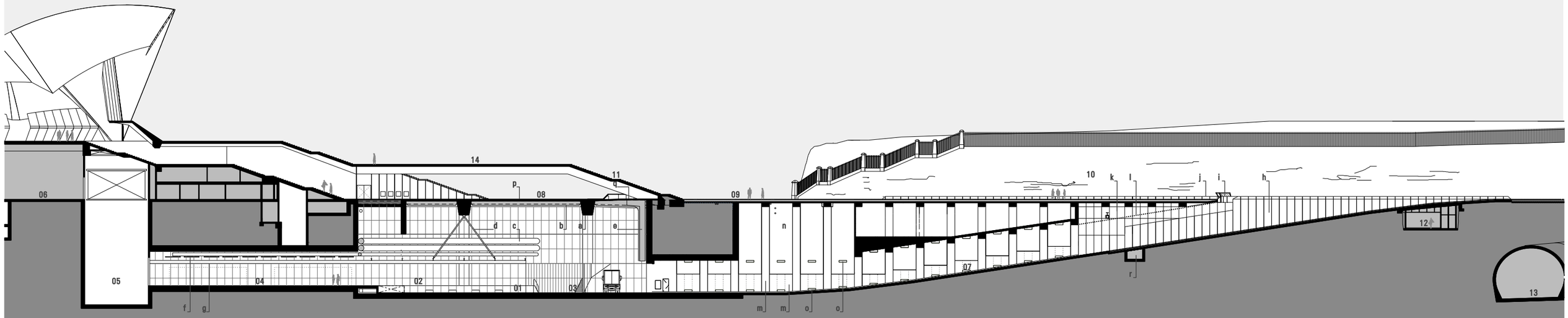
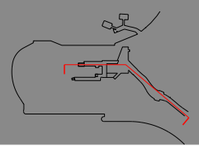
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
SECTION Y29_E
EA-335 / REV.00
0934 2 JUNE 2010

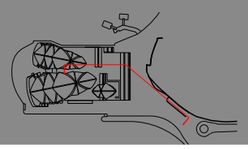


SEE ALSO EA-440 + EA-465

01 DELIVERY DOCK / FFL -11.160
02 SIDE LOADING DOCK / FFL -10.060
03 TRUCK TURNING BAY
04 CONTAINER STORAGE
05 LIFT 21 TEMPORARY SCENERY LIFT
06 SET CHANGING AREA
07 VEHICLE RAMP
08 VEHICLE CONCOURSE / EXISTING FFL 3.680 APPROX.
09 FORECOURT
10 TARPEIAN WALL
11 MONUMENTAL STAIR
12 SOH CARPARK PEDESTRIAN TUNNEL
13 HARBOUR TUNNEL
14 PODIUM

a Girder Beams Off-form Concrete Class 2
b Shaped Beams Precast Forms
c Mechanical Services Oval Ducts
d Gantry Support
e Outside Air Intakes
f Suspended Discontinuous Accoustic Panels
  below Clear Sealed Concrete Soffit & Services
g Gantry
h Precast Crushed Granite Wall Panels
i Precast Crushed Granite Parapet & Bronze Handrail
j Precast Cruched Granite Upstand
k Off-form Concrete
l Suspended Bronze Tube Baffle
m Off-form Concrete Paint Finish
n Blockwork Paint Finish
o Tunnel Exhaust
p Reinstate Existing Finishes
q Bronze Grilles
r Kitchen Exhaust





1:600 @ A3 0 6 12 18M

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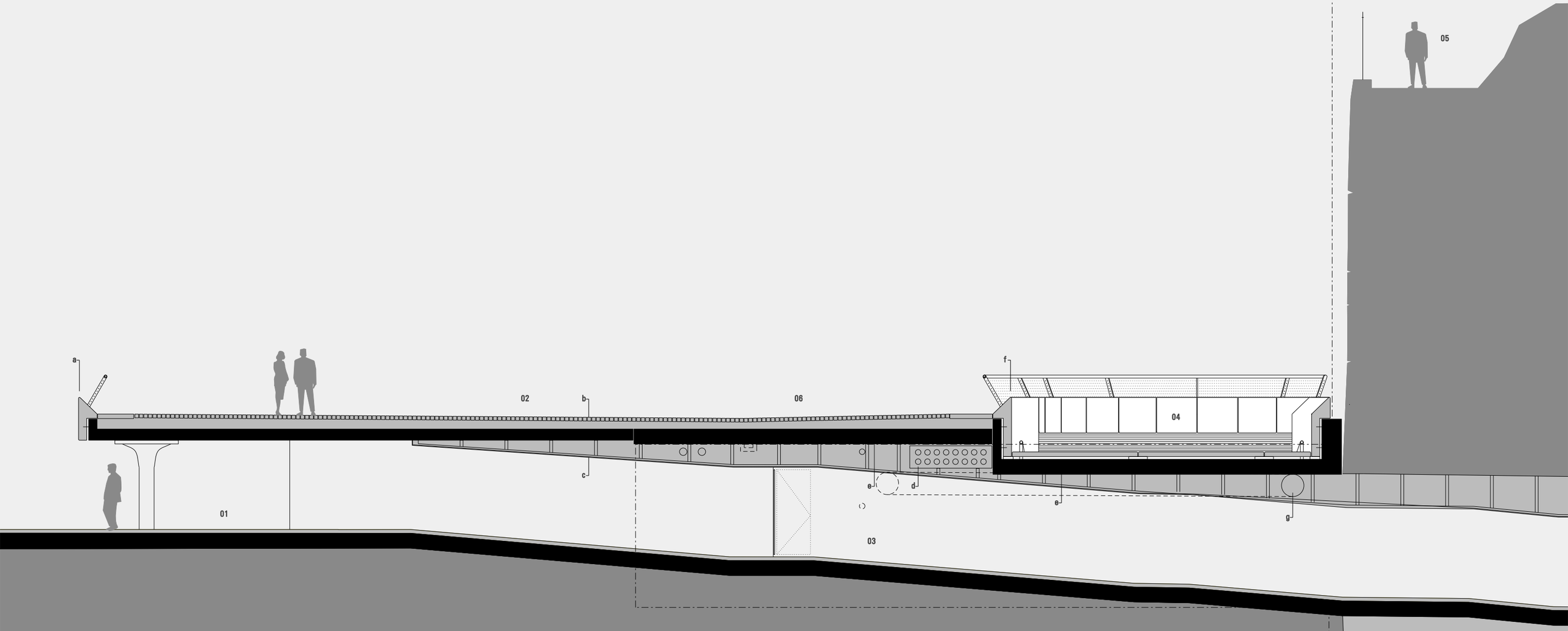
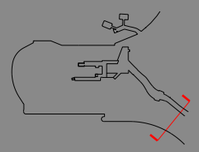
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
SECTION Y34_E & PROPOSED VEHICLE RAMP

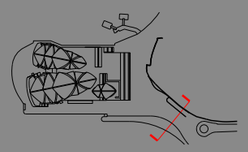
EA-340 / REV.00
0934 2 JUNE 2010



01 EXISTING LOWER CONCOURSE
02 FORECOURT / FFL VARIES
03 SOH CARPARK PEDESTRIAN ACCESS
04 RAMP
05 TARPEIAN WAY
06 PEDESTRIAN/VEHICLE SHARED ZONE

a Existing Precast Crushed Granite Parapet & Bronze Handrail
b New Granite Setts & Slabs to match Existing
c Reinstate Existing Ceiling
d HV Cables Diversion
e New Roof Slab to Carpark Access
f Precast Crushed Granite Parapet & Bronze Handrail with Integrated Lighting to match Existing
g Stormwater Diversion
i Boundary





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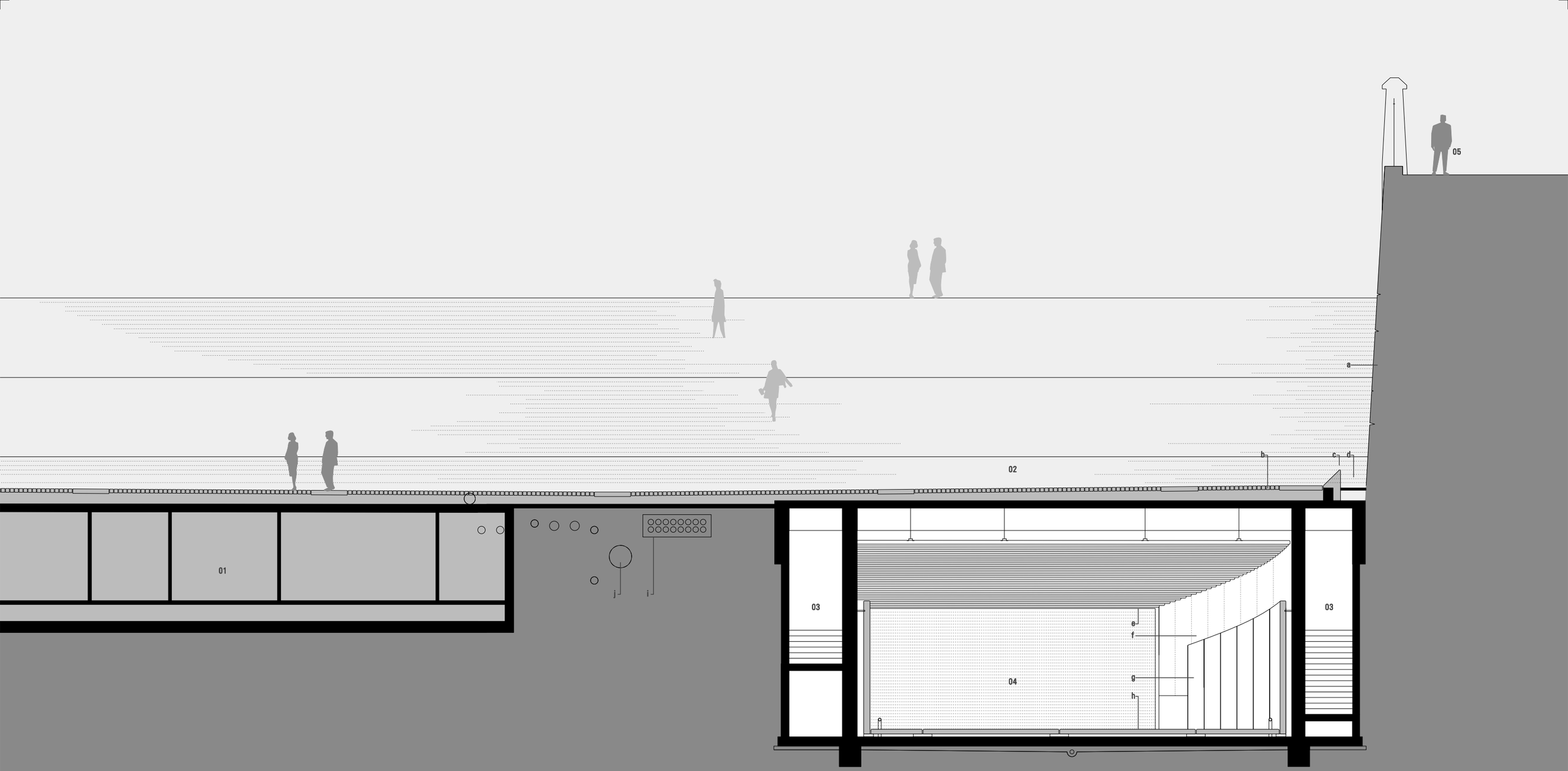
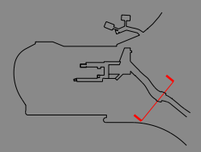
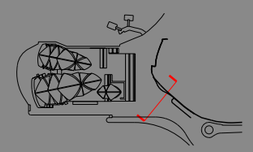
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
VEHICLE RAMP SECTION B PROPOSED
EA-406 / REV.00
0934 2 JUNE 2010



01 LOWER CONCOURSE SERVICE AREAS
02 FORECOURT
03 EGRESS
04 RAMP
05 TARPEIAN WAY

a Tarpeian Wall
b Reinstate Existing Setts & Slabs & Regrade as Required
c Precast Crushed Granite Upstand
d Integrated Services Sone
e Suspended Bronze Tube Baffle
f Class 2 Concrete Wall
g Precast Crushed Granite Panels
h Ramp Finish to match Precast Crushed Granite
i HV Cable Diversion
j Stormwater Diversion





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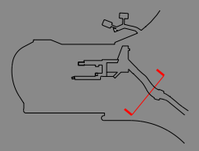
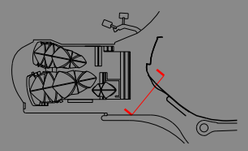
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
VEHICLE RAMP SECTION D

EA-415 / REV.00
0934 2 JUNE 2010

01 FORECOURT
02 EGRESS
03 DELIVERY DOCK ENTRY RAMP
04 SOH CARPARK OUTSIDE AIR INTAKE
05 TARPEIAN WAY

a HV Cable Diversion
b Reinstate Existing Setts & Slabs & Regrade as Required
c Precast Crushed Granite Upstand
d Integrated Services Zone & Solid Bronze Grille
e Tarpeian Wall
f Tunnel Exhaust
g Boundary





1:100 @ A3 0 1 2 3M

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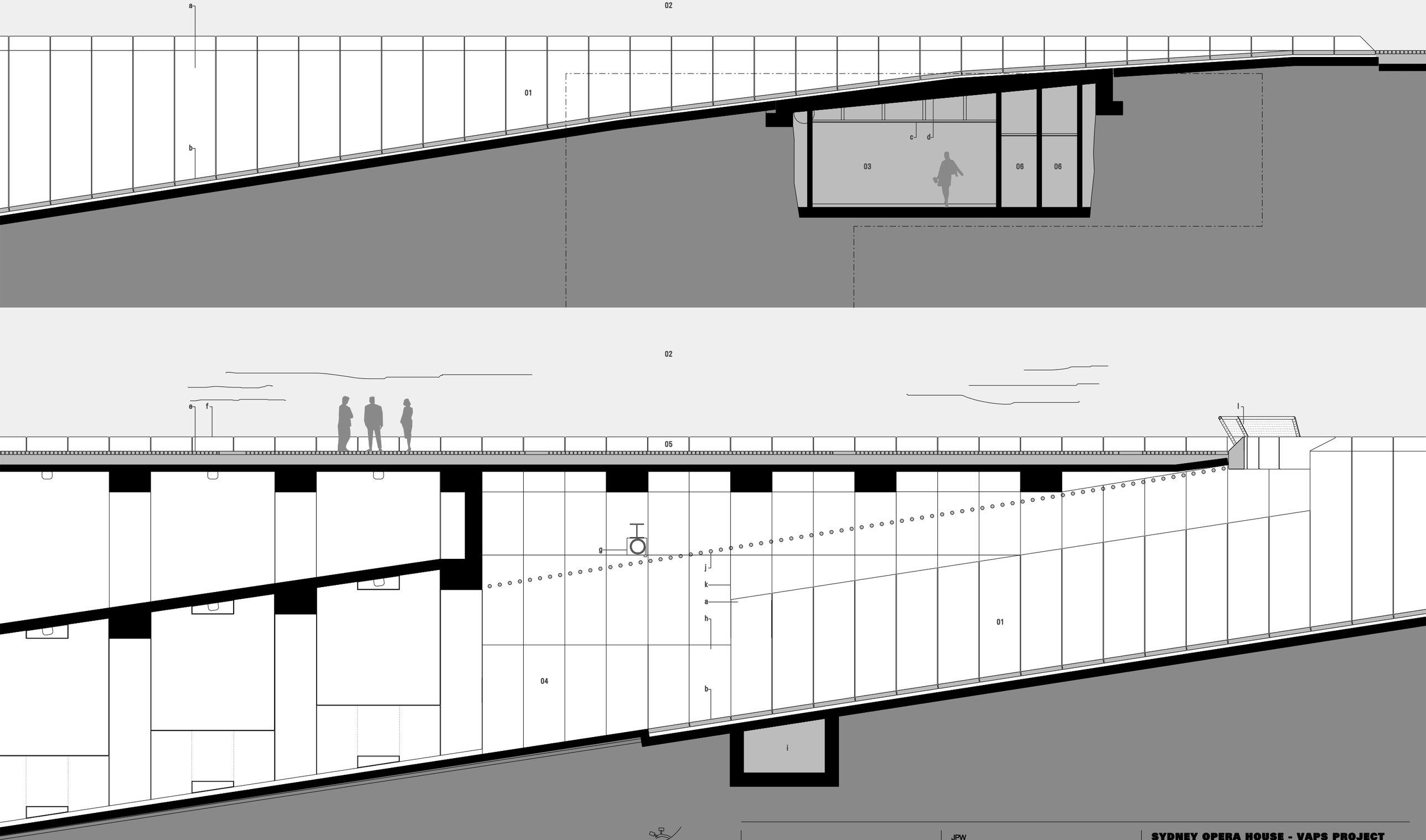
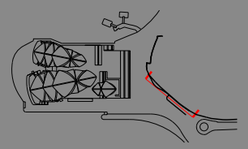
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
VEHICLE RAMP SECTION E
EA-420 / REV.00
0934 2 JUNE 2010



01 RAMP
02 TARPEIAN WALL
03 SOH CARPARK PEDESTRIAN ACCESS
04 DELIVERY DOCK ENTRY RAMP
05 FORECOURT
06 EGRESS

a Precast Crushed Granite Panels
b Ramp Finish to match Precast Crushed Granite Panels
c Reinstate Existing Ceiling
d New Roof Slab to Carpark Access
e Reinstate Existing Setts & Slabs & Regrade as Required
f Precast Crushed Granite Upstand

g Roller Shutter
h Egress Discharge
i Lower Concourse Kitchen Discharge Diversion
j Suspended Bronze Tube Baffle
k Class 2 Concrete Wall
l Precast Crushed Granite Upstand & Bronze Handrail to match Existing With Integrated Lighting



1:100 @ A3 0 1 2 3M

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SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
SECTION JJ VEHICLE RAMP AND PEDESTRIAN TUNNEL

EA-440 / REV.00

0934 2 JUNE 2010

05

04

03

02

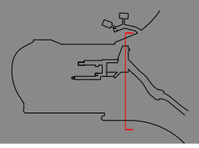
01

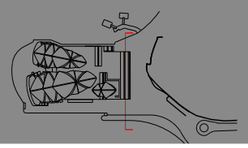
a
b
c
d
e
f
g
h

LONG VEHICLE

01 VEHICLE RAMP BEYOND
02 TRUCK TURNING BAY
03 MECHANICAL PLANT ROOM
04 VEHICLE CONCOURSE
05 MONUMENTAL STAIR

a Existing Tie Beams
b Stormwater
c Reinstate Existing Finishes
d HV Cables
e Compressed Fibre Cement Panels
f Class 2 Concrete Walls
g Folded Slab Concourse Beams
h Existing Precast Upstand





1:100 @ A3 0 1 2 3M

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SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
DELIVERY DOCK_ELEVATION NORTH

EA-450 / REV.00

0934 2 JUNE 2010

04

03

02

01

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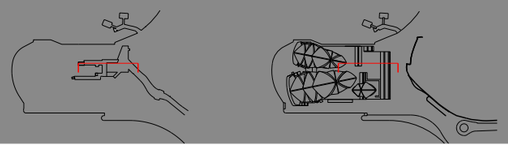
01 REAR LOADING DOCK
02 DOCK CONTROL BEYOND
03 VEHICLE CONCOURSE
04 MONUMENTAL STAIR

a Compressed Fibre Cement Panels
b Class 2 Conrete Walls
c Reinstate Existing Finishes
d Existing Tie Beams
e Roller Door to Garbage Collection
f Stormwater Diversion
g Ramp
h Scissor Lift
i Outside Air Intake
j Solid Bronze Grille
k Existing Precast Upstand
l Folded Slab concourse Beams



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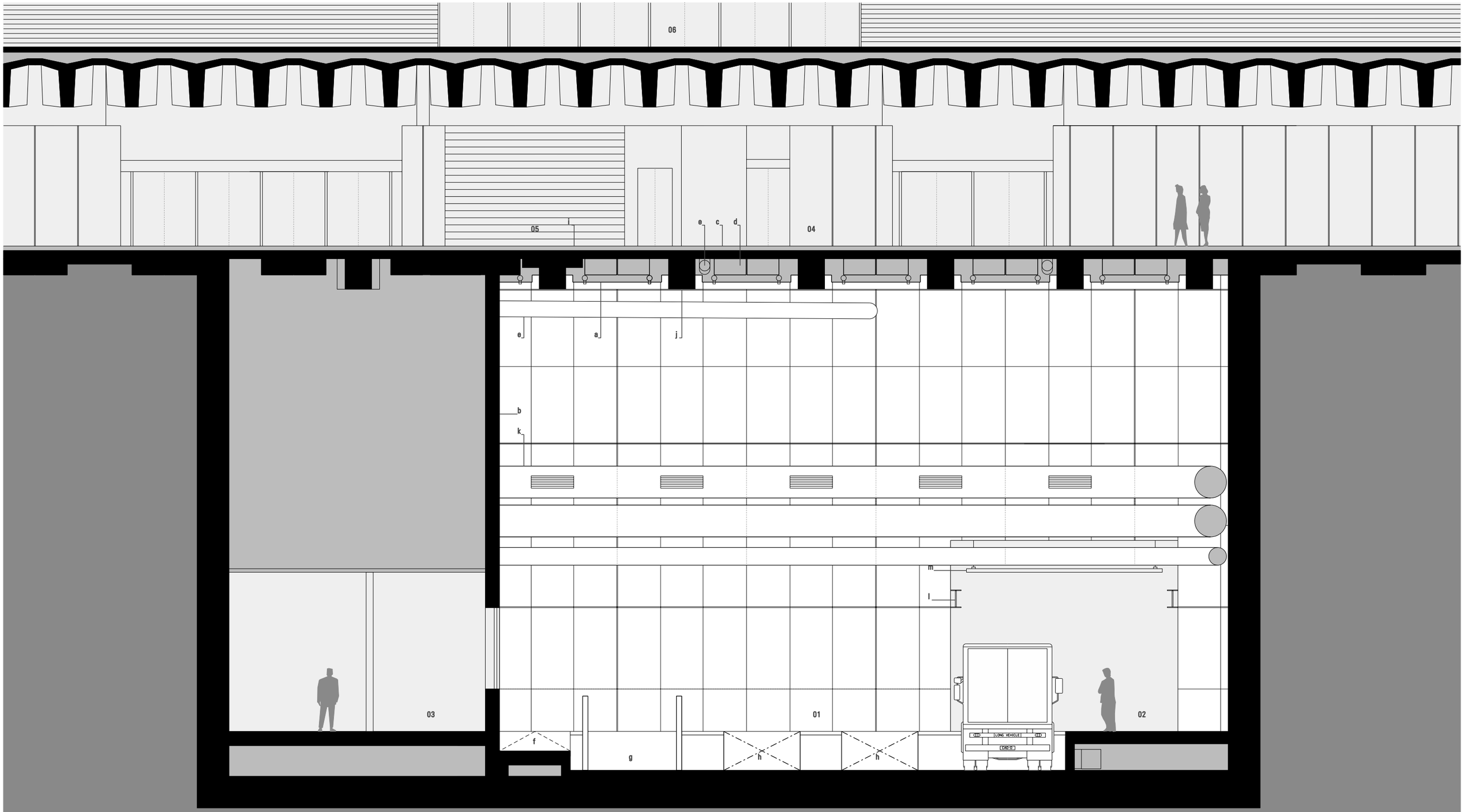
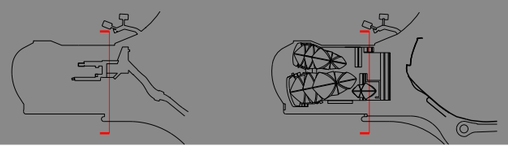
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
DELIVERY DOCK_ELEVATION EAST

EA-455 / REV.00
0934 2 JUNE 2010



01 REAR LOADING DOCK
02 SIDE LOADING DOCK
03 DOCK CONTROL
04 VEHICLE CONCOURSE
05 CENTRAL PASSAGE BEYOND
06 PODIUM

a Compressed Fibre Cement Panels
b Class 2 Concrete Walls
c Reinstate Existing Finishes
d Existing Tie Beams
e Stormwater
f Ramp
g Scissor Lift
h Dock Leveller
i HV Cable Route
j Shaped Beams Precast Forms
k Mechanical Services Oval Ducts
l Gantry
m Suspended Discontinuous Accousitc Panels below
Clear Sealed Concrete Soffit & Services



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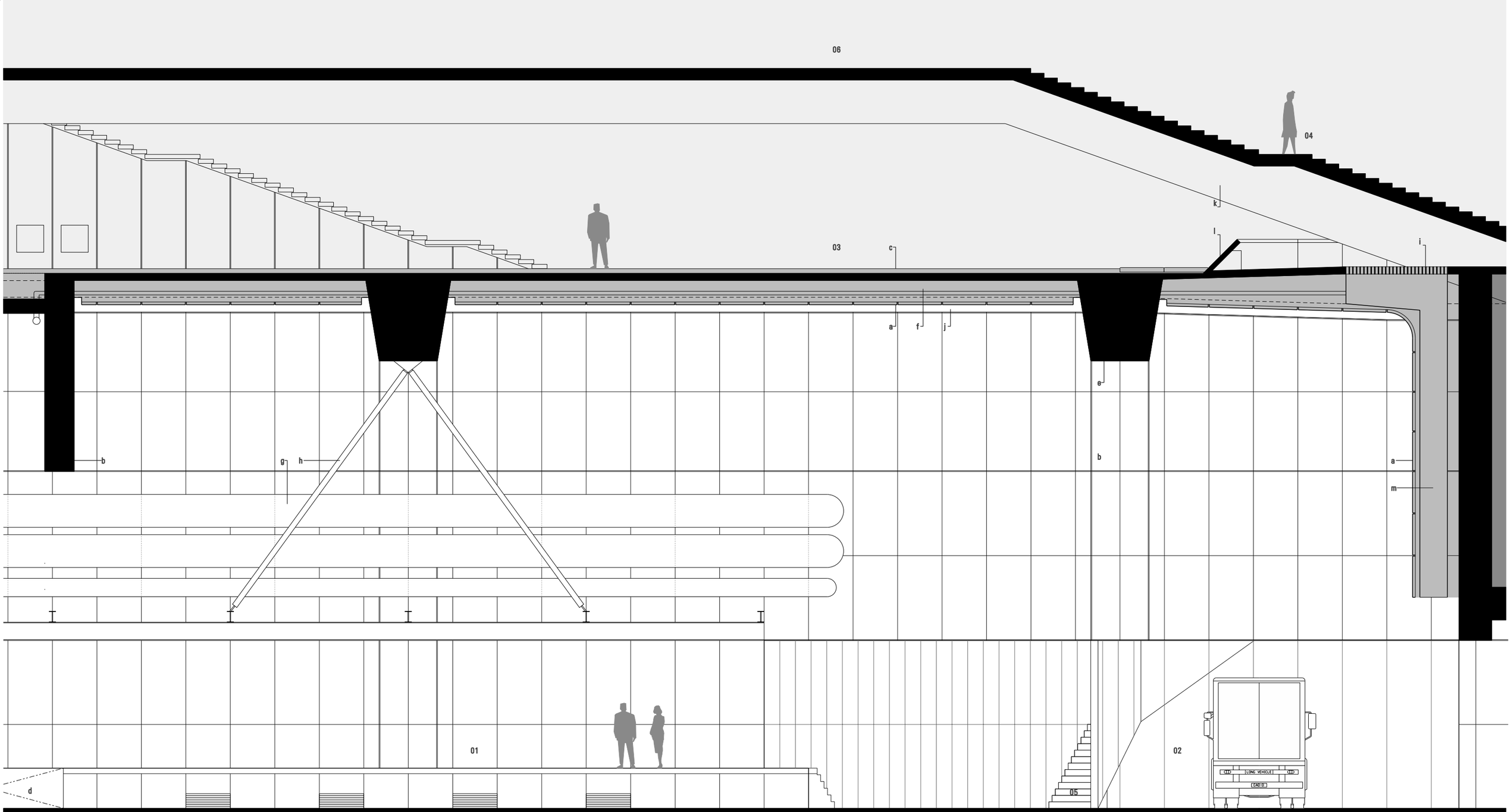
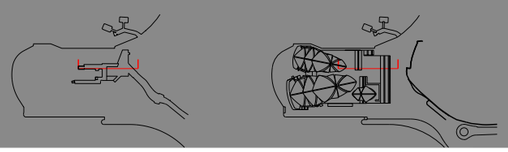
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
DELIVERY DOCK_ELEVATION SOUTH
EA-460 / REV.00
0934 2 JUNE 2010



01 SIDE LOADING DOCK
02 TRUCK TURNING BAY BEYOND
03 VEHICLE CONCOURSE
04 MONUMENTAL STAIR
05 STAIR TO MECHANICAL PLANT ROOM
06 PODIUM

a Compressed Fibre Cement Panels
b Class 2 Concrete Walls
c Reinstate Existing Finishes
d Dock Leveller
e Girder Beam Off-form Concrete Class 2
f Existing Tie Beam
g Mechanical Services Oval Ducts
h Gantry Support
i Outside Air Intake Solid Bronze Grille
j Shaped Beam Precast Form
k Folded Slab Concourse Beams
l Existing Precast Upstand
m Outside Air Intake



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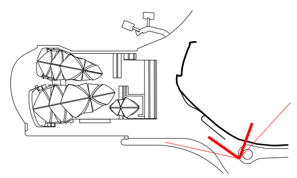
SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
DELIVERY DOCK_ELEVATION WEST
EA-465 / REV.00
0934 2 JUNE 2010



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SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
EXISTING IMAGE 01 -
FROM MACQUARIE ST ROUNDABOUT

EA-900 / REV. 00

0934 02 JUNE 2010

EA-900.dgn
1/06/2010
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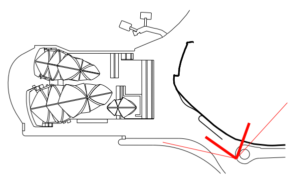

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SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
PROPOSED IMAGE 01 -
FROM MACQUARIE ST ROUNDABOUT

EA-905 / REV. 00

0934 02 JUNE 2010

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1/06/2010
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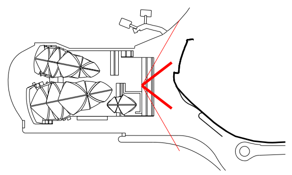

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SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
EXISTING IMAGE 02 -
FROM MONUMENTAL STAIRS

EA-910 / REV. 00

0934 02 JUNE 2010

EA-910.dgn
1/06/2010
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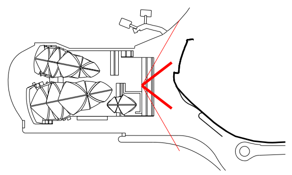

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SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
PROPOSED IMAGE 02 -
FROM MONUMENTAL STAIRS

EA-915 / REV. 00

0934 02 JUNE 2010

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1/06/2010
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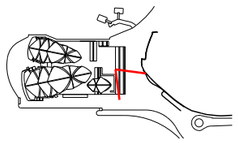

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SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
EXISTING IMAGE 03 -
FROM MONUMENTAL STAIRS DETAIL

EA-920 / REV. 00

0934 02 JUNE 2010

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1/06/2010
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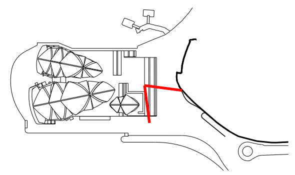

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SYDNEY OPERA HOUSE - VAPS PROJECT
ENVIRONMENTAL ASSESSMENT
PROPOSED IMAGE 03 -
FROM MONUMENTAL STAIRS DETAIL

EA-925 / REV. 00

0934 02 JUNE 2010

EA-925.dgn
1/06/2010
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