

**ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979**

**DETERMINATION OF BENNELONG DRAIN DIVERSION**

**Major Project No.09\_0122**

I, the Deputy Director General, acting under delegation from the Minister for Planning having considered the matters in section 75J(2) of the *Environmental Planning & Assessment Act 1979* (the EP&A Act), determine pursuant to section 75J(1) of the EP&A Act to **give approval** to the major project referred to in the attached Schedule 1 subject to the conditions of approval in Schedule 2.

This approval applies to the plans, drawings and documents cited by the proponent in their Environmental Assessment, Response to Submissions and Statement of Commitments, subject to the conditions of approval in Schedule 2.

The reasons for the imposition of conditions are to:

- (a) ensure the site is appropriately managed for the proposed use;
- (b) to encourage good urban design and a high standard of architecture;
- (c) to encourage ecologically sustainable development principles;
- (d) adequately mitigate the environmental impacts of the development;
- (e) reasonably protect the amenity of the local area; and
- (f) protect the public interest.



Richard Pearson  
Deputy Director General  
Development Assessment and Systems Performance  
Department of Planning

Sydney, 26<sup>th</sup> August 2010

# SCHEDULE 1

## PART A — TABLE

Application made by:	Sydney Opera House Trust
Application made to:	Minister for Planning
Major Project Number:	MP 09_0122
On land comprising:	2 Circular Quay and Macquarie Street, Bennelong Point, Sydney Lot 4 DP 787933 and Lot 5 DP 775888
Local Government Area	City of Sydney Council
For the carrying out of:	Excavation and construction of a new section of stormwater drain and diversion the existing Bennelong Drain
Capital Investment Value	\$7.5 million
Type of development:	Project approval under Part 3A of the EP&A Act
Determination:	Project approval is granted subject to the conditions in the attached Schedule 2
Date of commencement of approval:	This approval commences on the date of the Minister's approval
Date approval is liable to lapse	5 years from the date of this approval unless the building works associated with the project have substantially commenced

## PART B — NOTES RELATING TO THE DETERMINATION OF MAJOR PROJECT No. 09\_0122

### Responsibility for other consents/agreements

The proponent is solely responsible for ensuring that all additional consents and agreements are obtained from other authorities, as relevant.

### Legal Notices

Any advice or notice to the approval authority shall be served on the Director-General.

### Inconsistencies between documents

In the event of any inconsistency between the conditions to this major project approval and the approved plans and documentation described in Schedule 2 and the Statement of Commitments in Schedule 3, the conditions in this major project approval prevail.

## PART C - DEFINITIONS

In this approval, the following definitions apply:

<b>Advisory Notes</b>	Advisory information relating to the approved project but do not form a part of this approval.
<b>BCA</b>	Building Code of Australia
<b>Certifying Authority</b>	Has the same meaning as Part 4A of the EP&A Act.
<b>Construction</b>	Any works, including earth and building works
<b>Council</b>	City of Sydney Council
<b>Day</b>	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
<b>DECCW</b>	Department of Environment, Climate Change and Water or its successors
<b>DEWHA</b>	Department of Environment, Water, Heritage and the Arts or its successors
<b>Department</b>	Department of Planning or its successors
<b>Director-General</b>	Director General of the Department of Planning, or nominee
<b>EA</b>	Environmental Assessment titled GHD, dated January 2010
<b>EP&amp;A Act</b>	<i>Environmental Planning and Assessment Act 1979</i>
<b>EP&amp;A Regulation</b>	Environmental Planning and Assessment Regulation 2000
<b>Evening</b>	The period from 6pm to 10pm
<b>Incident</b>	A set of circumstances that causes or threatens to cause material harm to the environment, and/or breaches or exceeds the limits or performance measures/criteria in this approval
<b>Minister</b>	Minister for Planning, or nominee
<b>Night</b>	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
<b>PPR</b>	<i>Preferred Project Report</i>
<b>Project</b>	The project described in Condition A1, Part A, Schedule 2 and the accompanying plans and documentation described in Schedule 2, Part A, and Condition A2.
<b>Proponent</b>	Sydney Opera House Trust, or anyone else entitled to act on this Approval
<b>POEO Act</b>	<i>Protection of the Environment Operations Act 1997</i>
<b>Reasonable and Feasible</b>	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements. Feasible relates to engineering considerations and what is practical to build.
<b>RTA</b>	Roads and Traffic Authority
<b>Subject Site</b>	Lot 4 DP 787933 and Lot 5 DP 775888
<b>Statement of Commitments</b>	The Proponent's Statement of Commitment in Schedule 3

## SCHEDULE 2

### CONDITIONS OF APPROVAL

#### MAJOR PROJECT APPLICATION NO. MP 09\_0122

#### PART A—ADMINISTRATIVE CONDITIONS

##### **A1. Development Description**

- Excavation and construction of a new section of stormwater drain and diversion the existing Bennelong Drain.

##### **A2. Development in Accordance with Plans and Documents**

The development shall be in accordance with the following plans, documentation and recommendations made therein:

<b>A. Environmental Assessment Report and Appendices prepared by GHD on behalf of Sydney Opera House Trust, dated January 2010.</b>			
<b>B. Response to Submissions and Appendices prepared by GHD on behalf of Sydney Opera House Trust, dated June 2010</b>			
<b>C. Archaeological Management Plan and Heritage Impact Assessment report prepared by GML in January 2010.</b>			
<b>D. Statement of Commitments prepared by GHD on behalf of Sydney Opera House Trust, dated June 2010 contained in Schedule 3.</b>			
<b>E. Preliminary Architectural Drawings prepared by Sydney Water Corporation</b>			
Drawing No.	Revision	Name of Plan	Date
81070SW Sheet 1/7	4	Bennelong Point SWC No. 29 Deviation	26/5/09
81070SW Sheet 2/7	4	-	26/5/09
81070SW Sheet 3/7	4	Longitude Section	26/5/09
81070SW Sheet 4/7	4	Elevation Box Culvert – Foundation Treatment	26/5/09
81070SW Sheet 5/7	4	Elevation of Culvert at Sea Wall	26/5/09
81070SW Sheet 6/7	4	Sections - Junction Pit Enlargement Plan	26/5/09
81070SW Sheet 7/7	4	Details showing detail/ levels, services & Design	26/5/09

Except for:

- (1) any modifications which are 'Exempt and Complying Development' or as may be necessary for the purpose of compliance with the BCA and any Australian Standards incorporated in the BCA; or
- (2) otherwise provided by the conditions of this approval.

##### **A3. Inconsistency Between Documents**

In the event of any inconsistency between conditions of this approval and the drawings/documents referred to above, the conditions of this approval prevail.

**A4. Lapsing of Approval**

The project approval will lapse 5 years after the approval date in Part A of Schedule 1 of this project approval unless the development has been substantially commenced.

**A5. Compliance with Relevant Legislation and Australian Standards**

The proponent shall comply with all relevant Australian Standards and Codes (including Building Code of Australia) and obtain all necessary approvals required by State and Commonwealth legislation in undertaking the project described in Condition A1, Part A, Schedule 2 of this approval.

**A6. Prescribed Conditions**

The proponent shall comply with the prescribed conditions of approval under clause 98 of the Environmental Planning and Assessment Regulation 2000 in relation to the requirements of the BCA.

**A7. Materials and Finishes to Match Existing**

Materials used for all proposed works shall be in keeping with the existing heritage fabric of the Sydney Opera House and its surrounds.

**PART B—PRIOR TO THE ISSUE OF A CONSTRUCTION CERTIFICATE**

**B1 Structural details**

Prior to the issue of a Construction Certificate, the proponent shall submitted to the satisfaction of the Certifying Authority, structural drawings prepared and signed by a suitably qualified practising Structural Engineer that comply with:

- (a) The relevant clauses of the BCA;
- (b) The relevant project approval;
- (c) Drawings and specifications comprising the Construction Certificate; and
- (d) Relevant Australian Standards listed in the BCA.

**B2 Stormwater and Drainage Works**

Prior to the issue of a Construction, the proponent shall submit to satisfaction of Sydney Water all details of the proposed stormwater drainage system. An "Application for Approval of Stormwater Drainage Connections" (if applicable) must also be submitted to the Council for connection of stormwater to the Council's drainage system.

**B3 Sydney Water**

Prior to the issue of a Construction Certificate, a Notice of Requirements under Part 6, Division 9 of the *Sydney Water Act 1994* shall be obtained and a copy must be submitted to the Certifying Authority.

**B4 Erosion and Sediment Control**

Soil erosion and sediment control measures shall be designed in accordance with the document *Managing Urban Stormwater – Soils & Construction Volume 1 (2004)* by Landcom, or its latest version. Details are to be submitted to the satisfaction of the Certifying Authority prior to the issue of a Construction Certificate.

**PART C—PRIOR TO THE COMMENCEMENT OF WORKS**

**C1 Construction Environmental Management Plan**

Prior to the commencement of works, a Construction Environmental Management Plan shall be submitted to and approved by the Certifying Authority. The Plan shall address, but not be limited to, the following matters:

- (a) Techniques and methods to be utilised for the construction of the stormwater drain.
- (b) Hours of work.
- (c) Contact details of site manager.
- (d) Environmental health and safety matters.
- (e) Noise and vibration management.
- (f) Waste management.
- (g) Predicted traffic volumes, types and routes.
- (h) Ingress and egress of vehicles to the site.

- (i) Loading and unloading, including construction zones,
- (j) The location of site shed/s and materials storage to minimise disruption to surrounding land uses and to ensure that the public thoroughfare around the site is not impeded.

The Applicant shall submit a copy of the approved plan to the Department and Council.

### **C2 Waste Management Plan**

Prior to the commencement of works, a Waste Management Plan shall be prepared by a suitably qualified person and submitted to and approved by the Certifying Authority. A copy of the Plan shall be submitted to the Department and Council.

### **C3 Conservation Architect and Archaeologist**

An experienced Conservation Architect and Archaeologist is to be appointed and commissioned to work with the consultant team throughout the construction stages of the project.

### **C4 Notice of Commencement**

At least 48 hours prior to the commencement of any development (including demolition, excavation, shoring or underpinning works), a notice of commencement of building or subdivision work form and appointment of the principal certifying authority form shall be submitted to Council.

### **C5 Site Notice**

A site notice shall be erected on the site prior to any work commencing and shall be displayed throughout the works period.

The site notice must:

- be prominently displayed at the boundaries of the site for the purposes of informing the public that unauthorised entry to the site is not permitted
- display project details including, but not limited to the details of the builder, PCA and structural engineer
- be durable and weatherproof
- display the approved hours of work, the name of the site/project manager, the responsible managing company (if any), its address and 24 hour contact phone number for any inquiries, including construction/noise complaint are to be displayed on the site notice
- be mounted at eye level on the perimeter hoardings/fencing and is to state that unauthorised entry to the site is not permitted

### **C6 Notification of Builders Details**

Prior to the commencement of any development or excavation works, the PCA shall be notified in writing of the name and contractor licence number of the owner/builder intending to carry out the approved works.

### **C7 Geotechnical Report**

Prior to the commencement of any excavation works on site, the proponent shall submit to the PCA, the results of a detailed geotechnical investigation on the site. The report is to address such matters as:

- appropriate excavation methods and techniques
- vibration management and monitoring
- dilapidation survey
- support and retention of excavated faces
- hydrogeological considerations

The recommendations of the report are to be implemented during the course of the works.

### **C8 Barricade Permit**

Where construction works require the use of a public place including a road or footpath, approval under section 138 of the *Roads Act 1993* is to be obtained from Council prior to the commencement of work.

## **PART D—DURING CONSTRUCTION**

### **D1 Hours of Construction**

All building work shall be restricted to within the hours of 7.00 am to 7.00 pm between Monday to Friday, and 8.00 am to 1.00 pm on Saturday, with no work on Sundays and/or Public Holidays. Measures shall be undertaken to ensure no adverse noise or amenity impacts occur to any residential premises.

Works may be undertaken outside these hours, subject to the approval of the Director General where:

- (1) the delivery of materials is required outside these hours by the Police or other authorities;
- (2) it is required in an emergency to avoid the loss of life, damage to property and/or to prevent environmental harm;
- (3) the work is approved through the Construction Noise and Vibration Management Plan; and
- (4) residents likely to be affected by the works are notified of the timing and duration of these works at least 48 hours prior to the commencement of the works.

### **D2 General Heritage Requirements**

- (a) The proposed works are to be carried out in a manner that minimises demolition, alterations, new penetrations/fixings to significant fabric.
- (b) All existing elements and finishes of the building must be protected from damage during the course of the works.

### **D3 Appearance**

All temporary hoardings and barricading are to be designed and constructed to minimise their visual and physical impact on the affected area and on visitors and occupants of the Sydney Opera House.

### **D4 Approved Plans to be on site**

A copy of the approved and certified plans, specifications and documents incorporating conditions of approval and certification shall be kept on the site at all times and shall be readily available for perusal by any officer of the Council or the Department.

### **D5 Safety and Security**

The proponent shall ensure all appropriate safety and security measures are implemented for the duration of the works.

### **D6 Noise**

All work, including demolition, excavation and building work must comply with the 'City of Sydney Code of Practice for Construction Hours/Noise within the Central Business District 1992' and the Australian Standard 2436:1981 'Guide to Noise Control on Construction, Maintenance and Demolition Sites'.

### **D7 Public Way**

The public way must not be obstructed and the roadway and footway is to be clear at all times.

### **D8 Complaints Management System**

The proponent must prepare and implement a Construction Complaints Management System before construction commences and maintain the System for the duration of construction. The System shall include the following:

- A direct telephone number on which complaints and enquiries about the project may be registered.
- A postal address to which written complaints and enquiries may be sent
- An email address to which electronic complaints and enquiries may be transmitted

The telephone number, postal address and email address shall be included on the Site Notice prior to the commencement of construction. A record of complaints received and responses shall be maintained for the duration of construction.

**D9 Covering of Loads**

All vehicles involved in the excavation and/or demolition process and departing the property with demolition materials, spoil or loose matter must have their loads fully covered before entering the public roadway.

**D10 Erosion and Sediment Control**

- (1) Construction must be carried out in a manner that minimises the potential for materials, including construction and demolition debris, sediments and other pollutants to entering Sydney Harbour and waterway. In the event that material enters Sydney Harbour and waterway, it must be removed immediately.
- (2) The erosion, sediment and pollution management system is to be effectively maintained at or above design capacity during construction and until such time as all the ground disturbed has been stabilised and rehabilitated so that it no longer acts as a source of sediment.
- (3) Any material that is to be stockpiled on site is to be stabilised and covered to prevent erosion or dispersal of the material into the adjacent waterway.

**D11 Floating Booms and Silt Curtains**

Unless otherwise agreed by the Director General, a floating boom and silt curtain must be installed and maintained around the stormwater outlet construction area. The floating boom and silt curtain is to be retained and suitably maintained until the construction works have been completed and the water quality inside the silt curtain and boom is equal to the water quality of Sydney Harbour. The silt curtain must extend from the surface of the water to the seabed, and ensure that all attachment points for silt curtains are firmly anchored to avoid gaps and release of contaminants.

**PART E – PRIOR TO THE COMMENCEMENT OF USE**

**E1 Structural Inspection Certificate**

A Structural Inspection Certificate must be submitted to the satisfaction of the Certifying Authority prior to the use of the stormwater drain. A copy of the Certificate with an electronic set of final drawings shall be submitted to the Department and Council after:

- (1) The site has been periodically inspected and the Certifying Authority is satisfied that the Structural Works are deemed to comply with the final Design Drawings.
- (2) The drawings listed on the Inspection Certificate have been checked with those listed on the final Design Certificate/s.

**E2 Section 73 Compliance Certificate**

A Section 73 Certificate under the *Sydney Water Act 1994* must be obtained. The Section 73 Certificate must be submitted to the PCA prior to the commencement of use.

**ADVISORY NOTES**

**AN1 Heritage Requirements**

The proponent is advised that a section 60 application under the *Heritage Act 1977* must be lodged with the Heritage Branch of the Department of Planning as per the terms of the Bilateral Agreement prior to the commencement of any works on site.

**AN2 Requirements of Public Authorities for Connection to Services**

The proponent shall comply with the requirements of any public authorities (e.g. Energy Australia, Sydney Water, Telstra Australia, AGL, etc) in regard to the connection to, relocation and/or adjustment of the services

affected by the construction of the proposed structure. Any costs in the relocation, adjustment or support of services shall be the responsibility of the proponent.

**AN3 Application for Hoardings and Scaffolding**

A separate application shall be made to Council for approval under Section 68 of the *Local Government Act, 1993*, to erect a hoarding or scaffolding in a public place (if applicable). Such an application shall include:

- (1) Architectural, construction and structural details of the design in accordance with Council's policies.
- (2) Structural certification prepared and signed by a suitably qualified practising structural engineer.

**AN4 Use of Mobile Cranes**

The proponent shall obtain all necessary permits required for the use of mobile cranes on or surrounding the site, prior to the commencement of works. In particular, the following matters shall be complied with:

- (1) For special operations including the delivery of materials, hoisting of plant and equipment and erection and dismantling of on site tower cranes which warrant the on street use of mobile cranes, permits must be obtained from Council:
  - (a) At least 48 hours prior to the works for partial road closures which, in the opinion of Council will create minimal traffic disruptions, and
  - (b) At least 4 weeks prior to the works for full road closures and partial road closures, which, in the opinion of Council, will create significant traffic disruptions.
- (2) The use of mobile cranes must comply with the approved hours of construction and shall not be delivered to the site prior to 7.30am without the prior approval of Council.

**AN5 Roads Act, 1993**

A separate application shall be made to Council for approval under Section 138 of the *Roads Act, 1993* to undertake any of the following:

- (1) erect a structure or carry out a work in, on or over a public road, or
- (2) dig up or disturb the surface of a public road, or
- (3) remove or interfere with a structure, work or tree on a public road, or
- (4) pump water into a public road from any land adjoining the road, or
- (5) connect a road (whether public or private) to a classified road.

**AN6 Road repairs necessitated by excavation and construction works**

Section 102(1) of the *Roads Act* states "A person who causes damage to a public road is liable to pay to the appropriate roads authority the cost incurred by that authority in making good the damage."

Council will notify when road repairs are needed, and if they are not carried out within 48 hours, then Council will proceed with the repairs, and will invoice the proponent, owner and relevant contractor for the balance.

**AN7 Temporary Structures**

An approval under Section 68 of the *Local Government Act 1993* must be obtained from the Council for the erection of the temporary structures (if applicable). The application must be supported by a report detailing compliance with the provisions of the *Building Code of Australia*.

Structural certification from an appropriately qualified practicing structural engineer must be submitted to the Council with the application under Section 68 of the *Local Government Act 1993* to certify the structural adequacy of the design of the temporary structures.

**AN8      *Excavation – Historical Relics***

Should any historical relics be unexpectedly discovered then all excavations or disturbance to the area is to stop immediately and the Heritage Council of NSW shall be informed in accordance with Section 146 of the *Heritage Act, 1977*.

**AN9      *Movement of Trucks Transporting Waste Material***

The proponent shall notify the RTA's Traffic Management Centre (TMC) of the truck route(s) to be followed by trucks transporting waste material from the site, prior to the commencement of the removal of any waste material from the site.

# SCHEDULE 3

## STATEMENT OF COMMITMENTS MAJOR PROJECT APPLICATION NO. MP 09\_0122 BENNELONG DRAIN DIVERSION

**Table 1 Final Statement of Commitments**

Environmental Issue	Commitment
Construction Environmental management plan	<p>A construction environmental management plan would be prepared and implemented to guide environmental management and monitoring activities during construction. The construction environmental management plan would include the following sub-plans:</p> <ul style="list-style-type: none"> <li>✓ Noise management plan – The plan would address how noise will be mitigated and managed during construction activities, in accordance with DECC's Draft Construction Noise Guideline and the measures described in section 7.5.5 of the Environmental Assessment;</li> <li>✓ Erosion and sedimentation control plan – The plan would address how potential construction impacts on water quality would be mitigated and managed during construction, including the measures listed in section 7.2.4 of the Environmental Assessment. The plan would be prepared in accordance with Managing Urban Stormwater – Soils and Construction, Volume 2D road construction' DECC 2008 to be read and used in conjunction with Volume 1 'Managing Urban Stormwater – Soils and Construction' Landcom 2006.;</li> <li>✓ Traffic and access control plan – The plan would address how potential construction impacts on local traffic and access within and across the forecourt would be managed during construction, including the measures listed in section 8.2.2 of the Environmental Assessment.</li> <li>Air ✓ Dust management plan – The plan would outline mitigation measures to control dust from exposed areas, stockpiles, and construction activities, including the measures listed in section 8.3.2 of the Environmental Assessment;</li> <li>✓ Soils and waste management plan – The plan would include disposal requirements, measures to prevent the generation and measures to reduce, re-use or recycle wastes where possible. It would also detail measures to manage any potentially contaminated fill, as described in section 7.7.2 of the Environmental Assessment.</li> </ul>
Consultation	<p>Relevant utility authorities will be consulted prior to construction commencing to confirm the location of services and utilities in the vicinity of the proposal and ensure that relocation and/or restoration of services or utilities meets the requirements of the relevant stakeholder.</p> <p>Sydney Opera House will undertake all engineering investigations and engineering structural work required prior to and during the project to obtain an Engineering Certificate to confirm that the project will not have any material adverse affect on the easement for support and the structural integrity of the Sydney Opera House Car Park and its associated ventilation shafts. This certificate will be provided to the Trust Company of Australia (lessee of the car park).</p> <p>The detailed design would be developed in consultation with Sydney Water. This would involve resolution of issues raised in Sydney Water's letter dated 25 May 2010.</p>
Environmental Issue	Commitment
Potential archaeological impacts	<p>Archaeological investigation and recording would be undertaken consistent with the recommendations of the archaeological management plan as detailed in Section 5 of Appendix B of the Environmental Assessment.</p> <p>Relevant site personnel would attend a site induction prior to commencement of the works to ensure that all on-site personnel are aware of the heritage issues associated with the site and the role of the archaeologist(s) on site.</p> <p>Any ground disturbance in areas of archaeological sensitivity should be undertaken under the supervision of a monitoring archaeologist and in accordance with the methodologies described in the archaeological management plan.</p> <p>In the event that any archaeological remains are exposed during site works, they should be appropriately documented according to the procedures outlined in the archaeological management plan.</p> <p>Subsurface disturbance should be limited to those areas defined by the project plans so as to avoid disturbance of other potential archaeological remains at this site.</p> <p>In the event that unexpected archaeological evidence is encountered during site works, works in the immediate vicinity should cease and the Heritage Branch, Department of Planning, should be notified immediately. Further assessment and/or approval may be required before works could recommence.</p> <p>In the event that unexpected Aboriginal archaeological evidence is encountered during site works, works in the immediate vicinity should cease and DECCW should be notified immediately in accordance with the <i>National Parks and Wildlife Act 1974</i>. Works must not recommence until Sydney Opera House Trust receives written authorisation from DECCW.</p>

**Other heritage issues**

**Forecourt**

The existing forecourt paving will be removed and reinstated upon the completion of the excavation and construction works. The works will be directed by the heritage architect to ensure minimum fabric is removed, damage is minimised, the paving is reinstated appropriately and any necessary remedial work is carried out.

**Bennelong Drain**

The removal or disturbance of any sections of the original ovoid channel (currently functioning or previously decommissioned) should be minimised wherever possible.

Any sections of the original drain that are to be removed should be photographed in situ prior to removal (including sections of the original ovoid drain and later diversions).

Any exposed sections of the original ovoid drain that will not be removed should be protected during excavation works, as well as in association with construction of the new diversion junction.

Removal of any sections of the original ovoid drain would be undertaken in consultation with Sydney Water.

Sydney Water would be consulted in relation to any preservation requirements, including the retention and storage of any fabric or artefacts recovered from the Sydney Water asset.

**Seawall**

To match the existing fabric of the seawall, the drain would be lined with sandstone to about 1-1.5 m from the outlet.

All works to the seawall should retain and respect the existing material configuration where possible.

Methodologies employed for the construction of the eastern section of the drain will be selected to minimise construction vibration and to avoid any impact on surrounding structures including the sea wall and QEII gates.

The amount of sandstone removed from the seawall for construction of the outlet should be minimised.

Removal of stone from the seawall should be undertaken in a manner that does not disturb, damage or destabilise the surrounding fabric.

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**Environmental Issue**

**Commitment**

**Interpretation**

Interpretation of any exposed archaeological features and the contribution of this evidence to archaeological research may also mitigate any adverse archaeological impacts. Any such interpretation should be part of a holistic approach to the interpretation of the site. Potential archaeological evidence that may be of particular interest would include:

Remains of Fort Macquarie, associated with a major period in the historical development of Bennelong Point; and

Any evidence of Aboriginal use or occupation of the site, including any isolated artifacts that may be discovered during site works.

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**Hydrology and drainage**

**Construction**

As described in section 7.6.3 of the Environmental Assessment, a detailed erosion and sedimentation control sub-plan would be prepared as part of the construction environmental management plan, describing safeguards to minimise the adverse impacts on water quality from erosion, sediment transfer and sedimentation during the construction phase. Measures would include a sediment curtain around the relocated stormwater outlet during the construction phase.

Construction methods and management measures would be developed to ensure that the drain can remain operational during the construction of the diversion.

**Operation**

It is recommended that a monitoring program be established to monitor the amount of sediment that may be deposited at the outlet once it has been commissioned. The quantity of sediment discharged from the outlet to the receiving environment would be further quantified post construction. This would be undertaken as part of Sydney Water's existing operational plan for the overall stormwater network and would involve six monthly inspections of the sediment trap immediately upstream of the project to ensure it is operating effectively.

If the sediment yield is found to be significant and significant sediment deposition problems are observed to be occurring, a strategy would be developed in consultation with Sydney Water to mitigate impacts. This may involve consideration of options such as upgrading the sediment sump that is currently located within the Sydney Opera House Car Park, immediately upstream of the project.

It is also recommended that a boom be temporarily installed at the proposed diversion outlet to monitor and capture any floating debris and gross pollutants that may be discharged into Farm Cove. This, would provide an indication of the amount of floating debris discharged from the drain. If the amount of floating debris is found to be significant, management measures would be developed in consultation with Sydney Water and City of Sydney Council to manage the impact, otherwise the temporary boom would be removed.

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**Aquatic ecology      Construction**

A detailed erosion and sedimentation control plan detailing safeguards to minimise the adverse impacts on water quality from erosion, sediment transfer and sedimentation during the construction phase would be prepared as part of the construction environmental management plan developed by the contractor. It would incorporate measures to manage erosion and runoff in accordance with the specifications outlined in *Managing Urban Stormwater – Soils and Construction, Volume 2D road construction* DECC 2008 to be read and used in conjunction with Volume 1 *Managing Urban Stormwater – Soils and Construction* Landcom 2006.

**Visual impacts      Construction**

Erection of construction hoardings in accordance with standard Sydney Opera House procedures. All construction activities and equipment would be contained within these hoardings.

**Operation**

The drain would be lined with sandstone to about 1-1.5m from the outlet to match the existing fabric of the seawall.

**Issue**

**Construction noise and vibration**

Where possible, the amount of materials that are dropped from heights should be minimised;

Where practical, machines should be operated at low speed or power and should be switched off when not being used rather than left idling for prolonged periods;

Where possible, equipment should be selected to minimise noise emissions, should be fitted with appropriate silencers and should be in good working order;

An excavator likely to produce low noise emissions should be selected;

Machines found to produce excessive noise compared to normal industry expectations should be removed from the site or stood down until repairs or modifications can be made;

Noise emissions from reversing alarms should be minimised, although use of such alarms should still be satisfactory to achieve occupational health and safety requirements;

Construction activities should be limited to recommended standard construction hours;

All site workers should be made aware of the potential for noise impacts and encouraged to take practical and reasonable measures to minimise noise during the course of their activities;

Noise intensive and vibration generating activities, such as rockbreaking, should be minimised; and

Construction hoarding should be used, in accordance with standard practice for construction activities at Sydney Opera House.

**Geological conditions**

In the event that indications of contamination are encountered (ie. odorous or visually contaminated materials) as a result of exposure of sub soils during construction, work in the area would cease until an environmental consultant can advise on the need for remediation or other action, as deemed appropriate.

All waste including spoil will be managed in accordance with DECCs *'Waste Classification Guidelines'* (2008).

A detailed erosion and sedimentation control plan detailing safeguards to minimise the adverse impacts on water quality from erosion, sediment transfer and sedimentation during the construction phase would be prepared as part of the construction environmental management plan developed by the contractor. It would incorporate measures to manage erosion and runoff in accordance with the guideline *'Managing Urban Stormwater – Soils and Construction, Volume 2D road construction'* DECC 2008 to be read and used in conjunction with Volume 1 *'Managing Urban Stormwater – Soils and Construction'* Landcom 2006.

The erosion and sediment control plan prepared as part of the construction environmental management plan would ensure:

- Sediment and erosion control measures, such as sediment fences and bunding, are installed and maintained, with particular attention where the drainage is towards Farm Cove;
- Use of silt curtains as a minimum during construction adjacent the outlet construction area;
- Stockpiles are stabilised and remain covered and appropriate sediment and erosion control measures are installed down slope of all stockpiles;
- Spill kits are made available to construction vehicles;
- Implementation of sediment controls in the vicinity of the outlet construction; and
- Any dangerous goods used on site would be handled, used and stored in accordance with relevant material safety data sheets, Australian Standards, and the Dangerous Goods Code. Procedures are included for the management of accidental spills to minimise potential contamination during construction.

**Waste management**

As part of the construction environmental management plan, a waste management sub-plan would be prepared. The sub-plan would be framed using the waste management hierarchy principles outlined above. The sub-plan would be prepared prior to construction commencing and be consistent with the *Waste Avoidance and Resource Recovery Act 2001* and the *'Waste Classification Guidelines'*.

Environmental Issue	Commitment
Traffic and access	<p>A traffic and access management plan would be prepared as part of the construction environmental management plan and would include measures such as:</p> <ul style="list-style-type: none"> <li>▶ Vehicles are to remain on internal road network where possible;</li> <li>▶ Vehicles to minimise distance travelled across forecourt where possible;</li> <li>▶ Alternate parking to be found for personnel vehicles that are not required to be on site;</li> <li>▶ Where possible, heavy vehicle movements for delivery of materials/equipment and removal of spoil should be restricted to off peak times or when forecourt use is low;</li> <li>▶ Access to Man O' War Steps to be maintained at all times; and</li> <li>▶ Access to the Royal Botanic Gardens to be maintained at all times during construction.</li> </ul>
Air quality	<p>A dust management plan would be prepared as part of the construction environmental management plan, including measures such as the following:</p> <ul style="list-style-type: none"> <li>▶ Areas with the capacity to cause dust would be dampened to suppress dust emissions;</li> <li>▶ Materials transported in trucks would be appropriately covered to reduce dust generation;</li> <li>▶ Vehicle movement controls would be installed, particularly entrance to and exit from construction work sites;</li> <li>▶ Construction activities that generate high dust levels would be avoided during high wind periods;</li> <li>▶ Rehabilitation of disturbed surfaces would be undertaken as soon as possible;</li> <li>▶ All construction plant and machinery would be fitted with emission control devices complying with Australian Design Standards and would be regularly maintained; and</li> <li>▶ Plant and machinery would be turned off when not in use.</li> </ul>
Land use	<p>Construction of the works and events would be timetabled to avoid construction coinciding with forecourt events.</p>
Infrastructure	<p>Services searches undertaken by the construction contractor would confirm the location of any services.</p> <p>Consultation with service providers would be undertaken prior and during the works to ensure that all services located in the area are located and protected during the works.</p>
Safe work method statement	<p>Following confirmation of the final construction method, the Contractor will develop a detailed safe work method statement to ensure delivery and installation of the project maintains the integrity of the surrounding heritage fabric of the Sydney Opera House site.</p>
Operation and maintenance	<p>As the asset would be owned and operated by Sydney Water, Sydney Water would be responsible for operation and maintenance, including any ongoing monitoring or inspections. This would include six monthly water quality or sedimentation investigations undertaken as part of routine operation of the wider stormwater drainage system.</p>
	<p>Sydney Opera House Trust would apply to Sydney Water for a Section 73 Certificate.</p>