WHERE IMAGINATION TAKES YOU. SYDNEY OPERA HOUSE

25 October 2010

Mr Michael Buckley
NSW Department of Planning
23-33 Bridge Street
Sydney NSW 2000

Email: Michael.Buckley@planning.nsw.gov.au

Your ref: MP09_0200

Dear Mr Buckley

Re: Exhibition of Vehicle Access and Pedestrian Safety Project (VAPS) at Sydney Opera House (MP 09-0200)

Reference is made to Mr Cavallo's letter dated 23 September 2010 regarding the public exhibition of the Vehicle Access and Pedestrian Safety Project Environmental Assessment.

Please find enclosed the Submissions Report as requested.

You can contact me on 9250 7178 if you require any further information.

Yours sincerely

C. McTaggart

Greg McTaggart
Director, Building Development & Maintenance

BYRNES & ASSOCIATES PTY LTD

ARCHITECTURE
PLANNING AND
URBAN DESIGN

VEHICLE AND PEDESTRIAN SAFETY PROJECT

AT

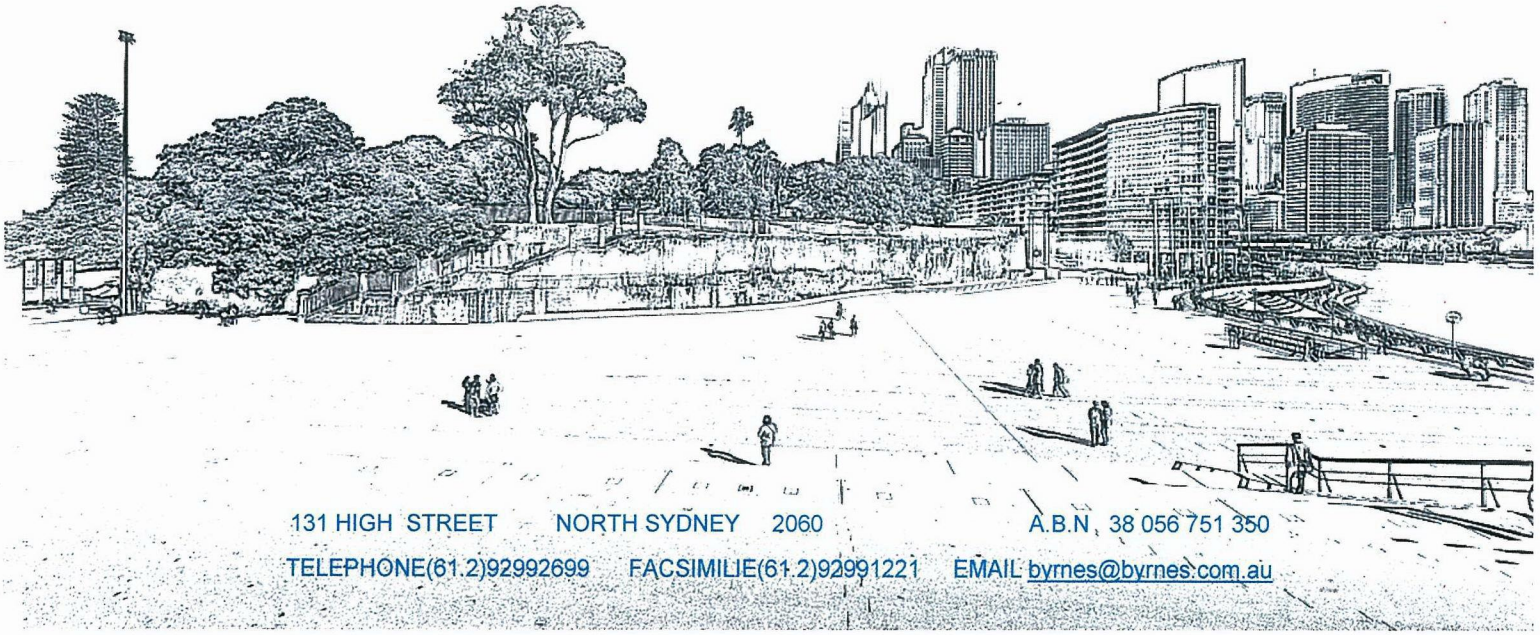
THE SYDNEY OPERA HOUSE

RESPONSE TO SUBMISSIONS

Prepared on behalf of

The Sydney Opera House Trust

October 2010



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List of Abbreviations

CMP 2003	Conservation Management Plan 2003 ("*Sydney Opera House: A Revised Plan for the Conservation of the Sydney Opera House and its Site*" (3rd edition 2003) by James Semple Kerr
DECCW	Department of Environment, Climate Change and Water, NSW
DEWHA	Australian Government Department of Environment, Water, Heritage and the Arts
DGEARs	Director Generals Environmental Assessment Requirements
EA	Environmental Assessment
EPA Act	Environmental Planning and Assessment Act 1979
RTA	Roads and Traffic Authority of NSW
SPA	State Property Authority
TNSW	Transport NSW
VAPS	Vehicle and Pedestrian Safety

Certification of Response to Submissions

Proponent, Site and Project Details

Applicant: Sydney Opera House Trust
Sydney Opera House
GPO Box 4274
Sydney NSW 20001

Site: The Sydney Opera House
Bennelong Point
Lot 5 in Deposited Plan 775888
Lot 4 in Deposited Plan 787933
Lot 101 of DP828892

Proposal: Vehicle and Pedestrian Safety Project
As described in this report and including new underground loading dock, access ramp and associated changes to the Forecourt and Interior of The Sydney Opera House

Authorship

This report has been prepared by

Terence P Byrnes
Principal
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131 High Street North Sydney
ASTC Arch (NSW), MCP Hons (Yale), FRAIA, FPIA

assisted by

Natasha Harras
Senior Consultant Planner
BA; Grad Dip URP; MPIA

Declaration

We certify that the contents of the Environmental Assessment and the Response to Submissions to the best of our knowledge, has been prepared in accordance with the requirements of Part 3A of the Environmental Planning and Assessment Act 1979 and that to the best of our knowledge the information contained in this report is neither false nor misleading.

Terence P Byrnes
22/10/2010

Natasha Harras
22/10/2010

Chapter 1: Introduction

1.1 Background

Major Project Application No MP09_0200 is for the development of an underground loading dock and associated works, known as the Vehicle and Pedestrian Safety (VAPS) Project at the Sydney Opera House. The Application was first made to the Department of Planning on 6 November 2009.

Following recept of the Application, the Department issued the Director-General's Environmental Assessment Requirements for the Proposal.

An Environmental Assessment (EA) was then prepared in accordance with those requirements and submitted to the Department of Planning. The EA described in detail the site and locality, the proposed development, provided a detailed assessment of the impacts of the proposal and included a 'Draft Statement of Commitments' in relation to future actions and mitigation measures.

The Environmental Assessment was exhibited by the Department of Planning from 18 August to 17 September 2010. During that time, 11 submissions were received. Submissions were from Government Departments and Agencies, as well as from 2 neighbours and the Australian Institute of Architects.

1.2 Purpose of this Report

Section 75H(6) of the Environmental Planning and Assessment Act (EPA Act) provides that:

(6) The Director-General may require the proponent to submit to the Director-General:
(a) a response to the issues raised in those submissions, and
(b) a preferred project report that outlines any proposed changes to the project to minimise its environmental impact, and
(c) any revised statement of commitments.

On 23 September 2010, the Department of Planning wrote to the Sydney Opera House requiring that the proponent respond to the issues raised in the submissions in a 'Submissions Report'. It also advised that if there are any proposed changes to the project, A Preferred Project Report may be required and that The Statement of Commitments may need to be revised to reflect any proposed changes.

This report has been prepared in response to that request. This report will briefly describe the background and give an overview of the proposal (**Chapter 1**); will outline the submissions received from the various organisations and Government Departments and include the proponent's response to the

submissions (**Chapter 2**); will provide an updated 'Statement of Commitments' to further address issues raised in the submissions (**Chapter 3**); and provide a conclusion (**Chapter 4**).

Where additional information has been requested in the submissions, that information has been included in the annexures to this report.

None of the matters raised in the submission gave rise to the need to make any changes to the proposed project. Therefore a 'Preferred Project Report' is not required in this instance.

1.3 Overview of the Proposal

The Vehicle and Pedestrian Safety (VAPS) Project is described in detail in Chapter 3 of the Environmental Assessment and that document should be referred to for a complete description of the project.

However by way of background to this response report, the following provides a brief summary of the proposal.

The VAPS project has been designed to address the long standing objectives of separating heavy vehicles from pedestrian traffic on the Forecourt of the Sydney Opera House thereby improving public safety; improving the visitor's experience and views to the Sydney Opera House; as well as improving the functioning of the site as a performing arts venue. It includes the following s:

- Construction of an underground loading dock to be located below the Sydney Opera House building and Forecourt;
- Alteration of existing lifts and stairs and construction of new lift services and underground corridors to link the new underground loading dock with the performance areas and back-of-house facilities of the Sydney Opera House;
- Construction of a new opening on the southern side of the Forecourt to create a new vehicle access ramp providing service vehicle access from the existing Macquarie Street roundabout down to the new underground loading dock;
- Removal of the recessed vehicle access path flanked by kerbs across the Forecourt, and replacement with a surface that is level with the surrounding paving in same material as existing;
- Removal of the existing guardhouse and construction of a new smaller guardhouse re-located in line with the new loading dock entry;
- Associated minor changes to the Forecourt including improvements to Forecourt lighting; Removal of existing planter boxes on the southern side of the Forecourt; reconfiguration of the grille to the existing car park air shaft vents against the Tarpeian wall and investigation of regrading of the curved steps opposite the 'Aria Restaurant' to improve patron safety.; and
- Relocation of various below ground site services and modifications to the roof of the pedestrian tunnel to the existing adjoining car park where it opens onto the lower concourse level.

The following aerial photo demonstrates the location of the works within the site. The photomontage below that demonstrates how the forecourt will present upon completion of the project.

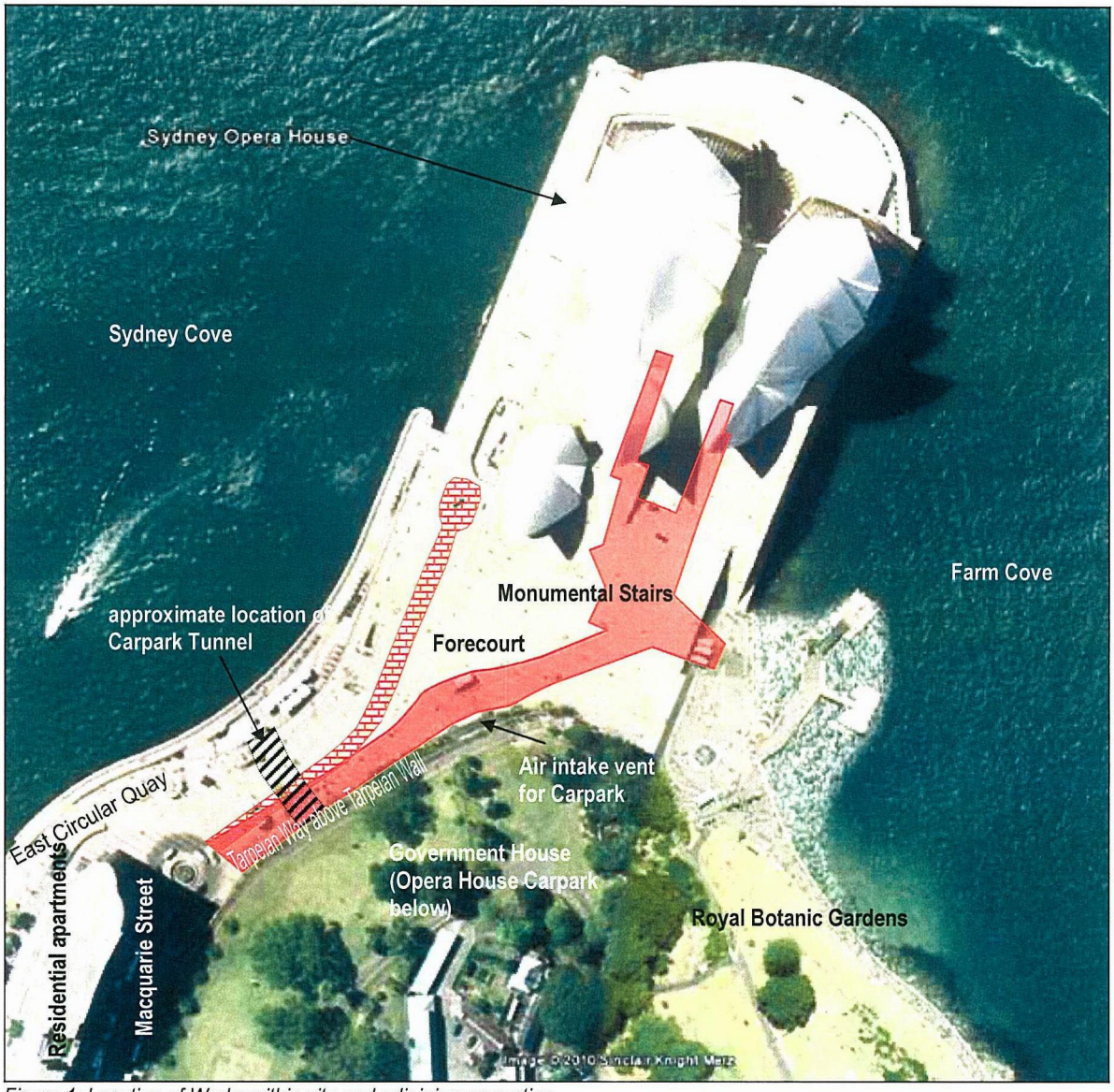

Figure 1: Location of Works within site and adjoining properties
Below Ground Works
Above Ground Works

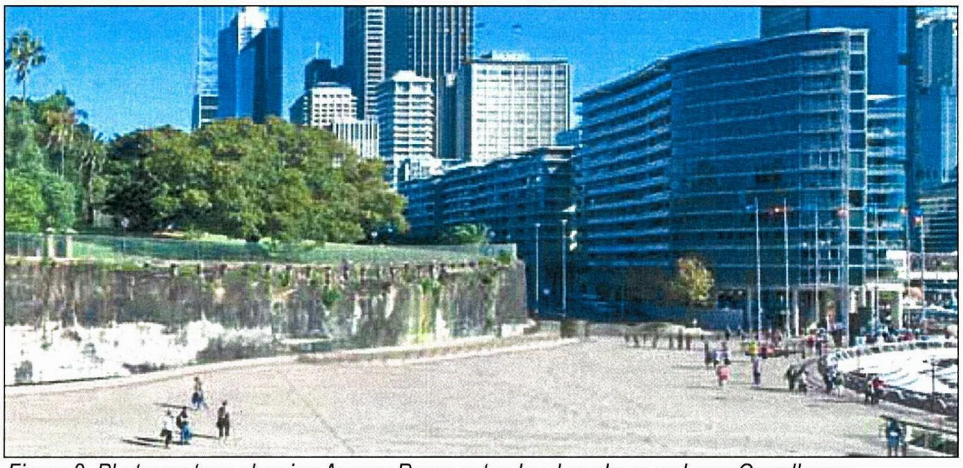

Figure 2: Photomontage showing Access Ramp entry, level roadway and new Guardhouse

Chapter 2:
Response to Submissions

2.1 Australian Institute of Architects

The Australian Institute of Architects took the opportunity to

> *"congratulate the proponent and consultants on an elegant and practical solution to the problems of pedestrian safety and Vehicle access to the city's World Heritage site".*

The Institute supports the application and the benefits it will provide.

Response:
No response required.

2.2 The Botanic Gardens Trust

The Trust advises it supports the proposal to improve pedestrian safety on the Sydney opera House Forecourt.

It makes 3 other comments in relation to the proposal which can be summarised as:

- The Trust is aware of and supports the proposed Aboriginal rock engravings on the Tarpien Wall as described in the Aboriginal Cultural Values Assessment.

  Response: The proposed Aboriginal rock engravings are mentioned in the Aboriginal Cultural Values Assessment but are outside the boundary of the site and do not form part of the subject proposal.

- The Trust will seek more information regarding the timing and potential impacts of the construction but wish it noted that pedestrian and emergency services access to the Royal Botanic Gardens must remain unimpeded;

  Response: It was always intended that pedestrian access to the Royal Botanic Gardens would remain unimpeded. The updated Statement of Commitments provides that *"All hoardings and access paths will be arranged so that pedestrian and emergency vehicle access to the Royal Botanic Gardens will be retained ".*

- The amenity and use of the Domain and the Royal Botanic Gardens for a range of events / activities should not be affected by the construction program, including New years Eve Celebrations, use of the Bennelong Lawn, triathlons and running events and the operation of visitor and services facilities.

  Response: The updated Statement of Commitments provides that immediate neighbours will be consulted with upon resolution of the final design and prior to finalising the Detailed Construction Management Plan and that the final construction management plan will take into account any concerns from neighbours and stakeholders relating to amenity and operational impacts and timing of any major events on adjoining sites.

2.3 City of Sydney

The City of Sydney raised 8 issues and under the heading of each issue, made a number of recommendations. The following provides a brief summary of each of the issues, details the recommendations of the Council and the Proponent's response:

2.3.1 Impact upon setting of the Opera House and the Forecourt.

The City finds that the proposal, once completed, has the potential to achieve an overall positive impact in respect of the setting of the Sydney Opera House and the pedestrian approach from the City. However, the City is concerned about several negative impacts in relation to the setting of the Opera House and the Forecourt. These relate to the following:

- The area of the Forecourt that is proposed to be 'cut and cover' excavation is not clearly represented and it is difficult to ascertain whether the amount of open cut excavation of the Forecourt could be reduced in favour of additional tunnelling.

- The degree of disruption and reduction in the visitor experience during the construction phases of the project will be excessive. It is essential to minimise disruption of the visitor experience through well resolved construction management to be carefully resolved and continued consultation with stakeholders.

- The resolution of design details has not yet been documented. Care will be required to ensure the quality and detail described in the concept design is achieved in the implementation. The proposed entry ramp and opening will introduce a new permanent element but its detailing, configuration, and location is critical in reducing any visual intrusion. Proposed materials and colours must be consistent with Utzon's palette of natural materials used elsewhere on the site. The resolution of external lighting within the entrance to the tunnel including the appropriate form of lighting, locations and illumination levels are critical in achieving a sympathetic and high quality result.

Recommendations & Response:

1. *To reduce disruption of the visitor experience during construction phase and to conserve the sandstone and potential archaeological resources of Bennelong Point the amount of open cut excavation of the Forecourt should be reduced in favour of additional tunnelling wherever feasible.*

Response: This has already been examined in detail with the structural engineers and the geotechnical engineers. In light of the structure proposed above the tunnel to house water tanks and equipment, and the proximity of the top of this level to the existing forecourt level, tunnelling will not be possible to the majority of the tunnel length. There is no opportunity to reduce the extent of cut and cover construction any further.

2. *It is essential that the architect's Johnson Pilton Walker be engaged to continue the design resolution, construction documentation and construction phases of the project.*

   Response: This is an unreasonable request and one that the proponent can not comply with. The Sydney Opera House can only invite Johnson Pilton Walker to participate and cannot force them to participate. A commitment was already included in the Draft Commitments that the quality and detail described in the concept drawings and documents will not be diminished during the detailed design or construction process and that in order to achieve this, the documentation and construction process will be reviewed at regular and/or significant points along the project's implementation program to ensure these are maintained, and if possible enhanced: Refer to **Section 3.1** below.

3. *To reduce visual impacts the proposed finishes to the Forecourt, and Access ramp and tunnel are to be consistent with Utzon's palette of natural materials used elsewhere on the site and with the Sydney Opera House Vehicle and Pedestrian safety Project Architects Statement 2 June 2010 by Johnson Pilton Walker including the following:*
   - *The Access ramp paving to be crushed granite panels identical in dimension and detail to the existing Boardwalk and podium paving or an in situ finish of the same with solid bronze inlays,*
   - *The walls and upstands of the Access ramp to be precast crushed granite panels identical in dimension material finish and module and detail to the podium cladding;*
   - *The handrail surrounding the ramp to be solid bronze with integrated lighting to match the existing podium handrails,*
   - *The outward perimeter below the upstand to be a single row of 1200 x 600mm gang sawn granite slabs matching those against the western edge of the forecourt,*
   - *The Forecourt paving to be a continuity of the existing bands of single granite paving slabs with granite setts between.*

   Response: The proponent intends to construct in accordance with the above requirements. All external areas or areas visible to the public will be constructed in accordance with the details provided in the Architect's Statement and in accordance with Utzons palette. Areas that are not visible to the public will also be finished in accordance with the details set out in the Architect's Statement unless an alternative solution is approved by the Specialist Heritage Architect or Jan Utzon and confirmed as appropriate in heritage terms. An appropriate commitment has been added to the final Statement of Commitments – refer to **Section 3.1** below.

4. *To reduce visual impacts to the Forecourt the resolution of external lighting within the entrance to the access tunnel should be carefully resolved in respect of appropriate forms, locations and illumination levels critical in achieving a sympathetic and high quality result.*

   Response: An appropriate commitment has been included in the amended Statement of Commitments. Refer to **Section 3.1** below.

5. *To reduce disruption of the visitor experience during construction phase there should be continuous consultation with the City of Sydney and other stakeholders in regards the management of the project. It is crucial that hoardings, signage and temporary lighting at night for pedestrians achieve a high level of design quality, safety and clarity to ensure the visitor experience along the major paths of pedestrian travel through the Forecourt areas to the Opera House, Farm Cove, the Royal Botanical Garden and the Tarpeian Way is maintained and that temporary visual impacts are minimised.*

   Response: Appropriate commitments have already made with respect to hoardings and signage: Refer **Section 3.3** below. An additional commitment has now been included which provides that key stakeholders, including the City of Sydney, will be consulted with upon resolution of the final design and prior to finalising the Detailed Construction Management Plan: refer **Section 3.2.** The proponent is also agreeable to setting up a protocol for ongoing communication with the City of Sydney, to address any issues should they arise during the construction phase.

2.3.2 Impact upon the interiors of the Opera House.

Although the location selected for the proposed underground loading dock has no visual relationship with the significant Utzon designed spaces the City supports the proposed consistency with Utzon's Design Principles in the design of its structure and form, and the selection of materials, natural finishes and colours.

Recommendations & Response:

6. *It is essential that the architect's Johnson Pilton Walker be engaged to continue the design resolution, construction documentation and construction phases of the project.*

   Response: See comments in relation to recommendation 2 above.

2.3.3 Potential structural impacts upon the Opera House.

A major constraint for the proposed main loading dock excavations is the degree of stress-relief that will occur and that the lateral movements around the loading dock could be in the range of 8 - 30 mm. Careful consideration should be given to the implications of stress relief movements for the existing Opera House and surrounding structures. The presence of post-tensioned cables that act to brace the existing Monumental Steps will preclude the opportunity to carry out the excavation using conventional excavation and support methods for the main loading dock. However, where the excavation footprint extends beyond the Steps, conventional piled or diaphragm systems may be utilised

Recommendations & Response:

7. *Further geotechnical investigation will generally be necessary to address the key issues of stress relief related ground movements and rock mass permeability and the presence of the Fault Zones.*

   Response: The EA already included a commitment in this regard. Refer to **Section 3.1** below.

8. *Arup be engaged to continue the design resolution, construction documentation and construction phases of the project.*

   Response: See comments in relation to Recommendation 2 above. Nevertheless Arup will be invited to tender for the structural engineering role on VAPS or otherwise to be engaged in a peer review capacity and specifically to ensure structural stability of the existing building.

2.3.4 Impact upon the Tarpeian Wall.

The City acknowledges that the primary aim is to maximise the open paved area of the forecourt between the Monumental Stairs and the Tarpeian Wall to reduce the impact upon the Sydney Opera House. The result is that the separation between the Tarpeian rockface and the access ramp is minimal. The Preliminary Geotechnical Investigation and Waste Classification Assessment February 2010 by Douglas Partners states that potential impacts arising out of rock excavation includes stress relief related ground movements and saline groundwater inflows/upflows through the rock along the GPO Fault Zone. However it does not provide any specific assessment of the potential for impacts of these types on the Tarpeian Wall due to the excavation and tunnelling for the access ramp.

Recommendation & Response:

9. *To ensure minimisation of impacts upon the Tarpeian Wall, the final precise location of the access ramp should be resolved through a careful balance of the geotechnical considerations including minimising potential impacts from stress relief related ground movements arising out of rock excavation as well as the potential impacts arising out of the relative locations of the GPO Fault Zone and reducing the potential for increased rates of saline groundwater inflows/upflows. Further geotechnical investigation will generally be necessary to address these key issues.*

   Response: The EA included a commitment to carry out further geotechnical investigations and that these investigations would inform the final design of the project. To address the City's concern, the Commitment has now been amended to explicitly include the final precise location of the access ramp relative to the Tarpeian Wall. **Refer to Section 3.1** below

2.3.5 Impact upon the Bennelong Stormwater Drain

The proposed cut and cover excavation will impact upon the oviform brick Bennelong Stormwater channel c1857 requiring removal of sections of this item considered to be of high significance.

Recommendation & Response:

10. *The removal or disturbance of any sections of the original oviform channel should be minimised wherever possible.*

11. *Any sections of the channel that are to be removed should be photographed in situ prior to removal (including sections of the original oviform drain and later diversions*

12. *Any exposed sections of the original oviform channel that would not be removed should be protected during excavation works, as well as in association with construction of the new diversion junction.*

13. *Sydney Water would be consulted in relation to the methodology for removal of any sections of the original oviform channel and any preservation requirements, including the retention and storage of any fabric or artefacts recovered.*

14. *Archaeological recording of the removed sections of the oviform brick Bennelong Stormwater channel is to be undertaken according to Heritage Branch, Department of Planning guidelines and best practice archaeological methodologies and one copy of the report is to be submitted to the City of Sydney Archives. This should inform the future interpretation and produce a detailed record of the site.*

15. *The results of the archaeological program need to be incorporated into the interpretation plan for the site. The archaeologists need to have a central role in the development of ideas and themes and interpretative concepts.*

16. *Sydney Water should be consulted in relation to any preservation requirements, including the retention and storage of any fabric or artefacts recovered from the Sydney Water asset, the Bennelong stormwater Channel*

Response: The EA already included commitments which addressed all these matters, with the exception of provision of a report to the City of Sydney Archives. A new commitment is therefore now included which provides for the preparation of a Final Excavation report and for a copy of that report to be submitted to the City of Sydney Archives That report will include Archaeological recording of the removed sections of the oviform brick Bennelong Stormwater channel. **Refer to Section 3.4** below

2.3.6 Impact upon Potential Archaeological resources

The component of the proposed works that would have the greatest archaeological impact would be the potential cut-and-cover excavation for construction of the easternmost section of the loading dock turning circle. Excavation of this area is considered to have a major archaeological impact' and one that requires far greater acknowledgment than proposed.

Potential archaeological impacts associated with the proposed basement level are limited to the location of the three lifts that would connect the new basement level to existing levels of Sydney Opera House, as well as some deeper subsurface elements that may be present across the site. The proposed temporary scenery lift is located within the former footprint of Fort Macquarie and the later tram-car house and extends through a part of the site that may not have been previously disturbed. Its construction may therefore disturb archaeological deposits or features of high significance or high research potential.

Recommendation & Response:

To effectively manage the impacts upon non indigenous archaeological potential of the area in accordance with the NSW Heritage Act, the following is recommended:

17. *All excavation works to be undertaken in a manner consistent with CMP 2003 Policy 53.1 Managing the process of change - Excavation.*

18. *All work involving excavation or investigation of sub surface deposits should be planned and executed in accordance with the requirements of the Heritage Act 1977 and advice of the NSW Heritage Office.*

19. *A program of archaeological investigation of areas subject to excavation and disturbance should be undertaken prior to any commencement of any excavation for the vehicle tunnel or for the loading dock turning circle. This investigation should determine the nature and extent of archaeological deposits and to assist the development of an archaeological management strategy.*

20. *There should be a programme of on going archaeological monitoring throughout the excavation works to investigate and record remains exposed during the monitoring process.*

21. *Based on the archaeological integrity of the remains, a program of archaeological salvage and site recording will be required including*

22. *Detailed photography, measured drawings, context sheets. The archaeological sampling and recording need to be undertaken according to Heritage Branch, Department of Planning guidelines and best practice archaeological methodologies. This is to inform the future interpretation and produce a detailed record of the site. One copy of the report is to be submitted to the City of Sydney Archives. This should inform the future interpretation and produce a detailed record of the site.*

23. *Opportunities to interpret or display any evidence discovered during the proposed forecourt works should be considered as part of a holistic approach to interpreting the site. The results of the archaeological program need to be incorporated into the interpretation plan for the site. The archaeologists need to have a central role in the development of ideas and themes and interpretative concepts. As the nature of the proposed works do not allow for in situ retention of archaeological evidence, it is critical that the proposal includes provision for adequate archival recording and interpretation including public display on the site, particularly of archaeological deposits or features of high significance associated with Fort Macquarie.*

24. *Any artefacts recovered from the site during site works and a full set of archaeological investigation reports should be included in the Sydney Opera House's moveable heritage collection or alternatively provenanced according to their contexts. All artefacts to be inventoried, boxed, labelled and catalogued*

Response: The EA already included commitments which addressed all these matters, with the exception of provision of a report to the City of Sydney Archives. A new commitment is therefore now included which provides for the preparation of a Final Excavation report and for a copy of that report to be submitted to the City of Sydney Archives. **Refer to Section 3.4** below

2.3.7 Impact upon Aboriginal Cultural Values

The Aboriginal Cultural Values Report suggests that there is potential for impacts to physical Aboriginal objects that may survive beneath the surface and for impacts upon intangible cultural values, which may be connected to the potential physical evidence of Aboriginal heritage or may also be connected to the history and beliefs associated with the site.

Recommendations & Response:

25. *If any Aboriginal "objects" (as defined under the National Parks and Wildlife Act1974) are located during the course of the testing program, the Metropolitan Local Aboriginal Land Council should apply for a Care Agreement with the Department of Environment, Climate Change and Water to enable them to keep the objects.*

    Response: The Proponent cannot force the Metropolitan Local Aboriginal Land Council to apply for a Care Agreement. A new commitment has therefore been added which provides that *"The Metropolitan Local Aboriginal Land Council will be advised of any Aboriginal Objects located on the site and invited to apply for a Care Agreement with the Department of Environment, Climate Change and Water to enable them to keep the objects"*. Refer to **Section 3.3** below.

26. *Interpretation of the Aboriginal history of the site should be included in the redevelopment proposals*

    Response: An appropriate commitment in line with the findings of the Aboriginal Cultural Values Assessment report has already been included: Refer to **Section 3.3** below.

2.3.8 General Heritage and Archaeological Issues

Design 5 Architects is preparing the 4th edition of the Conservation Management Plan for the Sydney Opera House.

Recommendations & Response:

27. *One electronic copy and two colour bound hard copies of the 4th edition of the Conservation Management Plan for the Sydney Opera House to be lodged with the City of Sydney archives when completed.*

    Response: This is unrelated to the project. Nevertheless the proponent has no objection to supplying copies to the City of Sydney as requested.

28. *All relevant site personnel would attend a site induction prior to commencement of works to ensure they were aware of the heritage issues associated with the site including with the role of the archaeologist(s).*

    Response: A commitment is already included which provides that "*Suitable clauses will be included in all contractor and subcontractor contracts to ensure that on-site personnel are aware of the heritage issues associated with the site and the role of the archaeologist(s) on site*". Refer to **Section 3.3** below. This is considered to satisfy the intention of the recommendation and is consistent with recommendations from the Heritage Architect and The Heritage Office of NSW.

29. *An online resource should be established to provide information about the proposed works before they commence, in anticipation of public interest in visible on-site works and on-site signage should be provided during the proposed works to provide visitors with information about the nature and extent of the site works the proposed archaeological investigation and its results, and any ongoing site management and interpretation.. Signage should be erected in relation to the proposed works to inform site visitors of the nature and extent of site works. Any signage would need to be consistent with the requirements and restrictions identified in the Sydney Opera House Management Plan and Signage Manual. All website information and information display boards to be constantly updated*

Response: An on-line resource has already been established and a commitment is already included to this effect: Refer to **Section 3.2** below. A commitment in relation to signage is also already included: Refer to **Section 3.3**. These matters could also be appropriately dealt with as conditions of approval.

2.4 Department of Environment, Climate Change and Water NSW

The Department of Environment, Climate Change and Water (DECCW) comments that the Archaeological Management Plan submitted as part of the EA provides a comprehensive approach to the management of Aboriginal Values, including monitoring of construction to ensure that the archaeological evidence is identified and appropriate managed. DECCW also suggests the inclusion of a protocol in the event that human remains be encountered.

Response:
The protocol has been included in the updated Statement of Commitments (refer **Section 3.3** below). It could also appropriately be included as a condition approval.

2.5 Department of the Environment, Water, Heritage and the Arts

The Australian Government Department of the Environment, Water, Heritage and the Arts (DEWHA) makes an assessment of the EA and sets out a number of relevant Policies within the Conservation Management Plan (CMP 2003). It finds that the proposed VAPS Project is unlikely to have any permanent or significant adverse effect on the World and National Heritage values of the Sydney Opera House and supports the measures to mitigate against impacts (6.1.8) and the Draft Statement of Commitments (7.1) in the Environmental Assessment.

The only recommendations within the text of the letter are that:

- The Proposal should be considered together with the proposal for the Stormwater Drain Diversion (MP 09_0122) and
- All current fabric, including the oviform stormwater drain should be recorded before any construction or demolition commences.

Response:
The majority of works to the Bennelong Stormwater Drain are proposed as part of a separate application. MP09_0122 was approved on 26 August this year. It's relevance to the proposed VAPS project was considered throughout the Environmental Assessment and it was found that the minor works to the drain for the construction of the tunnel would represent a very small incremental impact to the heritage item when considered in conjunction with the previous works. The Archaeological Management Plan sets out the methodology for recording of fabric, including the oviform stormwater drain.

2.6 Heritage Council of NSW

The Heritage Council of NSW advised that the application could be approved, subject to the provision of 21 conditions.

Response:
Most of the suggested conditions were already covered by the Draft Statement of Commitments. Where conditions suggested by the Heritage Council were not covered by existing commitments, additional commitments have been incorporated to reflect those conditions. Refer to Chapter 3 below. These relate mostly to the need for further approvals as well as commitments in relation to the final excavation report. The 21 suggested conditions could also appropriately be included as conditions of approval.

However, a concern is raised with the wording of Condition 1, which provides that (emphasis added):

> *In accordance with Policy 1.5 of the Current CMP, the quality and detail described in the concept drawings and documents should not be diminished during the detailed design or construction process. In order to achieve this, the documentation and the construction process should be reviewed at regular and/or significant points along the projects' implementation program to ensure these are maintained, and if possible enhanced. Unless prevented by extenuating circumstance, key personnel from the original architects and designers of the project should be part of this quality control and checking process, and their recommendations properly considered and included in the implementation;*

The intent of Condition 1 is already satisfied by the first Commitment. The Sydney Opera House cannot comply with the condition suggested by the Heritage Council as it is not is a position to require key personnel to be part of the quality control and checking process (regardless of whether extenuating circumstances apply or not) – only to invite them to do so.

2.7 NSW Maritime

NSW Maritime responded that it did not intend to make a submission at this time.

Response:
No response required.

2.8 Roads and Traffic Authority of NSW

The Roads and Traffic Authority (RTA) made 8 comments.

1. The layout of the proposed vehicle accessible areas associated with the subject development (including, driveways, grades, turn paths, sight distance requirements, aisle widths, aisle lengths, and parking bay dimensions) should be in accordance with AS 2890.2 - 2002 for heavy vehicle usage.
2. The swept path of the longest vehicle entering and exiting the subject site, as well as manoeuvrability through the site, shall be in accordance with AUSTROADS. In this regard, a swept

path plan shall be submitted to the Department of Planning for approval, which illustrates that the proposed development complies with this requirement.

3. The proposed turning areas within the loading dock are to be kept clear of any obstacles, including parked vehicles, at all times.
4. All vehicles are to enter and leave the site in a forward direction.
5. Ail vehicles are to be wholly contained on site before being required to stop
6. All loading and unloading shall occur on the site;
7. A Construction Traffic Management Plan (CTMP) detailing construction vehicle routes, number of trucks, hours of operation and access arrangements shall be prepared by a certified practitioner and undertaken in accordance with the RTA's Traffic Control at Worksites Manual. The CTMP shall be submitted to the Department of Planning, Council and the RTA for review prior to commencement of works.
8. All works/regulatory signposting associated with the proposed development are to be at no cost to the RTA

Response:
The proposal complies with AS 2890.2 – 2002 and a swept paths plan has been provided to demonstrate compliance with AUSTROADS. Refer to statement and plan by Halcrow at **Annexure B**.

Items 3 – 8 are matters which were always intended to be complied with. They could be dealt with as conditions of approval. However, the Statement of Commitments has also been updated to reflect the matters raised here as well. Refer to **Section 3.3 and 3.4** below.

2.9 State Property Authority

The State Property Authority (SPA) owns the adjoining site known and the Sydney Opera House Car Park. They raised a wide range of questions with respect to various aspects of the project. A total of 34 questions relating to Acid Sulfate; Consultation; Design; Flooding; Ground Water; Insurance and Legal Costs; Mechanical Ventilation; Noise; Odour; Operational; Safety; Stormwater Diversion; Structural Stability; Timing; Traffic; Vibrations and Visual and Access impacts. Although a wide range of questions are asked, no particular objection is made with respect to the proposal. Their covering email however states that they have received limited information on the methods of construction and the impact of the proposed works on the structural integrity and continued operation of the Sydney Opera House Car Park during and after construction.

Response
The proponent has prepared a response to each of the questions raised by the State Property Authority. A copy of that response is included at **Appendix C**.

The question in relation to structural stability and anchoring of the carpark structure has already been addressed in a letter from Pells Consulting which was previously provided to the SPA although not included in the EA. It has therefore been included in **Appendix D** to this report.

The details of the design and the exact methods of construction will be determined during the detailed design phase. An additional commitment has been included in the Final Statement of Commitments which provides that Immediate neighbours and key stakeholders will be consulted with upon resolution of

the final design and prior to finalising the Detailed Construction Management Plan and that the final construction management plan will take into account any concerns from neighbours and stakeholders relating to amenity and operational impacts (Refer to **Section 3.2** below).

2.10 Transport NSW

Transport NSW (TNSW) advises that it supports the proposed development because it will substantially Improve the pedestrian environment in the vicinity of the Sydney Opera House, which forms part of the pedestrian connection between the Circular Quay public transport interchange and the Sydney Opera House. It also advised that Macquarie Street is a designated cycle route and is included in the Sydney Strategic Bicycle Network.

If approval is granted to the application, TNSW requests that any final Statement of Commitments or conditions of consent include:

- safe design for bicycle access through the Macquarie Street roundabout In accordance with the NSW Bicycle Guidelines; and
- the provision of bicycle parking in an appropriate location within the Forecourt

Response:

It in unclear specifically what Transport NSW are requesting in terms of safe design for bicycle access through the roundabout. However, as the proposal does not include any works to the roundabout itself it will not affect existing bicycle access through the roundabout. Any requirement for roadworks to create a bicycle path or bicycle lane within the roundabout would therefore be considered to be unjustified. It is noted that neither the RTA nor the Council (who are responsible for the management of the Macquarie Street including the roundabout) are seeking the provision of a bicycle path within the roundabout. Furthermore, the proposal to provide a roadway that is level with the Forecourt improves access to the area for cyclists.

Bicycle parking is already provided within the public area under the Monumental Stairs. The provision of additional parking within the Forecourt is not considered to be appropriate as it would detract from the special heritage values of the Forecourt and have a detrimental impact on the Heritage significance of the World Heritage Item.

2.11 Sydney Water

Sydney Water advises that the drinking water and wastewater systems have sufficient capacity for the proposed development. It also advises that it will further asses the impact of the development when the proponent applies for a Section 73 Certificate. Any necessary trade Waste permits can also be applied for at this stage. It advises that the proponent must fund any related infrastructure adjustments and advises that the proponent should engage a Water Servicing Co-ordinator.

Response:

A commitment was already included in the EA that *" The proponent will engage a Water Servicing Co-ordinator and will liaise with Sydney Water, obtain any necessary approvals, including Section 73 Certificates before commencing work on the site"* Refer to **Section 3.2** below.

Chapter 3:
Final Statement of Commitments

The Draft Statement of Commitments set out in Chapter 7 of the Environmental Assessment has been revised to include additional matters raised in the submissions as set out in Section 2 of this report.

For easy reference, all changes are depicted in blue text.

3.1 Final Commitments for Detailed Design Work Phase

EA Issue	Commitments
Design - Consistency	The quality and detail described in the concept drawings and documents will not be diminished during the detailed design or construction process. In order to achieve this, the documentation and construction process will be reviewed at regular and/or significant points along the project's implementation program to ensure these are maintained, and if possible enhanced. Key personnel from the original architects and designers of the project will invited to be part of this quality control and checking process, and their recommendations properly considered and included in the implementation.
Design - Heritage	Specialist heritage conservation advice will continue to be sought during the design development and documentation stages for the VAPS Project and continue through to completion of the project to ensure the broader as well as detailed conservation objectives are achieved. All materials and finishes visible from within the Forecourt or any other publically accessible area will be in accordance with Utzon's palette of natural materials used elsewhere on the site and in accordance with the details set out in the Architect's Statement. Areas that are not visible to the public will also be finished in accordance with the details set out in the Architect's Statement unless an alternative solution is approved by the Specialist Heritage Architect or Jan Utzon and confirmed as appropriate in heritage terms.
Design – Structural	A detailed structural design and structural engineer's report will be prepared for approval prior to commencement of works
Design - Lighting	Detailed design investigation will be carried out during the design development phase to ensure lighting will complement and enhance the special features of the place and will be consistent with Utzon Design Principles, the lighting policies specified in the CMP 2003 and the Utzon endorsed 2007 Lighting Masterplan. The design of lighting within the entrance to the access tunnel will be carefully resolved in terms of form, locations and illumination levels to ensure achievement of a sympathetic and high quality result.
Archaeological Investigation	The program of archaeological investigation outlined in the Archaeological report will be adopted as part of the mitigative strategy for these works to address the potentially adverse impacts that these works would have on the archaeological significance of the site. The proposed program of archaeological investigation includes: ▪ Potential cut-and-cover excavation for loading dock construction—archaeological testing of this area prior to bulk excavation, followed by further archaeological investigation (open area excavation or monitoring, if required).

	▪ Cut-and-cover excavation for vehicular tunnel—exposure and recording of sections of Bennelong stormwater channel (original section and later diversion) prior to removal of these elements, followed by monitoring of the initial stages of all excavation works
Geotechnical Investigation and Design	Further geotechnical investigation will be carried out to address the key issues of stress relief related ground movements and rock mass permeability, including the presence of the GPO Fault Zone using inclined boreholes and in accordance with the recommendations of the *Report on Preliminary Geotechnical Investigation and Waste Classification Assessment Proposed Vehicle and Pedestrian Safety (VAPS) Project Sydney Opera House Bennelong Point* by Douglas Partners dated February 2010. The results of the Geotechnical Investigation are to inform the final design of the project including the final precise location of the access ramp relative to the Tarpeian Wall.
Geotechnical Investigation and Water Quality	The geotechnical investigation above will inform the final design of ground water discharge and treatment. Where necessary the design will include further treatment beyond gross pollutant traps and will ensure all water discharged from the pump out pits complies with accepted standards

Table 1: Draft Commitments for Detailed Design Work Phase

3.2 Final Commitments in relation to Consultation & Further Approvals

EA Issue	Commitments
Generally	Immediate neighbours and key stakeholders, including the City of Sydney, will be consulted with upon resolution of the final design and prior to finalising the Detailed Construction Management Plan. The final construction management plan will take into account any concerns from neighbours and stakeholders relating to amenity and operational impacts and timing of any major events on adjoining sites.
Sydney Water Requirements	The proponent will engage a Water Servicing Co-ordinator and will liaise with Sydney Water, obtain any necessary approvals, including Section 73 Certificates before commencing work on the site.
Heritage Requirements	Sydney Water will be consulted in relation to any preservation requirements, including the retention and storage of any fabric or artefacts recovered from the Sydney Water asset (Bennelong stormwater channel).
	Detailed Drawings will be submitted to and approved by the Director of the Heritage Branch of the Department of Planning prior to work commencing on the site.
	An application under section 60 of the NSW Heritage Act will be submitted and approved by the NSW Heritage Council prior to work commencing on the site.
	Separate approval will be sought for any directional signage associated with the safe operation of the access ramp to the new loading dock that is visible from public spaces prior to its erection.
Infrastructure Impacts	Where upgrading of services is required, the appropriate approvals will be sought from service providers.
SOH Carpark Requirements	Impacts to the structure of the adjoining carpark will be further investigated during the detailed design phase and the extent and methodology for dealing with any clashes will be the subject of further consultation with the State Property Authority and Recap before finalising. Hoarding types and locations will be determined as part of the detailed Construction Management Plan and will be also be discussed with the State Property Authority and Recap before finalising.

Archaeology and Aboriginal Assessment Requirements for Consultation	~~A copy of the Archaeological report will be sent to the Metropolitan Local Aboriginal Land Council for their information.~~ *(refer instead to 3.4 below)* An online resource will be established to provide information about the proposed works before they commence, in anticipation of public interest in visible on-site works
Local Residents	Local Residents will be informed of Construction Works before they commence and will be provided with the Site Manager's contact details as a point of contact for concerns that may arise during the construction phase. Refer also to commitments in the following section.

Table 2: Final Commitments in relation to Consultation & Approval

3.3 Final Commitments for the Construction Phase

Construction Management Commitments will be in the form of a Detailed Construction Environmental Management Plan. This plan will include commitments known at this stage as set out in the table as well as further commitments based on additional detail and investigations that will be carried out during the detailed design phase.

Detailed Construction Environmental Management Plan

A construction environmental management plan will be prepared and implemented. The plan will outline environmental management practices and procedures to be followed during site preparation and construction. The plan will cover the environmental protection practices, resources and sequence of activities required to comply with relevant environmental legislation, conditions of any applicable licence, approvals and permits. The plan will be prepared in accordance with Guideline for the Preparation of Environmental Management Plans (DIPNR 2004) and include:

General	▪ A description of activities to be undertaken on the site during the site preparation and construction stages of the project. ▪ Statutory approvals and other obligations that would be fulfilled during site preparation and construction.
Heritage	The location of hoardings and site and construction facilities required to carry out the works, will be located as unobtrusively as possible and will only be erected for a stated limited time to minimise impacts on the setting and accessibility of the Sydney Opera House. Hoardings will be erected to contain all aspects of the proposed excavation and construction works.
	The Sydney Opera House Trust will advise the public via appropriate signage or other means, of the purpose of the works and their timeframe.
	Once the detailed design is complete, the Contractor engaged is to develop a detailed safe work method statement which addresses the various activities to be undertaken during the construction phase, and ensures the safety of the site's existing heritage fabric.
Archaeology and Aboriginal Values	Archaeological monitoring of proposed development works will occur in accordance with the Archaeological Management Plan submitted as part of the application. It would be appropriate for Aboriginal stakeholder representatives to participate in the monitoring.
	In the event that unexpected historical archaeological evidence were to be encountered during site works, works will cease and the Heritage Branch, Department of Planning will be notified immediately. Further assessment and/or approval may be required before works could recommence.
	In the event that any archaeological remains were to be exposed during site works, they will be appropriately documented according to the procedures outlined in the Archaeology Report.
	Suitable clauses will be included in all contractor and subcontractor contracts to ensure that on-site personnel are aware of the heritage issues associated with the site and the role of the archaeologist(s) on site.
	Subsurface disturbance will be limited to those areas identified in the documentation of the proposed works so as to avoid disturbance of other potential archaeological remains at this site.

	In the event that unexpected Aboriginal archaeological evidence were to be encountered during site works, works will cease and the Department of Environment, Climate Change and Water (DECCW) will be notified immediately. Further assessment and/or approval may be required before works could recommence.
	In the event that Aboriginal cultural material is identified and collected, it may be appropriate for such material to be retained, interpreted and displayed on site. Further consultation with Aboriginal stakeholders would be required to determine the appropriate management of such material. The Metropolitan Local Aboriginal Land Council will be advised of any Aboriginal Objects located on the site and invited to apply for a Care Agreement with the Department of Environment, Climate Change and Water to enable them to keep the objects.
	Opportunities to interpret any evidence discovered during the proposed forecourt works will be considered as part of a holistic approach to interpreting the site.
	If any human remains are located in, or under the land, the proponent will ▪ Not further disturb the remains; ▪ Immediately cease all work at the particular location; ▪ Immediately notify the NSW Police; ▪ Notify the Department of Planning as soon as practicable and provide details of the remains and their location; and ▪ Not recommence work at the particular location unless authorised in writing by the Department of Planning.
Traffic	As part of the Construction Management Plan, a Construction Traffic Management Plan (CTMP) will be prepared and approved prior to construction works to address the potential impacts identified in the EA and *Sydney Opera House Vehicle and Pedestrian Safety Project Environmental Assessment Traffic Report* by Halcrow. The CTMP is to set out a plan to manage construction activities such that the potential traffic implications are mitigated or appropriately managed and is to include: • Details of proposed works • Timing of proposed works; • Hours of construction activities; • Number of construction vehicles, particularly heavy vehicles to be used; • Mitigation and management measures including use of construction vehicle on site management system, construction vehicle access arrangements and circulation; and • Contact details for on site construction personnel. The CTMP shall be prepared in accordance with RTA guidelines and will be submitted to the Department of Planning, the RTA and the City of Sydney for review prior to commencement of works.
	The CTMP is to also include the specific recommendations of the *Sydney Opera House Vehicle and Pedestrian Safety Project Environmental Assessment Traffic Report* by Halcrow, including for example: • Vehicle access to and from the site will be generally restricted to the existing access routes to and from the site. • Heavy construction vehicles be restricted from accessing the site via Macquarie Street during peak arrival and departure periods for events / performances at the Sydney Opera House. • Hours of operation for construction vehicle movements be managed so that the impacts of construction vehicle noise on amenity can be mitigated for sensitive times. • Construction vehicle access arrangements will be designed such that all construction vehicles can enter and exit the site in a forward direction
	All works and regulatory signposting associated with the proposed development will be at no cost to the RTA.
Noise & Vibration	Construction work is to comply with the recommendations of *Sydney Opera House Vehicle and Pedestrian Safety Operational and Construction Noise Assessment* by Acoustic Studio
	The Contractor is to undertake noise monitoring at nominated affected occupancies
	Noise and vibration levels are generally to comply with the requirements of *The City of Sydney's "Construction Hours / Noise within the Central Business District – Code of Practice"*, 1992.
	All construction is to be carried out between the hours of 7am to 6pm Monday to Friday and 8am to 1pm Saturdays, with the exception of the following activities: ▪ Construction work to internal areas of the proposal; ▪ Construction of the portion of the entry tunnel works which are over the car park pedestrian link; and ▪ Works in the vehicle concourse.
	Where necessary, acoustic screening for out of hours construction works will be put in place to mitigate the noise impacts for the closest affected residential receivers and ensure compliance with the requirements of The City of Sydney's "Construction Hours / Noise within the Central Business District –

	Code of Practice", 1992.
	Deliveries of building materials and spoil removal, etc will be managed so as to not unreasonably impact on the amenity of the patrons of the Sydney Opera House and the surrounding residential receivers outside of the standard daytime construction hours.
	Where an item of equipment exceeds ether the noise criteria or the equipment noise level limits set out in the *Sydney Opera House Vehicle and Pedestrian Safety Operational and Construction Noise Assessment* by Acoustic Studio, a number of noise controls measures and construction best practices will be applied where possible to minimise the noise impacts on the neighbourhood.
	Recommended noise control measures that may be found to be appropriate to the proposal include: ▪ Schedule noisy construction activities to occur outside of the most sensitive times of the day for each nominated receiver. ▪ Consider implementing equipment-specific screening or other noise control measures recommended in Appendix E of AS2436. ▪ Limit the number of trucks on site at the commencement of site activities to the minimum required by the loading facilities on site. ▪ Provide exit ramps to the street and all internal haul roads at the lowest grade practicable. ▪ During the demolition of the concrete elements, consider using concrete crushing jaws to minimise the use of rockbreakers. ▪ Removed rock by a "ripper" attached to a large dozer wherever practical. ▪ When loading trucks, adopt best practice noise management strategies to avoid materials being thrown into dump trucks. ▪ Avoid unnecessary idling of trucks and equipment. ▪ Locate concrete mixers as far from noise-sensitive receivers as possible. ▪ Ensure that any miscellaneous equipment (extraction fans, etc) not specifically identified in this plan incorporates silencing equipment as required to meet the noise criteria
	Construction is to be managed so that vibration levels arising from demolition, excavation, and construction activities do not exceed the limits for human comfort as set out in Table 11 to the Acoustic Studio Report
	The CMP is to include the following measures as set out in Section 6.4 of the Acoustic Studio Report ▪ A preliminary assessment to determine whether the existence of significant vibration levels justifies a more detailed investigation: and ▪ Where necessary, a detailed investigation; ▪ The use of vibration surveys; ▪ Vibration monitoring; ▪ Non-compliance reporting ▪ Control measures; ▪ Site Specific Vibration Management Considerations
Acid Sulfate Soils	Materials are to be inspected following excavation by a qualified environmental consultant in accordance with the recommendations of *Report on Preliminary Acid Sulphate Soil Assessment Vehicle and Pedestrian Safety (VAPS) Project Sydney Opera House Bennelong Point* by Douglas Partners. If the materials are inconsistent with those observed during the preliminary investigation or if signs of acid sulfate soils are detected then additional assessment will be conducted to confirm the presence/absence of potential or actual acid sulfate soils.
Contamination	Filling excavation works be monitored by an experienced environmental consultant in accordance with the recommendations of *Report on Preliminary Contamination Assessment Vehicle and Pedestrian Safety (VAPS) Project Sydney Opera House Bennelong Point* by Douglas Partners. Furthermore, it is recommended that a Construction Environmental Management Plan be prepared and implemented to control segregation of materials, final waste classification, and management "unexpected finds
Waste Management	A fully detailed Waste Management Plan will be developed by the Contractor engaged to undertake the project prior to construction and will be consistent with the Waste Avoidance and Resource Recovery Act 2001 and the 'Waste Classification Guidelines'.
	The plan will be consistent with the advice in the Environmental Assessment Construction Management Plan prepared by Savills Project Management and ▪ Identify requirements for waste avoidance, reduction, reuse and recycling. ▪ Provide procedures for handling, stockpiling, and reuse of wastes. ▪ Identify disposal sites and relevant testing as well as transport options. ▪ Set out procedures for obtaining the required approvals for offsite management of spoil.
Air Quality	***A dust management plan*** will be prepared by the Contractor engaged to undertake the works prior to commencing construction. The plan will include measures such as:

	▪ Areas with the capacity to cause dust will be dampened to suppress dust emissions. ▪ Materials transported in trucks will be appropriately covered to reduce dust generation. ▪ Vehicle movement controls will be installed, particularly entrance and exit from construction work sites. ▪ Construction activities that generate high dust levels would be avoided during high wind periods. ▪ Rehabilitation of disturbed surfaces will be undertaken as soon as possible. ▪ All construction plant and machinery will be fitted with emission control devices complying with Australian Standards and would be regularly maintained.
Water Quality	Measures to monitor and minimise soil erosion and the discharge of sediments and other pollutants will be incorporated into the detailed Construction Management Plan for authorisation prior to commencement of work
Safety	Appropriate hoardings, access gates and signage will be utilised during the construction period to provide a clear delineation between public and construction spaces, and ensure public safety. Works will be appropriately managed and scheduled during performance times.
	Prior to commencing construction the Contractor engaged to undertake the works in conjunction with the SOH will prepare a fully detailed works staging strategy, which addresses public access and ensure safety.
	Temporary diverted vehicle access paths will be clearly delineated and managed to minimise pedestrian and vehicle conflict.
	All hoardings and access paths will be arranged so that pedestrian and emergency vehicle access to the Royal Botanic Gardens will be retained.
Communication and Complaints	The contractor is to establish a communications and complaints protocol for dealing with complaints
	The contractor is to establish a communications register for recording incoming complaints

Table 3: Final Commitments for the Construction Phase

3.4 Final Commitments for the Operational Phase

EA Issue	Commitments
Traffic Requirements	At all times vehicle movements in the Loading Dock Area will be managed by appropriately qualified personnel.
	Articulated vehicles arriving at the site entrance will be managed by the guard who is to walk out of the guard house to stop the vehicle at the point where the vehicle is clear of the Macquarie Street roundabout
	The proposal will comply with RTA operational conditions and recommendations set out in their letter of 16 September 2010 including: o Turning areas within the loading dock will be kept clear of any obstacles, including parked vehicles at all times; o All vehicles will enter and leave the site in a forward direction; o All vehicles will be wholly contained on the site before being required to stop; o All loading and unloading will occur on the site.
Future Aboriginal Values Commitments	The Sydney Opera House Trust will develop a protocol for ongoing Aboriginal stakeholder consultation and engagement as part of the long-term management of the Sydney Opera House.
	The Sydney Opera House Trust will develop an interpretation strategy that outlines an approach to the recognition and interpretation of the Aboriginal cultural values and Aboriginality associated with the Sydney Opera House site. Aboriginal people are the rightful interpreters of Aboriginal cultural heritage. Any proposed interpretation of Aboriginal cultural heritage at the Sydney Opera House will involve identified Aboriginal Stakeholders
	As part of the current revision of the Sydney Opera House Conservation Management Plan, further consideration and assessment of Aboriginal cultural values with regard to the aforementioned recommendations will be considered.

	Any future revision of the Management Plan for the Sydney Opera House will reflect the updated Conservation Management Plan, particularly any revised policies regarding Aboriginal cultural significance
Archaeological Reporting	A Final Excavation report by the nominated Excavation Director, to publication standard, will be prepared within 1 year of the completion of the field based archaeological activity. A copy of the report will be sent to the Local Aboriginal Land Council for their information. A copy will also be submitted to the City of Sydney Archives.
	Where appropriate, any artefacts recovered from the site during site works, as well as a full set of investigation report will be included in the Sydney Opera House's moveable heritage collection.

Table 4: Draft Commitments for the Operational Phase

Chapter 4: Conclusion

The proponent has reviewed the 10 submissions made in response to the notification of the Environmental Assessment of the Vehicle and Pedestrian Safety Project for the Sydney Opera House.

This Submissions Report addresses all of the issues raised in the submissions.

None of the submissions objected to the proposal and none of the submissions sought changes to the design of the development.

A limited number of recommendations suggested in the submissions were considered by the proponent to be unreasonable and these have been addressed in the report.

All remaining issues that were required to be addressed have been resolved either through the provision of additional information or through clarification of the proponent's commitment to manage environmental issues by elaborating on the existing Statement of Commitments.

The final Statement of Commitments has been included in this report to address issues raised in submissions (where required) and ensure that potential environmental impacts are appropriately managed. Potential impacts associated with the project are able to be adequately mitigated by implementing the final Statement of Commitments.

NSW GOVERNMENT | Planning

23 September 2010

Contact: Michael Buckley
Phone: 02 9228 6468
Fax: 02 9228 6399
Email: Michael.Buckley@planning.nsw.gov.au

Our ref: MP09_0200
Your ref:

Mr Greg Mc Taggart
Director Building Development & Maintenance
Sydney Opera House
GPO Box 4274
SYDNEY NSW 2001

Dear Mr Mc Taggart

Subject: Exhibition of Vehicle and Pedestrian Safety Project at Sydney Opera House (MP 09_0200)

The exhibition of the Environmental Assessment for the above project ended on Friday 17 September 2010. Please find enclosed copies of the submissions received by the Department during the exhibition.

In accordance with section 75H of the *Environmental Planning and Assessment Act 1979*, the Director-General requires Sydney Opera House Trust to respond to the issues raised in these submissions in a Submissions Report.

If there are any proposed changes to the project to minimise its environmental impact, a Preferred Project Report may be required. The Statement of Commitments may need to be revised to reflect any proposed changes to the project.

Your contact officer for this project, Michael Buckley, can be contacted on 02 9228 6468 or via email Michael.Buckley@planning.nsw.gov.au. Please mark all correspondence regarding the project to the attention of the contact officer.

Yours sincerely

Daniel Cavallo
A/Director, Government Land and Social Projects

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17 September 2010

Australian Institute of Architects

The Director
Government Land and Social Projects
Department of Planning
GPO Box 39
SYDNEY NSW 2001

Dear Sir / Madam

MP09_0200 VEHICLE AND PEDESTRIAN SAFETY PROJECT, SYDNEY OPERA HOUSE

The institute welcomes the opportunity to congratulate the proponent and consultants on an elegant and practical solution to the problems of pedestrian safety and vehicle access to the city's World Heritage site.

Alan Croker notes that these issues were identified in the 2003 Sydney Opera House Conservation Management Plan. The present proposal not only addresses them in a simple and well-conceived manner; it also deals with the intrusive effect of the present guardhouse by reducing it in size and re-locating it near the new entry.

The proposal will also further reduce visual clutter on the forecourt, enabling visitors to appreciate the long distance view of the building as they approach it.

We support this application and the benefits it will provide, both for the efficient working of this major performing arts centre and its improvements for pedestrian safety and amenity.

Yours sincerely

Brian Zulaikha
NSW President

From: Cameron Sargent
To: Michael Buckley
Date: 21/09/2010 9:26 am
Subject: Fwd: MP09_0200 vehicle & pedestrian safety project Sydney Opera house
Attachments: planning submission170910.pdf

FYI - print and file

>>> John Grierson 17/09/2010 1:39 pm >>>
Hi,

On behalf of the State Property Authority i have today (17 September 2010) lodged a "public submission" via the Planning web site for the above exhibition, unfortunately the web process would not accept/allow the attachment to be sent via that means and is therefore attached to this email

In addition to this attachment there are supporting comments and additional issues contained in the comments section of the web based submission.

Please acknowledge receipt of the email

regards

John Grierson
Senior Property Portfolio Officer
Portfolio Management Division
State Property Authority
Land and Property Management Authority
Level 1 Bligh House
4-6 Bligh Street
SYDNEY NSW 2000

Ph: 9338 7154
Mob :0406922925
Fax: 9338 7055
e: john.grierson@spa.nsw.gov.au

From: Cameron Sargent
To: Michael Buckley
Date: 21/09/2010 9:25 am
Subject: Fwd: Online Submission from John Grierson of State Property Authority (SPA) (other)

FYI - print and file

>>> John Grierson <john.grierson@spa.nsw.gov.au> 17/09/2010 1:27 pm >>>
(http://majorprojects.onhiive.com/)

Please disclose Organisation name only

SPA is the owner of Lots 101 and 102 DP828946 which contains the Sydney Opera House Car Park

The proposed works impact on or around the SPA owned land

The concerns raised in the following attachment (note the attachement even though PDF format was unable to be attached and will be forwarded under seperate email to plan_comment@planning.nsw.gov.au) have been discussed with representatives of the Sydney Opera House and are lodged on the bases of record purposes, consideration and formal response.

In adition to the concerns/issues raised in the attachment SPA has received limited information on the methods of construction and the impact the proposed works would have on the structual integrity and continued operation of the Sydney Opera House Car Park during and after construction.
Concerns are also held for the safety of contractors working in or around the car park air intake shaft.

Name: John Grierson
Organisation: State Property Authority (SPA)

Address:
4-6 Bligh St Sydney NSW 2000

IP Address: proxyb.ccsu.nsw.gov.au - 203.15.73.30

Submission for Job: #3623 MP 09_0200 - Vehicle & Pedestrian Safety Project
https://majorprojects.onhiive.com/index.pl?action=view_job&id=3623

Site: #153 Sydney Opera House
https://majorprojects.onhiive.com/index.pl?action=view_site&id=153

Cameron Sargent

E: cameron.sargent@planning.nsw.gov.au

The table below has been presented in alphabetical order and not the order of importance.

Item	Issue	Concern	Comments
001	Acid sulphate	Is there a possibility acid sulphate levels adjacent to the car park or within the car park site will increase due to ground water flows changing?	If so how will this impact on the car park structure?
002	Consultation	How is consultation with SPA anticipated to be undertaken and at what durations?	Allows SPA to be informed of any advancements or updates.
003	Design	What is the detail associated with the modifications to the roof of the pedestrian tunnel?	Exact detail of the modification required. If modification is undertaken does this reduce the flexibility to refurbish the pedestrian tunnel at a later date? Possible waterproofing issues?
004	Design	It appears the entry into the loading dock could be relocated and as a result not impact on the pedestrian tunnel.	If the entry was moved forward the pedestrian tunnel may not be as affected as it currently will be.
005	Design	Quality of works being undertaken?	Is the quality of works going to meet SPA's expectations?
006	Flooding	If the proposed project flooded, how would this impact upon the car park structural stability?	
007	Ground Water	Where is ground water going to be diverted to?	Will this increase the ground water required to be pumped out of the car park site? Will this affect the structural stability of the car park?
008	Ground Water	Is it possible that contamination within the Sydney Opera House site could transfer to the car park site?	

Item	Issue	Concern	Comments
009	Insurance	What are the insurance implication associated with the works being undertaken upon SPA owned land?	
010	Insurance	Will the works affect site insurances premiums during or upon completion of the works?	
011	Mechanical Ventilation	As additional dust will be present during the works, will this result in the existing mechanical ventilation system for the car park blowing the dust through the car park?	Will this affect the breathable air quality being provided? Will it result in the car park & cars being covered in dust? How will this impact on the mechanical equipments life expectations?
012	Mechanical Ventilation	Will trucks/traffic entering the proposed tunnel affect the quality of air being taken in by the car park's existing mechanical ventilation system?	What is the proximity of the car park's air grille to trucks potentially stopping adjacent?
013	Mechanical Ventilation	Given the proximity of the proposed ramp to the existing air intake shaft, will work be required to support the air intake temporarily?	
014	Mechanical Ventilation	Will the volume of air be reduced/restricted as it appears that the size of the air intake shaft & air grilles is being reduced?	Will this limit any future potential to increase air volumes into the car park?
015	Noise	Noise impact during construction and post construction on the car park operations?	Pedestrian tunnel particularly.
016	Odour	How will odour/smells that may be present during the works be addressed?	

Item	Issue	Concern	Comments
017	Operational	How is pedestrian access anticipated to be provided to the car park when the works are being undertaken on the pedestrian tunnel itself?	This will impact on the operation of the car park during these works.
018	Operational	Does the relocation of the various below ground services affect the operation of the car park?	How? How is this to be managed?
019	Operational	Confusion of car park customers as to whether the car park is still open during the works or which entrance to enter.	How is this to be managed?
020	Safety	SPA should insist that no works are to occur above the pedestrian access tunnel whilst the public from the car park have access to the area.	
021	Proposed Stormwater/culvert diversion	Extent not identified.	Detail required to assess if any impacts may result.
022	Structural stability	Collapse of Tarpeian wall?	What is the thickness of the wall between the entry ramp and the car park? Is the car park at the same level as the entry ramp?
023	Structural stability	Structural stability of the pedestrian access tunnel prior to the works being undertaken?	Will construction vehicles cause an issue?
024	Structural stability	How will the work affect the shoring/anchoring of the car park structure?	
025	Timing	What is the anticipated timing & duration of the project?	Anticipated start early 2011 and the project is targeted for completion in mid 2013; Are these dates still accurate; Project programme required.

Item	Issue	Concern	Comments
026	Traffic	Additional risk associated with accidents adjacent to the car park entry due to increased traffic during construction.	To be address within a Traffic Mgt Plan; may lead to car park clients having to wait to enter the car park or access to car park being blocked; a deterrent to car park clients.
027	Traffic	How is dirt on roads going to be managed?	To be address within a Traffic Mgt Plan; may be a deterrent to car park clients.
028	Traffic	Location of any Construction Zones to be advised.	To be address within a Traffic Mgt Plan; may be a deterrent to car park clients.
029	Traffic	How will damage to roadways from construction traffic be managed?	May be a deterrent to car park clients.
030	Traffic	Increased traffic congestion during construction particularly at the roundabout.	May lead to car park clients having to wait to enter the car park.
031	Traffic	During construction access into the car park may be delayed/restricted	May be a deterrent to car park clients.
032	Traffic	Given the proximity of the security gate to the Macquarie Street roundabout it would appear that an articulated vehicle would not fit onto the site prior to being stopped and as a result may block the entrance into the car park whilst waiting for access	It appears the entry into the loading dock could be relocated further into the site.

Item	Issue	Concern	Comments
033	Vibrations	Vibration impact during construction and post construction on the car park structure & operations?	Pedestrian tunnel particularly; EA report indicates vibration levels & impacts cannot accurately be provided at this stage pg.72
034	Visual & access	What is the visual and access impacts of the fencing, hoarding, etc required?	Hoarding details & locations to be provided.

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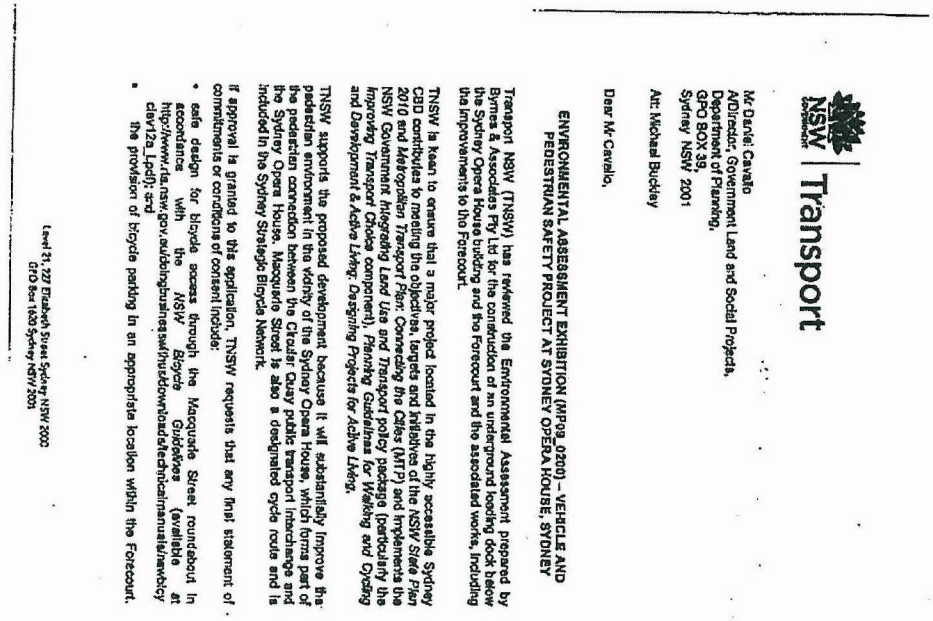

NSW Government | Transport

Mr Daniel Cavallo
A/Director, Government Land and Social Projects,
Department of Planning,
GPO BOX 39,
Sydney NSW 2001

Att: Michael Buckley

Dear Mr Cavallo,

ENVIRONMENTAL ASSESSMENT EXHIBITION (MP09_0200) – VEHICLE AND PEDESTRIAN SAFETY PROJECT AT SYDNEY OPERA HOUSE, SYDNEY

Transport NSW (TNSW) has reviewed the Environmental Assessment prepared by Byrnes & Associates Pty Ltd for the construction of an underground loading dock below the Sydney Opera House building and the Forecourt and the associated works, including the improvements to the Forecourt.

TNSW is keen to ensure that a major project located in the highly accessible Sydney CBD contributes to meeting the objectives, targets and initiatives of the NSW *State Plan 2010* and *Metropolitan Transport Plan: Connecting the Cities* (MTP) and implements the NSW Government *Integrating Land Use and Transport* policy package (particularly the *Improving Transport Choice* component), *Planning Guidelines for Walking and Cycling* and *Development & Active Living: Designing Projects for Active Living*.

TNSW supports the proposed development because it will substantially improve the pedestrian environment in the vicinity of the Sydney Opera House, which forms part of the pedestrian connection between the Circular Quay public transport interchange and the Sydney Opera House. Macquarie Street is also a designated cycle route and is included in the Sydney Strategic Bicycle Network.

If approval is granted to this application, TNSW requests that any final statement of commitments or conditions of consent include:

- safe design for bicycle access through the Macquarie Street roundabout in accordance with the *NSW Bicycle Guidelines* (available at http://www.rta.nsw.gov.au/doingbusinesswithus/downloads/technicalmanuals/newbicycleguidev12a_1.pdf); and
- the provision of bicycle parking in an appropriate location within the Forecourt.

Level 21, 227 Elizabeth Street Sydney NSW 2000
GPO Box 1620 Sydney NSW 2001

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Our Ref: RDC 10M1837 SYD10/00681
Contact: James Hall (RN) T 8849 2047
Your Ref: MP09_0200

NSW GOVERNMENT | RTA

The Director
Government Land & Social Projects
Department of Planning
GPO Box 39
Sydney NSW 2001

Attention: Michael Buckley

SYDNEY OPERA HOUSE UNDERGROUND LOADING DOCK CONSTRUCTION ENVIRONMENTAL ASSESSMENT
2 MACQUARIE STREET, SYDNEY

Dear Sir/Madam

Reference is made to the Department of Planning's correspondence dated 16 August 2010 regarding the subject Environmental Assessment (EA) forwarded to the Roads and Traffic Authority (RTA) for comment.

The RTA has reviewed the subject EA and provides the following comments to the Department of Planning for its consideration in the determination of the application:

1. The layout of the proposed vehicle accessible areas associated with the subject development (including, driveways, grades, turn paths, sight distance requirements, aisle widths, aisle lengths, and parking bay dimensions) should be in accordance with AS 2890.2 – 2002 for heavy vehicle usage.

2. The swept path of the longest vehicle entering and exiting the subject site, as well as manoeuvrability through the site, shall be in accordance with AUSTROADS. In this regard, a swept path plan shall be submitted to the Department of Planning for approval, which illustrates that the proposed development complies with this requirement.

3. The proposed turning areas within the loading dock are to be kept clear of any obstacles, including parked vehicles, at all times.

4. All vehicles are to enter and leave the site in a forward direction.

5. All vehicles are to be wholly contained on site before being required to stop.

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6. . All loading and unloading shall occur on site.

7. A Construction Traffic Management Plan (CTMP) detailing construction vehicle routes, number of trucks, hours of operation and access arrangements shall be prepared by a certified practicioner and undertaken in accordance with the RTA's Traffic Control at Worksites Manual. The CTMP shall be submitted to the Department of Planning, Council and the RTA for review prior to commencement of works.

8. All works/regulatory signposting associated with the proposed development are to be at no cost to the RTA.

Should you require any further clarification in relation to this matter, please contact the undersigned on 8849 2047.

Yours sincerely

James Hall
A/Land Use Planning and Assessment Manager
Transport Planning, Sydney Region

16 September 2010

The Management Plan for the Sydney Opera House is the bilaterally accredited Management Plan for the Sydney Opera House August 2005 which also encompasses the Conservation Management Plan 3rd Edition 2003 (CMP). This CMP finds the Forecourt to be of exceptional significance with the roadway paving of fan pattern granite sets and the remains of the 1857 oviform drain of considerable significance. The air intake grill at the base of the Tarpeian cliff is of little significance. The security gatehouse, the cat's eye reflectors and black and yellow speed humps on the roadway, and the garden and dwarf granite walls at the base of the Tarpeian cliff are intrusive.

Policy 1.2 (f) notes that the open and uncluttered character of the forecourt and the grand stair, by which access to the raised podium is gained, are essential to architect Utzon's concept and should be retained in any future development. Policy 1.6 permits excavation of the forecourt to provide new access and delivery systems, provided the access systems are designed to be minimal visual intrusions into the surrounds of the building. Policy 3.3 requires objects, such as railings, only to be permitted on the forecourt if they do not interrupt or intrude upon the open and uncluttered nature of the place, or if they are absolutely necessary for the safety of visitors. Policies 4.1 and 4.2 suggests the need to resolve the unsatisfactory conflict between pedestrians and particularly heavy vehicular traffic, while Policy 6.1 requires the forecourt to remain unchanged. Policy 15.1 requires the retention and conservation of the fan pattern granite sets of cobbles, whilst Policy 15.2 permits the roadway granite sets to be renewed with long lasting fabric of the same material, colour and texture, without intrusive traffic calming features, possibly by raising the level of the roadway to the surrounding pavement level. Policy 15.3 permits an underground access facility by retaining the existing level of the forecourt, by minimising above ground intrusions, by recording the surviving nineteenth century fabric of the stormwater drain before its diversion and providing for paving designed to be consistent with the character of adjacent podium and broadwalk paving.

The proposal involves the grade separation of service delivery and heavy vehicles from pedestrians, by constructing: an access ramp and underground tunnel in the forecourt, new underground loading and unloading facilities and equipment. The proposal also includes: the redesign of the guardhouse, the raising of the existing kerbed roadway to the existing pavement level; the removal of garden beds; and the redesign of the existing air intake grill opening.

The CMP anticipates all these proposals and the proposals are consistent with the CMP conservation policies identified above. In particular it is noted that the proposal to construct a tunnel under the forecourt will involve the removal and replacement of the granite paving sets and the removal of the intrusive traffic calming features such as the cat's eyes and road humps and the relocation of the existing guardhouse further away from the forecourt. The entrance to the underground tunnel will be located as close as possible to Macquarie Street to minimise the adverse impact of the intervention in significant forecourt fabric, and the railing to provide public safety will mimic the existing public safety water edge barriers.

The overall result of the proposed works will be an enhancement to the ability of the place to operate as a world class performing arts venue. Adverse impacts, such as the tunnel ramp and the erection of safety railings, will be minimised. In addition, some of the intrusive elements on and adjacent to the forecourt will be removed and the intrusive nature of other elements will be diminished.

Consequently the proposed Vehicle and Pedestrian Safety Project at Sydney Opera House (MP 09_0200), together with the proposal MP 09_0122, Stormwater Drain Diversion, is unlikely to have any permanent or significant adverse effect on World and National Heritage values of the Sydney Opera House. All current fabric, including the fabric of the oviform stormwater drain, should be recorded before any construction or demolition commences.

The Department of the Environment, Water, Heritage and the Arts supports the Measures to Mitigate against Impacts (6.1.8) and the implementation of the Draft Statements of Commitments for Detailed Design Work Phase (7.1) included in Volume 1 of the Environmental Assessment (July 2010).

Yours sincerely

Theo Hooy
Assistant Secretary
Historic Heritage Branch

31 August 2010

Our reference: DOC10/37231
Contact: Lou Ewins (02) 9995 6802

Michael Buckley
A/Director
Government Lands & Social Projects
Department of Planning
GPO Box 39
Sydney NSW 2001

Dear Mr Buckley,

Re: Proposed Vehicle and Pedestrian Safety Project Sydney Opera House (MP 09-0200)

Thank you for providing the Department of Environment Climate Change and Water (DECCW) the opportunity to comment on the Environmental Assessment for the above project.

The EA *"Vehicle and Pedestrian Safety Project at the Sydney Opera House* Byrne & Associates July 2010, includes a report on the assessment of Aboriginal heritage by Godden MacKay Logan Aboriginal heritage (Annexures D and E). This assessment notes that an Aboriginal midden (AHIMS#45-6-1683) was recorded within the study area in 1983 and this site has been classified as "destroyed". The consultants suggest that there is a slight possibility that material evidence of Aboriginal occupation could still be present. The Archaeological Management Plan includes a comprehensive approach to the management of Aboriginal values, including monitoring of construction to ensure that archaeological evidence is identified and appropriately managed.

There is the potential for Aboriginal middens to be associated with burials. However, it cannot be assumed that human remains will be of Aboriginal origin. It is suggested that following protocol be included in section 6.2 Recommendations/ Archaeological Investigation, in the event that human remains be encountered:

If any human remains are located in, on or under the land, the proponent must:

(a) not further disturb these remains;
(b) immediately cease all work at the particular location;
(c) immediately notify the NSW Police;
(d) notify the Department of Planning (DoP) as soon as practicable and provide any available details of the remains and their location; and
(e) not recommence any work at the particular location unless authorised in writing by the DoP.

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ABN 30 841 387 271
www.environment.nsw.gov.au

If you wish to discuss any of the above matters further please contact Lou Ewins, Manager, Planning and Aboriginal Heritage, Metropolitan Branch, on (02) 9995 6802.

Yours sincerely

G Howard 9/9/10

GISELLE HOWARD
Director Metropolitan
Environment Protection and Regulation

NSW MARITIME

31 August 2010

Our ref: W10/471

Mr Daniel Cavallo
A/Director, Government Land and social Projects
Department of Planning
GPO Box 39
SYDNEY MSW 2001

Attn: Mr Michael Buckley

By email to: Michael.Buckley@planning.nsw.gov.au

Dear Mr Cavallo

Exhibition of Vehicle and Pedestrian Safety Project at Sydney Opera House (MP 09_0200)

I refer to your letter received 16 August 2010 inviting a submission on the above project.

Please be advised that NSW Maritime does not intend to make a submission at this stage.

If you have any questions please contact Mr Ian Tait, Assessments Officer on telephone 9563 8812 or email itait@maritime.nsw.gov.au.

Yours sincerely

Allan Young
Manager Property Planning
Property, Planning and Infrastructure Division

NSW MARITIME
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Botanic Gardens Trust
SYDNEY

Science Education
CONSERVATION
Horticulture Recreation

16 September 2010

The Director,
Government Land and Social Projects
NSW Department of Planning
GPO Box 39
Sydney NSW 2001
Via email: plan_comment@planning.nsw.gov.au

Dear Sir/Madam

Exhibition of Vehicle and Pedestrian Safety Project at Sydney Opera House (MP 09_0200)

Thanks for the opportunity to comment on the abovementioned development.

The Botanic Gardens Trust manages the Royal Botanic Gardens and Domain and is always interested in adjoining land uses and development proposals that may impact on our estates, access and services.

Sydney Opera House has consulted with the Botanic Gardens Trust regarding the vehicle and pedestrian safety project. The Trust provides the following comments:

- The Trust supports the proposal to improve pedestrian safety on the Sydney Opera House forecourt;
- The Trust is aware of and supports the proposed Aboriginal rock engravings on the Tarpeian Wall as described in the project's Aboriginal Cultural Values Assessment (July 2010). The Tarpeian Wall is a Trust asset. The Trust acknowledges the importance of the area around Bennelong Point to Aboriginal people;
- The Trust will seek more information from Sydney Opera House regarding the timing and potential impacts of the construction program but we wish it noted that pedestrian and emergency services access to the Royal Botanic Gardens must remain unimpeded from the forecourt precinct;
- The amenity and use of both the Domain and Royal Botanic Gardens for a range of community and private events/activities should not be affected by the construction program. Such events/activities include, but are not limited to, use of the Bennelong Lawn and Tarpeian Precinct for New Years Eve celebrations, private and public hire of Bennelong Lawn, use of the Domain and Royal Botanic Gardens for triathlons and running events, and the operation of visitor services and facilities.

The Botanic Gardens Trust looks forward to working with the Sydney Opera House to minimise the effects of the construction program, subject to final Department of Planning approvals.

Yours sincerely

Mark Savio
Director
Domain and Royal Botanic Gardens

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Fax (61 2) 9251 4403

Mount Annan Botanic Garden
Mount Annan Drive
Mount Annan NSW 2567 Australia
Tel (61 2) 4648 2477
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Mount Tomah Botanic Garden
Bells Line of Road
via Bilpin NSW 2758 Australia
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City of Sydney

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council@cityofsydney.nsw.gov.au www.cityofsydney.nsw.gov.au

28 September, 2010

Daniel Cavallo
A/Director, Government Lands & Social Projects
NSW Department of Planning
GPO Box 39
SYDNEY NSW 2001

Attention: Cameron Sargent

Vehicle and Pedestrian Safety Project at Sydney Opera House (MP 09_0200)

Dear Sir,

I refer to the abovementioned Major Project. The Environmental Assessment July 2010 prepared by Byrnes and Associates Pty Ltd summarises the proposal as:

- Construction of an underground loading dock to be located below the Sydney Opera House building and Forecourt;
- Alteration of existing lifts and stairs and construction of new lift services and underground corridors to link the new underground loading dock with the performance areas and back-of-house facilities of the Sydney Opera House;
- Construction of a new opening on the southern side of the Forecourt to create a new vehicle access ramp providing service vehicle access from the existing Macquarie Street roundabout down to the new underground loading dock;
- Removal of the recessed vehicle access path flanked by kerbs across the Forecourt, and replacement with a surface that is level with the surrounding paving in same material as existing;
- Removal of the existing guardhouse and construction of a new smaller guardhouse re-located in line with the new loading dock entry;
- Associated minor changes to the Forecourt including improvements to Forecourt lighting; Removal of existing planter boxes on the southern side of the Forecourt; reconfiguration of the grille to the existing car park air shaft vents against the Tarpeian wall and investigation of regrading of the curved steps opposite the 'Aria Restaurant' to improve patron safety.; and
- Relocation of various below ground site services and modifications to the roof of the pedestrian tunnel to the existing adjoining car park where it opens onto the lower concourse level.

To this summary should be added:

- Construction of an exhaust tunnel to the eastern board walk.
- Repaving of almost the entirety of the Forecourt.

Documentation Reviewed

The following documents have been reviewed as part of this assessment:

- Conservation Management Plan—"*Sydney Opera House: A Revised Plan for the Conservation of the Sydney Opera House and its Site*" (3rd edition 2003) (CMP 2003) by James Semple Kerr
- The 2002 Utzon Design Principles
- Sydney Opera House – VAPS Project Environmental Assessment July 2010 prepared by Byrnes and Associates Pty Ltd
- Sydney Opera House – VAPS Project Architects Statement June 2010 by Johnson Pilton Walker
- Sydney Opera House – VAPS Project Structural Engineers Report June 2010 by Arup
- Sydney Opera House – VAPS Project *Preliminary Geotechnical Investigation and Waste Classification Assessment February 2010 by Douglas Partners*
- Sydney Opera House – VAPS Project Heritage Impact Statement July 2010 by Design 5 – Architects Pty Ltd
- Sydney Opera House – VAPS Project Archaeological Management Plan and Archaeological Impact Assessment February 2010 by Godden Mackay Logan
- Sydney Opera House – VAPS Project Aboriginal Cultural Values Assessment June 2010 compiled by Godden Mackay Logan
- Drawings by Johnson Pilton Walker
  - EA-010 00 Locality Plan
  - EA-050 00 Site Plan Existing
  - EA-055 00 Site Plan Proposed
  - EA-100 00 Basement 4 (Level -0.38')
  - EA-130 00 Basement 1 (Level +/-001')
  - EA-140 00 Ground (Level +012')
  - EA-200 00 Basement 4 (Level -038') Reflected Ceiling Plan
  - EA-300 00 Section X70_N
  - EA-305 00 Section X48_N
  - EA-310 00 Section X38_N
  - EA-315 00 Section X30_N
  - EA-320 00 Section X09_N
  - EA-325 00 Section Y21_E
  - EA-330 00 Section Y25_E
  - EA-335 Rev 00 Section Y29_E
  - EA-340 Rev 00 Section Y34_E & Proposed Vehicle Ramp
  - EA-406 Rev 00 Vehicle Ramp Section B Proposed
  - EA-415 Rev 00 Vehicle Ramp Section D
  - EA-420 Rev 00 Vehicle Ramp Section E
  - EA-440 Rev 00 Section JJ Vehicle Ramp and Pedestrian Tunnel
  - EA-450 Rev 00 Delivery Dock_Elevation North
  - EA-455 Rev 00 Delivery Dock_Elevation East
  - EA-460 Rev 00 Delivery Dock_Elevation South
  - EA-465 Rev 00 Delivery Dock_Elevation West
  - EA-900 Rev 00 Existing Image 01 – From Macquarie St Roundabout
  - EA-905 Rev 00 Proposed Image 01 – From Macquarie St Roundabout
  - EA-910 Rev 00 Existing Image 02 – From Monumental Stairs
  - EA-915 Rev 00 Proposed Image 02 – From Monumental Stairs
  - EA-920 Rev 00 Existing Image 03 – From Monumental Stairs Detail
  - EA-925 Rev 00 Proposed Image 03 – From Monumental Stairs Detail

Heritage Status

The Sydney Opera House is listed on the following statutory registers:

- World Heritage List (UNESCO)
- National Heritage List (Australian Government)
- Register of the National Estate (Australian Heritage Council)
- State Heritage Register (NSW Government)
- Sydney Local Environmental Plan 2005 SLEP Schedule 8 Part 1.

The Sydney Opera House is also listed on the following non-statutory heritage registers:

- National Trust of Australia (NSW) register
- National Register of Significant 20th Century Buildings (Australian Institute of Architects)

The Tarpeian Wall is included in the following statutory listings:

- SLEP 2005 Schedule 8 Part 3 Royal Botanic Gardens
- State Heritage Register listing for the Royal Botanic Gardens.
- The Tarpeian Wall is within the curtilage for the World Heritage listing of the Sydney Opera House.

Director General's Requirements (DGR's) for Environmental Assessment

The DGRs provided for an assessment of prepared to address Key Issues 2 and 3 in the Director General's Requirements (DGR's) for Environmental Assessment, as set out in the letter from Department of Planning dated 17 December 2009. Key Issues 2 and 3 are as follows:

1. Statutory and Other Requirements

All relevant legislation and planning provisions applying to the site; including permissibility and the provisions of all plans and policies including:

- Objects of the Environmental Planning and Assessment Act 1979;
- State Environmental Planning Policy No. 55 – Remediation of Land;
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005;
- Sydney Local Environmental Plan 2005;
- Management Plan for the Sydney Opera House 2005; and
- Nature and extent of any non-compliance with relevant environmental planninginstruments, plans and guidelines and justification for any non-compliance.

2. Heritage and Archaeology

The EA must include a detailed Heritage Impact Statement prepared by a suitably qualified person which addresses the Conservation Management Plan prepared byJ.S. Kerr as well as other matters including, but not limited to:

a) Details of the underground loading dock, vehicle access tunnel and associated works and assessment of the physical impact of the proposed works on the heritage significance of the Sydney Opera House;
b) The measures undertaken to minimise and mitigate potential heritage impacts.

c) Alternate designs and solutions that involve lesser intrusion into the forecourt, which may utilise other public and private lands;
d) An assessment of the likely impacts of the proposal on Aboriginal cultural heritage values and the protection measures to be adopted during the works;
e) An assessment of how much of the existing Sydney Opera House building fabric is to be demolished or removed, level of significance and physical condition;
f) Justification for the removal of any intrusive fabric and consideration for reuse. If historic fabric is to be demolished or removed a storage disposal strategy is required outlining preferred options and possible alternatives for the use of historic fabric;
g) Consideration of measures to conserve and protect the ovoid Bennelong Stormwater outfall;
h) Demonstration (if applicable) of adherence to the principles, processes and practices of the Burra Charter (Australia ICOMOS);
i) Demonstration (if applicable) of consideration of advice contained in Statements of Heritage Impact published by the Heritage Office; and
j) Demonstration of compliance with Sydney Opera House Conservation Plan dated 23 June 2003.

The EA must also include an Archaeological Assessment prepared by a suitably qualified person in accordance with Heritage Council Guidelines and should make reference to any previous archaeological studies.

3. Visual Impact

The EA must include an assessment of the potential visual impacts of the proposal on the Sydney Opera House, adjoining properties and the public domain. The EA must demonstrate that the location of the entry ramp and air vents (if proposed) will minimise visual impacts. In this regard, consideration of alternatives for air vent locations and service vehicle access from other locations and adjoining properties, apart from the Sydney Opera House must be outlined.

4. Noise, Vibration, Odour, Air

The EA must include a detailed assessment of the noise, vibration, odour and air impacts associated with the construction and operation of the proposal.

5. Traffic and Vehicular Access

The EA must include a detailed assessment which assesses the potential construction and operational traffic impacts of the proposal on the local road network, and percentage of vehicle traffic the proposal will address. Restrictions on access to the Sydney Opera House, adjoining properties and the public domain should be identified and mitigation measures discussed.

6. Excavation and Waste

The EA must include a detailed analysis of the proposed demolition and excavation works prepared by a suitably qualified person which includes:

a) An assessment of the likely spoil generation and type;
b) An assessment of the potential for contaminated materials;

c) A Waste Management Plan for correct disposal and management of waste and materials.

7. Geotechnical

The EA must include a detailed geotechnical report assessing the suitability of the site and groundwater conditions, site stability, erosion hazard, proposed earthworks and retention methods.

8. Water Quality

The EA must address the potential impacts on water quality of surface water, groundwater and Sydney Harbour.

9. Infrastructure Provision

The EA must identify existing infrastructure on site and potential impacts on any such infrastructure, and detail measures to mitigate the impacts of the proposal on any infrastructure items.

10. Climate Change and Sea Level Rise

The EA must assess the risks associated with sea level rise on the proposal as set out in the draft NSW Coastal Planning Guideline: Adapting to Sea Level Rise.

11. Structural Engineers Report

A Structural Engineers Report must be submitted on the likely impacts of the proposal on the structural integrity of the Sydney Opera House.

12. Safe Work Method Statement

A Safe Work Method Statement must be submitted, explaining the delivery and installation of materials while ensuring protection of the surrounding heritage fabric.

CRITICAL ISSUES

The proposal has been assessed in respect of its compliance with the Conservation Management Plan—"*Sydney Opera House: A Revised Plan for the Conservation of the Sydney Opera House and its Site*" (3rd edition 2003) (CMP 2003) by James Semple Kerr and the 2002 Utzon Design Principles and with the Statements of Significance that form part of the various statutory listings for the Sydney Opera House, the Domain, the Royal Botanical Gardens and the Bennelong Stormwater Drain.

The following are the major critical issues in respect of impact upon heritage items and archaeological resources:

1. **Impact upon setting of the Opera House and the Forecourt.**
2. **Impact upon the interiors of the Opera House.**
3. **Potential structural impacts upon the Opera House.**
4. **Impact upon the Tarpeian Wall.**
5. **Impact upon the Bennelong Stormwater Drain**
6. **Impact upon Potential Archaeological resources**
7. **Impact upon Aboriginal Cultural Values**

Issue 1: Impact upon setting of the Opera House and the Forecourt.

The proposed works to the Sydney Opera Forecourt can be summarised as:

- The construction of a new opening in the concourse at southern side of the Forecourt to create a new vehicle access ramp;
- Cut-and-cover excavation for the construction of the easternmost section of the loading dock turning circle east of the Monumental Steps;
- Cut-and-cover excavation for the construction of the access ramp and tunnel for a distance of 75m and an additional 40m open cut excavation that is not to be covered;
- Removal of the kerbed sunken vehicle driveway across the Forecourt, and replacement with a surface that is level with the surrounding paving in same material as existing;
- Removal of the existing guardhouse and construction of a new smaller guardhouse re-located in line with the new loading dock entry;
- Associated minor changes to the Forecourt including Forecourt lighting; removal of existing planter boxes on the southern side of the Forecourt; reconfiguration of the grille to the existing car park air shaft vents against the Tarpeian wall of the Domain and regrading of the curved steps opposite the 'Aria Restaurant'; and
- Repaving of almost the entirety of the Forecourt.

The City acknowledges that in considering the alternate options considered for the location of the access point the primary aim was to maximise the open paved area of the forecourt between the Monumental Stairs and the Tarpeian Wall, and to minimise the visual impact of the entry point on the setting of the Sydney Opera House and its forecourt. We note the alternate options considered for the location of the access point to the loading dock including: from the Forecourt, the Sydney Harbour Tunnel, from within Sydney Opera House Carpark and from Macquarie Street outlined in Section 3.3 of the Environmental Assessment and the constraints in locating the access ramp particularly the constraining locations of the southbound lane of the

Sydney Harbour Tunnel, the Tarpeian Wall and the Macquarie Street roundabout, and the grades required to access the dock location, the constraints for locating the 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 and the complexities in the arrangement of existing tunnels and services, including the air intake shaft for the underground carpark.

The City finds that the proposal, once completed, has the potential to achieve an overall positive impact in respect of the setting of the Sydney Opera House and the pedestrian approach from the City which is a key feature of Utzon's intended sequence arrival, expanding the sense of openness and continuity of pavements. The proposal has the potential to enhance the open and uncluttered setting of the forecourt by removing a number of existing intrusive elements including the sunken driveway, the security gatehouse, sections of the grille over the air intake vents for the carpark, the circular granite edge planter beds at base of Tarpeian cliff; reflectors and speed humps and the above-ground loading dock, whilst simultaneously reducing the conflict of pedestrian and vehicle paths and makes the approach to the Sydney Opera House via the Forecourt clearer and safer.

The proposal minimises intrusion of heavy vehicles into the forecourt and separates them from pedestrian traffic and providing a more efficient loading dock is beneficial to the long term efficient and safe use of the place. The proposed tunnel entry for the loading dock will encroach on the southern part of the forecourt, but the location far enough away from the podium and monumental stairs, as well as important view lines, to avoid adversely affecting the exterior form and appreciation of the Sydney Opera House. The existing area of the grilled openings at forecourt level for the fresh air intake for the underground carpark is to be reduced and reshaped in a simpler design integrated with the Access ramp. The loss of the area occupied by the proposed tunnel entry is offset by the removal of the sunken driveway.

Once completed, the proposal as it impacts upon the Sydney Opera House's setting and forecourt is generally consistent with the relevant policies of the Conservation Management Plan—"*Sydney Opera House: A Revised Plan for the Conservation of the Sydney Opera House and its Site*" (3rd edition 2003) By J S Kerr including:

- *Policy 49.1 Managing the process of change – Use, approach and review*
- *Policy 1.5 Utzon, Hall and the approach to change – Major works*
- *Policy 1.6 Utzon, Hall and the approach to change – Additional on-site facilities*
- *Policy 3.3 Setting – Open and uncluttered setting*
- *Policy 4.1 Setting – Forecourt pedestrian and vehicle paths*
- *Policy 4.2 Setting – Forecourt pedestrian and vehicle paths*
- *Policy 6.1 Exterior – External form*
- *Policy 6.2 Exterior – External form*
- *Policy 11.1 Exterior – Podium "platform", broadwalk and forecourt*
- *Policy 13.1 Exterior – Paving and cladding of podium and broadwalk*
- *Policy 13.2 Exterior – Paving and cladding of podium and broadwalk*
- *Policy 15.3 Exterior – The forecourt and lower forecourt*

However, the City is concerned about several negative impacts in relation to the setting of the Opera House and the Forecourt. These relate to the following:

- Firstly, the area of the Forecourt that is proposed to be 'cut and cover' excavation is not clearly represented by the documentation available and it is

difficult to ascertain whether the amount of open cut excavation of the Forecourt could be reduced in favour of additional tunnelling. The Structural Engineers Report June 2010 by Arup states that of the 140m length of the access ramp, 40m is open drive structure, 75m cut and cover and 25m in hard rock tunnel. The Preliminary Geotechnical Investigation and Waste Classification Assessment February 2010 by Douglas Partners explains that the presence of post-tensioned cables that act to brace the existing Monumental Steps will preclude open cut excavation for the main loading dock except where the footprint extends beyond the Steps. Whilst the final proposed result is to re establish the singular level of the Forecourt and its pavement. (Note the impacts of this upon the Bennelong Stormwater Drain and potential archaeological resources are discussed in subsequent section).

- Secondly, the degree of disruption and reduction in the visitor experience during the construction phases of the project will be excessive, not only for the excavation works but also for the relocation of services traversing the Forecourt including high voltage cables, the Bennelong stormwater, gas and water mains and Telstra cables, and for construction equipment, waste and plant and the eventual repaving works. It is essential to minimise disruption of the visitor experience through well resolved construction management to be carefully resolved and continued consultation with stakeholders including the City of Sydney. It is crucial that hoardings, signage and temporary lighting at night for pedestrians achieve a high level of design quality, safety and clarity to ensure the visitor experience along the major paths of pedestrian travel through the Forecourt areas to the Opera House, Farm Cove, the Royal Botanical Garden and the Tarpeian Way is maintained and that temporary visual impacts are minimised.

- Thirdly, that the resolution of design details has not yet been documented. In regard the second, the City highlights that care will be required to ensure the quality and detail described in the concept design is achieved in the implementation. The proposed entry ramp and opening will introduce a new permanent element but its detailing, configuration, and location is critical in reducing any visual intrusion. Proposed materials and colours must be consistent with Utzon's palette of natural materials used elsewhere on the site. Details of the materials and finishes outlined in the Architects statement indicate that precast pink reconstituted granite panels will be used to line the publicly visible sections of the tunnel entry, with the angled parapet and bronze handrail and balustrade detail matching that on the western side of the forecourt. To ensure a good match, care should be taken to achieve a finish which is not highly polished. The resolution of external lighting within the entrance to the tunnel including the appropriate form of lighting, locations and illumination levels are critical in achieving a sympathetic and high quality result.

Recommendations:
The following are critical in reducing visual impacts to the Forecourt of the Sydney Opera House and in minimising any reduction in visitor experience whether temporary or permanent:

- To reduce disruption of the visitor experience during construction phase and to conserve the sandstone and potential archaeological resources of Bennelong Point the amount of open cut excavation of the Forecourt should be reduced in favour of additional tunnelling wherever feasible.

- It is essential that the architect's Johnson Pilton Walker be engaged to continue the design resolution, construction documentation and construction phases of the project.

- To reduce visual impacts the proposed finishes to the Forecourt, and Access ramp and tunnel are to be consistent with Utzon's palette of natural materials used elsewhere on the site and with the Sydney Opera House Vehicle and Pedestrian safety Project Architects Statement 2 June 2010 by Johnson Pilton Walker including the following:
    - The Access ramp paving to be crushed granite panels identical in dimension and detail to the existing Boardwalk and podium paving or an in situ finish of the same with solid bronze inlays,
    - The walls and upstands of the Access ramp to be precast crushed granite panels identical in dimension material finish and module and detail to the podium cladding;
    - The handrail surrounding the ramp to be solid bronze with integrated lighting to match the existing podium handrails.
    - The outward perimeter below the upstand to be a single row of 1200 x 600mm gang sawn granite slabs matching those against the western edge of the forecourt.
    - The Forecourt paving to be a continuity of the existing bands of single granite paving slabs with granite setts between.

- To reduce visual impacts to the Forecourt the resolution of external lighting within the entrance to the access tunnel should be carefully resolved in respect of appropriate forms, locations and illumination levels critical in achieving a sympathetic and high quality result.

- To reduce disruption of the visitor experience during construction phase there should be continuous consultation with the City of Sydney and other stakeholders in regards the management of the project. It is crucial that hoardings, signage and temporary lighting at night for pedestrians achieve a high level of design quality, safety and clarity to ensure the visitor experience along the major paths of pedestrian travel through the Forecourt areas to the Opera House, Farm Cove, the Royal Botanical Garden and the Tarpeian Way is maintained and that temporary visual impacts are minimised.

Issue 2. Impact upon the interiors of the Opera House.

The City acknowledges the proposal is the result of consideration of an extensive variety of other options, which were either not feasible or resulted in greater impacts, and that the proposed location of the underground loading dock will improve the operational efficiency of the Sydney Opera House as a performing arts centre. The need for improved loading facilities and to separate heavy vehicles and pedestrians was identified in the Utzon Design Principles in 2002.

Although the location selected for the proposed underground loading dock has no visual relationship with the significant Utzon designed spaces the City supports the proposed consistency with Utzon's Design Principles in the design of its structure and form, and the selection of materials, natural finishes and colours.
The proposal as it impacts upon the interiors of the Sydney Opera House's is generally consistent with the relevant policies of the Conservation Management Plan—"*Sydney Opera House: A Revised Plan for the Conservation of the Sydney Opera House and its Site*" (3rd edition 2003) By J S Kerr including:

- *Policy 1.1 Utzon, Hall and the approach to change – Utzon's principles*
- *Policy 1.2 Utzon, Hall and the approach to change – Utzon's concepts*
- *Policy 25.1 Character and treatment of internal spaces – New areas*
- *Policy 37.1 Spaces within the podium – Central vehicle passage as delivery space*
- *Policy 38.1 Care of the fabric – Removal or alteration of fabric*
- *Policy 39.1 Care of the fabric – Treatment of intrusive items*
- *Policy 39.2 Care of the fabric – Treatment of intrusive items*
- *Policy 46.3 Housekeeping – Signs*
- *Policy 49.1 Managing the process of change – Use, approach and review*
- *Policy 51.1 Managing the process of change – Relating levels of significance to proposals*
- *Policy 56.1 Managing the process of change – Sequence and advice in developing proposals*

The City supports the proposed acoustic isolation of the loading dock facility from the performance venues as being essential part of the conservation of the place.

Recommendations:

- It is essential that the architect's Johnson Pilton Walker be engaged to continue the design resolution, construction documentation and construction phases of the project.

Issue 3. Potential structural impacts upon the Opera House.

The Preliminary Geotechnical Investigation and Waste Classification Assessment February 2010 by Douglas Partners explains that a major constraint for the proposed main loading dock excavations is the degree of stress-relief that will occur and that the lateral movements around the loading dock could be in the range of 8 – 30 mm. Careful consideration should be given to the implications of stress relief movements for the existing Opera House and surrounding structures. The presence of post-tensioned cables that act to brace the existing Monumental Steps will preclude the opportunity to carry out the excavation using conventional excavation and support methods for the main loading dock. However, where the excavation footprint extends beyond the Steps, conventional piled or diaphragm systems may be utilised.

The Executive Summary of this report states that the '*bulk of the proposed excavation will be within high strength, Class II and Class I Sandstone. Heavy ripping and rock hammering will generally be required for bulk excavation although noise and vibration constraints are likely to dictate that much of the rock is removed using rotary rock saws and milling heads, possibly in conjunction with line-drilling around the perimeter, so as to avoid excessive overbreak.*'

The Structural Engineers Report June 2010 by Arup concludes that the works to the dock and turning areas '*are capable of being designed and constructed to satisfactorily support all existing elements of the Sydney Opera House and can be built in a manner that is unlikely to result in unacceptable movements to the existing structure and fabric of the Sydney Opera House.*'

Recommendations:

- Further geotechnical investigation will generally be necessary to address the key issues of stress relief related ground movements and rock mass permeability and the presence of the Fault Zones.

- Arup be engaged to continue the design resolution, construction documentation and construction phases of the project.

Issue 4. Impact upon the Tarpeian Wall.

The City acknowledges that the primary aim is to maximise the open paved area of the forecourt between the Monumental Stairs and the Tarpeian Wall to reduce the impact upon the Sydney Opera House. The result is that the separation between the Tarpeian rockface and the access ramp is minimal.

The Preliminary Geotechnical Investigation and Waste Classification Assessment February 2010 by Douglas Partners states that potential impacts *arising out of rock excavation* includes stress relief related ground movements and saline groundwater inflows/upflows through the rock along the GPO Fault Zone. However it does not provide any specific assessment of the potential for impacts of these types on the Tarpeian Wall due to the excavation and tunnelling for the access ramp.

Recommendations:

- To ensure minimisation of impacts upon the Tarpeian Wall, the final precise location of the access ramp should be resolved through a careful balance of the geotechnical considerations including minimising potential impacts from stress relief related ground movements arising out of rock excavation as well as the potential impacts arising out of the relative locations of the GPO Fault Zone and reducing the potential for increased rates of saline groundwater inflows/upflows. Further geotechnical investigation will generally be necessary to address these key issues.

Issue 5. Impact upon the Bennelong Stormwater Drain

The proposed cut and cover excavation of the proposed vehicular access tunnel will be at least 10m wide to a maximum depth of up to 8m below the current forecourt surface and will impact upon the oviform brick Bennelong Stormwater channel c1857 requiring removal of sections of this item considered to be of high significance.

The City acknowledges that in considering the alternate options considered for the location of the access point the primary aim was to maximise the open paved area of the forecourt between the Monumental Stairs and the Tarpeian Wall, and to minimise the visual impact of the entry point on the setting of the Sydney Opera House and its forecourt.

A study of the Sydney Water Section 170 Register map suggests that disturbance to the Bennelong Stormwater Drain is unavoidable in any of the Access ramp location options considered within the Forecourt. The option of constructing the access via an additional slip lane in the Sydney Harbour Northbound Tunnel may have avoided the need to disturb the drain but this option was considered inappropriate due to potential negative impacts on tunnel safety and traffic.

Recommendations:

- The removal or disturbance of any sections of the original oviform channel should be minimised wherever possible.
- Any sections of the channel that are to be removed should be photographed in situ prior toremoval (including sections of the original oviform drain and later diversions).

- Any exposed sections of the original oviform channel that would not be removed should be protected during excavation works, as well as in association with construction of the new diversion junction.
- Sydney Water would be consulted in relation to the methodology for removal of any sections of the original oviform channel and any preservation requirements, including the retention and storage of any fabric or artefacts recovered.
- Archaeological recording of the removed sections of the oviform brick Bennelong Stormwater channel is to be undertaken according to Heritage Branch, Department of Planning guidelines and best practice archaeological methodologies and one copy of the report is to be submitted to the City of Sydney Archives. This should inform the future interpretation and produce a detailed record of the site.
- The results of the archaeological program need to be incorporated into the interpretation plan for the site. The archaeologists need to have a central role in the development of ideas and themes and interpretative concepts.
- Sydney Water should be consulted in relation to any preservation requirements, including the retention and storage of any fabric or artefacts recovered from the Sydney Water asset, the Bennelong stormwater Channel.

Issue 6. Impact upon Potential Archaeological resources

Archaeological and excavation issues both Aboriginal and European are addressed in the two reports prepared by Godden Mackay Logan. These explain that the potential archaeological remains that may be affected by the proposed excavation works include:

- The component of the proposed works that would have the greatest archaeological impact would be the potential cut-and-cover excavation for construction of the easternmost section of the loading dock turning circle. Excavation within this area of levels above the proposed loading dock level will '*potentially disturb structural and other remains associated with the south eastern extension of the Fort Macquarie battery, structural and other remains of an early nineteenth-century building in this area, and potential remains associated with the original shoreline and former seawalls. Excavation of this area is considered to have a major archaeological impact*' and one that requires far greater acknowledgment than proposed.

- Potential archaeological impacts associated with the proposed basement level are limited to the location of the three lifts that would connect the new basement level to existing levels of Sydney Opera House, as well as some deeper subsurface elements that may be present across the site such as evidence of natural ground levels and former shorelines as well as deeper built elements such as wells or privies. The proposed temporary scenery lift is located within the former footprint of Fort Macquarie and the later tram-car house and extends through a part of the site that may not have been previously disturbed. Its construction may therefore disturb archaeological deposits or features associated with Fort Macquarie considered to be of high significance and the later tram-car house considered of moderate significance and which both have high research potential. The other two proposed lifts connect the new basement level to existing levels of Sydney Opera House and are unlikely to have any archaeological impacts, as they are located within the footprint of the existing basement level.

Recommendations:

To effectively manage the impacts upon non indigenous archaeological potential of the area in accordance with the NSW Heritage Act, the following is recommended:

- All excavation works to be undertaken in a manner consistent with *CMP 2003 Policy 53.1 Managing the process of change – Excavation.*
- All work involving excavation or investigation of sub surface deposits should be planned and executed in accordance with the requirements of the Heritage Act 1977 and advice of the NSW Heritage Office.
- A program of archaeological investigation of areas subject to excavation and disturbance should be undertaken prior to any commencement of any excavation for the vehicle tunnel or for the loading dock turning circle. This investigation should determine the nature and extent of archaeological deposits and to assist the development of an archaeological management strategy.
- There should be a programme of on going archaeological monitoring throughout the excavation works to investigate and record remains exposed during the monitoring process.
- Based on the archaeological integrity of the remains, a program of archaeological salvage and site recording will be required including detailed photography, measured drawings, context sheets. The archaeological sampling and recording need to be undertaken according to Heritage Branch, Department of Planning guidelines and best practice archaeological methodologies. This is to inform the future interpretation and produce a detailed record of the site. One copy of the report is to be submitted to the City of Sydney Archives. This should inform the future interpretation and produce a detailed record of the site.
- Opportunities to interpret or display any evidence discovered during the proposed forecourt works should be considered as part of a holistic approach to interpreting the site. The results of the archaeological program need to be incorporated into the interpretation plan for the site. The archaeologists need to have a central role in the development of ideas and themes and interpretative concepts. As the nature of the proposed works do not allow for in situ retention of archaeological evidence, it is critical that the proposal includes provision for adequate archival recording and interpretation including public display on the site, particularly of archaeological deposits or features of high significance associated with Fort Macquarie.
- Any artefacts recovered from the site during site works and a full set of archaeological investigation reports should be included in the Sydney Opera House's moveable heritage collection or alternatively provenanced according to their contexts. All artefacts to be inventoried, boxed, labelled and catalogued.

Issue 7: Impact upon Aboriginal Cultural Heritage Impacts

The 'Sydney Opera House: Vehicle and Pedestrian Safety Project—Aboriginal Cultural Heritage Values' identifies Aboriginal cultural values associated with the place and an assessment of the impacts of the proposal on those values. The National Heritage Listing for the Sydney Opera house recognises Aboriginal cultural values and associations with the site, in particular with Bennelong, an Aboriginal man 'captured' by Governor Phillip and who subsequently lived on the peninsula. The Conservation Management Plan 2003 also recognises Aboriginal Associations. Consultation with Aboriginal stakeholders has built upon these previously documented values and a range of cultural values, both tangible and intangible are

set out in the report. Values relate to the association of the site and surrounding areas a meeting and gathering place for Aboriginal people, and in more recent times, as a of the place for performing arts, including by Aboriginal performers, as well as the negative associations with the site including the dislike of the Australia Day commemoration in the Botanic Gardens and the slaughtering of Aboriginal people in the early days of settlement.

The report suggests that there is potential for impacts to physical Aboriginal objects that may survive beneath the surface and for impacts upon intangible cultural values, which may be connected to the potential physical evidence of Aboriginal heritage or may also be connected to the history and beliefs associated with the site.

Recommendations:

- If any Aboriginal "objects" (as defined under the *National Parks and Wildlife Act1974*) are located during the course of the testing program, the Metropolitan Local Aboriginal Land Council should apply for a Care Agreement with the Department of Environment, Climate Change and Water to enable them to keep the objects.
- Interpretation of the Aboriginal history of the site should be included in the redevelopment proposals.

General heritage and archaeological issues:

Design 5 Architects is preparing the 4th edition of the Conservation Management Plan for the Sydney Opera House.

Recommendations:

- One electronic copy and two colour bound hard copies of the 4th edition of the Conservation Management Plan for the Sydney Opera House to be lodged with the City of Sydney archives when completed.
- All relevant site personnel would attend a site induction prior to commencement of works to ensure they were aware of the heritage issues associated with the site including with the role of the archaeologist(s).
- An online resource should be established to provide information about the proposed works before they commence, in anticipation of public interest in visible on-site works and on-site signage should be provided during the proposed works to provide visitors with information about the nature and extent of the site works the proposed archaeological investigation and its results, and any ongoing site management and interpretation.. Signage should be erected in relation to the proposed works to inform site visitors of the nature and extent of site works. Any signage would need to be consistent with the requirements and restrictions identified in the Sydney Opera House Management Plan and Signage Manual. All website information and information display boards to be constantly updated.

Please contact Andrew Rees if you require any clarification or further information on this matter, on phone number 9246 7599 or by email at arees@cityofsydney.nsw.gov.au

Yours sincerely,

Bill Mackay
Manager of Planning Assessments

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Contact: Rajeev Maini
Telephone: 9873 8592
Rajeev.maini @planning.nsw.gov.au
B no.: B166545
Barcode no.: PCU 000766
HOD no.: 5054880
File: 09/00783
Your reference

Daniel Cavalo
Manager
Infrastructure Projects
NSW Department of Planning
GPO 39
SYDNEY NSW 2001

Attn: Michael Buckly

Dear Mr Cavalo,

Re: MAJOR PROJECT 09_0200 – VEHICLE AND PEDESTRIAN SAFETY PROJECT, INCLUDING NEW UNDERGROUND LOADING DOCK, ACCESS RAMP AND ASSOCIATED CHANGES TO THE FORECOURT AND INTERIOR OF THE SYDNEY OPERA HOUSE.

I refer to your letter received by the Heritage Branch on 24 August 2010 seeking comment on the vehicle and pedestrian safety project including new underground loading dock, access ramp and associated changes to the forecourt and interior of the Sydney Opera House.

The Heritage Council considered the above project at its special meeting on 16 September 2010 and resolved:

That the Heritage Council of NSW advise the Department of Planning that the application could be approved with the following conditions:

1. **In accordance with Policy 1.5 of the Current CMP, the quality and detail described in the concept drawings and documents should not be diminished during the detailed design or construction process. In order to achieve this, the documentation and the construction process should be reviewed at regular and/or significant points along the projects' implementation program to ensure these are maintained, and if possible enhanced. Unless prevented by extenuating circumstance, key personnel from the original architects and designers of the project should be part of this quality control and checking process, and their recommendations properly considered and included in the implementation;**

2. **In accordance with Policy 56.1 of the Current CMP, specialist heritage conservation advice should continue to be sought during the design development and documentation stages for the VAPS project and continue through to completion of the project to ensure the broader as well as detailed conservation objectives are achieved;**

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3. **Detailed drawings must be submitted and approved by the Director, Heritage Branch, Department of Planning prior to work commencing on site to ensure removal of original fabric is minimised and new work is detailed in a sympathetic manner;**

4. **It is important that the ramp is maintained in an inconspicuous state as much as possible by avoiding large signs etc. This approval does not include any signage on the ramp. It is, however, anticipated that some directional signage may be required for safe operation of the access ramp. Separate approval is required for any signage that may be required for its operation to ensure it does not become an intrusive element within the setting of the Opera House;**

5. **In accordance with Policy 6.4 of the Current CMP, the location of hoardings and site & construction facilities required to carry out the works, should be located as unobtrusively as possible and should only be erected for a stated limited time to minimise impacts on the setting and accessibility of the Sydney Opera House. Hoardings should be erected to contain all aspects of the proposed excavation and construction works;**

6. **The Sydney Opera House Trust should advise the public via appropriate signage or other means, of the purpose of the works and their time frame;**

7. **Construction activities and the movement of trucks carrying excavated material or delivering new materials should be carefully planned, considered and managed and monitored to ensure their impact on patrons, visitors and surrounding areas is minimised and acceptable;**

8. **The program of archaeological investigation outlined in the archaeological report should be adopted as part of the mitigation strategy for these works to address the potentially adverse impacts that these works would have on the archaeological significance of the site. The proposed program of archaeological investigation includes:**
   a) **Potential cut and cover excavation for loading dock construction – archaeological testing of this area prior to bulk excavation, followed by further archaeological investigation (open area excavation or monitoring, if required);**
   b) **Cut and cover excavation for vehicular tunnel – exposure and recording of sections of Bennelong stormwater channel (original section and later diversion) prior to removal of these elements, followed by monitoring of the initial stages of all excavation works;**

9. **Archaeological monitoring of proposed development works should occur in accordance with the archaeological Management plan submitted as part of the application. It would be appropriate for the**

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Aboriginal stakeholder representatives to participate in the monitoring;

10. **In the event that any archaeological remains were to be exposed during site works, they should be appropriately documented according to the procedures outlines in the Archaeology Report;**

11. **Suitable clauses should be included in all contractor and subcontractor contracts to ensure that on-site personnel are aware of the heritage issues associated with the site and the role of the archaeologists on site;**

12. **Subsurface disturbance should be limited to those area identified in the documentation of the proposed works so as to avoid disturbance of other potential archaeological remains at this site;**

13. **In the event that unexpected historical archaeological evidence was to be encountered during site works, works 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;**

14. **In the event unexpected Aboriginal archaeological evidence were to be encountered during site works, works should cease and the Department of Environment, Climate Change and water should be notified immediately. Further assessment and/or approval may be required before works could recommence;**

15. **Opportunities to interpret any evidence discovered during the proposed forecourt works shall be considered as part of a holistic approach to interpreting the site;**

16. **An online resource should be established to provide information about the proposed works before they commence, in anticipation of public interest in visible on-site works;**

17. **Any artefacts recovered from the site during site works and a full set of archaeological investigation reports should be included in the Sydney Opera Houses' moveable heritage collection;**

18. **Sydney Water should be consulted in relation to any preservation requirements, including the retention and storage of any fabric or artefacts recovered from the Sydney Water Asset (Bennelong Storm Water Channel);**

19. **The Applicant must ensure that a final excavation report is prepared by the nominated Excavation Director, to publication standard, within one (1) year of the completion of the field based archaeological activity unless an extension of time or other variation is approved by the**

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Heritage Council of NSW in accordance with section 65A of the 'Heritage Act, 1977';

20. **A copy of the Archaeological report should be sent to the metropolitan Local Aboriginal Land Council for their information; and**

21. **An application under section 60 of the NSW Heritage Act must be submitted and approved by the NSW Heritage Council prior to work commencing.**

If you have any query in this regard, please contact Rajeev Maini on (02) 98738592.

Yours sincerely

Timothy Smith

Tim Smith
A/Director 29.9.10
Heritage Branch, Department of Planning
AS DELEGATE OF THE NSW HERITAGE COUNCIL

PCU014850

20 September 2010

Sydney WATER

Daniel Cavallo
A/Director, Government Lands and Social Projects
Department of Planning
GPO Box 39
Sydney NSW 2001

Dear Mr Cavallo,

Re: Environmental Assessment – Major Project Application MP09_0200
Vehicle and Pedestrian Safety Project at Sydney Opera House

Thank you for your letter of 16 August inviting submissions on the Environmental Assessment for the proposed vehicle and pedestrian safety project at Sydney Opera House. Sydney Water has reviewed the proposal and provides the following comments for the Department of Planning's consideration.

Water
The drinking water system has sufficient capacity for the proposed development. The drinking water main available for connection is the 200 mm main on the northeast side of Macquarie Street.

Wastewater
The wastewater system has sufficient capacity for the proposed development. The wastewater main available for connection is the 300 mm main north of Macquarie Street.

Trade Waste
All customers discharging trade waste into Sydney Water's wastewater systems must have written permission from Sydney Water. The trade waste requirements help Sydney Water discharge or reuse wastewater while protecting the environment and meeting regulatory requirements.

Sydney Water will either issue the customer a trade waste permit or enter into a trade waste agreement. A trade waste permit must be obtained before any discharge can be made to the sewer system. The permit is also needed for site remediation purposes. Applications for a trade waste permit can be made to Sydney Water at the Section 73 Certificate application stage. For further information please visit the Sydney Water website at
http://www.sydneywater.com.au/OurSystemsAndOperations/Tradewaste/

Sydney Water Servicing
Sydney Water will further assess the impact of individual developments when the proponent applies for a Section 73 Certificate. This assessment will enable Sydney Water to specify any works required as a result of the development and to assess if amplification and/or changes to

the system are applicable. Sydney Water requests the Department of Planning to continue to instruct proponents to obtain a Section 73 Certificate from Sydney Water.

The proponent must fund any adjustments needed to Sydney Water infrastructure as a result of any development. The proponent should engage a Water Servicing Coordinator to get a Section 73 Certificate and manage the servicing aspects of the development. Details are available from any Sydney Water Customer Centre on 13 20 92 or Sydney Water's website at www.sydneywater.com.au.

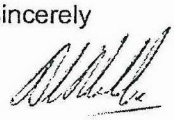
Sydney Water e-planning

Sydney Water has created a new email address for planning authorities to use to submit statutory or strategic planning documents for review. This email address is urbangrowth@sydneywater.com.au. The use of this email will help Sydney Water provide advice on planning projects faster, in line with current planning reforms. It will also reduce the amount of printed material being produced. This email should be used for:

- Section 62 consultations under the *Environmental Planning and Assessment Act 1979*
- consultations where Sydney Water is an adjoining land owner to a proposed development
- Major Project applications under Part 3A of the *Environmental Planning and Assessment Act 1979*
- consultations and referrals required under any Environmental Planning Instrument
- draft LEPs, SEPPs or other planning controls, such as DCPs
- any proposed development or rezoning within a 400m radius of a Sydney Water Sewage Treatment Plant
- any proposed planning reforms or other general planning or development inquiries

If you require any further information, please contact David Demer of the Urban Growth Branch on 02 8849 5241 or e-mail david.demer@sydneywater.com.au

Yours sincerely



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20 October 2010

Attention: Ms Marie Khoury

Dear Marie

Re: Sydney Opera House Vehicle Access and Pedestrian Safety (VAPS) Project Response to RTA Correspondence dated 16 September 2010

The following provides comments in reply to correspondence submitted by the RTA to The Department of Planning with regard to the VAPS Project Environmental Assessment.

A copy of the RTA is attached for reference purposes.

1. Compliance with AS2890.2-2002 for heavy vehicle access.

The layout of the proposed loading dock and the vehicle access arrangements to and from the loading dock have been designed to comply with AS2890.2 requirements.

It is noted that an Articulated Vehicle (AV) 19.0m semi trailer has been used as the design vehicle with regard to vehicle manoeuvring and accessibility.

A concept design compliance review prepared by Halcrow is attached. This review includes vehicle turn path analysis, headroom clearance, grade compliance etc.

2. Vehicle Swept Paths

As noted above, the design vehicle used in the assessment process was a 19.0m long Articulated Vehicle. Swept paths are included in the attached concept design compliance review.

3. Turning Areas to be Kept Clear of Obstacles

This is an operational matter. It is envisaged that this would be included as a condition of consent.

The dock area will be controlled by a dock manager who would be responsible for the implementation of all operational matters.

4. All Vehicles to enter and exit the site in a forward direction

The design of the loading dock and vehicle access arrangements would facilitate forward entry and exit movements (see attached Concept Design Review).

5. Vehicles contained wholly within the site when stopping.

The design of the access driveway and position of the security gate house will allow vehicles to stop without encroaching into the Macquarie Street roundabout.

It is noted that AV deliveries to the site are pre-arranged and associated with the bump in – bump out of the Opera or Symphony. As such there is minimal delay at the security gate.

Notwithstanding the above the security guard will be required to get out of the control both to communicate with the driver of an AV parked wholly of the Macquarie Street roundabout.

6. All loading to occur on site

The loading dock has been designed to accommodate the demands defined by the Sydney Opera House in their User Functional Brief. As such there would be no need for unloading / loading to occur off site.

Notwithstanding the above, this issue is an operational matter and should be included as a condition of consent.

7. Construction Traffic Management

A construction traffic management plan (CTMP) shall be prepared prior to commencement of construction activities.

8. All works at no cost to RTA

Noted.

If you have any queries or require further information, please do not hesitate to contact the undersigned.

Yours faithfully,

Jason Rudd
Associate
Transport Planning

Halcrow

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Halcrow

Sydney Opera House
c/- Savills Australia
Level 7
50 Bridge Street
Sydney NSW 2000

20 October 2010

Attention: Ms Marie Khoury

Dear Marie

Re: Sydney Opera House Vehicle Access and Pedestrian Safety (VAPS) Project Concept Design Certification Review - Vehicle Accessibility

As requested, Halcrow has undertaken a certification review of the proposed VAPS Project Concept Design with regard to traffic and vehicle accessibility.

The review has considered the following aspects of the Concept Design:

- Loading dock layout and vehicle manoeuvring;
- Loading dock ramp and tunnel design; and
- Vehicle access arrangements to and from the site from the external road network.

The review has considered the design requirements specified in the *Sydney Opera House VAPS Project User Functional Brief – Issue 5.0* (16 March 2010).

The User Functional Brief sets out the requirements for the Concept Design including:

- Functional space requirements for loading dock activities;
- Type of vehicles to be accommodated; and
- Security arrangements.

This Concept Design Certification review has been based on the following architectural plans prepared by Johnson Pilton Walker:

- SK-60 – 04 Site Plan Indicative Future Paving (24/5/2010)
- SK-100 – 05 Basement Level 04 (24/5/2010)
- SK-110 – 05 Basement Level 03 (24/5/2010)
- SK-120 – 05 Basement Level 02 (24/5/2010)
- SK-130 – 05 Basement Level 01 (24/5/2010)
- SK-140 – 05 Ground Level (24/5/2010)
- SK-350 -05 Section RR Proposed Vehicle Ramp (24/5/2010)

The following provides comments on the various aspects of vehicle access for the VAPS Project.

Loading Dock Layout and Manoeuvring

As required by the User Functional Brief, the loading dock will provide the following loading bays:

- Articulated Vehicle (AV) 19.0m side loading dock; plus
- AV 19.0m rear loading dock; plus
- 2 x Heavy Rigid Vehicle (HRV) 12.5m rear loading docks; plus
- Compactor access bay; plus
- Provision for temporary parking of outside broadcast vehicles.

The vehicle manoeuvring area provided has been assessed using AUSTROAD vehicle specifications for AV and HRV vehicles and the AUTOTURN vehicle simulation software.

The assessment indicates that the Concept Design would provide satisfactory and compliant (AS2890) vehicle access to and from the docks (see Figure A, B and C).

Loading Dock Ramp (Tunnel)

The loading dock ramp (tunnel) has been designed to accommodate two way movements along the length of the ramp.

As shown in Figure D, two AV's can pass each other along the length of the ramp. As such vehicles will not be required to stop on the ramp to allow vehicles to pass.

External Road Network Connections

It is noted that minor modifications to the vehicle access at the Macquarie Street roundabout are proposed so as to align the access path with the proposed new ramp to the loading dock.

Figure E indicates the vehicle turn path of an AV entering and exiting the site at the Macquarie Street roundabout. It is noted that AV's will continue to use the mountable apron of the roundabout.

Loading Dock Tunnel Headroom and Ramp Grades

Figure F indicates that the ramp design can satisfactorily accommodate a constant headroom clearance of 4500mm along the entire section of the ramp.

Figure F also indicates, with the application of the AS2890.2 AV ground clearance templates, that the gradient of the proposed ramp complies with AS2890.2 including maximum allowable gradients and transition gradients.

In summary this review has concluded that the Concept Design as detailed in the specified architectural plans confirms with the User Functional Brief and relevant AS2890 standards with regard to vehicle access.

If you have any queries or require further information, please do not hesitate to contact the undersigned.

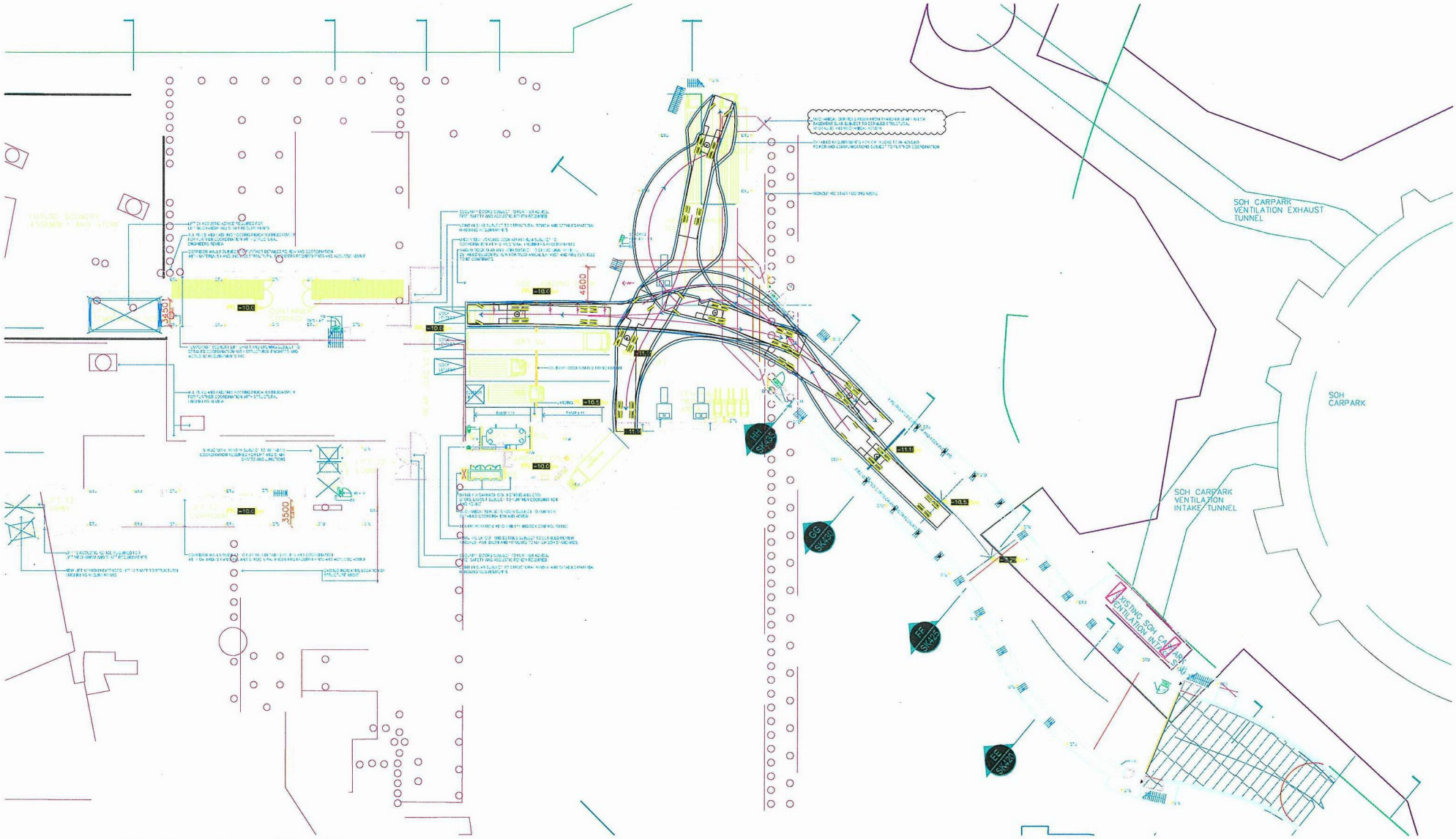
Yours faithfully,

Jason Rudd
Associate
Transport Planning

Halcrow

LOADING DOCK 1 - 19m AV TURN PATH

SOH VAPS PROJECT



Scale: 1:500@A3

SOURCE: JPW - SK -100

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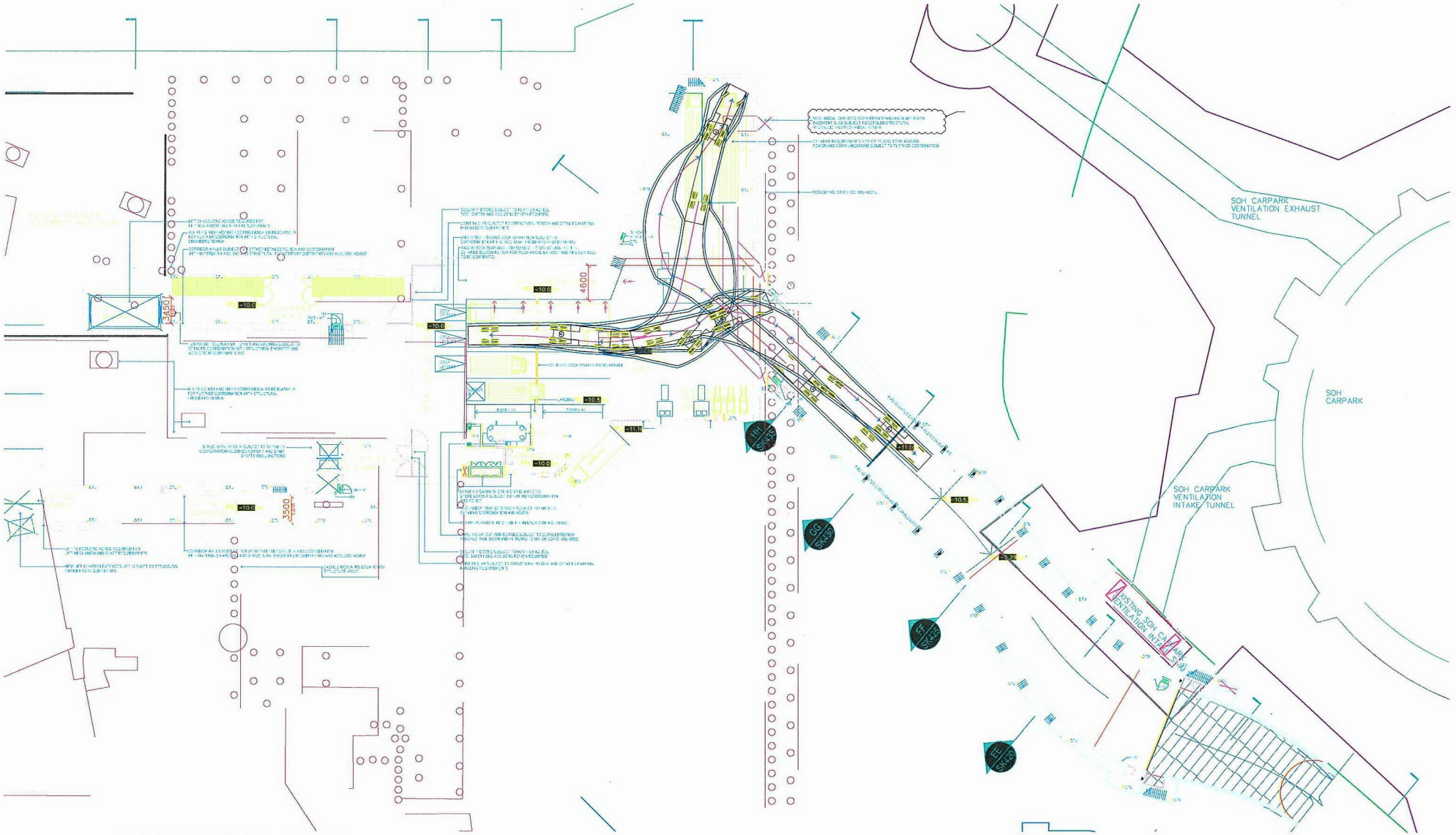
Filename: CTLREYda24

Figure A

Date: 20 October 2010

LOADING DOCK 2 - 19m AV TURN PATH

SOH VAPS PROJECT



Scale: 1:500@A3

SOURCE: JPW - SK -100

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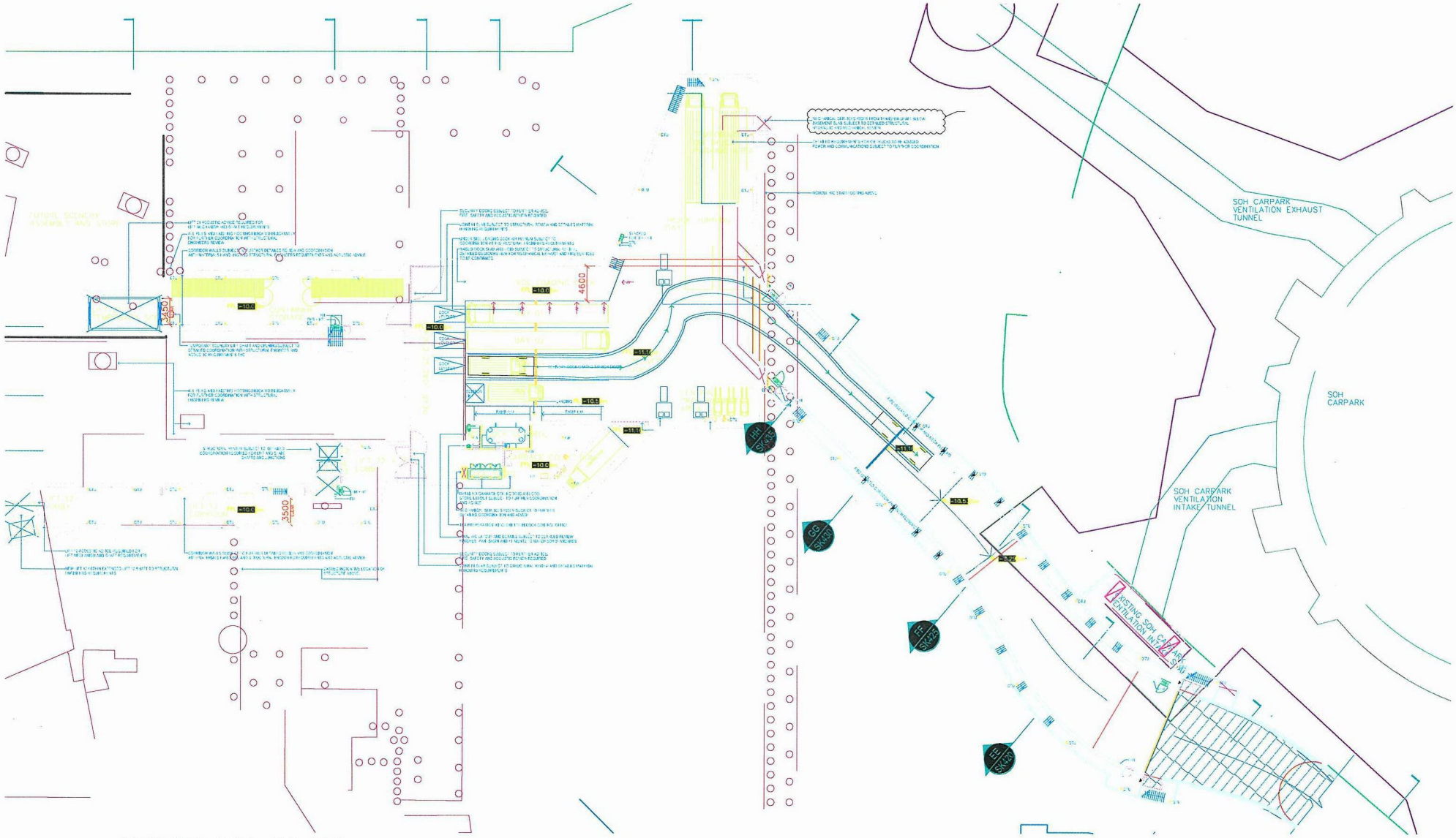
Figure B

Filename: CTLREYda24

Date: 20 October 2010

LOADING DOCK 3 - 8.8m MRV TURN PATH

SOH VAPS PROJECT



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SOURCE: JPW - SK -100

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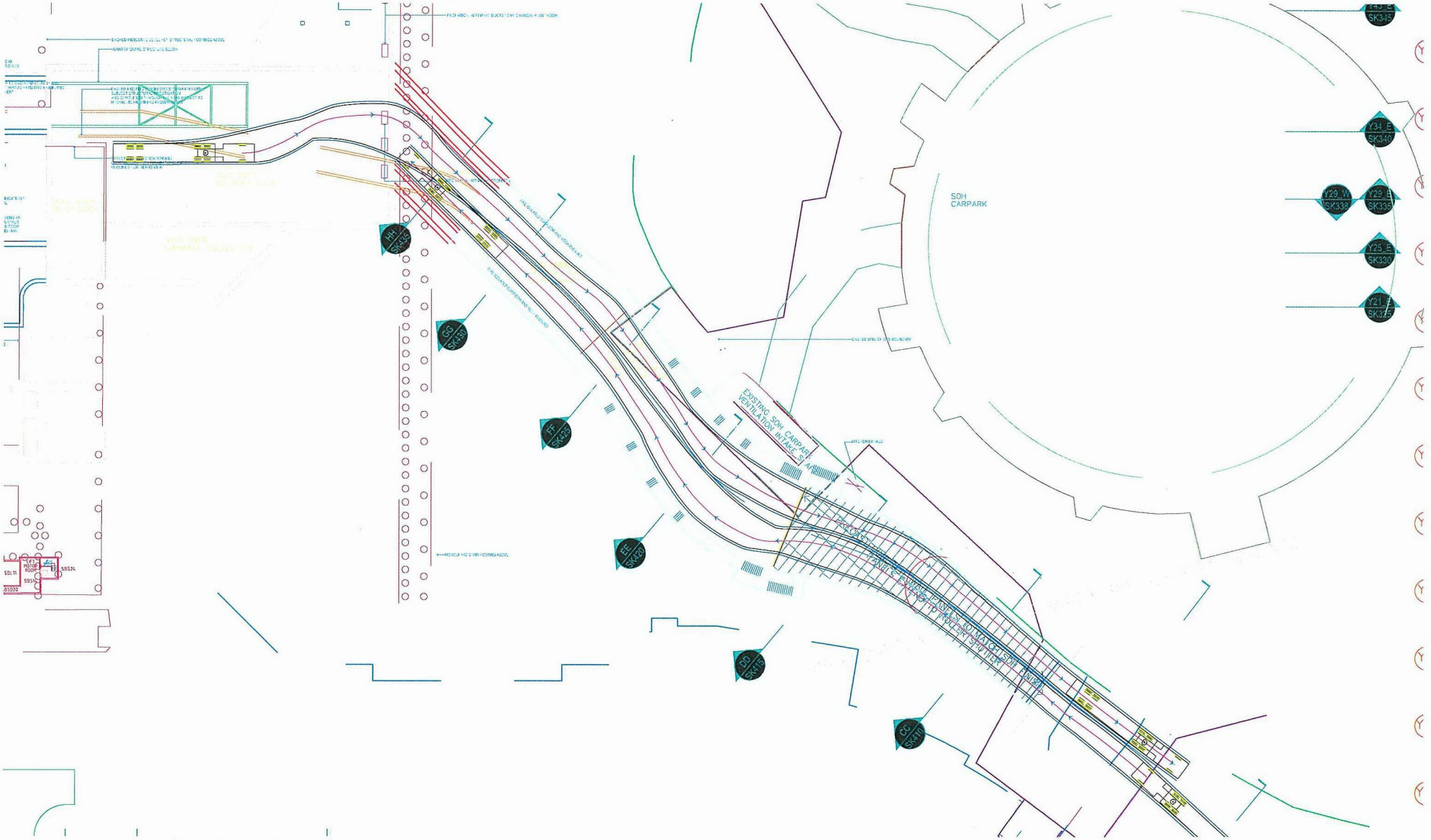
Figure C

Filename: CTLREYda24

Date: 20 October 2010

19m AV TRUCK LOADING DOCK VEHICLE ACCESS

SOH VAPS PROJECT



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SOURCE: JPW - SK -120

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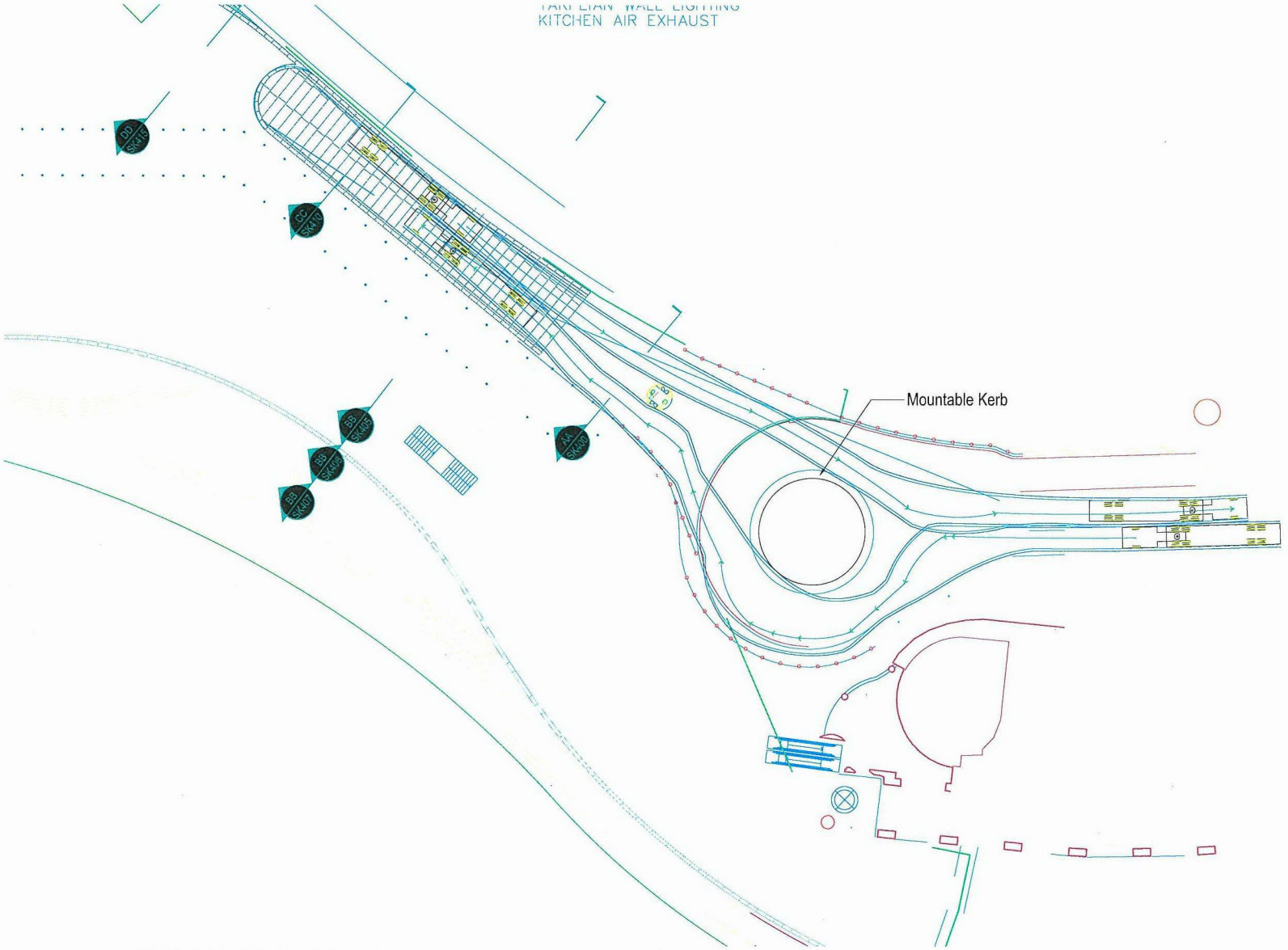
Figure D

Filename: CTLREYda24

Date: 20 October 2010

19m AV TRUCK ROUNDABOUT TURN PATHS

SOH VAPS PROJECT



Scale: 1:500@A3

SOURCE: JPW - SK - 60

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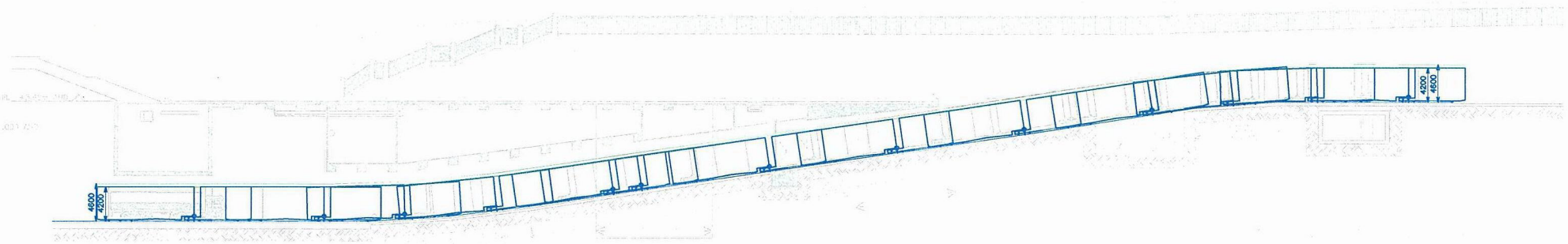
Filename: CTLREYda24

Figure E

Date: 20 October 2010

19m AV TRUCK LONGSECTION

SOH VAPS PROJECT



Scale: 1:500@A3

SOURCE: JPW - SK -350

Halcrow

Figure F

Filename: CTLREYda24

Date: 20 October 2010

Our Ref: RDC 10M1837 SYD10/00681
Contact: James Hall (RN) T 8849 2047
Your Ref: MP09_0200

The Director
Government Land & Social Projects
Department of Planning
GPO Box 39
Sydney NSW 2001

Attention: Michael Buckley

SYDNEY OPERA HOUSE UNDERGROUND LOADING DOCK CONSTRUCTION ENVIRONMENTAL ASSESSMENT
2 MACQUARIE STREET, SYDNEY

Dear Sir/Madam

Reference is made to the Department of Planning's correspondence dated 16 August 2010 regarding the subject Environmental Assessment (EA) forwarded to the Roads and Traffic Authority (RTA) for comment.

The RTA has reviewed the subject EA and provides the following comments to the Department of Planning for its consideration in the determination of the application:

1. The layout of the proposed vehicle accessible areas associated with the subject development (including, driveways, grades, turn paths, sight distance requirements, aisle widths, aisle lengths, and parking bay dimensions) should be in accordance with AS 2890.2 – 2002 for heavy vehicle usage.

2. The swept path of the longest vehicle entering and exiting the subject site, as well as manoeuvrability through the site, shall be in accordance with AUSTROADS. In this regard, a swept path plan shall be submitted to the Department of Planning for approval, which illustrates that the proposed development complies with this requirement.

3. The proposed turning areas within the loading dock are to be kept clear of any obstacles, including parked vehicles, at all times.

4. All vehicles are to enter and leave the site in a forward direction.

5. All vehicles are to be wholly contained on site before being required to stop.

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www.rta.nsw.gov.au | 13 17 82

6. . All loading and unloading shall occur on site.

7. A Construction Traffic Management Plan (CTMP) detailing construction vehicle routes, number of trucks, hours of operation and access arrangements shall be prepared by a certified practicioner and undertaken in accordance with the RTA's Traffic Control at Worksites Manual. The CTMP shall be submitted to the Department of Planning, Council and the RTA for review prior to commencement of works.

8. All works/regulatory signposting associated with the proposed development are to be at no cost to the RTA.

Should you require any further clarification in relation to this matter, please contact the undersigned on 8849 2047.

Yours sincerely

James Hall
A/Land Use Planning and Assessment Manager
Transport Planning, Sydney Region

16 September 2010

Item	Issue	SPA Concern	SPA Comments	SOH Response
001	Acid Sulphate	Is there a possibility acid sulphate levels adjacent to the car park or within the car park site will increase due to ground water flows changing?	If so how will this impact on the car park structure	The Acid Sulphate Soils Report (Appendix H of the Environmental Assessment) concluded that *"the materials encountered in the test bores did not contain actual acid sulphate soils or potential acid sulphate soils. Therefore based on the findings at this stage no acid sulphate soils management plan is necessary."*
002	Consultation	How is consultation with SPA anticipated to be undertaken and as what durations?	Allows SPA to be informed of any advancements or updates	Sydney Opera House will liaise as often as necessary with SPA to keep you informed of the progress of the project and any issues that may arise. A regular (say monthly) meeting can be arranged if so desired by SPA.
003	Design	What is the detail associated with the modifications to the roof of the pedestrian tunnel?	Exact detail of the modification required. Of modification is undertaken does this reduce the flexibility to refurbish the pedestrian tunnel at a later date? Possible waterproofing issues?	The concept for the modifications to the pedestrian tunnel roof is shown in Environmental Assessment drawings EA406 and EA440. The exact detail will be completed during the detailed design phase which will commence in November 2010. The proposed modifications occur above the ceiling area and do not reduce the flexibility to refurbish the tunnel. The modifications will be designed to be waterproof (note that there are significant leaks into the tunnel currently so the

				proposed modifications provide an opportunity to rectify existing leakage issues).
004	Design	It appears the entry into the loading dock could be relocated and as a result not impact on the pedestrian tunnel.	If the entry was moved forward the pedestrian tunnel may not be as affected as it currently will be	The Director General of Planning's requirements for this project (the DGR's) specifically directed that alternative solutions be considered (including those affecting adjoining public & private lands) to minimise the visual intrusion into the Forecourt. As explained to SPA in previous briefings all options impact on adjoining properties to a greater or lesser extent and the preferred option of modifying the roof of the pedestrian tunnel creates the least impact. The entry could be moved to not impact on the pedestrian tunnel, but other impacts (eg greater impact on the carpark intake shaft) would arise.
005	Design	Quality of works being undertaken?	Is the quality of works going to meet SPA's expectations?	Yes.
006	Flooding	If the proposed project flooded, how would this impact upon the car park structural stability?	Advice required.	As the carpark is constructed in solid sandstone, in the unlikely event that the proposed project was flooded there would be no impact on the carpark structural stability.
007	Ground Water	Where is ground water going to be diverted to?	Will this increase the ground water required	The lower levels of the proposed project will

			to be pumped out of the car park site? Will this affect the structural stability of the car park?	be sealed against the ingress of groundwater. There is no intention to divert groundwater.
008	Ground Water	Is it possible that contamination within the Sydney Opera House site could transfer to the car park site?	Advise required	The Contamination Survey in the Environmental Assessment concluded that *"it is considered that the site is suitable (from a contamination standpoint) for the proposed development and that the levels and nature of contamination are not likely to pose a significant risk to site users or site workers during the construction period of the VAPS works".*
009	Insurance	What are the insurance implications associated with the works being undertaken upon SPA owned land?	Advise required	Refer to the indemnities provided under the Deed of Licence and Consent.
010	Insurance	Will the works affect site insurances premiums during or upon completion of the works?	Advise required	This is considered to be unlikely.
011	Mechanical Ventilation	As additional dust will be present during the works, will this result in the existing mechanical ventilation system for the car park blowing the dust through the car park?	Will this affect the breathable air quality being provided? Will it result in the car park and cars being covered in dust?? How will this impact on the mechanical equipments life expectations?	We will work with our design team and construction contractor to provide a clean supply of air to the car park ventilation system. We routinely provide alternative air supply routes and extraction systems for air conditioning and ventilation within Sydney Opera House during our building projects. The design of the temporary system for the car park won't be undertaken until

				later in the project program, however we can share some preliminary concepts with you when we meet. Suitable filters will be incorporated into the design of the temporary air intake arrangements described in Point 4 above. Procedures will be put in place by the construction contractor to minimise the generation of dust at the source (refer to Construction Management Plan in Environmental Assessment).
012	Mechanical Ventilation	Will trucks/traffic entering the proposed tunnel affect the quality of air being taken in by the car park's existing mechanical ventilation system?	What is the proximity of the car park's air grille to trucks potentially stopping adjacent?	No. The trucks are underground in the area of the ventilation intake. The new access tunnel will be segregated from the air intake by a concrete wall.
013	Mechanical Ventilation	Given the proximity of the proposed ramp to the existing air intake shaft, will work be required to support the air intake temporarily?	Advise required	Temporary works will be required.
014	Mechanical Ventilation	Will the volume of air be reduces/restricted as it appears that the size of the air intake shaft and air grilles is being reduced?	Will this limit any future potential to increase air volumes into the car park?	This is not thought to be an issue, however engineering advice can be provided when the detailed design team has been appointed.
015	Noise	Noise impact during construction and post construction on the car park operations?	Pedestrian tunnel particularly.	Refer to the Noise and Vibration Assessment in the Environmental Assessment.
016	Odour	How will odour/smells that may be present during the works be addressed?	Advice required	What odour/smells are anticipated?

017	Operational	How is pedestrian access anticipated to be provided to the car park when the works are being undertaken on the pedestrian tunnel itself?	This will impact on the operation of the car park during these works.	We have requested approval to undertake the works above the pedestrian tunnel during the overnight period to mitigate the impacts on car park patrons using the tunnel. The work site above will be segregated from the pedestrian zone in the tunnel below by an appropriately designed hoarding. This hoarding will not be designed until later in the project programme, however it will be required to be structurally adequate, waterproof and dustproof. The underside of the hoarding will lined and be provided with lights to provide a clear and tidy passage for patrons using the car park. Again, as many of the car park users are Sydney Opera House patrons and the car park is their first impression of the Sydney Opera House precinct, it is important that the pedestrian tunnel be safe, functional and aesthetically pleasing.
018	Operational	Does the relocation of the various below ground services affect the operation of the car park?	How? How is this to be managed?	The HV mains supplying the carpark and the Opera House will be diverted. Changeover to the new mains will occur out of hours to avoid any disruption to either facility.
019	Operational	Confusion of car park	How is this to be	The vehicle and

		customers as to whether the car park is still open during the works or which entrance to enter.	managed	pedestrian entries to the car park will be unchanged during the construction of the project.
020	Safety	SPA should insist that no works are to occur above the pedestrian tunnel whilst the public from the car park have access to the area.	Construction and operational management issue.	We have requested permission to undertake these works out of car park operating hours. Some low impact works could occur during operational hours as there will be a Class B hoarding installed within the tunnel.
021	Stormwater Diversion	Extent not identified.	Detail required assessing if any impacts may result.	Refer to the drawings supplied separately to SPA.
022	Structural Stability	Collapse of Tarpeian wall?	What is the thickness of the wall between the entry ramp and the car park? Is the car park at the same level as the entry ramp?	Approximately 16 metres. The carpark covers multiple levels – not sure what the question is here.
023	Structural Stability	Structural stability of the pedestrian access tunnel prior to the works being undertaken?	Will construction vehicles cause an issue?	The clearance from the existing access road level to the pedestrian tunnel is similar to that proposed for the new access road. Heavy vehicles regularly use the existing road. What is the concern here?.
024	Structural Stability	How will the work affect the shoring/anchoring of the car park structure?	Advise required/	Refer to Phillip Pells report already provided to SPA.
025	Timing	What is the anticipated timing and duration of the project?	Anticipated start early 2011 and the project is targeted for completion in mid 2013; Are these dates still accurate; Project programme required.	Start on site on drain November 2010, completion targeted for mid 2013.
026	Traffic	Additional risk associated with accidents adjacent to the car park entry due to increased traffic during construction	To be address within a Traffic Mgt Plan; may lead to car park clients having to wait to enter the car park or access to car park being	Refer to Traffic Management Report in the Environmental Assessment. A detailed Traffic Management Plan will

			blocked; a deterrent to car park Clients	be prepared by the Contractor. As a substantial number of the carpark customers are also Sydney Opera House customers we have a vested interest in managing the construction traffic to avoid conflict with the car park traffic.
027	Traffic	How is dirt on roads going to be managed?	To be address within a Traffic Mgt Plan; may be a deterrent to car park clients	The Contractor will be required to prepare and comply with an Environmental Management Plan for the project. Sydney Opera House has a vested interest in keeping the site and the adjoining roads clean to protect the environment and to present a clean environment for our customers.
028	Traffic	Location of any construction zones to be advised.	To be address within a Traffic Mgt Plan; may be a deterrent to car park clients	All construction zones are contained within the Sydney Opera House site. They should not present any barriers to car park clients.
029	Traffic	How will damage to roadways from construction traffic be managed?	To be address within a Traffic Mgt Plan; may be a deterrent to car park clients	See Item 37 above.
030	Traffic	Increased traffic congestion during construction particularly at the round about	To be address within a Traffic Mgt Plan; may lead to car park clients having to wait to enter the car park	See Item 37 above.
031	Traffic	During construction access into the car park may be delayed/restricted	To be address within a Traffic Mgt Plan; may be a deterrent to car park clients	See Item 37 above.
032	Traffic	Given the proximity of the security gate to the Macquarie Street roundabout it would appear that an	It appears the entry into the loading dock could be relocated further into the site.	Various options have been considered in the development of the concept design and further work on this

		articulated vehicle would not fit onto the site prior to being stopped and as a result may block the entrance into the car park whilst waiting for access		aspect of the project will be undertaken during the detailed design phase. The operating rationale for booking trucks on to the site will be explained at our meeting. As noted above it is not in our interests for trucks to block the roundabout.
033	Vibrations	Vibration impact during construction and post construction on the car park structure and operations?	Pedestrian tunnel particularly; EA report indicates vibration levels and impacts cannot accurately be provided at this stage.	A vibration consultant will be appointed for the detailed design phase. Sydney Opera House also has a number of businesses and structures that will be sensitive to vibration during construction so tight controls will be specified and will limit the techniques that can be used by the contractor for excavation and demolition. The clearance from the existing access road level to the pedestrian tunnel is similar to that proposed for the new access road. The size and frequency of heavy vehicles using the new road will be the same as the existing situation. Sydney Opera House is not aware of any current or past issues with noise or vibration in the pedestrian tunnel. Acoustic and vibration consultants will be appointed as part of

				the design team to ensure that the design for the new road will provide the equivalent noise and vibration isolation as is provided for the existing road.
034	Visual & Access	What is the visual and access impacts of the fencing, hoarding, etc required?	Hoarding details and locations to be provided.	Sydney Opera House is a World Heritage listed site. The scrutiny that we will apply to the quality of the hoardings will be greater than would be normally expected for works in the vicinity of a carpark.

Pells Consulting

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Our Ref: P085.L3

6 July 2010

Savills Australia
Level 7, 50 Bridge Street
SYDNEY NSW 2000

Attention: Mr C Ging

Dear Sir,

OPERA HOUSE UNLOADING DOCK AND ENTRY TUNNEL

Thank you for your email of 30 June 2010 and the drawings of the proposed entry tunnel.

As described in your email, and shown on the drawings, the southern sidewall of the new tunnel will intersect the northern sidewall of the inlet shaft to the underground carpark. This shaft is located in Class 1 and Class 2 Hawkesbury Sandstone. The shaft has a ring beam at the surface but, otherwise, required no support of the rock.

Based on the writer's knowledge of the design and construction of the carpark excavations, including the shaft, there are, in principle, no reasons why the proposed new works cannot be undertaken without impacting on the integrity of the carpark and its associated works.

Yours faithfully,

PHILIP PELLS