ATTACHMENT D1

Responses to State Heritage Recommendations Raised in Heritage Council Submission 20 February 2019

PART 1 – HERITAGE COUNCIL OF NSW ASSESSMENT, COMMENTS AND RECOMMENDATIONS

Eastern Passageway connecting Southern Foyer to Northern Foyer

Heritage Council Recommendations

3.17 The following condition is included in the HIS, *the use of bronze panelling on the southern wall in the Caves area (Level 2) should be tested and reviewed once the other walls are stripped back, by the Opera House's Conservation Council, Eminent Architects Panel and heritage architect, to determine its appropriateness (Pg104).* However, the extensive use of bronze panelling within the passageway introduces a new design aesthetic to the space. A panelling treatment consistent with existing panelling used within the SOH should be proposed in consultation with the Heritage Council to ensure the 'natural' visually recessive palette of materials and colours is retained and respected.

SOH Response

With respect to the use of bronze panelling in the passageway, this design element has been considered further by the SOH Design Advisory Panel (DAP) on two occasions, on 11 April 2018 and 3 June 2019. The DAP has recommended that the eastern wall of the passageway remain as bronze panels, subject to some design refinements as compared to the DA submission.

The advice of the DAP from the meeting on 11 April 2019, was as follows:

> *"The Panel generally supported the approach to bronze cladding as proposed by the architects with the following recommended refinements:*
>
> - *Reducing the depth of the folds within the bronze cladding panels in the eastern passage and consequently reducing the extent of the black recessive elements between panels.*
> - *Investigation of the quality of the southern concrete wall within the 'cave' area with a view to deleting the bronze cladding in this location and revealing the concrete.*
> - *Reposition the junction between the carpet and granite paving at the southern end of the passage to align with the termination of the curtain if there is sufficient depth in the slab.*
>
> *"If these refinements are adopted the Panel is prepared to support an amended submission to the Heritage Council in response to their comments.*
>
> *"The Panel also requested that the scope of works include removal of carpet from columns in the northern foyer."*

After receiving this advice, ARM Architects revised the panelling in the passageway in accordance with the DAP's proposal. The position of the junction between the carpet and precast granite pavers in the passageway was also revised. Further investigation of the condition of the southern wall of the Caves has been undertaken, however more work is required to resolve the preferred finish for this wall.

ARM presented its revised designs for the passageway to the DAP at a meeting on 3 June 2019. The Heritage Council was represented at this meeting by Mr Bruce Pettman.

The rationale for the use of bronze panelling in the passageway is predicated on the following key issues:

- *The passageway is a "new" unique space within the SOH, with no analogous locations;*
- *The passageway is external to the Concert Hall, and the use of brushbox in this space is not supported because of this;*
- *The passageway is a created space, with only some pre-existing walls, and therefore new walls need to be constructed; and*
- *The appropriate treatment for the walls below the stair treads in the cut through the stairs, is bronze panels, similar to those used near the lift in the JST Northern Foyer, and therefore it is appropriate to continue the bronze panelling into the passageway itself.*

The DAP supported this rationale and confirmed at the meeting on 3 June 2019 that the bronze panelling in the passageway was the appropriate finish.

The changes to the bronze panelling that have been confirmed by the DAP, are shown in the following drawings included in Attachment E:

- *The original proposal for the raked bronze panelling, looking northwards, is shown in ARM-SK-9230;*
- *The revised proposal for the raked bronze panelling, looking northwards, is shown in ARM-SK-9231;*
- *The revised proposal, looking south, is shown in ARM-SK-9232; and*
- *The detail of the revised proposal for the rake of the bronze panelling, is shown in ARM-SK-9234, ARM-SK-9235, and ARM-SK-9236.*

As discussed above, ARM Architects also revised the position of the junction between the granite precast paving and the carpet in the passageway, in accordance with the DAP's prior guidance. The original proposal for the junction is shown in ARM-SK-9237, with the revised proposal shown in ARM-SK-9238 and ARM-SK-9239.

The south wall of the Caves is currently formed by a plywood wall, covered in carpet, sitting on a concrete plinth The plywood wall conceals the following services and equipment: an air-conditioning duct and diffusers, up-lighting of the beams, and a fire hydrant pipeline and hose reel. Further investigation of the condition of the concrete wall behind the carpet covered plywood will be undertaken to determine the appropriate final finish for this wall.

At the DAP meeting on 3 June 2019, ARM Architects presented to the DAP some findings of the review of the conditions of the south wall of the Caves. The DAP has supported the further investigation of the condition of the concrete wall and the required services in this area.

The SOH will continue to review the use of bronze panelling in the Caves area. This review process will be undertaken in consultation with ARM Architects, the SOH Heritage Architect, the DAP, and the SOH Conservation Council (CC). The SOH will be pleased to work with the Heritage Council, as part of this process, to achieve the best outcome for this component of the project.

The final finishes for both the passageway and the south wall of the Caves will be defined in the Section 60 application for the works.

3.18 Any new steps installed must match the existing in both form and finish. This should be determined in consultation with the nominated heritage consultant working closely with an experienced precast concrete craftsperson to ensure colour and form are matching. Removed fabric should be retained, modified and reused where possible.

SOH Response

The SOH will work with the SOH Heritage Architect and an experienced precast concrete craftsperson to ensure that the colour and form of any new stair treads installed match the existing. Where possible existing fabric will be modified, or will otherwise be retained for future re-use.

3.19 Any new elements proposed, including concrete finishes, must match the existing in both form and finish. This should be determined in consultation with the nominated heritage consultant working closely with an experienced concrete expert to ensure seamless consistency, to the satisfaction of a Heritage Council delegate.

SOH Response

Similar to other Renewal projects, the SOH will work with the SOH Heritage Architect and an experienced concrete expert to ensure that new finishes appropriately match the existing in form and finish.

Concrete finish benchmarks will be prepared and subject to the endorsement of the Heritage Architect, in consultation with the DAP, CC and Heritage Council delegate.

Relocation of existing plantroom/ Western podium façade exhaust hood

Heritage Council Recommendations

3.26 The Heritage Council does not support the design, location and size of the new mechanical exhaust hooded opening. Ventilation requirements should be reviewed to determine if alternative routes and outlets are feasible including utilisation of existing slots and hoods within the podium. This should be further reviewed in consultation with the Heritage Council to access the appropriateness of this major intervention into the exceptionally significant podium wall.

SOH Response

The SOH has revised the need to fully relocate the A/C plant in Plantroom 17. The existing plant can be replaced in situ with new smaller equipment.

This means that ***the new hood on the western side of the podium is not required. Neither is the removal of two cubicles in the women's toilets facilities (see para 3.61 below)****.*

Plans showing the design changes to this component are included in Attachment E. (49-BR-ARM01-A0706, 49-BR-ARM01-A0726, 49-BR-ARM01-A1206, 57-BR-SV240-M0293, 57-BR-SV240-M0720)

3.27 Further research is required to assess the significance of the mechanical equipment and machinery prior to removal. This should be done by an appropriately qualified expert in consultation with the nominated heritage advisor. The results of this assessment should be considered by the Heritage Council prior to determination on relocation of the equipment and machinery.

SOH Response

Similar to the removal of theatre machinery in the Joan Sutherland Theatre Renewal project, the SOH will undertake a significance assessment of the mechanical equipment and machinery prior to its removal by a qualified heritage expert/ heritage architect, and where appropriate, significant pieces recorded, removed and accessioned into the collection and/or recorded in archives and deaccessioned. An archival recording of mechanical equipment and machinery will be undertaken prior to removal.

The air-conditioning plant in Plantroom 17 is an Air Handling Unit, which comprises a fan, cooling coils, walls, pipework and controls. The walls are constructed of "Cliplok" galvanised metal sheeting and "Rockwool" insulation, which are common construction materials still available today. The cooling coils, pipework and controls have all been replaced in the last fifteen years. The fan is a Howden proprietary fan that is still commercially available, one of 55 similar units throughout the SOH.

Due to the constricted nature of the location, some equipment will need to be broken down as the equipment would not be able to be extracted intact. The constituent materials will be recycled.

Additional handrails to eastern and western foyer stairs

Heritage Council Recommendations

3.33 The provision of handrails in these locations is supported. Further information must be provided regarding the installation of the handrails and the impacts to precast granite stair treads to ensure impacts can be adequately assessed.

SOH Response

The installation will be designed to minimise the impacts to the precast granite stair treads. The installation details of these handrails will be provided in the Section 60 application.

3.34 The Heritage Council has noted a diversity of handrails being installed throughout upgrade projects and therefore recommends that the original 'D' shaped profile be consistent throughout the building and supplemented where necessary with appropriate compliant handrail attachments. This should inform the consolidation of the standard kit of parts.

SOH Response

There are more than 40 identified types of handrail and balustrade designs used at Sydney Opera House. As a consequence of changes in design requirements in the Building Code of Australia and Australian Standards (height, railing diameter, structural load, extent of handrails, termination details, clearances, balustrade infill materials, and lighting coverage etc) since the building was built, some of the existing handrails and balustrades are not compliant with today's standards. (Sydney Opera House Handrail and Balustrade Master Plan, NSW Government Architect's Office, 2014)

The existing U-Profile ('D' shaped profile) is no longer a compliant handrail and barrier system for areas of new works. Any new works require Building Code of Australia (BCA) and Disability Discrimination Act (DDA) compliance.

An audit in late 2016/2017 noted the requirement to develop a design approach to ensure any future project and upgrades were a considered and consistent approach, meeting all the current BCA and DDA requirements, and Heritage requirements.

The modular Kit of Parts was subsequently developed with involvement from various parties (EAP and various specialists including the Heritage Architect, and DDA and BCA consultants). The goal was to create a consistent and minimal set of handrail solutions that could be incorporated on the upcoming projects (and future upgrades), noting that each project may require slight modifications to adapt to unique project conditions.

Retention and modification of the inverted U-profile was investigated and explored, but with the combined issues of handrail profile, minimal balustrade infills and concealed lighting, it was not possible to retain the existing design. The scale, openness and materials of the original handrail system have been retained in accordance with CMP4 for the proposed handrails in the eastern and western foyer stairs.

The modular "kit of parts" construction system has been developed to fit congruously with the building's strict modular geometry and provide the opportunity for efficient off-site pre-fabrication and ease of maintenance and replacement when required.

This is consistent with the approach taken in the recent JST SAVE projects, and the new handrails installed in the Concert Hall will be from the same family as those installed in similar locations in the JST.

New lifts in Northern Foyers

Heritage Council Recommendations

3.50 The Heritage Council is supportive of equitable access, but this must be balanced against respecting the heritage values of the place. Further justification should be provided outlining whether DDA compliance can be adequately met with the provision of one lift only. The cumulative impacts of installing a second lift would need to consider the necessity of the lift against alternative operating methods and/or routes within the Concert Hall at Level 4a only.

As discussed in the covering letter, the SOH has removed Lift 29 from the project scope.

If, in the future, the demand for accessible seating changes such that more than 26 accessible seats are required in the Concert Hall, the SOH would seek to modify the SSD approval, the EPBC approval, and the Heritage Act approval, to enable access to the western side of the venue at Level 4.

3.51 The extent of demolition within the Northern Foyers must be reviewed and reduced to ensure that as much original fabric is retained in situ as possible.

SOH Response

The SOH is committed to retaining as much original fabric in situ as possible.

It should be noted that the demolition proposed does not include six cranked beams at Level 3. There are two sets of cranked beams at each end of the Northern Foyer. One set supports the stairs from Level 2A to Level 3 (Mural Level), of this set, only two cranked beams are demolished for the construction of a lift. The second set of cranked beams supports the stairs from Level 3A to Level 4, of this set, six beams are demolished for the construction of a lift and the lift access at Level 3A.

The plans that appear to show full sweeps of concrete steps being demolished actually show the carpet being removed only across the full sweep of steps.

The extent of superstructure demolition is shown in these drawings included in Attachment E. 49-BR-ARM01-A0900 DETAIL DEMOLITION SUPERSTRUCTURE PLANS - LIFT 30 (included in Attachment E).

3.52 Any new steps installed must match the existing in both form and finish. This should be determined in consultation with the nominated heritage consultant working closely with an experienced precast concrete craftsperson to ensure colour and form matching to the satisfaction of a Heritage Council representative.

SOH Response

As noted in the covering letter, SOH will work with the SOH Heritage Architect to ensure that the colour, finish and form of any new stair treads installed closely match the existing. Where possible existing fabric will be modified, but will otherwise be retained for future re-use. A similar approach was taken in the JST works.

3.53 The Heritage Council acknowledges the need for the intervention to the cranked beams to provide lift access. The proposed detail of the extension of the cranked beams to the new lift should be reviewed and revised to minimise visual impacts to ensure the new works do not disrupt the aesthetic qualities of the distinctive line of crank points in the beams.

SOH Response

The detail of the intervention to the cranked beams was carefully considered by ARM architects, the SOH Heritage Architect, the EAP and CC.

As noted in the Heritage Impact Statement (EIS Appendix 11):

> *The fabric of the cranked concrete beams towards the east and west ends of the Northern Foyer will be adversely affected by the insertion of Lifts 29 and 30. However, the remaining large sweep of these exceptional finely finished beams across the space will remain uninterrupted and unaffected. These beams represent the engineering genius of Ove Arup & Partners and the skilled craftsmanship of the builders for Stage 1 – Civil & Civic. Hornibrook were the builders for stages 2 and 3.*
>
> *The original configuration, materials, colour and finish of these beams will be respected in the proposed changes to these beams. The new or changed work will retain the original line of direction changes in the beams, with new configurations stepping back from these. (Section 7.1)*
>
> *Lifts 29 and 30 do cut through a number of the original radial cranked beams – total of 2 on Level 2-3 and 6 on Level 3A-4 for each lift. The splayed cut through the granite stairs for the landing on Level 3A results in the cutting of additional beams (included in the above figures) but does provide a better visual result in that there is less interruption and reduction to the broad sweep of stairs at each end. The beams between the lift and the outer wall have to be modified anyway to carry the loads from the lift shaft area. The crease line in the beams is retained on the underside to minimise visual impacts and retain the sense of the full extent of the structure. Insertion of these lifts result in very high but acceptable impacts given the substantial benefits to accessibility and patron amenity. (HIS Section 7.2.2.2)*

The detail of the modifications to the cranked beams are shown in the sections in drawing 49-BR-ARM01-A5126[L]-B1~DETAIL AREA - SECTIONS - LIFT 30 (included in Attachment E), with the orientation of the sections shown in drawings 49-BR-ARM01-A5120[M]-B1~DETAIL PLANS 1 - LIFT 30 and 49-BR-ARM01-A5121[L]-B1~DETAIL PLANS 2 - LIFT 30 (included in Attachment E).

As described in the HIS, the modified sections of the beams are proposed to be stepped up or back from the original cranking points on the beams to retain visual integrity and continuity and differentiate new work from original.

3.54 Any new concrete elements proposed including beams and stair hobs, must match the existing in high quality finish. This should be determined in consultation with the nominated heritage consultant working closely with an experienced concrete expert to ensure seamless consistency to the satisfaction of a Heritage Council representative. It will be a requirement of the s60 approval and certification.

SOH Response

The SOH will work with the SOH Heritage Architect to ensure that the colour, finish and form of any new concrete structure and stair treads installed match the existing. Where possible existing fabric (namely the stair treads) will be modified, but will otherwise be retained for future re-use. The SOH will address this in the Section 60 application.

3.55 In addition to the following condition recommended in the HIS, *the use of bronze panelling on the southern wall in the Caves area (Level 2) should be tested and reviewed once the other walls are stripped back, by the Opera House's Conservation Council, Eminent Architects Panel and heritage architect, to determine its appropriateness (Pg104),* the extensive use of bronze panelling should also be reviewed to ensure it is consistent with existing panelling used within the SOH. This should be undertaken in consultation with a Heritage Council representative to ensure the 'natural' visually recessive palette of materials and colours is retained and respected.

SOH Response

As noted in response to 3.17 above, the SOH has reviewed the use of bronze panelling in both the passageway and Caves area. The use of bronze panelling in the passageway is preferred, and has been confirmed by the DAP.

With respect to the use of bronze panelling on the southern wall of the Caves, this design element will be further reviewed following investigation of the concrete wall and the services to the Caves area. This review process will be undertaken in consultation with ARM Architects, the SOH Heritage Architect, the DAP, and the CC.

The final finishes, materials and colours will be defined in the Section 60 application for the works.

Toilet upgrades (Northern Foyers)

Heritage Council Recommendations

3.61 The removal of two WCs within the female amenities to provide a mechanical duct should be reviewed and reconsidered in consultation with a representative of the Heritage Council to ensure an original Peter Hall space is not unnecessarily impacted. In addition, the number of original Peter Hall public toilet facilities within the SOH should be identified to better understand the cumulative impacts of the proposed works on original Peter Hall spaces.

SOH Response

As noted above, the removal of two cubicles within the female amenities is no longer required.

The only original Peter Hall toilets in front-of-house areas are in the Northern Foyers of the JST and Concert Hall. The only ones to have been altered are the JST women's toilets. All others are as completed in 1972-73.

Accessibility upgrades to Seating/ Dressing rooms

Heritage Council Recommendations

3.68 The recommendation within the HIS (p 87) should be adopted. *Original fittings, including white birch plywood lockers and dressing room fitouts are important components in Peter Hall's fitout of the Podium. They should be retained and wherever possible, reused and incorporated into new areas to retain the consistency of his design regime in accordance with the CMP. This was done when the Orchestra Assembly Room was created in 1998 / 99 and should continue.*

SOH Response

The SOH will retain the original Peter Hall fittings and reuse these in the upgraded dressing rooms.

3.69 Further assessment of the wall fixtures and finishes including hand basins and WC's proposed to be demolished as part of the dressing room upgrades should be undertaken to determine the significance of the elements. Should elements be identified as significant, they should be retained, reused and incorporated into new areas to retain the consistency of the design aesthetic in accordance with the CMP.
In addition, the number of original Peter Hall dressing room facilities within the SOH should be identified to better understand the cumulative impacts of the proposed works on original Peter Hall spaces.

SOH Response

As noted above, the SOH will retain the original Peter Hall fittings and reuse these in the upgraded dressing rooms An assessment of fixtures and fittings will be undertaken to determine the significance of elements in these spaces, and recommendations to retain reuse and incorporate significant elements into new areas consistent with the CMP4.

The SOH will compile an assessment report on the number and condition of original Peter Hall dressing room facilities and cumulative impacts of the proposed work on these spaces and provide this with the Section 60 application.

Acoustic Reflectors

Heritage Council Recommendations

4.10 The Heritage Council seeks the best possible balance between acoustic performance and aesthetic values and qualities of the SOH for the community as a whole. Therefore, further details should be provided to clearly show that direct vision of the organ and pipes ensemble, the folded and domed ceiling forms and the timber finishes, which are significant Peter Hall design elements, are visible when the Concert Hall is at rest stage.

SOH Response

As noted in the covering letter, SOH agrees to develop an 'at rest' mode, the deployment of which will be governed by a new policy to be included in a future revision of the CMP. Renders of this configuration are included in Attachment E. Drawing ARM-SK-9226 shows the view from seat position Row N Seat 25 in the Upper Circle. Drawing ARM-SK-9227 shows the view from seat position Row X Seat 25 in the Stalls.- Drawing ARM-SK-9228 shows the view from Seat 10 in Box A.- Drawing ARM-SK-9229 shows the view from seat position Row C Seat 40 in the Circle.-

4.11 The following recommended condition relating to the over-stage reflectors within the HIS (p 106) should be adopted.

- *Before manufacture of the final reflectors, the final colour and finish is prototyped in situ in the Concert Hall and approved by the Opera House's Conservation Council, Eminent Architects Panel, and heritage architect*.

The final detailed design should be resolved in consultation with a representative of the Heritage Council as part of the Section 60 application.

SOH Response

As noted in the covering letter, the SOH will advance the design of the over-stage reflectors and provide this detail in the Section 60 application.

Further in-situ prototyping will take place during the delivery of the project and after closure. This will be carried out by the design team and heritage architect in consultation with DAP and CC. SOH would be happy to clarify with the Heritage Council as to what involvement is proposed from its delegate.

4.12 The following recommended condition relating to the existing over-stage reflectors within the HIS (p 106) should be adopted.

- *An original acrylic cloud reflector in good condition is identified and archived as part of the Opera House's collection.*

In addition, it is recommended that the remaining reflectors are meaningfully used in a way that is publicly accessible to relay the story of change to the SOH. This should be undertaken in consultation with a representative of the Heritage Council.

SOH Response

The SOH will select one original cloud reflector, along with the matching winch and ancillary equipment, and archive this in the SOH collection as per the recommended condition in the HIS.

Based on discussions with OEH, SOH understands that the Heritage Council does not propose that all of the reflectors be retained.

The SOH will commit to developing a strategy in regard to the future interpretation of the reflectors and this will form a component of the revised Renewal Interpretation Strategy (noting that a revision of this strategy is also a recommendation of the Heritage Council).

4.13 The following recommended condition relating to the existing side wall reflectors within the HIS (p 106) should be adopted.

- *Before commencement of works on the plywood ceiling, the process and methodology for dismantling a full panel, cutting out, construction, and operation of these retractable side reflector panels, is tested via a full size operational prototype.*
- *The existing white birch panels are retained and reinstated in their original locations, and not replaced with new as these are book and end-matched from a single log with panels above.*
- *Cuts across an original sheet junction are avoided wherever possible, and where this is not possible, the sheet junction is retained in its existing location.*
- *There is minimal visual interruption of existing white birch plywood, and preferably, the cut-out section to accommodate the reflector is used as the face of the new reflector to ensure it matches.*
- *Reflector panels are fully retracted and the original plywood surface finishes flush with the existing plywood when reflector panel is not required.*

The final detailed design is to be resolved and approved by the Opera House's Conservation Council, Eminent Architects Panel, heritage architect and a heritage council representative. To be resolved as part of the Section 60 stage application.

SOH Response

The SOH commits to the recommended condition from the HIS (p 106).

Full prototyping of the side wall reflectors will not be possible until after the submission of the Section 60 application. However, SOH agrees to prepare and submit a draft methodology statement as part of its submission. This will be finalised in collaboration with the joinery subcontractor once appointed.

4.14 It is recommended that the automated settings for the Concert Hall include an 'at rest' setting which results in the new acoustic and amplified equipment being hidden as much as possible to allow an audience or tour visitor to appreciate the Concert Hall in as original as possible state. The details of this setting mode and when it will be available are to be resolved with a Heritage Council representative as part of the Section 60 stage application.

SOH Response

As noted in the covering letter, SOH agrees to develop an 'at rest' mode. Renders of this configuration are included in Attachment E. Drawing ARM-SK-9226 shows the view from seat position Row N Seat 25 in the Upper Circle. Drawing ARM-SK-9227 shows the view from seat position Row X Seat 25 in the Stalls.- Drawing ARM-SK-9228 shows the view from Seat 10 in Box A.- Drawing ARM-SK-9229 shows the view from seat position Row C Seat 40 in the Circle.-

4.15 The new acoustic reflectors should be designed to be as reversible as possible and able to be removed easily in the future to foreshadow acoustic technology advancements.

SOH Response

The over-stage reflectors are fully reversible, as they can be removed from the venue. The sidewall reflectors could be left closed, and a "shadow line" will remain in the white birch plywood walls.

Panelled Box Fronts

Heritage Council Recommendations

4.21 The following recommended condition relating to the laminated brush box panels within the HIS (p 105) should be adopted.

- *A full panel size prototype or mock-up of the laminated brush box diffusion panel should be tested in situ and the pattern refined if required. This mock-up test is presently planned for November 2018.*

The final detailed design should be resolved in consultation with a representative of the Heritage Council to be issued as part of the Section 60 stage application.

SOH Response

The full size prototype has already been installed on the front of Box C. A number of refinements have resulted from this prototype, which will be incorporated into the construction of the new box fronts. The final designs will be included in the Section 60 application for the works.

4.22 The following recommended condition relating to the tapered bronze guard rails within the HIS (p 105) should be adopted, with the highlighted change (strikeout).

- *The original tapered bronze guard-rails surrounding the boxes and the front of the circle should, if possible, be retained.*

SOH Response

The tapered bronze rails at the rear of Boxes A, B, C, U, V, and W, will be replaced with new matching handrails to enable accessible seating to be installed at the rear of these boxes.

Tapered handrails at the front of the boxes will be reinstated.

All handrails removed will be retained.

4.23 The proposed new box fronts should overlay original material and forms to enable the reinstatement of original fabric and the uncluttered experience of the space should new technologies emerge.

SOH Response

The existing box fronts are not original material and were installed in 2011. This installation of new fabric in 2011 is described in Section 5.2.3 of the HIS (P16):

Following acoustic analyses and tests by Kirkegaard Associates, commencing in 2007, the 'saw-tooth' fronts to the boxes were replaced with flat panels in matching brush box in 2011/12 …

At this time, the original 1970s saw-tooth panels were photographed, removed, tagged, wrapped and stored. The original concrete support walls were exposed and new steel sub-frames added to carry the replacement flat panels. The tapered bronze handrails at the top of each box front were reinstated.

It is necessary to remove the laminated box fronts and the steel sub-frames, with the original concrete support walls remaining in place.

The original 1970s brush box sawtooth panels or replacement brush box flat panels (2011) will be able to be reinstated in the future.

The tapered bronze handrails on top of the panels will be removed and reinstated.

The full size test panel has been installed and assessed, including for its visual impacts. The DAP, CC and SOH heritage architect have reviewed this prototype and concluded that, with some further refinements to be developed in the delivery of the project, it should have a positive visual impact and not dominate the space or overpower Hall's design.

4.24 The extent of removal of box fronts should be clarified to ensure representative samples of all types of 1973 box fronts are retained in situ. The proposed new box fronts should only be supported if this representative sample of 1973 box fronts is resolved in consultation with a representative of the Heritage Council as part of the Section 60 stage application.

SOH Response

The full scope of the replacement panels is described in the extract from the HIS below, including an indication of whether the fabric being replaced is original 1973 construction or a later change. Currently, there is not a representative example of all types of 1973 box fronts in situ and the proposal is unable to include a representative sample of 1973 box fronts in the Concert Hall due to the acoustic upgrades of the venue. However, other original saw tooth panelling will remain in situ in the Concert Hall at the rear of the lower circle.

The original fabric of the brush box sawtooth panels (1970s) or the replacement brush box flat panels (2011) would be able to be reinstated as they are/will be stored by SOH.

The Section 60 application will detail the final designs and the fabric to be replaced.

The extent of the proposed modifications to fabric encompassed by the introduction of acoustic diffusion panels is described in the HIS (P64) as follows:

Replacement of the existing flat, laminated brush box panels of the box fronts (2011), rear wall of the side boxes (1973), 'sawtooth' profile rear wall of the stalls (1973), rear wall of upper circle (1973), and side and rear walls of the stage (2011 and 1973), with new laminated brush box panels with a profiled three-dimensional surface pattern based on acoustic waves.

- *These new panels are required in order to provide more diffused acoustic reflection to the orchestra and audience. Small panels (1.2m square) have been prototyped in laminated brush box to determine depth and finish of profile pattern. The proposed 'wave' surface profile could introduce a strong visual pattern into what is presently a relatively 'quiet' timber backdrop. This requires further testing to ensure impacts are acceptable – see below.*
- *It is important to note that all the original 'sawtooth' profile box fronts were replaced with flat panels in the same material in late 2011 as part of an earlier attempt to improve acoustic performance. Their replacement with new profiled panels of matching material will have little impact on original fabric. The original panels were archived as part of the Opera House collection of salvaged original fitout.*

- *The proposal retains bronze as the material for all handrails, guardrails and other fittings. Some handrails will require modification to meet current codes but these will be part of the suite of profiles developed for application across the site. It is important that all fittings be visually recessive with minimal impact on view lines. In this regard, the existing flat guard rails surrounding the boxes and the front of the circle should, if possible, be retained.*
- *The proposed works affect much of the original 1973 wall fabric, however the new panelling respects the original material of the auditorium by continued use of glue laminated brush box – high impact on fabric but with overall positive acoustic benefits.*
- *It is recommended the visual impact of these new panels, particularly the diffusion pattern, be tested in situ with a full panel size prototype or mock-up.*

Where the new diffusive surfaces are proposed there is no original 1973 fabric retained in situ. There is still representative 1973 fabric in the Hall to areas of the side wall and the real wall of the circle (between circle and upper circle)

The original saw-tooth profiled panels, while required by the acoustician at the time, are a significant part of the present acoustic problem and Peter Hall was concerned about their visual impact. CMP4 notes the following on page 123:

> *The history and rationale for Peter Hall's design of the Concert Hall and all its components is explained in his 1990 report, but it is worth noting that the main driving force behind the configuration of many of them was acoustics. Thus, in fine-tuning the acoustics, some change may need to be considered.*
>
> *He noted that acoustics required a saw-tooth (or zig-zag) configuration on the seating box fronts, and that these were "of major visual concern".[11] It can be argued, therefore, that this is where some degree of modification could be considered, rather than alteration of the white birch ceiling.*

Considering this last comment – the configuration of the white birch ceiling is retained in the proposed works, with new operable acoustic reflectors and other devices inserted into it. The brush box box fronts on the other hand are replaced with a new and different configuration in the same material.

Large areas of the original flat brush box panelling on the perimeter of the hall will be retained in-situ while those closest to the stage will be replaced with new profiled panels.

Acoustic Drapes

Heritage Council Recommendations

4.28 The following recommended condition relating to the white birch ceiling crown within the HIS (p 107) should be adopted.

- *Before commencement of works on the plywood ceiling, the process and methodology for cutting out, constructing, and operating these new panels, both in the crown and the side walls, be tested via a full size operational prototype that includes a full size drape.*
- *The automated acoustic absorption drapes rising from the floor and manually deployed drapes on the box fronts etc, should be tested with a full-sized mock-up to ensure all technical and design issues are resolved*
- *The cloth material used for the drapes and banners is to be plain, without pattern, and the colour based on the signature magenta of the seat upholstery, grading towards black, closest to the stage, as indicated on the renders provided in the application.*
- *the location and configuration of the drapes respects the geometry of the interior. - All drapes are fully retractable and the machinery / hardware for their automation / deployment is fully concealed from the auditorium;*

- *The substantial modifications to the ceiling crown to accommodate the drapes and their machinery is as least intrusive as possible, so that when retracted, the crown looks as close as possible to the original configuration.*
- *the existing white birch ring is retained and not replaced as these ring elements are matched from a single log with other ceiling panels.*
- *there is minimal loss of existing white birch plywood, and preferably, the cut out section to accommodate each acoustic drape unit is used as the lower face of its access panel to ensure it matches; and*
- *Reflector panels are fully retracted and the original plywood surface finishes flush with the existing plywood when reflector panel is not required.*

The final detailed design is to be resolved and approved by the Opera House's Conservation Council, Eminent Architects Panel, heritage architect and a heritage council representative. To be resolved as part of the Section 60 stage application.

SOH Response

The SOH is committed to complying with the condition as detailed in the HIS. Further details of the proposed construction methodology will be provided in the Section 60 application.

Further in-situ prototyping will take place during the delivery of the project and after closure. This will be carried out by the subcontractors responsible for the works in collaboration with the design team and heritage architect, and in consultation with DAP and CC. SOH would be happy to clarify with the Heritage Council as to what involvement is proposed from its delegate.

4.29 It is recommended that the automated settings for the Concert Hall include an 'at rest' setting which results in the new acoustic and amplified equipment being hidden as much as possible to allow an audience or tour visitor to appreciate the Concert Hall in as original as possible state. The details of this setting mode and when it will be available are to be resolved with a Heritage Council representative as part of the Section 60 stage application.

SOH Response

As noted in the covering letter, SOH agrees to develop an 'at rest' mode. Renders of this configuration are included in Attachment E. Drawing ARM-SK-9226 shows the view from seat position Row N Seat 25 in the Upper Circle. Drawing ARM-SK-9227 shows the view from seat position Row X Seat 25 in the Stalls.- Drawing ARM-SK-9228 shows the view from Seat 10 in Box A.- Drawing ARM-SK-9229 shows the view from seat position Row C Seat 40 in the Circle.

4.30 The new acoustic drapes should be designed to be reversible and able to be removed easily in the future in response to acoustic technology advancements.

SOH Response

The new acoustic drapes and mechanisms would be able to be removed. Where the mechanisms have been inserted into the white birch plywood walls and ceiling, then shadow lines would remain where the opening panels have been closed up.

Lighting/ Speakers

Heritage Council Recommendations

4.35 The following recommended condition relating to the new lighting arrays within the HIS (p 108) should be adopted to maximise views to the grand organ and minimise clutter.

- *Lighting bars and fittings deployed for any performance are minimum in number and as efficient as possible.*
- *Lighting arrays between the reflectors are not enclosed and arranged and placed to minimise their visibility from the auditorium and maximise views towards the grand organ.*
- *Lighting bars / trusses over the stalls are only deployed when necessary and removed when not required.*
- *Every effort is made by production and technical crews to minimise clutter from suspended lighting infrastructure for each performance*

The final detailed design is to be resolved and approved by the Opera House's Conservation Council, Eminent Architects Panel, heritage architect and a heritage council representative. To be issued as part of the Section 60 stage application.

SOH Response

The SOH is committed to complying with the condition as detailed in the HIS.

The lighting arrays proposed have been extensively reviewed by the DAP, with the conclusion reached that the short lighting bars in a black finish were the most appropriate design. This design removes the need for forestage lighting bars during orchestral performance, which was an alternative option considered earlier in the design phase.

The Concert Hall will continue to be managed consistent with CMP4, which includes guidance on the management of technical overlays that are necessary to deliver performances.

4.36 The following recommended condition relating to the new speaker arrays within the HIS (p 108) should be adopted with the highlighted change (strikeout), to maximise views to the grand organ and minimise clutter.

- *Speaker arrays are as small as possible to minimise their visual presence.*
- *For non-amplified performance, at least the centre 3 speaker arrays are raised high towards the ceiling or~~-preferably, removed.~~ This should apply to all other speaker arrays wherever and whenever this is possible.*
- *Speaker arrays deployed anywhere in the space for any performance are minimum in number.*

In addition, the colour of the speaker and lighting arrays should be revisited to minimise visual impacts during the 'at rest' stage. The final detailed design is to be resolved and approved by the Opera House's Conservation Council, Eminent Architects Panel, heritage architect and a Heritage Council representative. To be issued as part of the Section 60 stage application, including a revisit of the colour of speaker units to minimise visual impacts at the rest stage.

SOH Response

The SOH is committed to complying with the condition as detailed in the HIS, but unable to commit to the highlighted (strikeout) change recommended by Heritage Council.

Further revision of the speaker system has negated the need for five speaker arrays across the stage front. There will be only be three speakers deployed - left, centre and right at the front of the stage.

The left and right speakers will typically be used for all performances, as they provide an important function for public address.

When not required for orchestral performance, the central speaker array can be raised as high as practicable as illustrated in the Concert Hall 'At Rest' images included in Attachment E. However removing the central speaker array is impractical for operational reasons, as this process involves the removal of fixed seats as well as retesting and calibration of the system. Further details of the proposed speaker system will be detailed in the Section 60 application.

4.37 It is recommended that the automated settings for the Concert Hall includes an 'at rest' setting which results in the new acoustic and amplified equipment being hidden as much as possible to allow an audience or tour visitor to appreciate the Concert Hall in as original as possible state. The details of this setting mode and when it will be available are to be resolved with a heritage council representative as part of the Section 60 stage application.

SOH Response

As noted in the covering letter, SOH agrees to develop an 'at rest' mode. Renders of this configuration are included in Attachment E. Drawing ARM-SK-9226 shows the view from seat position Row N Seat 25 in the Upper Circle. Drawing ARM-SK-9227 shows the view from seat position Row X Seat 25 in the Stalls.- Drawing ARM-SK-9228 shows the view from Seat 10 in Box A.- Drawing ARM-SK-9229 shows the view from seat position Row C Seat 40 in the Circle.

4.38 Further details of ceiling penetrations for new lighting and speaker arrays including number and diameter should be provided to enable appropriate assessment. All efforts should be made to reuse existing penetrations to reduce the number of new ones.

SOH Response

SOH has made every effort to minimise the number of new penetrations required in the ceiling, and will patch any penetrations which are no longer required as part of the works.

The new theatre machinery and penetration design is also such that "bob weights" will no longer need to be left hanging within the space when winches are not in use. This will remove significant visual clutter from the upper volume of the hall.

Further details of the proposed penetrations will be detailed in the Section 60 application.

Stage improvements

Heritage Council Recommendations

5.5 The following recommendation relating to the removal of theatre machinery (p 88) should be adopted to minimise impacts to original fabric.

A full heritage assessment of existing machinery and equipment in the Concert Hall will be undertaken, and any significant pieces identified. The process outlined in this policy was carried out for the recent Theatre Machinery Project in the Joan Sutherland Theatre where the machinery was fully documented before decommissioning and selected significant pieces removed and archived as part of the Opera House collection. It is proposed this same process will be employed for the Concert Hall Renewal Project.

SOH Response

The SOH agrees to comply with the condition as detailed in the HIS.

5.6 The following recommended condition relating to the removal of seating within the HIS (p 110) should be adopted to minimise impacts to original fabric.

- *To avoid unnecessary wastage, it is recommended that as much of the removed seating as possible be used in the new position.*

SOH Response

The SOH is committed to complying with the condition as detailed in the HIS.

The SOH commits to reusing as much of the existing seating as possible. Existing fabric will only be replaced where it is damaged or worn and unsuitable for reuse, consistent with current maintenance practices.

In addition to the replacement of damaged or worn fabric, the project includes treatment of a proportion of the seating to achieve adequate fire retardance. This is discussed further in the SOH response to paragraph 5.29 (see below).

Modifications to back stage area

Heritage Council Recommendations

The following recommendations are to be submitted as part of the Section 60 stage application.

5.15 The reconfiguration of the side foyers to accommodate an increase in backstage area should be reviewed with the view to minimising the narrowing of the side foyer space.

SOH Response

The proposed configuration to increase the backstage area of the Concert Hall for the arena risers retains and respects the geometry of Peter Hall's auditorium and foyer walls. The changes to the foyers are minimal and will not be at all obvious to visitors and patrons. The main exit path widths in the side foyers are respected and barely narrowed.

The reconfiguration of the side foyers is primarily driven by the introduction of the arena risers on the stage, rather than the increase in backstage area. The introduction of the arena risers is a key component of the acoustic upgrades to the Concert Hall, specifically to improve orchestral performances. Once the arena risers are deployed, additional doors from the stage wings must be included downstage (towards the audience) to provide access to the stage. To achieve this outcome the side foyers must be reconfigured.

The SOH considers this reconfiguration to be the minimal solution to the stage access issue when the arena risers are deployed, and the proposed design respects the design aesthetics of the side foyers. It has only a minimal impact on the plan area of the side foyers, and only in areas with a

lowered ceiling height created by bulkheads above. It does not have any impact on normal paths of access through the foyers.

Additional plans which detail the extent of demolition, and relocated and new fabric are included in Attachment E. Drawing ARM-9240 details the new work with the removed structure shown in red for the East Side Foyer, and drawing ARM-9241 details the new work with the removed structure shown in red for the West Side Foyer.

Additional renders, which provide a different perspective from those included in the EIS package, are also included in Attachment E. The view of the existing East Side Foyer is shown in ARM R-05, with the proposed configuration shown in ARM R-06. The view of the existing West Side Foyer is shown in ARM R-07, with the proposed configuration shown in ARM R-08.

SOH would be happy to provide further details of the proposed changes in the Section 60 application, if necessary.

5.16 The extent of demolition within the anteroom and orchestra assembly room should be clarified to enable appropriate assessment.

SOH Response

The extent of demolition within the orchestra assembly room is shown on drawing 49-BR-ARM01-A0705, and 49-BR-ARM01-A0725. Where appropriate, existing finishes are carefully removed and retained for reuse either at the same location, or elsewhere as needed.

The new fitout of the orchestra assembly room is shown on drawings 49-BR-ARM01-A5310, 49-BR-ARM01-A5311, 49-BR-ARM01-A5312, and 49-BR-ARM01-A5313.

The extent of demolition within the anteroom is shown on drawings 49-BR-ARM01-A0706, 49-BR-ARM01-A0726, 49-BR-ARM01-A0910, and 49-BR-ARM01-A0911.

The new fitout of the anteroom is shown on drawings 49-BR-ARM01-A5321, 49-BR-ARM01-A5322 and 49-BR-ARM01-A5323

5.17 Timber wall panelling within the anteroom and orchestra assembly room should be retained and reused as part of the works to ensure original fabric and existing character of the spaces is retained.

SOH Response

The proposal does not include the reinstatement of brushbox panelling in the anteroom, as changes to the geometry of the anteroom and stage wings are such that the existing brushbox cannot be readily reinstated. SOH will consider options to reuse the brushbox elsewhere in the project, but notes that it has also been subjected to extensive wear and tear arising from years of use in the delivery of theatre equipment.

The new fitout has been designed to be more robust and less subject to this type of incidental damage, and in keeping with back-of-house spaces elsewhere at SOH. SOH proposes that the final finishes in the anteroom and orchestra assembly room are detailed in the Section 60 process.

5.18 WC fixture and fittings from the two toilet facilities within the anteroom (level 2) should be retained and reused as part of the refurbishment works to ensure original fabric and existing character of the spaces is retained including the ‘natural’ palette of materials and colours.

SOH Response

The SOH will work with the SOH Heritage Architect and ARM to review these fixtures and assess their suitability for reuse. The SOH will address this in the Section 60 application.

5.19 Any new elements proposed, including concrete finishes, must match the existing in both form and finish. This should be determined in consultation with the nominated heritage consultant working closely with an experienced expert to ensure seamless consistency, to the satisfaction of a Heritage Council representative. It will be a requirement of the s60 approval and certification.

SOH Response

Similar to other Renewal projects, the SOH will work with the SOH Heritage Architect and an experienced concrete expert to ensure that new finishes appropriately match the existing in form and finish.

Concrete finish benchmarks will be prepared and subject to the endorsement of the Heritage Architect, in consultation with the DAP, CC and Heritage Council delegate.

Technical improvements

Heritage Council Recommendations

5.23 The following recommendation relating to the removal of theatre machinery (p 88) should be adopted to minimise impacts to original fabric.

- *A full heritage assessment of existing machinery and equipment in the Concert Hall will be undertaken, and any significant pieces identified. The process outlined in this policy was carried out for the recent Theatre Machinery Project in the Joan Sutherland Theatre where the machinery was fully documented before decommissioning and selected significant pieces removed and archived as part of the Opera House collection. It is proposed this same process will be employed for the Concert Hall Renewal Project.*

This assessment must be undertaken prior to the removal of any items to ensure appropriate action is taken in regard to recognition and recording of significant fabric and engineering solutions of the time. In addition, archival recording must be undertaken prior to removal, with the equipment in situ.

SOH Response

The SOH commits to undertaking this assessment.

5.24 Further detail regarding the strengthening of the steel structure above the plywood Concert Hall ceiling should be provided to adequately assess the impacts of the works.

SOH Response

The following drawings in Attachment E, detail the strengthening to be carried out to the portal frames:

- *29-BR-AR201-ST-0312 Portal Frame General Arrangements and Elevations*
- *29-BR-AR201-ST-0313 Portal Frame Details*
- *29-BR-AR201-ST-0314 Portal Frame Strengthening Details - Sheet 2*
- *29-BR-AR201-ST-0315 Portal Frame Strengthening Details - Sheet 3*
- *29-BR-AR201-ST-0316 Portal Frame - Sections and Details - Sheet 1*
- *29-BR-AR201-ST-0317 Portal Frame - Sections and Details - Sheet 2*

The following drawings in Attachment E, detail the strengthening to be carried out to the portal frame trusses and ceiling trusses:

- *29-BR-AR201-ST-0430 Ceiling Truss Strengthening - Sheet 1*
- *29-BR-AR201-ST-0431 Ceiling Truss Strengthening - Sheet 2*
- *29-BR-AR201-ST-0432 Ceiling Truss Strengthening - Sheet 3*
- *29-BR-AR201-ST-0433 Ceiling Truss Strengthening - Sheet 4*
- *29-BR-AR201-ST-0434 Ceiling Truss Strengthening - Sheet 5*
- *29-BR-AR201-ST-0435[A]~Ceiling Truss Strengthening - Sheet 6*
- *29-BR-AR201-ST-0436 Ceiling Strengthening Truss to Arch - Sheet 1*
- *29-BR-AR201-ST-0437[D]~Ceiling Strengthening Truss to Arch - Sheet 2*

Strengthening of portal frames:

Drawings 312-317 detail out all the strengthening required to the portal frame legs. The existing legs of the portal frame are essentially made from fabricated steel beams consisting of 50mm thick steel plates. The portal frames support all the structure held within the Concert Hall ceiling. With the new dedicated winch room , increased payload and automated acoustic systems being installed within the Concert Hall ceiling the load coming back through the portal frames is substantially increased. All though the scheme adds new load to the portal frames this isn't the only reason strengthen is required. When the Opera House was designed there was no code requirement to design for seismic restraint. Under the current code this needs to be taken into account.

The strengthening to the portal frame legs consists of welding 50mm thick steel plates around the "knee" at the bottom of the portal frame.

Strengthening of portal frame trusses and ceiling trusses:

Drawings 430-437 detail the strengthening required to the portal frame trusses and ceiling trusses. The existing ceiling trusses with in the Concert Hall ceiling are made from relatively small section size of steel. The need to strengthen these trusses is derived from the operation requirement to increase the lifting capacity within the ceiling. All the load from the trusses makes its way back to the "portal frame trusses" then down the "portal frame legs" . The strengthening of these trusses is the addition of small sections of steel. For example the strengthening required to sections of the bottom cord is the addition of a 12mm think steel plate.

All of this work will be concealed from public view.

Seat refurbishment

Heritage Council Recommendations

5.29 The following recommendation relating to the modification of seating (p 110) should be adopted to minimise impacts to original fabric.

- *The white birch plywood seat shells should only be replaced with matching if they are beyond repair.*

SOH Response

The SOH is committed to complying with this recommendation as detailed in the in the HIS. Seat fabric will only be replaced when the existing fabric is worn or damaged beyond repair. In addition, some replacement of fabric is necessary to upgrade a proportion of the seating to improve fire resistance.

As part of the Concert Hall upgrade, SOH will be installing a new smoke exhaust system. However, to achieve safe fire egress, it is also necessary to reduce fire load inside the venue by upgrading the current seating. This was successfully achieved for the first two rows of seats in the JST for similar reasons.

The upgrade consists of: new fire impregnated white birch arm and back rest, new flame resistant cushions and replacing the worn gas struts. The new seats will look identical to the existing seats.

Air conditioning upgrade

Heritage Council Recommendations

5.34 The following recommended conditions relating to the cannon-ports and diffusers (p109) should be adopted to minimise impacts to original fabric.

- *A full size mock-up of the 'canon-port' infill panels should be assembled and approved before these particular works commence.*
- *The 'cannon-port' infill panels are closely fitted with a fine shadow line to delineate the extent of the original opening, and match the adjacent white birch as closely as possible.*
- *New air delivery registers in the soffits over the boxes should respect the geometry of the ceiling, plywood panels and adjacent registers, have white birch surrounds wit narrow slot registers, and visually sit 'quietly' in their location.*

The final detailed design is to be resolved and approved by the Opera House's Conservation Council, Eminent Architects Panel, heritage architect and a heritage council representative. To be resolved as part of the Section 60 stage application.

SOH Response

The SOH commits to complying with the recommendation in the HIS.

Further in-situ prototyping will take place during the delivery of the project and after closure. This will be carried out by the subcontractors responsible for the works in collaboration with the design team and heritage architect, and in consultation with DAP and CC. SOH would be happy to clarify with the Heritage Council as to what involvement is proposed from its delegate.

5.35 An evaluation of the mechanical equipment should be undertaken to assess the significance of this equipment prior to removal works being undertaken to ensure appropriate action is taken in regard to recognition and recording of significant fabric and engineering solutions of the time. In addition, archival recording must be undertaken prior to removal, with the equipment in situ.

SOH Response

Similar to the removal of theatre machinery in the Joan Sutherland Theatre Renewal project, the SOH will undertake a significance assessment of the mechanical equipment and machinery prior to its removal by a qualified heritage expert/heritage architect, and where appropriate, significant pieces recorded, removed and accessioned into the collection and/or recorded to archives and deaccessioned. An archival recording of mechanical equipment and machinery will be undertaken prior to removal.

6.0 CREATIVE LEARNING CENTRE

Heritage Council Recommendations

The following recommendations are to be submitted as part of the Section 60 application.

6.11 The proposed relocation of the western entry doors should be revised to ensure the deep shadow of the existing entry is not adversely reduced

SOH Response

The proposed relocation of the doorway is necessary for several reasons. The configuration of the entry to the Creative Learning Centre from the Western Broadwalk has been designed to provide internal access to the amenities, from both the Primary Learning Space and the Secondary Learning Spaces, without a patron needing to go through the other learning space. Secondly, the configuration has been designed to cater for the use of the small lobby created as a camera location when the Creative Learning Centre is being used for the creation of digital content. Lastly, the small lobby created by the position of the new doorway provides an alternative independent entry to the Creative Learning Centre when an event is under way in the Western Foyer.

The doorway was originally proposed to be the entry to the intended location for the administration offices on level +12. With the change in use of the Major Hall after Utzon's departure, the executive administration areas were relocated to Level +30.

The HIS (p143) assesses that the alteration of the Western Broadwalk, including the proposed new doorway is a:

> *Minor modification retains and respects Utzon and Hall. Provides functional benefits internally.*

There is a door in a similar position on the Eastern Broadwalk, which is set back 1.52m from the podium façade. The door to the Creative Learning Centre, after relocation, is set back 1.95m from the podium façade, maintaining a deep shadow during the day.

Additional renders of this entry to the Creative Learning Centre have been prepared and are included here in Attachment E.

Based on the above, it is SOH's position that the relocation of the western entry doors maintains the deep shadow of the existing entry and should remain as proposed.

6.12 The proposed opening within the curved concrete wall should be reduced in area to ensure that sufficient area of the original wall remains to provide evidence and understanding of the wall and spatial arrangement of the space.

SOH Response

The size of the proposed opening in the curved concrete wall is necessary to provide the usable space required for the Primary Learning Space. However, SOH notes that the render in the EIS package did not accurately display the size of the proposed opening and appeared to be larger than what is proposed. New renders have been prepared which more accurately show the size of the proposed opening, these have also been included in Appendix D

The HIS assesses that the size of the opening is appropriate and has 'very little impact' on the fabric and spaces of the building. The proposal ensures that sufficient area of the original wall remains to provide evidence and understanding of the wall and spatial arrangement of the space. The HIS states (p132)

> *The works involve removal of limited sections of the curved structural walls within the Podium, but this is assessed as having very little impact on significant fabric and spaces within the building. These works will respect the work of both Jørn Utzon and Peter Hall, and do not adversely impact Utzon's original design concept.*

6.13 Details relating to strengthening of the existing curved concrete wall required for the proposed opening should be provided to allow for adequate assessment of impacts.

SOH Response

The strengthening of the existing curved concrete wall is similar to the strengthening employed for the new openings in similar walls in the new Function Centre. A concrete "jacket" is created on the northern side of the curved wall, with reinforcement tied back into the existing wall.

The following drawings (included in Attachment E) detail the proposed reinforcement of the curved concrete wall: 29-BR-AEC07-S010, 29-BR-AEC07-S030, 29-BR-AEC07-S031, 29-BR-AEC07-S035, and 29-BR-AEC07-S036.

7.0 ARCHAEOLOGY

Heritage Council Recommendations

7.2 The applicant is to confirm that excavation is not proposed as part of this project.

SOH Response

No excavation below existing ground level is proposed as part of this project.

8.0 CUMULATIVE IMPACTS

Heritage Council Recommendations

8.4 The Conservation Management Plan must be updated to reflect the significant changes to the spaces, forms, fabric and materials of the SOH. The updated CMP is to be submitted to the satisfaction of the Heritage Council.

SOH Response

The SOH will update the CMP after the completion of the Renewal Stage 1 projects.

8.5 The Summary Assessment of Impacts included in the HIS should be revised to better reflect the cumulative impacts of these works only using the identified heritage values. This should be submitted to the satisfaction of the Heritage Council.

SOH Response

The Summary Assessment of Impact tables have been revised and included in Attachment C.