***ATTACHMENT 5: Supplementary Information re Key Project Components***

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***Scope of Works***

The Concert Hall projects comprise:

Accessibility

- On-grade access from the Southern Foyer at Level 2 to the corresponding level in the Northern Foyer via new passageway within the Eastern Foyer stairs
- New lift, No 30, located in the east of the Northern Foyer
- New handrails in the centre of the Eastern and Western Foyer stairs
- New handrails to replace existing non-compliant handrails throughout the Concert Hall
- Changes to accommodate increased number of wheelchair positions (up to 26 total) throughout the Concert Hall
- Two new accessible sanitary facilities on Level 3 of the Northern Foyer
- Improved mobility access and wet area facilities to the performers dressing rooms on Level 1

Theatre Planning and Technology

- Stage
    - Redesign and reconstruction of stage
    - Automated and adjustable stage risers
    - Lowering the stage level
    - Provide under stage storage, including automated storage of seating rows A and B when stage extension is implemented
- Backstage
    - Adjustment to the floor level to meet the stage level
    - Increased size of the stage wings
    - New downstage entry doors
- Technical Zone
    - New technical equipment zone in the ceiling above
    - New winch room
    - Relocation of some of the Plant Room 21 mechanical equipment
    - Reconfiguration and strengthening of the ceiling structure
    - New penetrations in the existing ceiling

Acoustics

- Acoustic Music
    - Replacement of the existing acrylic over stage reflectors with a new array of adjustable reflectors
    - New operable side wall reflectors
    - New adjustable stage risers
    - New stage floor
    - New acoustically diffusive timber panelling to the box fronts
    - New acoustically diffusive timber panelling to the stage surround
    - New acoustically diffusive timber panelling to the rear of the side boxes, the rear wall of the circle, choir and the rear wall of the stalls
    - Adjustment of the box fronts and stage surround geometry
- Amplified Music
    - Acoustically absorbent fabric introduced to the venue via mechanically deployed banners above the stage, and on the stage-surround walls, box fronts and rear walls
    - New speaker amplification system

Concert hall air conditioning

- Upgrades to the Air Handling Units (AHUs) in Plant Room 12
- New secondary air ductwork behind the side walls of the Hall
- Closing up of the existing cannon port openings and installation of new A/C diffusers outlets
- Increased number of ceiling diffusers in the lower sections of ceiling over the Boxes
- Upgrade of the smoke exhaust capacity within the Hall

Seat Refurbishment

- Refurbishment of sections of existing patron seating to comply with fire engineering requirements and requirements for different patron seating configurations/wheelchair use/technical operational requirements

The **Creative Learning Centre** project involves demolition of internal walls and re-purposing of the north-western corner of the building, currently used for offices, into a multi- purpose space for education and creative activities. Alterations include:

- removal of existing fitout, including wall and ceiling white birch plywood 'wobbly' panels
- relocation of doors within recessed entry from the Western Broadwalk and modified precast paving slabs to provide a step ramp
- cutting of openings and removal of minor internal walls and partitions to create new larger spaces and connections
- provision of new internal public entry at the north end of Western Foyers
- construction of wall storage units within the primary learning space using salvaged white birch wobbly panels
- construction of storage and facilities elsewhere in spaces utilising salvaged white birch wobbly wall panels
- construction of new complying WC and other facilities
- fitout of new entry passage with wall panels and stretched Barisol ceiling lining
- lining concrete ceilings where exposed with thin acoustic panels and fitout of suspended ceiling grid
- installation of new floor finishes

The following parts of this attachment, supporting the Section 60 application, covers a number of "over-arching" issues with the SOH's responses, along with specific information about key project components.

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***Consultation and Exhibition***

The Sydney Opera House (SOH) lodged the SSD8663 application with the NSW Department of Planning & Environment (DPE) on 19 October 2018. The Development Application was on exhibition from 1 November 2018 to 28 November 2018.

The SOH has been working closely with the Heritage Division (HD) and the Heritage Council (HC) delegates since the SSD8663 application was lodged. Detailed responses to matters raised by the HD and HC through this process are documented in Attachment 9, and are set out below for convenience.

At various instances in its submissions, the HC has recommended that finishes and components of the project be subject to further review and approval of a HC delegate.

SOH notes that final finishes for some elements of the proposal will need to be further resolved and prototyped during the delivery of the project and after approvals have been obtained. This is necessarily deferred so that SOH can work closely with the actual contractors and tradespeople who

will be carrying out the works, to ensure that the final design is achievable. Many of these will need to be prototyped on site once the venue is closed. In these instances, SOH will continue to have close involvement with the design team, Design5, DAP and CC to ensure the best possible outcome. SOH would be happy to clarify with the HD what further involvement is proposed during the delivery of the project.

The SOH also notes that the design for the Concert Hall Renewal project was carried out over a period of three years, from September 2015 to September 2018. Undertaking design over this length of time is rare in building projects, but appropriate for the SOH, where the objective has been to conduct a robust design process and extensive consultation with many stakeholders.

The design has been carried out in accordance with the SOH's CMP4 which sets out the governance by which changes to the building fabric are managed. It has included extensive involvement of a Heritage Architect in the development of the design (in this case, Alan Croker of Design5, the author of CMP4), and close scrutiny  DAP and the CC. As noted in Appendix 8 of the EIS, the DAP considered the project design on 37 occasions, and the CC considered the project design on 25 occasions. Since lodgement of the EIS, the DAP has considered the project design on a further four occasions.

SOH has also consulted extensively with a wide range of other stakeholders, including NSW Government agencies including the Office of Environment and Heritage, SOH resident companies, the architecture and heritage community, disability community, performing arts community, SOH staff, neighbouring residents and the general public. These consultations were documented in Section 3.4 of the EIS.

The extensive design process and consultation has been described in the EIS, the Architectural Design Statements, the HIS, and the Options and Design Alternatives Analysis Appendix to the EIS. Attachment A included in the Response to Submission (Attachment 9) details the extensive consultation with the DAP and the CC.

As a condition of the previous EPBC approval for the JST Safety, Accessibility and Venue Enhancements (EPBC 2016/7825), SOH was required to obtain approval of design finishes from the DAP and CC. This was subsequently documented in letters of support. In anticipation of a similar requirement for this project, SOH obtained these letters of support and provided them with its EIS submission.

Noting this, SOH considers that its proposal is well-considered and achieves a very high quality in design outcomes, and will have an acceptable impact on heritage significance.

SOH would like to clarify with the Heritage Division what further involvement is required during the delivery of the project.

***Revision of the Conservation Management Plan***

In its response to the Heritage Council submission on SSD8663 (4 July 2019), the SOH has committed to update *Respecting the Vision: Sydney Opera House – a Conservation Management Plan Fourth Edition* (CMP4, A. Croker 2017), with this to occur after the completion of the Renewal Stage 1 projects.

***Concert Hall "At Rest" Policy***

In its response to the Heritage Council submission on SSD8663 (4 July 2019), the SOH has committed to develop an "At Rest" policy for the Concert Hall.

The “At Rest” policy will be included in the future revision of the Conservation Management Plan. Policies included in the CMP4 are intended to “retain, conserve, and where possible strengthen, the significance of the place, including its use as a performing arts centre, and its State, National and World Heritage Values.”[1]

The SOH has prepared a draft “At Rest” policy for consideration. This draft policy is attached for the information of the Heritage Council.

***Matching of New Concrete Finishes to Existing Concrete***

In the submissions on SSD8663, the HC requested that the Sydney Opera House ensure seamless consistency of concrete finishes, for example:

*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.* (Paragraph 3.19, Part 1 HC Submission)

In response, SOH re-confirms its previous advice that it is impractical to achieve a precise match of new concrete with that originally used in the construction of the SOH. This is because:

1. the constituent materials and methods now used are different to those used in the 60’s and 70’s;
2. the primary objectives of achieving required strength, workability and durability (which may differ from the original design) require a different mix and admixtures; and
3. new concrete will not have the age or ‘patina’ of the original.

SOH’s experience, developed through the delivery of the Joan Sutherland Theatre Safety, Accessibility and Venue Enhancement (SAVE) and Function Centre projects, is that by working with a concrete finishes expert it is possible to treat finished concrete to achieve a close match to the colour and texture of adjacent concrete surfaces. This can be adopted selectively where it is appropriate to have seamless consistency. In other cases, it will be appropriate to introduce subtle differences in finishes so as to distinguish between original form and changes made to the building.

In accordance with the HC’s request, the SOH will work with a heritage consultant/ heritage architect and experienced concrete expert on the concrete finishes and form. Whilst an exact match of concrete finishes is unlikely to be achieved, SOH will ensure high quality craftsmanship, and a high degree of seamless integration of new and existing works, including through careful treatment of existing and new concrete. As there is a range of different situations where new and old concrete co-exist, it is intended to carry out prototyping and benchmarking of these finishes which can then be used as a guide for the remaining and future works. This would include review of finishes achieved on previous projects, and development of new finishes with the tradespeople responsible for the works. These would be prepared during the course of the works, and subject to SOH’s approval in consultation with the design team including Design 5.

SOH is able to invite the HC delegate to review these benchmarks, however the timing of preparation and approvals will be critical to achieving the tight timeframes set for the project.

**Bronze Componentry Project (“Kit of Parts”)**

The Bronze Componentry Project (BCP), or “Kit of Parts”, is a project initiated by the SOH and undertaken by Grimshaw Architects, which has sought to develop a consistent approach to handrail

[1] Croker, A., 2017*, Respecting the Vision: Sydney Opera House – a Conservation Management Plan, Fourth Edition*, p.49.

and barrier design for new works at the SOH. The BCP has developed a Design Investigations Report and a Design Manual for bronze componentry at the SOH (included here in Attachment 10).

The Bronze Componentry Project couples industrial design with engineering to create a new suite of multi-functional handrails and barriers for both the interior and exterior of the Opera House. The project aims to improve venue accessibility and safety for all visitors, including those with disability, while also enhancing the visitors' tactile experience of the precinct in a manner that is consistent with the heritage values of the Sydney Opera House. The BCP builds on previous industrial design studies, primarily the Handrail and Barrier Master Plan (2014) prepared by the Government Architects Office, which identified over 40 types of barrier and handrail systems in use at the Opera House.

Bronze componentry is a highly significant heritage and tactile element of the Opera House. Its upgrading, design and care requires great sensitivity to current and future needs and conditions. In the past, where new bronze componentry has been added, these efforts have generally been undertaken in a considered but limited scope.

The project presented an opportunity to address the Opera House's bronze elements with a holistic approach, taking into account the needs and conditions across the site. The project aims to capture the full quantum of bronze componentry at the Opera House, ensuring that bronze future works can be undertaken in a cohesive manner across a range of current and future upgrading projects, and in the course of normal maintenance, helping to ensure that lead times, manufacturing processes and procurement costs can be made as efficient as possible.

The BCP is a necessary part of Opera House renewal due to changes in legislative accessibility standards, building codes, and statutory requirements since the Opera House's completion in 1973. Building projects undertaken as part of the renewal program (2013-2023) present an opportunity to provide a safer and more inclusive experience for Opera House artists, audiences visitors and staff.

The designs developed in the BCP have been considered by the SOH Eminent Architect's Panel (EAP, now the Design Advisory Panel, DAP) and the SOH Conservation Council (CC) and approved for use at the SOH (subject to any necessary external or statutory approvals).

A short summary of BCP designs was provided to the Heritage Council with the prior s60 application, 2016/s60/64, for the JST SAVE, Entry Foyer and Eastern Accommodation Project. As requested by the Heritage Council, in its letter to the Department of Planning & Environment on 16 August 2019, the SOH has provided with this application copies of the BCP Design Investigations and Design Manual (Attachment 10) which form the key components of the BCP documentation.

The architects for the Concert Hall Project, ARM Architects, and the Creative Learning Centre Project, TZG Architects, have worked with Grimshaw and the BCP to ensure that any new handrails or barriers to be installed are compliant with necessary engineering and accessibility standards, and to be consistently applied across the SOH where necessary.

**Acoustic Diffusion – Box Fronts, Stage Surrounds and Walls**

The Heritage Council's recommendations relating to the introduction of acoustic diffusion require the SOH to: clarify the amount of replacement of original 1973 box fronts; and retain the original tapered bronze guard rails.

Plan ARM-9251~191125 Timber Diffusion Location details the proposed distribution of different wall types throughout the Concert Hall. After the completion of the works, there will be new diffusion panelling on: the front of all boxes, the rear wall of the stage, the rear wall of the circle, the rear wall of the stalls, the rear wall of the choir gallery, and the rear walls of boxes C,D,E,F and W,X,Y,Z. The rear wall of the lower circle, the rear walls of boxes A,B and U,V, and the side walls of the upper circle will remain as original fabric.

Plans 49-BR-ARM01-DA5328, 49-BR-ARM01-DA5330, 49-BR-ARM01-DA5331, 49-BR-ARM01-DA5332, 49-BR-ARM01-DA5333, 49-BR-ARM01-DA5334, 49-BR-ARM01-DA5335, and 49-BR-ARM01-DA5341 included in the SSD application (included here in Attachment 4), detail the full scope of acoustic diffusion panelling, and also the necessary modifications to the tapered bronze guard rails.

It is important to note that none of the box fronts, including those abutting the stage, are original 1973 box fronts. As noted in the Heritage Impact Statement (HIS, p105), all the original 'sawtooth' profile box fronts were replaced with flat panels in the same material in late 2011 and are therefore not original fabric.

It is not possible to overlay existing brushbox panelling with the new acoustic diffusion panelling. The new panelling requires the installation of suitable substrate framing which can support the new panels. Installing the substrate framing on top of existing brushbox panelling would irreparably damage the existing panelling, and would compromise the available space in the venue, particularly in the walkways at the rear of the boxes.

The existing tapered bronze guard rails will be removed during demolition, and then reinstated during reconstruction of the various locations. The guard rails at the rear of boxes U, V, and W, need to be reinstated in a segmented manner, as the rear walls of these boxes need to have removable sections to cater for the accessible seating locations. If possible, the existing handrails will be modified to be reinstated, however if new handrails are needed these will be manufactured from a BCP profile which is a near match to the existing profile.

***Archival Recording and Heritage Assessment***

Similar to the Joan Sutherland Theatre projects, the SOH will prepare a photographic archival record of all areas undergoing works, prior to the works commencing. This record will be prepared in accordance with the document *How to Prepare Archival Records* by the Heritage Council of NSW, and submitted to the Heritage Council.

Specifically, any plant and equipment that is to be removed and/or replaced will be recorded in the above fashion prior to removal or replacement.

Consistent with the recommendation in the Heritage Impact Statement (Attachment 8, p.88), and the Heritage Council's recommendations in the submission of 20 February 2019, the SOH will undertake a full heritage assessment of existing machinery and equipment in the Concert Hall, 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.

Where appropriate, significant pieces will be recorded, removed and accessioned into the SOH collection and/or recorded to archives and deaccessioned.

***Supplementary Information***

As part of the SSD8663 process, the HC has requested additional information to be provided in the s60 application. The following sections detail these components of the project, the information in relation to each component that is provided herewith which has also been previously submitted, and supplementary information now provided to assist the HD and HC to assess this s60 application.

This information has also been presented to address the draft SSD conditions.

***Eastern Passageway***

*Heritage Council Recommendations – 20 February 2019*

*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.*

*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.*

*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.*

*Heritage Council Recommendations 16 August 2019*

*In addition to the Heritage Council recommendations 3.18 & 3.19 (20 February 2019), the following conditions are recommended.*

*2.7 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 (now DAP) and heritage architect, to determine its appropriateness (Pg104). This should also be undertaken in consultation with a representative of the Heritage Council and documentation submitted as part of the section 60 application for the works.*

*2.8 Further refinement of the passageway details should be undertaken to better integrate with the proposed finish to the new lift including skirting. This should be submitted as part of the section 60 application for the works.*

*Heritage Council Recommendations 16 October 2019*

*15.13 The action includes the removal of original fabric. Removed fabric should be retained and reused where possible to retain the consistency of the design regime in accordance with the CMP. The SOH has agreed to this.*

*15.16 The SOH has agreed to complying with the recommendation to carefully match the materials, finishes, form, quality and workmanship when introducing new fabric, as well as reusing original fabric whenever possible. This aligns with the CMP and the Utzon Design Principles which recommend cohesiveness of the whole experience.*

*15.21 The SOH has agreed to further investigate some actions which have the potential for change to reduce negative impacts. These are proposed to be addressed as part of the Section 60 stage*

*application under the Heritage Act 1977. This includes use of bronze cladding in the Caves area, and construction methodology for the sidewall reflectors and acoustic drapes.*

*15.28 They have also agreed to further investigate some actions as part of the Section 60 stage application under the Heritage Act 1977 which have the potential for change to reduce negative impacts including:*

- *the use of bronze cladding within the Caves area;*

*16.1.17 There are some actions which should be subject to further review as there is potential for change to reduce negative impacts. These are:*

- *…*
- *refinement of the passageway details to better integrate with the proposed finish to the new lift including skirting (S 2.8 – 16 August 2019)*
- *the use of bronze panelling on the southern wall within the Caves area (refer S 2.7 – 16 August 2019)*

SSD Draft Condition *B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) the final finishes for the passageway and south wall of the Caves area;*

*(b) …*

| ***Previous Submissions*** | ***Supplementary Information*** | ***Attachment*** |
|---|---|---|
| DA Drawing Set | | 4 |
| Response to Heritage Council Submission | | 9 |
| | Additional Renders of Bronze Panelling | 6 |
| | Handrail plan 49-BR-GAS01-A0721_C02 | 7 |
| | Bronze Componentry Project | 10 |

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 renders included in the Response to the Heritage Council Submission (Attachment 9, and also included here in Attachment 6):

- 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. Behind the plinth the floor level is lower than the floor of the Caves. 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. This is shown in the following photos.

Existing South Wall of the Caves

View behind carpet clad wall, showing a/c duct, electrical services and floor level lower beyond plinth

View behind carpet clad wall showing a/c duct

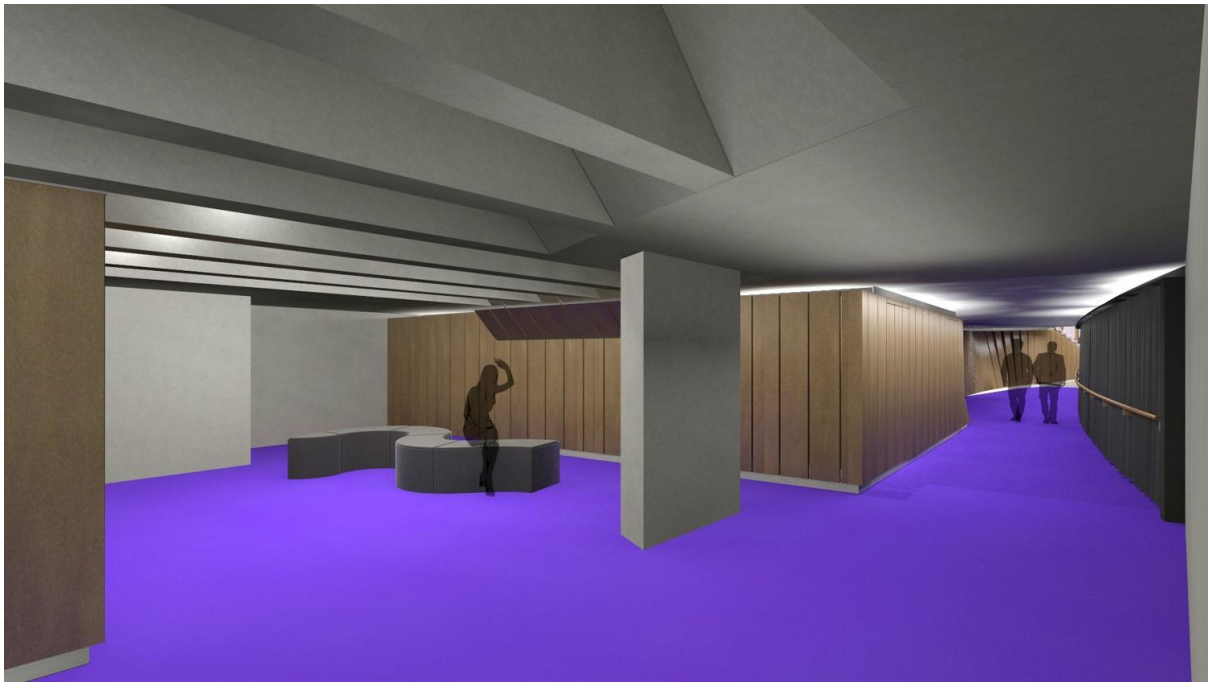
View of partially removed carpet clad wall, showing fire hose reel, electrical services, and uplighting of beams

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 supported the further investigation of the condition of the concrete wall and the required services in this area.

The SOH undertook further investigation of the condition of the wall with carpet clad panels removed on 8 October 2019. Following this investigation, the SOH asked ARM Architects for further commentary in regard to the use of bronze panelling on the south wall of the Caves. ARM has advised that:

*An inspection of the Southern Wall of the Caves on 8th October 2019 further reinforced our belief that bronze cladding is the most appropriate architectural solution for this wall. The inspection revealed an insitu concrete plinth at the base of the wall with a concrete trench on the other side at a lower level than the adjacent carpet finish. There are numerous services penetrations and services that would be exposed should the wall not be clad. These include primarily an air-conditioning supply air duct as well as the Fire Hose Reel pipework. This is not appropriate for a Front of House location of this stature and is not in keeping with FOH areas adjacent. A continuation of the bronze cladding of the passageway, combined with the stripping of the carpet finish to the Eastern Wall and Columns we believe strikes the best balance between new and old in this location. The use of Bronze in this location is also consistent with the use of it in the JST Cave.*

The proposed finish for the Caves is shown in the following render:



Similar to other locations in the Concert Hall, the wall panelling will finish short of the floor, leaving an off-form concrete finish recessed below the bronze panelling as the skirting detail. This can be seen in the above renders.

A meeting of the DAP was held on 29 October 2019 to view the condition of the concrete behind the carpet clad wall, and to consider the advice of ARM Architects in regard to the use of bronze panelling on the south wall of the Caves. The DAP advice from this meeting is as follows:

> *The Panel viewed the condition within the Caves, noting the extensive and continuous services located on the southern wall including an air conditioning duct, electrical cabling and a fire services cabinet. As a result, it is not appropriate to reveal the concrete wall.*
>
> *The Panel supported the architects' recommendation to replace existing cladding to the southern wall with Bronze panels to the same profile as the existing cladding with concealed doors to the Fire Services cabinet.*

The Concert Hall architects, ARM have provided the following commentary about the various options that were considered for the South wall of the Caves:

> *In determining that bronze cladding is the most appropriate solution for the southern wall of the caves a thorough review of other alternatives was undertaken. These included:*
>
> - *Leaving the carpet clad wall in place*
> - *Brush box cladding*
> - *Expose existing concrete wall behind carpet*
> - *New concrete insitu finish*
>
> *The existing carpet clad finish is deemed 'Intrusive' in the CMP in Section 4.8 and as such was ruled out as a viable finish.*
>
> *Cladding the passageway and southern wall of caves in Brush box was reviewed but also ruled out as it is not in keeping with the architectural regime instituted by Peter Hall whereby only the outside of the Concert Hall venue itself is clad in Brush box.*

*Exposing the existing concrete wall behind the carpet was tested insitu via the removal of a section of the carpeted wall temporarily so that the existing conditions could be reviewed by SOH, ARM, DAP and Heritage Architect. As we noted to this group there are a number of existing services behind this wall that need to be maintained. These include a fire hose reel and hydrant, supply air duct, lighting fixtures and electrical conduits. Given the amount of services present exposing the existing wall and these services is not appropriate for such a prominent FOH location.*

*A new insitu concrete finish is not viable for similar reasons to above, the sheer number and variety of services this wall needs to host makes such a wall impractical.*

*The continuation of the bronze finish in the passageway is the most appropriate finish to the southern wall of the caves as it provides a legibility to the journey from the Southern Foyer to the Northern Foyer and lift which in turns enhances wayfinding and accessibility. It draws from the existing palette of SOH materials and is capable of concealing and integrating the existing services in an appropriate front of house manner.*

Handrails in the passageway will be selected from the BCP. The handrail in the passageway is shown in the approved plan 49-BR-ARM01 DA5326 (Attachment 4). The handrail detail is shown in Grimshaw Architects drawing 49-BR-GAS01-A0721_C02 (Attachment 7), however this handrail will not have the concealed lighting as shown in this drawing.

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**Relocation of existing plantroom/ Western podium façade exhaust hood**

*Heritage Council Recommendations – 20 February 2019*

*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.*

*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.*

*Heritage Council Recommendations 16 August 2019*

*As per Heritage Council recommendation 3.27 (20 February 2019).*

*Heritage Council Recommendations 16 October 2019*

*15.22 The SOH has also agreed to further research to assess the significance of some elements prior to actions which impact on them. This assessment must be undertaken prior to the removal of any items to ensure appropriate action is taken regarding 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, to record the full ensemble of parts.*

*15.28 They have also agreed to further investigate some actions as part of the Section 60 stage application under the Heritage Act 1977 which have the potential for change to reduce negative impacts including:*

- *undertaking significance assessments of equipment proposed to be removed to determine what pieces will be retained in SOH collections;*

*SSD Draft Condition B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) …;*

*(o) significance assessments of equipment proposed to be removed to determine what pieces will be retained in the Sydney Opera House's collections;*

*(p) …*

| ***Previous Submissions*** | ***Supplementary Information*** | ***Attachment*** |
|---|---|---|
| DA Drawing Set | | 4 |
| Response to Heritage Council Submission | | 8 |
| | Additional Drawings | 7 |

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.**

Plans showing the design changes to this component are included in Attachment 7. (49-BR-ARM01-A0706, 49-BR-ARM01-A0726, 49-BR-ARM01-A1206, 57-BR-SV240-M0293, 57-BR-SV240-M0720)

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 Eastern & Western Foyers**

*Heritage Council Recommendations – 20 February 2019*

*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.*

*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.*

*Heritage Council Recommendations 16 August 2019*

*In addition to the Heritage Council recommendation 3.33 (20 February 2019), the following condition is recommended.*

*2.16 Additional details must be provided demonstrating the consistency of the proposed handrails with those used in similar locations throughout the SOH, and with the kit of parts document. Further, the Kit of Parts document should be submitted as part of the section 60 application for the works for Heritage Council's consideration.*

*Heritage Council Recommendations 16 October 2019*

*16.1.17 There are some actions which should be subject to further review as there is potential for change to reduce negative impacts. These are:*

- *the method of installation of handrails, particularly the impacts on precast granite stair treads (refer S 3.33 – 20 February 2019)*

*SSD Draft Condition B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) …;*

*(c) handrails and the 'kit of parts';*

*(d) …*

| ***Previous Submissions*** | ***Supplementary Information*** | ***Attachment*** |
|---|---|---|
| DA Drawing Set | | 4 |
| Response to Heritage Council Submission | | 9 |
| | Bronze Componentry Project | 10 |

The Bronze Componentry Project (BCP), or "Kit of Parts", is a project initiated by the SOH and undertaken by Grimshaw Architects, which has sought to develop a consistent approach to handrail and barrier design for new works at the SOH. The BCP has developed Design Investigations and a Design Manual for bronze componentry at the SOH (included here in Attachment 10). Wherever possible, ARM Architects have utilised componentry from the BCP in the Concert Hall project.

The methodology for the installation of the handrails is as follows:

- *Site measure handrails*
- *Mark out hand rail post locations on the precast treads*
- *Carefully remove the precast treads. To remove a precast tread the epoxy grout needs to be saw cut out and the panel lifted out on a mobile gantry*
- *Core a hole as small as possible so that the new hand handrail post can pass through the precast tread.*
- *Install the structural steel base pate to the concrete structure below the stair (this is usually between 300 and 600 below the precast tread)*
- *Install a solid section of stainless steel into the new base plate*
- *Replace precast treads*
- *Now that the precast tread has been installed grout in the solid stainless steel rod passing from the base plate through the tread. This rod will be concealed in the hand rail post providing structural stability to the handrail system*
- *Patch core hole through precast tread to match the existing granite finish*
- *Power cables for integrated lighting will be concealed inside a post.*
- *Install hand rail posts and top rail. This is usually completed by the installing the raw hand rail, making sure all the joints are tight and completing any adjustments as required. The handrail is then dismantled, taken off site and a patina finish applied.*
- *Final installation of handrail*

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**Lift 30**

*Heritage Council Recommendations – 20 February 2019*

*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.*

*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.*

*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.*

*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.*

*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.*

*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 Heritage Council Recommendations 16 August 2019*

*Heritage Council Recommendations 16 August 2019*

*In addition to the Heritage Council recommendations 3.52 and 3.54 (20 February 2019), the following condition is recommended.*

*2.24 The proposed detail of the extension of two cranked beams connecting to the new lift should be reviewed and revised to minimise visual impacts and to ensure the new works do not disrupt the aesthetic qualities of the distinctive line of crank points in the beams.*

*Heritage Council Recommendations 16 October 2019*

*16.1.18 There are some actions which should be subject to further review as there is potential for change to reduce negative impacts. These are:*

- *…*
- *the proposed detail of the extension of the two cranked beams to the new lift to ensure the design does not disrupt the aesthetic qualities of the distinctive line of crank points in the beams (S 2.24 – 16 August 2019)*

*SSD Draft Condition B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) …;*

*(b) northern foyer lift, including the detail of the extension of the two cranked beams connecting to the new lift;;*

*(c) …*

| ***Previous Submissions*** | ***Supplementary Information*** | ***Attachment*** |
|---|---|---|
| DA Drawing Set | | 4 |
| Response to Heritage Council Submission | | 9 |
| | Additional renders of cranked beams | 6 |

As discussed in the Response to the Heritage Council Submission (Attachment 9), the SOH has removed Lift 29 from the project scope.

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)*

The detail of the modifications to the cranked beams are shown in the sections in drawing 49-BR-ARM01-DA5126[F]-B1~DETAIL AREA - SECTIONS - LIFT 30 (included in Attachment 4), with the orientation of the sections shown in drawings 49-BR-ARM01-DA5120[F]-B1~DETAIL PLANS 1 - LIFT 30 and 49-BR-ARM01-DA5121[F]-B1~DETAIL PLANS 2 - LIFT 30 (included in Attachment 4).

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.

The SOH sought additional commentary from ARM Architects in relation to the extension of the cranked beams:

*"The additional renders (Attachment 6) supplied as part of this commentary demonstrate that the distinctive line of the crank points in the beams is not affected by the new works to the lifts.*

*"The new beams have been deliberately set at a level 100mm higher than the existing beams to ensure the crank points remain in their current location. This is a detail that was workshopped and agreed to in conjunction with the EAP and SOH Heritage Architect.*

*"The remainder of the new structure connecting into the lift shaft represents the minimum required structure to support the landing of Level 3A and is expressed in concrete to match the existing. (SOH underline) This robust expression of structure is in keeping with the surrounding network of existing beams."*

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**Accessible Toilets Northern Foyer**

*Heritage Council Recommendations – 20 February 2019*

*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.*

*Heritage Council Recommendations 16 August 2019*

*No additional recommendation.*

*Heritage Council Recommendations 16 October 2019*

*No additional recommendation.*

| *Previous Submissions* | *Supplementary Information* | *Attachment* |
|---|---|---|
| DA Drawing Set | | 4 |
| Response to Heritage Council Submission | | 9 |

As noted in the Response to the Heritage Council's submission (Attachment 9), 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.

The SOH Heritage Architect is currently undertaking an audit of Peter Hall designed facilities – toilets and dressing rooms. The audit report will be provided to the Heritage Division as soon as possible.

**Accessibility upgrades to Seating/Dressing Rooms**

*Heritage Council Recommendations – 20 February 2019*

*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.*

*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.*

*Heritage Council Recommendations 16 August 2019*

*As per Heritage Council recommendations 3.68 and 3.69 (20 February 2019).*

*Heritage Council Recommendations 16 October 2019*

*No additional recommendation.*

*SSD Draft Condition B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) …;*

*(b) …;*

*(p) fixtures and fittings in dressing room facilities to determine retention, reuse and incorporation of significant elements into new areas.*

| *Previous Submissions* | *Supplementary Information* | *Attachment* |
|---|---|---|
| DA Drawing Set | | 4 |
| Response to Heritage Council Submission | | 7 |

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

As noted in the Response to the Heritage Council's submission (Attachment 9), 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.

As noted above, the SOH Heritage Architect is currently undertaking an audit of Peter Hall designed dressing rooms. The report of the audit will be supplied to the Heritage Division as soon as possible.

**Acoustic Reflectors**

*Heritage Council Recommendations – 20 February 2019*

*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.*

*4.11 The following recommended condition relating to the over-stage reflectors within the HIS (p106) 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.*

*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.*

*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.

*Heritage Council Recommendations 16 August 2019*

*In addition to the Heritage Council recommendations 4.11, 4.12, 4.13 and 4.15 (20 February 2019), the following condition is recommended.*

*3.7 A policy governing the implementation of the 'at rest' mode when the venue is not being used for performances, is to be included in a future revision of the CMP. This must be developed in consultation with a Heritage Council's delegate as part of the Section 60 stage application.*

*Heritage Council Recommendations 16 October 2019*

*16.2.16 Actions that should be subject to further review as there is potential for change to reduce negative impacts (some overlap with those suggested by the SOH) are:*

- *over-stage reflectors (refer to S 4.11 – 20 February 2019)*
- *side wall reflectors (refer to S 4.13 – 20 February 2019)*
- *…*
- *ceiling penetrations for new lighting and speaker arrays (refer to S 3.21 – 16 August 2019)*

*SSD Draft Condition B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) …;*

*(d) the final colour and design of the over-stage reflectors, to be prototyped in situ in the Concert Hall and approved by the Opera House's Conservation Council, Design Advisory Panel, and heritage architect*

*(e) …;*

*(j) details of the penetrations in the Concert Hall ceiling;*

*(k) …;*

| ***Previous Submissions*** | ***Supplementary Information*** | ***Attachment*** |
|---|---|---|
| DA Drawing Set | | 4 |
| Response to Heritage Council Submission | | 9 |

As noted above, 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.

With regard to the proposed over stage reflectors, the SOH has already undertaken three prior prototype tests in the Concert Hall in 2016 and 2017. Details of these were provided in the Architectural Statement included with the EIS (pp 113-115) and in the Options and Design Analysis, Appendix 10 to the EIS (pp 46-47). During this process, feedback from expert listeners, patrons,

performers, the architecture and heritage community, the DAP, CC and Heritage Division was sought to inform the design of the reflector array, including the preferred colour and finish.

The SOH will refinish an existing prototype reflector in the proposed colour, and will hang this in the Concert Hall, along with a prototype acoustic banner drape, and a prototype overstage lighting array. The SOH will invite the Heritage Division to send a delegate to this viewing. This will occur in February 2020.

The SOH will select one 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 the Heritage Division, 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).

The SOH commits to the recommended condition from the HIS regarding the prototyping of the side wall reflectors (p 106). However, full prototyping of the side wall reflectors will not be possible until after the submission of this Section 60 application. SOH in collaboration with the joinery subcontractor once appointed, will prepare and submit a method statement.. It will be a requirement of the scope for the joinery subcontractor to:

- Laminate sheets of free issued white birch veneer to match site conditions as required to demonstrate an effective means making cuts and penetrations for the areas identified in the scope
- Make a mock-up of an indicative section of Concert Hall wall panels that accurately reflects the site conditions of at least 2 adjacent panels that include joists, fixings, internal cladding and any other standard in-situ details based on the contractors inspections to demonstrate effective means of making cuts across panels and recovering and reusing the resulting timber panels

Details of the penetrations in the Concert Hall ceiling were provided in the Response to the Heritage Council submission (Attachment 9).

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**Panelled Box Fronts**

*Heritage Council Recommendations – 20 February 2019*

*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.*

*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.

*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.*

*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.*

*Heritage Council Recommendations 16 August 2019*

*In addition to the Heritage Council recommendations 4.21 and 4.23 (20 February 2019), the following condition is recommended.*

*3.14 The following recommended condition relating to the tapered bronze guard rails within the HIS (p 105) should be adopted.*

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

*In addition, further detail is required to understand the extent of original tapered bronze guard-rails to be removed. This should be provided as part of the section 60 application for the works.*

*3.15 The extent of removal of box fronts including rear wall of side boxes, rear wall of stalls and upper and lower circles, should be clarified to better understand if representative samples of all types of 1973 box fronts could be retained in situ and whether new panels can overlay original materials and forms to enable the reinstatement of original fabric and the uncluttered experience of the space should new technologies emerge. This should be resolved in consultation with a representative of the Heritage Council as part of the Section 60 stage application.*

*Heritage Council Recommendations 16 October 2019*

*16.2.16 Actions that should be subject to further review as there is potential for change to reduce negative impacts (some overlap with those suggested by the SOH) are:*

- *…*
- *laminated brush box panels (refer to S 4.21– 20 February 2019 )*
- *tapered bronze guard-rails (refer to S 3.14 – 16 August 2019)*
- *1973 box fronts (refer to S 3.15 – 16 August 2019)*
- *…*

*SSD Draft Condition B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) …;*

*(e) clarification of the extent of removal of box fronts including the rear wall of side boxes, rear wall of stalls and upper and lower circles to understand whether samples of 1973 box fronts can be retained in situ and if new panels can overlay original materials and forms, and clarification of the final detail design of the laminated brushbox panels;*

*(f) clarification on the extent of the original bronze guard rail proposed to be removed to make way for accessible seating and retention of this, where possible; (e) …;*

*(g) …;*

| *Previous Submissions* | *Supplementary Information* | *Attachment* |
|---|---|---|
| DA Drawing Set | | 4 |
| Response to Heritage Council Submission | | 9 |
| | Additional drawings (ARM) - A6095 to A6099 | 7 |

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.*

Further details of the extent of removal of box fronts and rear walls were provided in the Response to the Heritage Council submission (Attachment 9).

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) would be able to be reinstated in the future.

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. This 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.

It is not possible to overlay existing brushbox panelling with the new acoustic diffusion panelling. The new panelling requires the installation of suitable substrate framing which can support the new panels. Installing the substrate framing on top of existing brushbox panelling would irreparably damage the existing panelling, and would compromise the available space in the venue, particularly in the walkways at the rear of the boxes.

The box front designs are shown in more detail in the additional drawings provided A6095-6099.

All handrails removed will be retained. Tapered handrails at the front of the boxes will be reinstated. The tapered bronze rails at the rear of Boxes U, V, and W, will be modified into segments, or if necessary, replaced with new matching handrails to enable accessible seating to be installed at the rear of these boxes.

**Acoustic drapes**

*Heritage Council Recommendations – 20 February 2019*

*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.*

*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.*

*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.*

*Heritage Council Recommendations 16 August 2019*

*As per Heritage Council recommendations 4.28 and 4.30 (20 February 2019).*

*Heritage Council Recommendations 16 October 2019*

*16.2.16 Actions that should be subject to further review as there is potential for change to reduce negative impacts (some overlap with those suggested by the SOH) are:*

- *…*
- *white birch ceiling crown (refer to S 4.28 – 20 February 2019)*
- *new acoustic drapes (refer to S 4.30 – 20 February 2019)*
- *…*

*SSD Draft Condition B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) …;*

*(g) details of the construction methodology for the sidewall reflector panels and acoustic drape mechanisms;;*

*(h) …;*

| ***Previous Submissions*** | ***Supplementary Information*** | ***Attachment*** |
|---|---|---|
| DA Drawing Set | | 4 |
| Response to Heritage Council Submission | | 9 |
| | Additional drawings | 7 |

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.

The drawing 49-BR-ARM01-A6200[2]-B1~CONSTRUCTION DETAILS - THEATRE INTEGRATION - ACOUSTIC BANNERS (Attachment 7) provides additional architectural detail of the drawer mechanisms.

The theatre designers, Theatreplan, have also produced a number of drawings that detail the acoustic banners and associated mechanisms. These additional drawings are included here in Attachment 7.

As noted above, a prototype banner will be hung in the Concert Hall in February 2020, at the same time as the prototype overstage reflector and lighting arrays will be flown. The SOH will invite the Heritage Division to send a delegate to this viewing.

The following drawings by our architects and theatre designers, included here in Attachment 7, detail the following components of the acoustic banner drapes:

- 49-BR-ARM01-6200 details the sidewall banner drawers
- Theatreplan drawings: 33-BR-TP002-TA440, 33-BR-TP002-TA443, 33-BR-TP002-TA444, and 33-BR-TP002-TA445 detail the sidewall banners and drawer mechanisms
- Theatreplan drawings: 33-BR-TP002-TA414, 33-BR-TP002-TA415, 33-BR-TP002-TA416, along with ARM drawings 49-BR-ARM01-6095 and 49-BR-ARM01-6096, detail the box front banner mechanisms

**Lighting/Speakers**

*Heritage Council Recommendations – 20 February 2019*

*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.*

*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.*

*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.*

*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.*

*Heritage Council Recommendations 16 August 2019*

*In addition to the Heritage Council recommendations 4.35 and 4.38 (20 February 2019), the following condition is recommended.*

*3.21 The following recommended condition relating to the new speaker arrays within the HIS (p 108) should be adopted, 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. 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.*

*Heritage Council Recommendations 16 October 2019*

*16.2.16 Actions that should be subject to further review as there is potential for change to reduce negative impacts (some overlap with those suggested by the SOH) are:*

- *…*
- *new lighting arrays (refer to S. 4.35 – 20 February 2019)*
- *ceiling penetrations for new lighting and speaker arrays (refer to S 3.21 – 16 August 2019)*

*SSD Draft Condition B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) …;*
*(h) details of the final speaker system;*
*(i) …;*
*(j) details of the penetrations in the Concert Hall ceiling;*
*(k) …;*

| ***Previous Submissions*** | ***Supplementary Information*** | ***Attachment*** |
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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. As noted elsewhere, the SOH has committed to developing an "At Rest" policy, and including this in a future revision of the CMP.

The SOH is committed to complying with the condition regarding the speaker arrays as detailed in the HIS, but is 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 9. 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.

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.

The DAP has recommended that any technical “overlay” required in the Concert Hall for various performance modes, be clearly seen as a technical overlay and that the SOH should not try to “camouflage” such equipment with colour similar to the white birch of the walls and ceiling.

It is considered that the current proposal addresses this recommendation in the most effective manner. The overstage lighting, whilst the architects originally proposed a bronze shroud around the short lighting trusses and attached lights, is best left as exposed “theatrical overlay”. This design was confirmed by the DAP at its meeting in December 2018, and confirmed again at the DAP meeting on 29 October 2019.

Similarly, the speakers, which are generally required in all performance modes (i.e. they are also required for public address purposes in acoustic mode), should be black. This was also confirmed by the DAP at the October 2019 meeting.

The SOH has asked David Ludlam, Executive Director of the theatre designers, Theatreplan, to comment about the colour finish of the lighting arrays and speakers.

David Ludlam has noted that lighting fixtures are black because they do not scatter or reflect light back to the audience, and black fixtures radiate heat most efficiently, and as such light coloured fixtures for theatrical use may not be guaranteed by their manufacturers. Given that the light fixtures need to be black, it is appropriate that the supporting frames are also black to avoid contrast and the reflecting or scattering of light.

With regard to the speaker arrays, he has noted that whilst it is possible to make the speakers and frames in a custom colour, any colour other than black could reflect light and therefore make the speakers more intrusive, particularly in concert mode when the lighting is focussed on the performers on the stage.

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**Stage improvements**

*Heritage Council Recommendations – 20 February 2019*

*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.

*5.6 The following recommended condition relating to the removal of seating within the HIS (p110) 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.

*Heritage Council Recommendations 16 August 2019*

*As per Heritage Council recommendations 5.5 and 5.6 (20 February 2019).*

*Heritage Council Recommendations 16 October 2019*

*No additional recommendations.*

*SSD Draft Condition B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) …;*
*(o) significance assessments of equipment proposed to be removed to determine what pieces will be retained in the Sydney Opera House's collections;;*
*(p) …;*

| ***Previous Submissions*** | ***Supplementary Information*** | ***Attachment*** |
|---|---|---|
| DA Drawing Set | | 4 |
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As described above, the SOH will undertake the heritage assessment of existing machinery and equipment in the Concert Hall, and will comply with the condition as detailed in the HIS.

**Modifications to back stage area**

*Heritage Council Recommendations – 20 February 2019*

*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.*

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

*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.*

*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.*

*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.*

*Heritage Council Recommendations 16 August 2019*

*In addition to the Heritage Council recommendations 5.17, 5.18 and 5.19 (20 February 2019), the following condition is recommended.*

*4.7 The relocated entry position to the theatre should be reconsidered to provide better visual access and orientation to patrons. Further detail of this consideration should be submitted as part of the section 60 application for the works.*

*Heritage Council Recommendations 16 October 2019*

*16.3.17 Actions that should be subject to further review as there is potential for change to reduce negative impacts (some overlap with those suggested by the SOH) are:*

- *reconfiguration of entry to Concert Hall (refer to S 4.7 – 16 August 2019)*

*SSD Draft Condition B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) …;*
*(k) reconfiguration of the side foyers;*
*(l) final finishes to be used in the anteroom and orchestra assembly room; (i) …;*
*(m) …;*

| ***Previous Submissions*** | ***Supplementary Information*** | ***Attachment*** |
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| | Additional Drawings | 7 |

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.

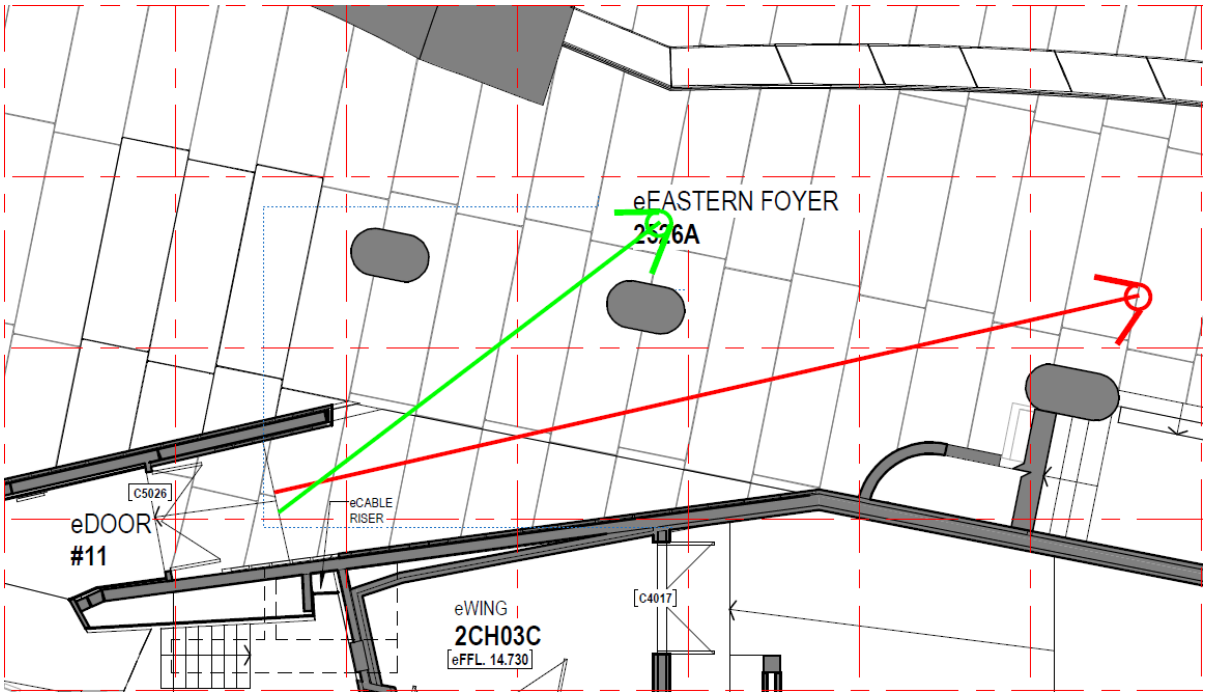
The SOH considers this reconfiguration to be the minimal solution to the stage access issue when the arena risers are deployed, and the proposed design respects the design aesthetics of the side foyers. It has only a minimal impact on the plan area of the side foyers, and only in areas with a lowered 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 7. 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.

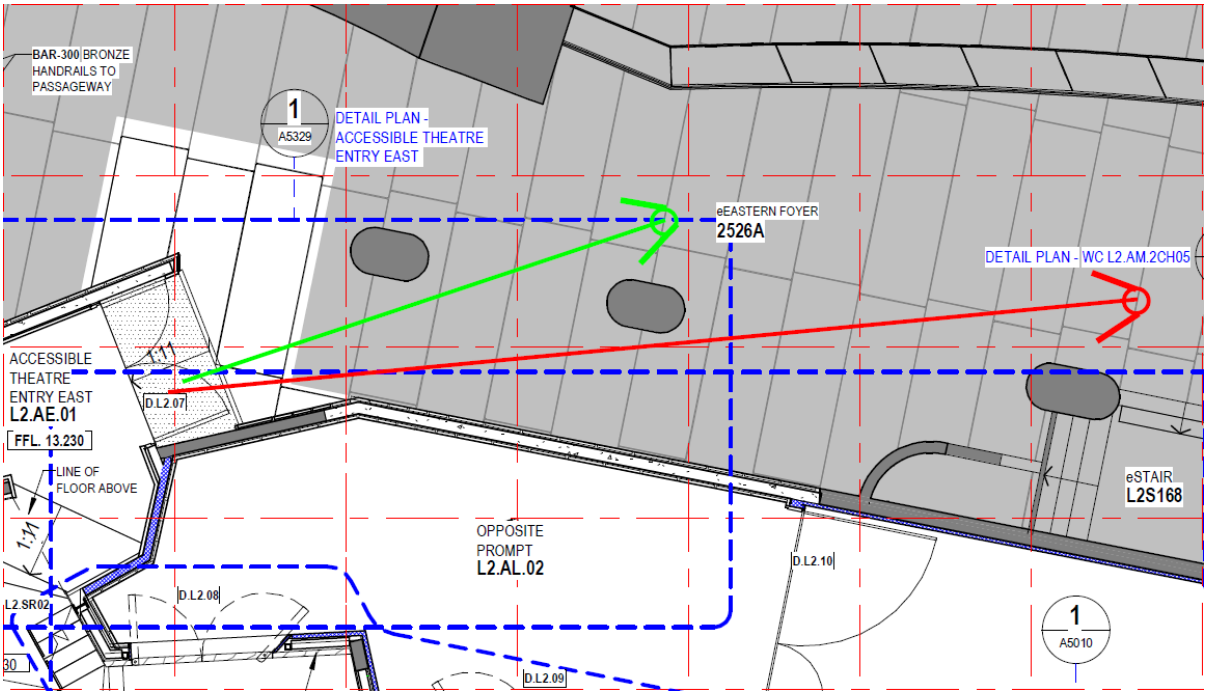
Additional renders, which provide a different perspective from those included in the EIS package, are also included in Attachment 6. The view of the existing East Side Foyer is shown in ARM R-05, with the proposed configuration shown in ARM R-06. The view of the existing West Side Foyer is shown in ARM R-07, with the proposed configuration shown in ARM R-08.

The Concert Hall architects, ARM have offered the following commentary on the reconfiguration of the theatre entries.

> *As the previous submission has noted, the relocation of the entries to the side foyers is driven by the introduction of the arena risers to the stage of the Concert Hall. This change does not have an appreciable impact on the grandness of the side foyers as it all occurs under the existing low ceiling space.*
>
> *We also believe that the relocated entry has acceptable visual access and provides suitable assistance in the orientation of patrons in its new condition.*
>
> *The following diagram shows the existing condition of the Eastern Foyer:*




> *The red marked position is as one approaches from the Southern Foyer and first can see the entry doors into the foyer. The second is further into the side foyer and a more likely point to orient oneself. In both positions the stalls entry can be viewed.*
>
> *This diagram shows the relocated condition of the Eastern Foyer:*




*Again, in both positions the stalls entry can be viewed. In particular the relationship of the entry doors to the second (green) position is more immediate and will aid in the orientation of people looking to make their way into the Hall. Similarly, people who are making their way up to the Northern Foyer or northern doors into the Concert Hall are not impeded by this entry as the natural ant track to these spaces remains on the eastern side of the large columns and within the grand volume of the side foyer.*

The extent of demolition within the orchestra assembly room is shown on approved drawings 49-BR-ARM01-DA0705, and 49-BR-ARM01-DA0725. 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 approved drawings 49-BR-ARM01-DA5310, 49-BR-ARM01-DA5311, 49-BR-ARM01-DA5312, and 49-BR-ARM01-DA5313.

The extent of demolition within the anteroom is shown on drawings 49-BR-ARM01-DA0706, 49-BR-ARM01-DA0726, and additional drawings 49-BR-ARM01-A0910, and 49-BR-ARM01-A0911 (Attachment 7).

The new fitout of the anteroom is shown on approved drawings 49-BR-ARM01-DA5321, 49-BR-ARM01-DA5322 and 49-BR-ARM01-DA5323.

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.

**Technical Improvements**

*Heritage Council Recommendations – 20 February 2019*

*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.*

*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.*

*Heritage Council Recommendations 16 August 2019*

*As per Heritage Council recommendation 5.23 (20 February 2019).*

*Heritage Council Recommendations 16 October 2019*

*No additional recommendations.*

| ***Previous Submissions*** | ***Supplementary Information*** | ***Attachment*** |
|---|---|---|
| DA Drawing Set | | 4 |
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As described above, the SOH will undertake the heritage assessment of existing machinery and equipment in the Concert Hall, and will comply with the condition as detailed in the HIS.

**Seating refurbishment**

*Heritage Council Recommendations – 20 February 2019*

*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.

*Heritage Council Recommendations 16 August 2019*

*As per Heritage Council recommendation 5.29 (20 February 2019).*

| *Previous Submissions* | *Supplementary Information* | *Attachment* |
|---|---|---|
| DA Drawing Set | | 4 |
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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 – 20 February 2019*

*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 with 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.*

*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.*

*Heritage Council Recommendations 16 August 2019*

*As per Heritage Council recommendations 5.34 and 5.35 (20 February 2019).*

*Heritage Council Recommendations 16 October 2019*

*16.3.17 Actions that should be subject to further review as there is potential for change to reduce negative impacts (some overlap with those suggested by the SOH) are:*

- *…*

- *infilling of the cannon-ports and diffusers (refer to S 5.34 – 20 February 2019)*

*SSD Draft Condition B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) …;*
*(i) air conditioning cannon port openings, including a full-sized mock-up to be assembled before the works commence;*
*(j) …;*
•

| ***Previous Submissions*** | ***Supplementary Information*** | ***Attachment*** |
|---|---|---|
| DA Drawing Set | | 4 |
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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.

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.

**CLC Entry**

*Heritage Council Recommendations – 20 February 2019*

*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.*

*Heritage Council Recommendations 16 August 2019*

*5.5 The proposed relocation of the western entry door should be revised to sit further east of the proposed location to ensure the deep shadow of the existing entry is retained. This is to be submitted as part of the Section 60 application for the works.*

*Heritage Council Recommendations 16 October 2019*

*16.4.15 The proposed relocation of the western entry doors should be subject to further review as there is potential for change to reduce negative impacts (refer to S 5.5 – 16 August 2019).*

*SSD Draft Condition B18. As part of the Section 60 application under the Heritage Act 1977, the Applicant is to further resolve the design of the following:*

*(a) …;*
*(m) the Creative Learning Centre ramp and doors at the entry from the western broadwalk;*
*(n) …;*

| ***Previous Submissions*** | ***Supplementary Information*** | ***Attachment*** |
|---|---|---|
| DA Drawing Set | | 4 |
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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.

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.

**CLC Wall modification**

*Heritage Council Recommendations – 20 February 2019*

*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.*

*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.*

*Heritage Council Recommendations 16 August 2019`*

*No additional recommendation.*

*Heritage Council Recommendations 16 October 2019*

*No additional recommendation.*

| *Previous Submissions* | *Supplementary Information* | *Attachment* |
|---|---|---|
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Details of the opening and proposed strengthening of the curved wall were provided in the SOH Response to the Heritage Council Submission.

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The SOH looks forward to working with the Heritage Division, and the Heritage Council, to resolve any outstanding issues and to finalise the issue of a Section 60 approval for the proposed projects.