

DESIGN 5

A R C H I T E C T S

**SYDNEY OPERA HOUSE**  
CONCERT HALL & CREATIVE LEARNING CENTRE  
RENEWAL PROJECTS  
SSD 8663

## **HERITAGE IMPACT STATEMENT**



Prepared for  
**Sydney Opera House Trust**

by  
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**17 October 2018**

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**SYDNEY OPERA HOUSE**  
**CONCERT HALL**  
**& CREATIVE LEARNING CENTRE**  
**RENEWAL PROJECTS**  
**SSD 8663**

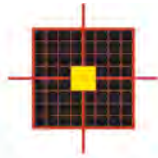
**Heritage Impact Statement**

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## **SYDNEY OPERA HOUSE**

### **CONCERT HALL & CREATIVE LEARNING CENTRE RENEWAL PROJECTS SSD 8663**

#### **Heritage Impact Statement**

## **1.0 BACKGROUND & EXECUTIVE SUMMARY**

### **1.1 Background and Purpose of Report**

Design 5 - Architects has been engaged by the Sydney Opera House Trust (SOHT) to prepare an assessment of the Heritage Impact of a proposed suite of Building Renewal projects within front-of-house and back-of-house areas at the Sydney Opera House, referred to in this application as:

- Concert Hall Renewal Project
- Creative Learning Centre

Refer to Section 3.2 of this report for an explanation of the naming of some of the projects and affected spaces in this application, as some differ from presently accepted names, or those used in other documents.

A more detail description of each project is given below in Section 4 of this report.

The report has been prepared by Alan Croker (director) and Anita Krivickas (associate), both of Design 5 – Architects.

## 1.2 EXECUTIVE SUMMARY

The suite of projects proposed in this application will affect a number of very significant parts of the Sydney Opera House. The impacts are assessed and described in detail with recommendations in the body of this heritage impact assessment report. The summary conclusion of this report is provided here below.

For more detail, including recommendations and conditions, refer to the following sections of this report:

- 7.3 Conclusion re CMP compliance
- 8.2 Summary assessment of heritage impact on State Heritage values
- 9.3 Summary assessment of heritage impact on National Heritage values
- 10.0 Impact on World Heritage Values of the Sydney Opera House
- 11.0 Compliance with the Utzon Design Principles

### **Concert Hall Renewal Project**

It is our conclusion that with the works proposed in the Concert Hall auditorium, foyer and back-of-house areas, Utzon's original design concepts will be strengthened and made accessible to a broader public than before, and Peter Hall's contributions will be retained and respected. The improved functionality and accessibility of the Concert Hall and its foyers, and improved acoustic performance in the hall itself, will potentially enhance the reputation and ability of the Sydney Opera House to attract national and international visitors, patrons and performers.

While acknowledging that the proposed insertion of the Level 2 passageway within the eastern side foyer will have high fabric impacts on the stepped podium, and the generosity of its stair width, the form of the soaring fan pedestals and ribs, their association with both Utzon and Arup, and the majestic qualities of this side foyer space remain unaffected.

Utzon's original concept was to have passages on both sides of the two main auditoria, with lifts in the northern foyers. The structure for these Level 3 passages survives beneath the grand stairs in the side foyers. It is important to note that in this project no passageway is proposed for the western side foyer which will remain as it is, except for the addition of a simple central handrail. Similarly, while the insertion of Lifts 29 and 30 will have high impacts on the broad sweep of stairs and cranked concrete beams at each end of the Northern Foyer and east and west caves below, carefully considered location and detailing, and adoption of Utzon and Hall's palette of materials will lessen their overall impact on the aesthetic qualities of these spaces.

These impacts must be considered in relation to the substantial positive impacts with regard to accessibility of the Concert Hall and its foyers for a broader section of the public. With these insertions, the experience of these foyer spaces, their power and grandeur, will be available to people who may never have been able to access them before. This is completely in line with Utzon's original concepts, and the identified State, National and World Heritage Values.

The proposed functional and acoustic upgrades within the Concert Hall auditorium will result in some adverse visual impacts, particularly for non-amplified performance, from the proposed over-stage acoustic reflectors, associated stage lighting and speaker arrays on the significant character of the Concert Hall auditorium. Depending on viewing position, these will partially mask views towards the grand organ and the faceted ceiling above. This will be most evident from the stalls and the front of the circle. However Peter Hall's design aesthetic and choice of materials and finishes will be respected by these changes. The use of the signature magenta colour from the upholstery as the basis for the over-stage acoustic reflectors should strengthen, in an elegant and respectful manner, both Utzon and Hall's concept of using celebratory colours in the auditoria.



Operable acoustic reflectors in the side walls of the white birch ceiling, when deployed, will be prominent, but should not substantially detract from the strong geometric character of Peter Hall's interior. It is proposed that these will only be deployed during the actual performance.

The 'wave' form diffusion panels on the box fronts, stage surrounds and side walls, will have high impacts on original and more recent fabric and be highly visible, but their configuration, material and details will retain and respect the original Hall design. These components of the project play an important and positive role in the acoustic quality of the hall for non-amplified performance, the primary use of the space.

The proposed acoustic treatments within the Concert Hall for amplified performances, including retractable acoustic drapes on side walls and box fronts, as well as retractable drapes suspended from the ceiling crown, will result in high visual impacts to the character of Hall's original interior of the Concert Hall, however these impacts are transient with the auditorium often darkened during this type of performance. Their well considered design and placement fits neatly with Hall's geometric interior and should be a considerable improvement on the present somewhat ad-hoc arrangements. The overall impacts in terms of acoustic performance should be positive.

In order to minimise visual clutter, in accordance with Policy 8.4 in the CMP, the set-up for each performance should ideally deploy the minimum technical and acoustic equipment and be flown out or removed when not in use. This includes suspended speaker clusters and lighting. This will be an ongoing housekeeping and management issue for the Opera House and the performing companies who use the Concert Hall and guidance on this issue is already included in the CMP. With this proposed suite of projects, the considerably enhanced operability and functional efficiency of the technical overlay will assist in achieving this objective.

These visual impacts are acknowledged as not insubstantial, but the mock-ups and acoustic testing, as well as the peer review process, have confirmed that improvements in the acoustic performance of the Concert Hall should be considerable. The visual impacts are therefore considered necessary if this venue is to maintain its status as a world class performance venue.

Changes required within the auditorium to accommodate additional wheelchair positions at stalls and mid-circle level (Level 4) will have only minimal visual impact on the quality and character of the space and Peter Hall's design regime will be respected. These and other adjustments to existing seating to accommodate these wheelchair positions and provide improved fire resistance should have minimal impact on the character, material and configuration of the seating and the Concert Hall space.

The automated semi-circular stage risers and changes below the stage to accommodate them will not impact on significant fabric or spaces and will improve sightlines from the auditorium, and functionality of the stage. The associated reconfiguration of the wing space, stage entries and southern most auditorium entry doors on both sides of the stage will impact on the fabric and space of the adjacent foyers, but as they retain and respect Hall's geometry and setout, materials and finishes, should remain relatively unnoticed when completed.

The proposed upgrade of the air-conditioning system for the Concert Hall involves removal of the existing 'cannon-port' air delivery system and replacement with a more efficient diffuser system in the same locations, with additional slot diffusers close to the edge of the ceiling soffits over the boxes and sides of the auditorium. These changes and additional elements have been designed and detailed to minimise impact on the fabric and avoid discordant patching of the existing plywood linings. Visually this should have a neutral impact.

Alterations to the Back-of-House performers' areas, including dressing rooms, toilets, corridors and assembly rooms, to improve access and functionality, will generally have minimal heritage impact. The aim of the design is to incorporate / reinstate Hall's palette of materials and finishes for affected back-of-house areas. This accords with the policies and objectives of the CMP.

While acknowledging that there will be substantial impacts to significant spaces and some original fabric, it is our assessment that the proposed Concert Hall Renewal Project will deliver an essential suite of sensitively designed accessibility, acoustic and functional improvements that comply with the Utzon Design Principles and the policies and guidelines in the CMP.

The works in the Concert Hall project are therefore assessed as having a 'significant (adverse) impact' on some of the State and National Heritage values of the Opera House, particularly those that relate to fabric and views within significant spaces, but these cannot be considered in isolation from the substantial positive impacts on those values that relate to its iconic status as an architectural masterpiece accessible to the broader public, and its core function and reputation as a world-class performing arts centre.

Weighing up the positive outcomes against the significant impacts, the proposed works have been assessed as not having an overall (net) adverse impact on Sydney Opera House's Outstanding Universal Value, and will not threaten or diminish it in either the short or long term.

Considering the above, our conclusion is that the proposed works in the Concert Hall project will strengthen the core function of the Opera House as a performing arts centre and have an overall positive impact on its State, National, and World Heritage values.

### **Creative Learning Centre**

The proposed change in use of the Level +12 administration areas for the Creative Learning Centre is considered a positive change. These spaces, originally fitted out by Peter Hall, address an important public promenade, the Northern Broadwalk, and should have a use that is functionally and visibly engaging for the public. This is consistent with the CMP and an opportunity for change identified by Jørn Utzon.

This dedicated facility will support the primary use of the Opera House and enhance its ability to engage with and inspire the next generation of theatre craftspeople and performers, both locally and nationally. This will strengthen its association with the wider performing arts community and its standing as a world-renowned performing arts centre.

The project involves minimal change externally, confined to minor modifications to the western entry off the Broadwalk, within the existing entry space with minimal and acceptable impacts.

The proposed works internally are more than modest functional improvements and constitute a major change, however this proposal retains and respects the character and design regimes used by Hall, noting that his work was inspired by Utzon's concepts. In this instance and for this proposed facility, this is considered an appropriate response and a positive impact.

The proposal involves some modification (opening up) of original structural walls within the Podium to create the required spaces, but these impacts are considered acceptable.

A connecting entry foyer to the Creative Learning Centre is proposed off the northern end of the Western Foyer. Proposed finishes on the Western Foyer side of this entry retain the design language, materials and finishes of this Utzon space, and will have little visible

impact. This connecting entry foyer, potentially a light box 'coloured' by indirect lighting, will provide a theatrical entry to a world of magic – an idea that is consistent with Utzon's concept for approaching the performance spaces.

The proposal includes salvage and adaptation of Hall's 'wobbly' panels in a new and dynamic storage / display configuration adding flexibility, colour and delight in a manner that is consistent with the Utzon Design Principles and Hall's design concepts for the interiors.

The use of strong colours within the wobbly fronted storage units, and on other selected surfaces, is considered appropriate in a creative learning environment and is supported. Colour was an important part of Peter Hall's interior schemes for the Opera House and it is suggested that the selected colours could potentially have some connection with the history and / or aesthetics of the building.

The northern most sections of the two main spaces will be fitted out on walls and ceilings with the wobbly panels in the same manner as Peter Hall had intended within the administration areas of the Podium, providing a consistent character with adjacent spaces when viewed from the Broadwalk. Other parts of the Creative Learning Centre will have pared back finishes to closely reflect the character of service and backstage areas.

The proposed Creative Learning Centre constitutes a major change within the Podium of the Sydney Opera House. However, it retains and respects the significant design regime introduced by Peter Hall, while also being consistent with the Utzon Design Principles.

The proposed changes in the Creative Learning Centre project will be permanent but none will have a 'significant impact' on the National or World Heritage values of the Opera House. The proposal complies with the policies and guidelines in the CMP and will have a positive impact on the significant values of Sydney Opera House, including those that are enshrined at State, National and World Heritage level.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Concert Hall Renewal Project (Part of SSD 8663)*

*Summary assessment of impacts – Creative Learning Centre (Part of SSD 8663)*

*Summary assessment of impacts – All Renewal Projects*

## 2.0 SEARS REQUIREMENT

The requirements for a Heritage Impact Statement (HIS) with respect to this application are stated in Key Issue 4 of the Secretary's Environmental Assessment Requirements (SEARS) for Application No. SSD 8663, issued 28 August 2017, as modified and re-issued 24 August 2018.

This modified version of the SEARS requirements requested the following issues be addressed in this Heritage Impact Statement (HIS):

### 3. *Environment Protection and Biodiversity Conservation Act (1999) (EPBC Act)*

- *The application must include a detailed assessment of all likely direct, indirect and consequential impacts of the proposed controlled action on all protected matters of national environmental significance under Part 3 of the EPBC Act, specifically the World Heritage values of a declared World Heritage Property and the National Heritage values of a National Heritage place.*

### 4. *Heritage*

- *The application must include a Heritage Impact Statement (HIS) prepared by a qualified Heritage Consultant. The HIS must identify and describe the characteristics and values that are likely to be impacted by all stages of the proposed development, with appropriate reference to relevant management plans.*
- *The HIS must address any impact to the heritage significance of the Sydney Opera House and its setting, including impacts to the world heritage buffer zone and/or Aboriginal, historic or archaeological significance.*
- *The HIS and accompanying plans must include details of the building works and alterations to significant building fabric, structural members, services and spaces associated with the proposal. The impacts to the significant fabric and structure are to be clearly identified. The impacts to users of the area must be clearly identified.*
- *The HIS must provide a detailed assessment of each of the key proposed elements, and implications of BCA compliance and construction issues.*
- *The HIS must include a visual analysis of the proposed works, including before and after perspectives.*
- *The HIS must consider current and known future access requirements under the Building Code of Australia and the Disability Discrimination Act 1992 and assess the heritage impact of these requirements. Details of the minimal BCA and accessibility work to achieve regulatory compliance shall be provided.*
- *The HIS must discuss options that have been considered and assessed in order to demonstrate that the proposed works present the best option with minimal heritage impacts.*
- *The HIS must assess the proposal against the requirements of the following documents:*
  - *NSW Heritage Manual*
  - *Matters of National Environmental Significance Significant Impact Guidelines 1. 1*
  - *Management Plan for the Sydney Opera House*
  - *Respecting the Vision: Sydney Opera House – A Conservation Management Plan (4th Edition)*
  - *Utzon Design Principles*
  - *Sydney Opera House Accessibility Masterplan 2015*
- *The HIS must demonstrate that the proposed works present the best option with the least heritage impacts.*
- *The HIS must include any technical data and other information used or needed to make a detailed assessment of the relevant impacts.*

### 3.0 BASIS OF ASSESSMENT

This Heritage Impact Statement (HIS) assesses the proposal against the following documents:

- *Matters of National Environmental Significance – Significant Impact Guidelines 1.1*, EPBC Act 1999, Department of the Environment 2013
- *Respecting The Vision, Sydney Opera House – a Conservation Management Plan*, by Alan Croker. Fourth Edition, SOHT June 2015 (referred to below as CMP 4th edition)
- *Sydney Opera House, Utzon Design Principles*, SOHT May 2002 (referred to below as the UDP 2002)

The *Management Plan for the Sydney Opera House* (prepared in 2005 as part of the bilateral agreement negotiations) references the CMP 3rd edition, (*Sydney Opera House, A Revised Plan for the Conservation of the Sydney Opera House and its Site*, by James Semple Kerr, third edition 2003) and the *Utzon Design Principles* and provides a framework for protection of the World and National Heritage values of the Sydney Opera House site and gives effect to the CMP. It was endorsed by the Heritage Division, Department of Planning & Environment (formerly the NSW Heritage Office). The Management Plan states that approval of actions in relation to the Sydney Opera House site may only be made in accordance with the Management Plan, which defers to the CMP 3rd edition for an assessment of heritage impact of proposals. Since this Bilateral Agreement was put in place, the CMP 4th edition has been formally endorsed by the Heritage Council of NSW on 2 August 2017, and now replaces the CMP 3rd edition.

This heritage impact assessment uses the CMP 4th edition as the basis for assessment

Assessment of these projects against the *Sydney Opera House Accessibility Master Plan 2015* is addressed briefly in Section 5 of this report and in the EIS accompanying this application.

#### 3.1 Methodology

This Heritage Impact Statement has been prepared in accordance with the principles and processes of the *Australia ICOMOS Burra Charter 2013*. The preparation of this Heritage Impact Statement also follows the process and model recommended in the NSW Heritage Manual, specifically the NSW Heritage Office guideline *Statements of Heritage Impact* (revised 2002), including consideration of alternative options and their impact.

#### 3.2 Naming of spaces

The naming of some of the renewal projects referred to in this application differs from the conventional naming for their affected spaces, or the names used in the *Utzon Design Principles* (UDP 2002) and the Conservation Management Plan (CMP 4th edition). These project names are working titles only and do not imply a re-naming of these spaces. The correlation of these titles / names are as follows:

<i>project / working title / name</i>	<i>conventional name</i>
<b>Under the steps</b>	<b>Covered Concourse</b> , previously known as the <i>Vehicle Concourse</i> Referred to in 2001 Strategic Building Plan as <i>Arrival Concourse</i>
<b>Entry Foyer</b>	<b>Box Office Foyer</b>

### 3.3 Documents reviewed

#### **Concert Hall Renewal Project**

**Report** (including Architectural Statements)

Sydney Opera House – Concert Hall Renewal Project

Development Application – October 2018 – BRN-ARM-RPT-AR-0033, Revision J  
ARM Architecture

**Drawing set** – 49-BR-ARM01, DA Issue, Revision D, dated 21 September 2018  
ARM Architecture

The Concert Hall Project Report includes images of the existing spaces and configuration, as well as images of the proposed works on completion. Selected images have been reproduced in this Heritage Impact Assessment.

#### **Creative Learning Centre**

Sydney Opera House – Front of House – Creative Learning Centre

Architectural Drawing Set – DA Issue – 19 February 2018 – Rev D  
Tonkin Zulaikha Greer Architects (TZG)

The Creative Learning Centre document set includes images of the spaces as proposed. Selected images have been reproduced in this Heritage Impact Assessment.

## 4.0 BRIEF DESCRIPTION OF PROPOSALS

These proposed projects form part of a suite of Renewal Projects across the Sydney Opera House site that are intended to upgrade existing performance and patron facilities, create new facilities where space is available, and improve accessibility to as many venues and areas as possible.

The projects considered in this application include the following:

Concert Hall Renewal Project  
Creative Learning Centre

These projects are briefly described as follows:

### 4.1 Concert Hall Renewal Project – Scope of Work

Broadly, the Concert Hall Renewal Project proposes functional and acoustic upgrades for the Concert Hall, including accessibility upgrades to both front-of-house and back-of-house areas identified in the *Accessibility Master Plan 2015*.

#### 4.1.1 Concert Hall Accessibility

This suite of works comprise a series of alterations and upgrades to improve accessibility to the Concert Hall and its foyers. The changes are proposed in reference to:

- SOH *Accessibility Master Plan 2015*
- NCC – Building Code of Australia
- Australian Standards relevant to Access and Mobility.

The works proposed comprise the following:

- On-grade public access from the Level 2 Southern Foyer to Level 2 Concert Hall Northern Foyer via a new passageway, requiring alteration to the eastern foyer stairs and relocation of existing back-of-house services. (Wheelchair access from Level 1 – Box Office level to Level 2 is via existing Lift 1);
- Provision of level access for wheelchairs and less mobile patrons to the Concert Hall circle level and all levels of the Northern Foyer through the installation of new lifts at the eastern and western ends of the Northern Foyer (Lifts 29 and 30);
- Increased number of available wheelchair positions within the Concert Hall – up to 34 at the front of the stalls (Level 2), rear of the lower circle (Level 4), and to the rear of side boxes A, B, C, U, V, and W (Level 4);
- Introduction of two new accessible toilet facilities at Level 3 in the Northern Foyer, adjacent to existing toilet facilities and requiring alterations to their entry lobbies; and
- Additional handrails to the centre of the eastern and western foyer stairs, and replacement of existing handrails within the Concert Hall to meet code compliance.

#### 4.1.2 Back-of-House Accessibility

- Improved mobility access to the Main Rehearsal Room (new wheelchair hoist);
- Upgrading of three performer dressing rooms (58, 75, and 76) at Level 1 for access and sanitary facilities; and
- Introduction of one new accessible toilet facility at Level 1 adjacent to the existing male performer amenities and dressing room 59/60.

#### 4.1.3 Acoustic Design

This suite of works comprise a number of measures to improve the acoustic performance for both amplified and non-amplified music within the Concert Hall.

### **Acoustic (non-amplified) Music**

- Removal of the existing acrylic over stage reflectors (doughnuts);
- Provision of a new array of adjustable over-stage reflectors;
- New operable side wall flaps, acting as acoustic reflectors;
- New stage floor with segmented adjustable risers;
- New profiled timber panelling to the box fronts and stage surround, rear of the side boxes, and rear walls of the choir, stalls and circle for improved acoustic diffusion;
- New profiled timber panelling to the stage surround to improve acoustic response to the musicians on stage;
- Reorientation of the box fronts and stage surround to better angle reflections to the benefit of both audience and musicians;

### **Amplified Music**

Additional elements required to cater for amplified music include:

- New operable acoustic absorbent drapes above the stage, to the stage-surround walls, box fronts and rear walls, and the rear wall of the auditorium, for use during amplified performances (to be fully withdrawn for non-amplified performance);
- Ability to retract side wall acoustic flaps and alter position of over-stage reflectors; and
- A new speaker amplification system and speaker arrangement.

#### **4.1.4 Concert Hall Technical Upgrade**

This suite of works comprise a series of upgrades to accommodate a wider range of performance modes than is presently available. These upgrades are designed to:

- improve safety for operational staff;
- improve efficiency for change-over between different performance modes;
- increase flexibility to accommodate wider range of performance modes; and
- improve capacity of back-stage area to better service on-stage performances.

These works are described below according to their location.

#### **Concert Hall Stage and Back Stage**

- Automated and adjustable stage risers to accommodate a variety of orchestral and other performance configurations;
- New forestage riser with two rows of seating removed (rather than the existing three), thereby increasing the number of seats at stalls level if forestage is raised;
- Retractable forestage seating (requiring modification of the front 2 rows of seating to the stalls),
- Under-stage storage for the retractable seating, lighting and rigging equipment;
- New lowered stage height to improve sight lines from the stalls, create better intimacy between performers and audience, and enable level access from back-of-house areas (in conjunction with adjustment of floor levels to backstage areas);
- Removal of one row of choir stalls to increase the area of the stage, and provide a new row of seating within the existing cross aisle at the rear of these stalls;
- Part removable and part automatic stair access from stage to choir stalls; and
- Enlargement of the prompt and off-prompt wings including the provision of additional downstage wing entries and consequent realignment of the walls to the eastern and western side foyers and reconfiguration of the stalls level entry doors (Level 2).

#### **Technical Zone above Concert Hall**

- Relocation of some of the Plant Room 21 mechanical equipment to allow housing of new winch room directly above the stage;



- Reconfiguration and strengthening of the steel structure above the plywood ceiling to support the winch room and technical grid, accommodate an increase in the flying capacity and the flexibility of the rigging configurations;
- Expansion and consolidation of available winching capacity and associated equipment within a new dedicated winch room above the Concert Hall stage;
- New penetrations, where required, to accommodate a revised layout with increased number of rigging lines for flying of acoustic and theatrical elements over the stage and auditorium and patch redundant penetrations with matching plywood; and
- Provide improved safety for personnel accessing technical equipment.

#### **4.1.5 Upgraded Air Conditioning**

Upgrading of the existing air conditioning system within the Concert Hall to provide quieter background acoustic levels and improved thermal comfort to both the audience and musicians on stage. These works include:

- Upgraded air handling units in Plant Room 12, and new ductwork in side wall spaces of the hall;
- Revised and upgraded air delivery system into Concert Hall, requiring closing up of the existing 'cannon-port' openings and installation of new A/C diffuser outlets; and
- Additional A/C diffuser outlets within the lower sections of the plywood ceiling over the boxes.

In addition to these modifications, an upgrade of the smoke exhaust capacity within the hall will be undertaken in line with the requirement for an enhanced fire engineering performance.

#### **4.1.6 Seat Refurbishment**

- Refurbishment of a percentage of the existing seats within the stalls and lower circle area, including plywood seat elements, cushion foam and fabric, to meet statutory fire indices; and
- Modification of those seats that may be removed for wheelchair positions, different patron seating configurations or technical operational requirements, to incorporate a quick release mechanism in the seat base for ease of removal.

## **4.2 Concert Hall Renewal Project – Architects' Design Approach**

In Section 3 of their Development Application Report, the architects (ARM) have provided the following summary of their design approach:

### **3.2/ DESIGN APPROACH**

*The Sydney Opera House received UNESCO World Heritage listing in 2007 at which time the heritage listing recognized that "The Sydney Opera House continues to perform its function as a world-class performing arts centre. The Conservation Plan specifies the need to balance the roles of the building as an architectural monument and as a state of the art performing centre, thus retaining its authenticity of use and function."*

*In 2013 the Opera House Enterprise Strategy anticipated that after 40 years of operation a renewal strategy was required to "ensure the Opera House retains its central position in Australia's life and identity."*

*The current Concert Hall Renewal Project approach to design has been considered in the context of these ambitions for an operating performance centre that is over 40 years old and in need of having to reflect contemporary standards for a building of architectural significance, performing arts reputation and its visitor experience. The need for the building to change over time was noted by the original designer Jørn Utzon in his Sydney Opera House Design principles 2002, "As time passes and needs change, it is natural to modify the building to suit the needs and technique of the day."*

To deliver these expectations has required the design team to carefully consider the design improvements proposed by the Design Brief prepared by the Sydney Opera House. This has included referencing the following documents when considering and balancing the briefed improvements against the heritage significance of the building:

- Sydney Opera House, Conservation Management Plan Fourth Edition, July 2017 which outlines the significance of the building fabric and a detailed conservation policy for any change to the existing building fabric.
- Sydney Opera House Utzon Design Principles, May 2002 which summarizes Jørn Utzon's original Vision for the Sydney Opera House, his ideas on an approach to the Future of the building and his guiding Design Principles to be considered by any design change.
- Sydney Opera House, The Design Approach to the Building with Recommendations On Its Conservation, Peter Hall, Architect, Sydney 1990 which provides a detailed background to the design of the building carried out under the guidance of Peter Hall post Jørn Utzon's involvement.

ARM's design approach for each of the design components considered are guided by the following principles in exploring options and tabling of preferred designs for review and approval by the SOH Stakeholders, the SOH Eminent Architects Panel (EAP) and SOH Conservation Council:

- Resolve the functional and operational aspirations of the design brief.
- Develop an architectural expression appropriate to the nature of their functional necessity while sympathetically maintaining the patron/performer experience of the existing building.
- Accommodate the anticipated variety of future uses to be delivered by the Concert Hall.
- Resolve with a quality of architectural detailing that is commensurate with the building's architectural reputation.
- Contribute to refreshing the performer and patron experience of the Concert Hall.

### **3.3/ DESIGN BRIEF**

The current design proposal is in response to the SOH brief to improve the operational demands on the Concert Hall in the future.

*"The Sydney Opera House Trust has decided to embark on a long-term program aimed at achieving two significant objectives.*

*The first is to safeguard the Sydney Opera House and its site for the benefit of future generations.*

*The second is to address the current effectiveness of the buildings function as a contemporary performing arts centre."* (1).

(1) Introduction, Sydney Opera House Utzon Design Principles, May 2002.

The Design Approach for the Concert Hall Renewal Project reflects the above extract from the SOH Utzon Design Principles. A summary of the more specific improvements addressed in the design are listed as the follows (2):

- The acoustic performance of the facility;
- Access to the facility for all;
- Flexibility and capability to meet a diverse range of production demands;
- Flexibility to adapt to newer technologies;
- Efficiency of production installations and turnarounds through improved systems and technology and design;
- Support facilities for performers;
- Improved operational safety.

(2) These aims are referenced from the Concert Hall Concept Design Development-Architect (Lead Consultant) & Engineering Services Contract No: RFT-SOH-505, 5. Conditions of Services.

### 4.3 Creative Learning Centre Project – Scope of Work

The purpose of this project is to provide dedicated spaces and facilities for education programs, creative learning, and interactive experiences for people of all ages within the podium. None exist at present. Refer to Architects' Design Statement in 4.4 below.

The proposed Creative Learning Centre will be situated on Broadwalk level (Level +12), at the north-west corner of the building, immediately north of the Western Foyers, and west of the Drama Theatre stage and back stage. Originally intended by Utzon as the primary entry to the administration areas, it has never operated as such with the main administration area now located on Level +30, north of the Green Room. The project area is presently occupied by administration and other facilities that are not required in this location.

The proposal involves the following:

- removal of existing fitout designed by Peter Hall, including wall and ceiling white birch plywood 'wobbly' panels;
- modification of recessed entry from Western Broadwalk with entry doors relocated further west to allow shallower entry lobby with access to spaces north and south, and modified precast paving slabs to provide a step ramp;
- cutting of large opening in main curved concrete wall and another in minor north south wall to connect spaces with steel beams over to strengthen openings;
- removal of minor walls and partitions to create larger spaces and facilities;
- lining concrete ceilings where exposed with thin acoustic panels, with exposed services below;
- fitout of suspended ceiling grid over primary learning space to act as a 'fly grid' for teaching theatre;
- fitting out of walls and ceilings to spaces adjacent to the Northern Broadwalk with salvaged and re-purposed white birch wobbly panels;
- construction of wall storage units within primary learning space using salvaged white birch wobbly wall panels, finished internally to suit storage and display;
- construction of storage and facilities elsewhere in spaces utilising salvaged white birch wobbly wall panels;
- construction of new complying WC and other facilities to service learning centre;
- construction of resilient floor finishes in teaching spaces, with existing carpet retained in adjacent admin corridor areas formed by the works; and
- modification of existing cupboard storage wall and doors at north end of Western Foyers to provide an internal public entry to the Creative Learning Centre; and
- fitout of new entry passage from Western Foyer with painted white walls and stretched Barisol ceiling lining.

### 4.4 Creative Learning Centre Project – Architects' Design Approach

The architects (TZG) have provided the following Design Statement for this project:

#### **Creative Learning Centre**

##### *Function*

*At the northern end of the Western Foyer the Creative Learning Centre (CLC) will provide a home for the innovative learning experience programme that has been developed at the SOH over the last decade. The program will offer interactive and immersive experiences for all ages.*

*The CLC is a space that will be used to facilitate diverse client groups, such as networking events from multinational organisations to a space that presents the most contemporary theatre for babies.*

*The programmatic objectives of the Creative Learning Centre consists of:*

- \* Large learning space with green screen capabilities*
- \* Small learning space*
- \* Work in progress storage*
- \* Equipment storage*
- \* Lighting and AV grid to the ceiling*
- \* Acoustic Isolation*
- \* Associated WC's and Kitchenette*
- \* Display 'stage' to Northern Boardwalk*
- \* Access from the Western Foyer and the Western Boardwalk*

*These objectives have been achieved by forming two principal spaces lined with multifunctional storage walls that use repurposed wobbly panels to create reversible and interchangeable surfaces for flexible program set-ups.*

*Each space has a lighting and AV grid located under the new acoustically isolating ceiling.*

### *Concept*

*The Creative Learning Centre has been thought of as a 'stage' where the magic of stagecraft becomes the basis of learning. The 'stage' is rendered white in order to stand out as a 'container'.*

*The vast amount of necessary storage joinery has been thought of as stage scenery, different modes playing to the space with various colours and acoustics.*

## 5.0 BACKGROUND ON ISSUES & CONSIDERATION OF ALTERNATIVES

A comprehensive analysis of the alternatives considered for the design of both the Concert Hall project and the Creative Learning Centre, (*Options & Design Alternatives*) has been separately prepared and attached to this development application as an appendix. The analysis report includes options that were originally identified in the SOH *Accessibility Master Plan 2015*.

The discussion below outlines the main points and issues, however, for more detail the *Options and Design Alternatives* report should be consulted.

### 5.1 Source of Renewal Projects

As legislation in regard to accessibility, and work health and safety become stronger, it is essential that high profile performance venues such as Sydney Opera House demonstrate leadership in addressing accessibility, inclusivity and safety. If such leadership is not taken, the Opera House risks losing its status as a world-renowned performing arts centre and becomes less attractive to performers, patrons and visitors. In the longer term, such non-compliance could also lead to some form of restriction on its ability to host and present performance art. This was recognised in the *Sydney Opera House Strategic Building Plan 2001* and a series of projects proposed to address these issues. This plan, developed in close collaboration with the original architect, Jørn Utzon, forms the genesis of the suite of projects included in this present application.

There are significant challenges in meeting the objectives in this strategic plan and in 2013, on the 40th anniversary of the opening of the Opera House, it was announced that there would be a period of renewal where the place and its venues would be upgraded and enhanced to better address current standards and expectations, in line with the 2001 Strategic Building Plan and within the framework of the CMP 4th edition and *Utzon Design Principles*. With these projects the Opera House would once again become a leader at the cutting edge of innovation – a centre pursuing and presenting excellence in the performing arts.

It is important to note that the author of this Heritage Impact Assessment has been part of the consultant team providing advice to the architects throughout the development of these proposals and has been part of the discussion on the alternatives explored.

With all of the projects included in this DA, there has been a rigorous process of review amongst user groups, consultants, the Opera House's heritage architect, Eminent Architects Panel and Conservation Council at schematic, concept design and design development stages.

### 5.2 Concert Hall Renewal Project

#### 5.2.1 Accessibility

In a major review of accessibility in 2014-15, a number of projects were investigated, many already identified as part of the 2001 Strategic Building Plan. This culminated in the SOH *Accessibility Master Plan 2015*. All of the accessibility projects have been developed from a suite of preferred options in this master plan. In its development, a range of potential solutions were explored, the preferred option selected on the basis of its minimised impact and optimal functionality. Many of these potential solutions were again examined and tested as part of the concept design process for the present projects.

Utzon's original design, as shown in the 1958 Red Book, a year before construction commenced, addressed accessibility issues by keeping the central passage at broadwalk level as a public space. This allowed front-of-house public access to lifts to southern foyer and

stalls levels (Level 2). There was no lift connection to levels above this, but at Level 3 there was a level passage in each side foyer, close to the glass wall line, to link the mid-level of the auditoria with the northern foyers. There was no passage at Level 2. When the Opera House opened in 1973, the central passage was the principal loading and servicing area and not available to the public, and the side passages which were fully built within the Podium were blocked over with the present stairs. The presently proposed project provides for a side passage on Level 2 to the Concert Hall eastern side foyer, on the same level as the Southern Foyer. Connecting with the bar level (Level 2) of the Northern Foyer, access to all other foyer levels is via the new lifts 29 and 30. This passageway then allows more available options for accessible seating and level access to regular seating to be provided within the Concert Hall, rather than only at the front of the stalls. This provides a considerably improved compliance with accessibility requirements than presently exists. To minimise potential visual impacts from views towards the Opera House, as well as impacts on the fabric, a passage is proposed only on the eastern side of the Concert Hall, next to the 'cleavage' between the main halls. Various options were considered for the exact location of the opening in the eastern side stairs, within the constraints of structure, services, patron amenity and visual impact. The presently proposed location was considered the preferred option.

The 2001 Strategic Building Plan, identifies a location for a single lift in the Northern Foyer of both the Joan Sutherland Theatre and the Concert Hall. The location on the Concert Hall side was at the junction of the main ascending and descending flights of stairs towards the eastern end of the foyer. On further consideration, it was determined that this would have a major impact on views within and across the space and would interrupt the broad sweep of cranked beams when viewed from bar and lounge levels (Levels 2 and 2.5). If this lift location were to adequately serve both sides of the auditorium, a cross-over passage at Level 4 would be functionally desirable but visually highly intrusive. Alternative locations were explored with the lifts finally pushed as close as possible to the outer edge of the foyer space to minimise visual impacts on the dramatic expanse of the space and the continuous sweep of cranked beams. This was balanced with retaining and respecting the complex geometry of the glass wall and the proximity of the concrete shell ribs. To provide adequate amenity and keep the lifts as small as possible, a lift on each side of the foyer was preferred. To minimise visual intrusion into views across and through the foyer, all structure and machinery for the lift will be kept below the floor level of the upper granite level, the lift surrounds at Level 4 and the lift car will be glass with bronze door trims.

### 5.2.2 Functional upgrade

Much of the theatre machinery installed in the venues, while state of the art in 1973, is now outdated by significant advances in digital technology and functional efficiency. Compliance standards have also changed and major overhaul or replacement is required if the Opera House is to maintain its leading performing arts status.

It is proposed to automate (as much as possible) the present mainly manual systems for setting up each performance type. These and other functional upgrades, including mechanical services, have been constrained by the limitations of available space and structure, and also the significant interiors and finishes of the Concert Hall and foyer spaces.

### 5.2.3 Acoustic upgrade

*Further diluting the quality both of the major theatres and of the customer experience are the technical flaws in acoustic performance, a liability for the Sydney Opera House and Major Presenters. Resolution of these issues is a fundamental priority at the core of the Strategic Building Plan, to ensure that the performance spaces can be properly positioned within world standing to reflect the iconic stature of the building. (Strategic Building Plan 2001, p20)*

As noted in the CMP 4th edition, acoustics was the driving force behind the original configuration of 'saw-tooth' box fronts, acoustic reflector 'clouds', and a number of other

components in the Concert Hall. *Thus in fine-tuning the acoustics, some change may need to be considered.* (CMP 4th edition, p123)

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 and the hole in the centre of the acrylic 'cloud' reflectors infilled with a clear acrylic dish. This was to test the minimal possible option. The acoustics improved with these changes but was still considered inadequate and further tests were carried out. A square acrylic reflector was tested visually, but the reflectivity on the underside was considered a problem. An array of square plywood over-stage reflectors was tested and although this improved the acoustic performance, it visually formed too strong a 'ceiling' over the stage that substantially divided the space, blocking views towards the organ.

Further studies and tests were carried out by Müller-BBM in 2016, confirming that the box fronts and the acoustic reflectors required different configurations and additional measures would be needed if substantial improvements were to be achieved. Independent peer reviews of Müller-BBM's design by international acousticians confirmed the extent of the challenge and the adequacy of the proposed solution. A full mock-up of the proposed arrangement of reflectors with a stepped stage configuration was tested during performances in November 2016, and proved very successful. Further refinements have been made to the design, with additional reflectors, high in the ceiling over the rear stalls deemed unnecessary.

To achieve adequate acoustic reflection over the stage and front stalls, a solid material with a density greater than acrylic and covering a larger area is required. Various configurations have been considered by the design team and reviewed by the Opera House's Eminent Architects Panel and petal shaped reflectors arranged with a gap centred on the central axis of the hall and grand organ was preferred, and is now proposed. The colour and finish of these reflectors have also been prototyped and reviewed in-situ. These prototypes confirmed that a colour based on Hall's signature magenta in the seat upholstery was preferred over a lighter natural timber finish matching the white birch ceiling. The latter potentially confuses and detracts from the strong geometric configuration of the ceiling.

The suspended lighting arrays, necessary because the new opaque acoustic reflectors prevent lighting from the crown, were first considered as individual 'boxed' units, but their bulk further obscured views between the reflectors, particularly towards the organ. The proposal was revised to suspend individual lights from short bars, with no enclosure, providing a greater sense of openness between the reflectors.

The operable acoustic reflectors on each side of the Concert Hall ceiling over the stage were included in the mock-ups tested in 2016, and considered less visually intrusive than originally anticipated. The proposal is for these to be automated and only deployed during the actual performance.

Müller-BBM also concluded that the flat box fronts and stage surrounds required a different vertical angle and a greater degree of acoustic diffusion. The design team investigated options, all reviewed by the Eminent Architects Panel. The proposed diffusion pattern, finish and material have now been tested with prototype panels. These panels will be glue-laminated brush box to emulate the existing, and respect Peter Hall's design regime and material selection.

The stepped stage configuration has been tested in performance and along with the mock-up of the over-stage reflectors, received much positive comment from the orchestra for the improved visibility and intimacy on stage, and a convincing approval from both performers and audience. Refer to separate report *Acoustic Upgrades – Prototype Testing November 2016*

With the increasing use of the Concert Hall for amplified performance, heavy cloth is regularly draped over the side and back stage fronts and the box fronts, as well as on the walls behind. This is time consuming and cumbersome and requires some form of

automation. Proposed acoustic absorption treatments for amplified performance have also been mocked up and tested.

### **5.3 Creative Learning Centre**

Sydney Opera House runs a number of education activities related to the performing arts for children and other groups. These are an important part of the Opera House's public engagement and should not be located off-site as this would substantially diminish their appeal and relevance. To date these activities have been without a designated space, occupying foyers and other available spaces on a temporary basis.

The 2001 Strategic Building Plan proposed the office spaces along the northern face of the Concert Hall Podium at Broadwalk level should be converted to a public use. The proposed Creative Learning Centre will provide this public use as well as a permanent and dedicated home for the Opera House's existing education activities.

The original concepts for the Creative Learning Centre included proposals for a variety of stage lift type structures that provided considerable flexibility and could be lowered out of sight when not required. These would have involved considerable work below the broadwalk level and were considered too ambitious for this project.

The design team considered a range of options for the fitout, including leaving the spaces as quite raw and stripped out. They ultimately decided to retain and re-use the white birch plywood 'wobblies' to retain consistency with adjacent spaces fitted out with Peter Hall's regime along this very public northern edge of the podium. This system also provided the flexibility required for discrete and organised storage that was clearly identified with the Opera House.



## 6.0 HERITAGE LISTINGS & STATUTORY FRAMEWORK

### 6.1 Listings

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

- World Heritage List (UNESCO) 2007
- National Heritage List (Australian Government) 2005
- State Heritage Register (NSW Government) 2003
- Sydney Local Environmental Plan 2005 (City of Sydney Council)

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

- National Register of Significant 20th Century Buildings (Australian Institute of Architects)
- National Trust of Australia (NSW) register
- Register of the National Estate (archived list with the Australian Heritage Council)

### 6.2 Statutory framework

The statutory framework for approvals for the Opera House is presently as follows:

#### 6.2.1 Commonwealth: *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

- Part 3, Division 1, identifies Commonwealth requirements relating to World Heritage properties and National Heritage places. Sydney Opera House is inscribed on the World Heritage List and included on the National Heritage List.
- Approval must be obtained from the Commonwealth Minister for the Environment for actions that are likely to have a significant impact on matters of national environmental significance (including National and World Heritage listed properties and sites) under the EPBC Act. The *Significant Impact Guidelines* definition is important here:
  - A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.*
- Sydney Opera House should undertake a 'self-assessment' process to determine potential impacts of proposed actions and whether or not a referral to the Minister under the EPBC Act is required. The *Significant Impact Guidelines* definition of 'action' is important here:

*'Action' is defined broadly in the EPBC Act and includes: a project, a development, an undertaking, an activity or a series of activities, or an alteration of any of these things.*

*Actions include, but are not limited to: construction, expansion, alteration or demolition of buildings, structures, infrastructure or facilities; .....*

*Actions encompass site preparation and construction, operation and maintenance, and closure and completion stages of a project, as well as alterations or modifications to existing infrastructure.*

*An action may have both beneficial and adverse impacts on the environment, however only adverse impacts on matters of national environmental significance are relevant when determining whether approval is required under the EPBC Act.*

**6.2.2 State (Planning): *Environmental Planning and Assessment Act 1979 (EP&A Act) and State Environmental Planning Policy (State and Regional Development) 2011***

- All development on land identified as being within the Sydney Opera House site is designated as State significant development (SSD) (Schedule 2) that requires consent under the EP&A Act.
- The Minister for Planning is the consent authority for SSD.

**6.2.3 State (Planning): *Environmental Planning and Assessment Regulation 2000 (Regulation)***

- Clause 288 of the Regulation requires the consent authority to take into consideration the *Management Plan for the Sydney Opera House* (which was prepared in 2005 as part of the bilateral agreement negotiations) in relation to development on the Sydney Opera House site. The Management Plan references the CMP 3rd edition and the Utzon Design Principles 2002.
- The Management Plan provides a framework for protection of the World and National Heritage values of the Sydney Opera House site and has been endorsed by the Heritage Division, Department of Planning (formerly the NSW Heritage Office).
- The Management Plan states that approval of actions in relation to the Sydney Opera House site may only be made in accordance with the Management Plan, which defers to the CMP 3rd edition for an assessment of heritage impact of proposals.

**6.2.4 State (Planning): *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 (REP)***

- The Opera House site falls within the Sydney Harbour Catchment area designated in the REP. It also is within the Foreshores and Waterways area and is designated as a Strategic Foreshore Site.
- The REP sets out a number of considerations that must be taken into account when submitting a DA (see clauses 13-15; Division 2 of Part 3 and Part 5 of the REP).

**6.2.5 State (Heritage): *Heritage Act 1977***

- An application for approval from the Heritage Council under section 60 of the Heritage Act is required for development on the Sydney Opera House site. Where the development has been approved as SSD, the approval of an application under section 60 of the Heritage Act cannot be refused by the Heritage Council.

## 7.0 COMPLIANCE WITH RESPECTING THE VISION – SYDNEY OPERA HOUSE, A CONSERVATION MANAGEMENT PLAN (CMP 4TH EDITION)

The CMP 4th edition, endorsed by the NSW Heritage Council in August 2017, has been used as the basis for the assessment of heritage impacts on individual spaces and fabric affected by the Concert Hall and Creative Learning Centre renewal projects.

The CMP identifies and defines the significant values of the Sydney Opera House and then formulates policies framed to retain these values. The following discussion assesses the impact of the proposed suite of projects in the same order as the CMP:

- Significant values,
- Overarching policies,
- Significant elements and components of the place, and
- Operational and management considerations.

### 7.1 CMP Section 3.1 STATEMENT OF SIGNIFICANCE Significant values – discussion of impact

The following Statement of Significance from CMP 4th edition summarises the significant values of the place (emphasis in bold type added as it relates to this assessment):

*The Sydney Opera House is a masterpiece of 20th century architecture and a world renowned performing arts centre. It is universally valued for its unparalleled design, form and response to its setting; and its exceptional engineering achievements and technological innovations. It is an internationally recognised landmark, an architectural icon, a symbol of Sydney and Australia, and holds a unique place in the Australian psyche as a focus for national celebrations and events.*

*The design of the Sydney Opera House by Danish architect, Jørn Utzon, represents an extraordinary and inspired response to the peninsular setting in Sydney Harbour and the 1956 competition brief. Its spectacular quality as a monumental sculpture in the round, both by day and night, is enhanced by its relationship to the harbour and the city. **The approach and arrival sequence, and the majestic quality of the public spaces, contained by powerful structural forms, provide an exceptional experience for users and visitors. Utzon's vision created a truly remarkable place, a structure that elevates and celebrates the human experience of the performing arts, as well as of the place itself.** These attributes are true to the original design and continue to be credibly expressed.*

*The Sydney Opera House is a work of human creative genius; a daring and visionary experiment that has had a seminal and enduring influence on the emergent architecture of the late 20th century. This vision utilised the plastic arts (three-dimensional works or effects from sculpting, modelling and moulding), geometry and technology to create a structure at the leading edge of human endeavour, at the very edge of the possible. Utzon's original design concept, his emphasis on innovation and his unique approach to building, gave impetus to a collective creativity of architects, engineers and builders. He inspired others to strive for and achieve excellence, particularly at this site.*

*The high-quality completion of the work by Sydney architects Hall, Todd & Littlemore, the technical support given by the internationally renowned engineering firm of Ove Arup & Partners, and the inventive contractor M.R. Hornibrook, helped make Utzon's vision a reality. In its construction and fabric, the Sydney Opera House reflects the contemporary philosophy of assembling and creating refined forms from prefabricated components. The Sydney Opera House retains a very high level of authenticity.*

*At national, state and local levels, the site has significant associations with important past events, activities and uses in the site's evolution, including Aboriginal and European contact. Indigenous cultural values associated with the Sydney Opera House site relate to both tangible remains (for example, potential surviving middens or other physical relics) as well as intangible meanings, associations, stories, memories and histories. The site has been used for cultural exchange and performance since at least the 1790s and is associated with a major meeting area and place for ceremony and corroboree at the adjacent Farm Cove. Bennelong Point is a place of early contact between local Aboriginal people and European settlers and takes its name from Bennelong, a Wangal man whose hut was provided by the Europeans and located on the western side of the point. Other significant historical associations include: defence (Governor Arthur Phillip's 1788 redoubt to convict architect Francis Greenway's Fort Macquarie, 1817–1901); picturesque planning (Governor Lachlan Macquarie to Utzon); and marine and urban transport and trade (overseas shipping and local ferry wharves, tram terminal and depot).*

***The Sydney Opera House has an almost mythological status as a cultural icon (then and now) arising from all the above, from the high public interest in its protracted and controversial development, and from its power to attract performers, patrons and visitors on a national and international level. As Australia's pre-eminent performing arts centre, it has the ability to encourage and inspire the pursuit of excellence and innovation in those who use it or are associated with it: all are inspired to achieve an outcome 'worthy of the Sydney Opera House'.***

*The inscription of the Sydney Opera House on the World Heritage List in 2007 recognises its Outstanding Universal Value.*

Those values noted above in bold type are relevant to the proposed renewal projects. Taking each of them separately, the following comments are made:

*The Sydney Opera House is a masterpiece of 20th century architecture and a world renowned performing arts centre.*

### **Concert Hall – Comment**

Wherever possible, the proposed Concert Hall renewal project aims to retain and expose the evidence of its 20th century evolution and construction. The presence and character of the fabric that contributes to these qualities have informed the design approach to renewal.

The proposed Concert Hall renewal project will improve the acoustic performance, functionality and accessibility of the Concert Hall auditorium and its associated foyers and back-of-house technical and performers' spaces. These works will have a positive impact on the function and status of Sydney Opera House as an internationally recognised performing arts centre.

### **Creative Learning Centre – Comment**

The proposed creation of this dedicated facility within the Podium at Broadwalk level, will enhance the ability of the Opera House to engage with and promote the performing arts to younger generations, both locally and nationally. This will strengthen its association with the performing arts and wider community and its importance as a world renowned performing arts centre.

*The approach and arrival sequence, and the majestic quality of the public spaces, contained by powerful structural forms, provide an exceptional experience for users and visitors. Utzon's vision created a truly remarkable place, a structure that elevates and celebrates the human experience of the performing arts, as well as of the place itself.*

## Comment:

The public spaces affected by this suite of projects, in order of their position in Utzon's approach sequence, include the following:

- Concert Hall eastern and western side foyers (Concert Hall renewal project)
- Concert Hall Northern Foyer (Concert Hall renewal project)
- Concert Hall auditorium (Concert Hall renewal project)

Each of these spaces will retain its majestic quality and the powerful structural forms that define them.

While acknowledging that the proposed insertion of the Level 2 passageway within the eastern side foyer will have high visual and fabric impacts on the stepped podium, particularly at its southern end, the form of the soaring fan pedestals and ribs and the majestic quality of the space remain unaffected.

Similarly, while the insertion of Lifts 29 and 30 will have high impacts on the broad sweep of stairs and cranked concrete beams at each end of the Northern Foyer and east and west caves below, carefully considered location and detailing, and adoption of Utzon and Hall's palette of materials will lessen their overall impact on the aesthetic qualities of these spaces.

The proposed functional and acoustic upgrades within the Concert Hall auditorium will result some adverse visual impacts from the proposed over-stage acoustic reflectors, associated stage lighting and speaker arrays, side wall reflectors, diffusion panelled box-fronts and rear walls, on the significant character of the Concert Hall auditorium. Depending on viewing position, the over-stage reflectors and lighting arrays will partially mask views towards the grand organ and the drama of the faceted ceiling above, including the central crown element. This will be most evident from the stalls and the front of the circle. However, the intent is that those components suspended within the space will read as separate to the powerful geometry and linings of the hall itself. The curved design of the suspended array of acoustic reflectors, and their use of the signature magenta colour, will reinforce this and give them a strong but not intrusive presence in the space.

The row of horizontal panel reflectors along the side walls of the stage and auditorium, will interrupt the dramatic visual continuity of Peter Hall's vertical faceted ceiling panels, but these can be closed up when not required, allowing the original geometry of the space to be appreciated. Their visual impact will be reduced by their material and finish, matching the existing white birch ceiling linings. Their role in the acoustic improvement of the space has been interrogated and is considered important.

These visual impacts are acknowledged as not insubstantial, but the mock-ups and acoustic testing, as well as the peer review process, have confirmed that improvements in the acoustic performance of the Concert Hall should be considerable. These impacts are therefore considered necessary if this venue is to maintain its world-class status.

The proposed acoustic treatments within the Concert Hall for amplified performances, including retractable acoustic drapes on side walls and box fronts, as well as retractable drapes suspended from the ceiling crown, will result in high visual impacts to the character of Hall's original interior of the Concert Hall, however these impacts are transient with the auditorium often darkened during performance. Acoustic drapes are currently deployed manually and often in an ad-hoc manner, resulting in visual impacts on the quality and character of the space. The impact of the proposed acoustic drape system in terms of amplified performances should be positive.

The proposal has sought to retain and respect the majestic qualities of the Concert Hall through the application of Hall's palette of materials and details and the careful detailing of new insertions to allow them to be adjusted, retracted or removed when not in use.

*The high-quality completion of the work by Sydney architects Hall, Todd & Littlemore, the technical support given by the internationally renowned engineering firm of Ove Arup & Partners, and the inventive contractor M.R. Hornibrook, helped make Utzon's vision a reality.*

#### **Concert Hall – Comment:**

The proposed works for both non-amplified and amplified performances in the Concert Hall require removal, modification or replacement of original Hall components, including the remaining 'saw-tooth' brush box wall to the circle, brush box perimeter and stage walls, acrylic over-stage acoustic 'clouds', and the 'canon-port' openings and air delivery system in the ceiling. However, the materials and finishes proposed within the Concert Hall respect and maintain the high quality and standards set by Hall, Todd & Littlemore's original work. This is discussed in further detail in relation to CMP Section 4.8.3 below.

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.

#### **Creative Learning Centre – Comment**

The works proposed for the Creative Learning Centre will retain and respect the significant contribution of Peter Hall in fitting out the Podium interiors and completing the project, especially in the creative use of Hall's wobbly wall and ceiling panels.

*The Sydney Opera House has an almost mythological status as a cultural icon (then and now) arising from all the above, from the high public interest in its protracted and controversial development, and from its power to attract performers, patrons and visitors on a national and international level.*

#### **Comment:**

The comments above about other aspects of the Statement of Significance, particularly in regard to proposed acoustic and functional upgrades in the Concert Hall, apply equally here.

The suite of accessibility, acoustic and functional upgrades and improvements in the Concert Hall renewal project will ensure the Opera House maintains its status as a cultural icon and is available and accessible to a much broader public. This in turn should enhance its reputation at both a national and international level and *its power to attract artists, patrons and visitors on a national and international level.*

The Creative Learning Centre project will enhance the ability of the Opera House to engage with and inspire the next generation of theatre craftspeople and performers.

## **7.2 Compliance with CMP policies (CMP Section 4)**

It is clear from the Statement of Significance in the CMP 4th edition that the Sydney Opera House derives its significance primarily from its form (design structure and construction), function and setting. These three components are interdependent and as each of them is

crucial to this significance then each must be maintained to the highest level. These are discussed below within the framework of relevant discussion, policies and Tolerance for Change tables from the CMP 4th edition.

## **7.2.1 Overarching policies (CMP Sections 4.1 – 4.4)**

### **7.2.1.1 CMP Section 4.1 THE PRIMACY OF JØRN UTZON'S VISION**

#### **Policy 1.1 Protecting Utzon's masterpiece**

*All work on the Sydney Opera House must be carried out within the framework of the Utzon Design Principles published in 2002 and in accordance with this CMP.*

#### **Comment**

The proposed works comprising the Concert Hall and Creative Learning Centre renewal projects have been designed and will be documented and carried out within the framework of *Utzon's Design Principles* and in accordance with the CMP.

#### **Policy 1.2 Utzon concepts**

*The following elements and qualities of the building are essential to Utzon's concept for the place and must be retained in accordance with the Utzon Design Principles and this CMP:*

- a. the visually free-standing sculptural form of the building in its setting as a counterpoint to the city, unobstructed by adjacent objects or structures;*
- b. the geometry and configuration of the three groups of shell roof structures and their tiled cladding;*
- c. the orientation and relationship between the three shell roof groupings, the Podium and platform below;*
- d. the open and uncluttered relationship between the Forecourt, Monumental Steps, Podium and Broadwalks;*
- e. the visually open relationship between the Podium and its setting, including the Bennelong Restaurant and foyers encircling the auditoria;*
- f. the sequence and intended qualities of approach and arrival spaces and experiences;*
- g. the natural palette of materials for exterior and related interior spaces;*
- h. the building's architecture, both externally and internally, formed by the honest expression of structure and materials;*
- i. the supporting structural systems throughout the building and their integrity as a reinforced concrete structure;*
- j. the utilisation of prefabricated components, strictly controlled in regard to geometry and quality, assembled to create structure, elements and spaces of the desired form;*
- k. harmony and uniformity resulting from application of a strict geometrical order and consistent forms;*
- l. containing all the processes of theatre and performance preparation out of public sight and within the Podium;*
- m. the interdependence of structure, form and fabric with function, all focused on enhancing the intellectual and emotional response of patrons, performers and visitors;*
- n. the primary function of the Sydney Opera House as a cultural venue that inspires and presents work of the highest quality in the performing arts.*

#### **Concert Hall – Comment**

Many of the elements and qualities listed above remain unaffected by the proposed suite of projects in this application. Those that will be affected by the Concert Hall renewal project are:

- e the visually open relationship between the Podium and its setting, including the Bennelong Restaurant and foyers encircling the auditoria;*
- f the sequence and intended qualities of approach and arrival spaces and experiences;*

- g the natural palette of materials for exterior and related interior spaces;*
- h the building's architecture, both externally and internally, formed by the honest expression of structure and materials;*
- i the supporting structural systems throughout the building and their integrity as a reinforced concrete structure;*
- j the utilisation of prefabricated components, strictly controlled in regard to geometry and quality, assembled to create structure, elements and spaces of the desired form;*
- k harmony and uniformity resulting from application of a strict geometrical order and consistent forms;*
- m the interdependence of structure, form and fabric with function, all focused on enhancing the intellectual and emotional response of patrons, performers and visitors;*
- n the primary function of the Sydney Opera House as a cultural venue that inspires and presents work of the highest quality in the performing arts.*

The visually open relationship between the foyers and the harbour setting will be marginally affected by the introduction of Lifts 29 and 30 in the northern foyer. These lifts will comprise a glass lift car within a fully glazed lift shaft above Level 4 (above the granite surface of the Podium) to minimise this impact and ensure views both internally and externally remain as open as possible. This impact is considered acceptable.

The original concept of sequential experiences on arrival, entry and circulation is not affected. The proposed works will substantially improve the accessibility of this sequence of spaces to a wider public, particularly those with mobility issues. This is a very positive impact.

However, the alterations required to achieve this positive benefit will result in some negative impacts, particularly visual impacts on the broad unbroken flight of stairs in the eastern side foyer, and at each end of the main granite level (Level 3A) of the Northern Foyer of the Concert Hall, and also each end of the impressive sweep of unpainted off-form cranked concrete beams that with their exceptional finish and geometric precision dominate the lower levels in the Northern Foyer.

To mitigate these impacts, the eastern passageway at Level 2 has been carefully sited to retain the legibility of the side foyer staircase as an extension of the external stepped podium. The simplicity of the incision, its details using repeated prefabricated panel forms, and the use of Utzon and Hall's original palette of materials lessen the visual impacts on the significant character and experience of the eastern side foyer. While there are both high visual and physical impacts arising from this work, these are considered acceptable when balanced against the substantial improvement in accessibility achieved.

It is important to note Utzon's original proposal for a passage at Level 3 on each side foyer to connect to the Northern Foyer. The structure for these passages exists beneath the precast steps and has always been an integral part of Utzon's design for circulation in these foyers. Hall tried to retain these passageways, however they were covered over by the time of completion in 1973. Following Utzon's re-engagement in 1999, he again proposed side foyer passages on both Levels 2 and 3 for the Opera Theatre renewal project (Gold Book 2005).

Lifts 29 and 30 have been located as far as possible towards the outer eastern and western edges of the Northern Foyer to minimise their visual impact on the broad sweep of cranked concrete beams, within the limits of the height plane of the glass wall above. These impacts are considered acceptable when balanced against the substantial improvement in accessibility achieved – all to better enable patrons to attend and appreciate the performance – the core function of the Opera House.

The works are in accordance with Utzon's design and execution of the podium, and his proposals for accessibility upgrade included in the Strategic Building Plan 2001. These projects were also identified in the *Accessibility Master Plan 2015* and were based on an exploration of all available options, considered in relation to their relative impacts on significant fabric and values. The negative impacts of this preferred option are therefore



considered acceptable in the light of the substantial improvement in accessibility and patron amenity, acknowledging that the proposed Level 2 passage will only be on the east side. This is a reduced impact on the two side passages proposed in the *Accessibility Master Plan 2015*.

### **Creative Learning Centre – Comment**

Elements and qualities that will be affected by the Creative Learning Centre project include:

- i the supporting structural systems throughout the building and their integrity as a reinforced concrete structure;*
- j the utilisation of prefabricated components, strictly controlled in regard to geometry and quality, assembled to create structure, elements and spaces of the desired form;*
- n the primary function of the Sydney Opera House as a cultural venue that inspires and presents work of the highest quality in the performing arts.*

The alterations within the Podium structure to create enlarged spaces for the Creative Learning Centre will have moderate impact on the supporting structural systems in this area. However these impacts are considered acceptable in order to achieve the required amenity for the proposed function.

The re-use of Peter Hall's prefabricated 'wobbly' panel system for linings and storage will retain and respect Hall's interpretation of Utzon's concept of assembling interiors from prefabricated components.

The proposed Creative Learning Centre will enhance the ability of the Opera House to engage with and inspire younger people – the next generation of performers, thus strengthening its connections and education role with the wider performing arts community.

#### **7.2.1.2 CMP Section 4.3      *PROTECTING THE VALUES***

##### ***Policy 3.1 – World, National and State Heritage values***

*The Outstanding Universal Value of the Sydney Opera House, defined by its World Heritage Listing and the values defined in Section 3.1 of this CMP, as well as those identified and included in its listing on the National Heritage List and State Heritage Register, must be retained, conserved, managed and protected for present and future generations in accordance with the policies in this CMP. This must continue beyond any changes in personnel or legislation.*

### **Comment**

A principal purpose of this Heritage Impact assessment is to determine to what degree this policy is complied with for both the Concert Hall and Creative Learning Centre projects.

In summary, while there will be high impacts on the fabric of the eastern and northern foyers of the Concert Hall, and the Concert Hall itself, the proposed design of the works minimises adverse visual impacts in these exceptionally significant spaces and will strengthen its State and National Heritage values, and its Outstanding Universal Value.

The Creative Learning Centre project will have minimal adverse impacts on the Opera House but will strengthen its State, National and World Heritage values.

Refer to discussion and conclusions elsewhere in this report regarding impacts on State, National and World Heritage values.

##### ***Policy 3.2 – Primary use as performing arts centre***

*The Sydney Opera House must continue its primary use as a nationally significant performing arts centre and its importance as a tourist attraction be recognised. The building, its site and*

*its setting must not accommodate, or be altered to accommodate, uses or events that will vitiate its significance, character or primary use.*

*A co-ordinated long-term plan for the use of spaces across the whole site must be implemented and periodically reviewed to address the above. This should be in the form of a comprehensive framework, such as the Strategic Building Plan 2001, with sufficient detail to understand the implications for every space.*

## **Comment**

The Concert Hall and Creative Learning Centre renewal projects support and strengthen the primary use of the site as a performing arts centre. They improve accessibility to and amenity of their public spaces, including the Concert Hall and its associated foyers, and to performers' spaces beneath the Concert Hall within the podium.

In particular, the proposed functional and acoustic upgrades in the Concert Hall itself will considerably improve its ability to accommodate and provide performances of the highest quality, and thus its international standing as Sydney and Australia's pre-eminent performing arts centre.

The Creative Learning Centre provides a dedicated space for SOH's innovative and interactive learning experience programme, which in turn will strengthen and enhance the role of the Opera House in promoting the performing arts to younger generations.

### **7.2.1.3 CMP Section 4.4      *UTZON, HALL & THE APPROACH TO CHANGE***

#### ***Policy 4.1 – Research to inform decisions***

*The concepts and ideas used for the original design of any particular space or element, as well as more recent Utzon commentary and the surviving fabric, must be fully researched and understood in order to inform and guide the design of any modifications or changes.*

## **Comment**

Each of the proposed projects (Concert Hall and Creative Learning Centre) have been guided by an understanding of what had been done in the past, and particularly on what Utzon had intended, both in the original design and since his re-engagement in 1999. This is particularly relevant in understanding the rationale for the proposed Level 2 passage and Lifts 29 and 30 in the Concert Hall foyer areas. This has been facilitated by regular input and reviews by the Opera House's heritage conservation architect, and periodic reviews by the Eminent Architects Panel and Conservation Council.

#### ***Policy 4.2 – Respecting Utzon and Hall***

*In order to retain, respect and potentially strengthen the authenticity and integrity of Utzon's work and the contributions made by Hall et al in its completion, all future designers and decision makers must:*

- comply with Policies 1.1, 1.2, 4.6, 4.7 and 4.8;*
- avoid the introduction of their own design language and preconceptions, and defer to the original design regimes of Utzon and Hall, in that order;*
- design new work to read as a subtle, respectful and sympathetic addition to the existing; and*
- not alter or remove original design regimes or components based solely on contemporary changes in aesthetic taste and fashion.*

*Major change or removal of the design regimes of interiors not designed by Utzon are only possible in accordance with Policy 4.5 – Major Change*

## **Comment**

The design teams for all three projects have complied with the policies noted above and been guided by frequent input and comment from Sydney Opera House's heritage architect and

Eminent Architects Panel. This has helped considerably in achieving compliance with this policy.

It is our assessment that all of these projects respect the original design regimes, and new work will read as subtle and sympathetic.

None of the original design regimes is to be removed or substantially changed.

***Policy 4.3 – Cautious approach to change***

*A fundamental principle in any approach to change at Sydney Opera House must be to change 'as much as necessary but as little as possible' (in the words of Article 3 of the Burra Charter). The minimum options must be considered and tested first, and only if these do not work should options that involve greater change be considered or pursued.*

**Comment**

Wherever possible, projects have been pared back from their original concepts thus achieving better compliance with this policy.

For example, the *Accessibility Master Plan 2015* recommended a passage connecting south and north foyers at Level 2 on both sides of the Concert Hall. The impacts were assessed as very high, both on the fabric and on the space itself, even though this solution was firmly based on Utzon's own concepts. It was concluded that this passage should only occur on the eastern side where it was less visible from other parts of the site, leaving the western side untouched, and where the passage would lead directly to the lift to the Box Office Foyer. Thus accessibility is achieved, but limiting its impact.

In regard to the Concert Hall acoustic upgrade, there have been a number of tests over a number of years, commencing in 2007 with an alternative clear acrylic over-stage acoustic reflector. The issue identified at the time was the very limited surface area of the reflectors, so a trial was carried out employing the 'minimum option' of acrylic saucers to infill the centre of the existing 'doughnuts'. These were of some benefit, but proved to be inadequate to address this issue properly. Refer to further discussion in Section 5 of this report.

***Policy 4.4 – Minor change***

*Any proposal for modest functional improvement, including redecoration to Utzon or Hall elements or components, above or within the Podium, must not fragment or diminish the authenticity or integrity of both the Utzon and Hall design regimes in accordance with Policies 4.7 and 4.8, except where such proposal accords with Policy 4.6. Proposals must be developed and executed in accordance with Policy 20.5 Continuity of advice, Policy 20.7 Heritage advice, and Policy 20.18 Statutory approvals.*

***Policy 4.5 – Major change***

*Major works to transform or completely renew a space within the Sydney Opera House may be acceptable where technical advance, expert advice, design quality, adequate resources and meticulous construction can be combined to achieve such new levels of technical and functional excellence that they will reinforce or enhance the significance of the place, and provided that:*

- the work fits within the context of an overall strategic plan for the place;*
- the proposed concept, design, detail and finish accords with the Utzon Design Principles and this CMP;*
- any proposal is planned well ahead to enable appropriate resources and expertise to be allocated to the project; and*
- the scheme is developed and executed in accordance with Policy 3.1 World, National and State Heritage values, Policy 20.5 Continuity of advice, Policy 20.7 Heritage advice and Policy 20.18 Statutory approvals.*

## Concert Hall – Comment

The proposed Concert Hall renewal project will involve a number of changes and insertions to the spaces and fabric of the foyer areas, the Concert Hall itself, and a number of back-of-house areas, but none ‘transformed’ as described in Policy 4.5. These changes and insertions are considered ‘minor’ in terms of the above policies and therefore Policy 4.4 applies.

The design regime and concepts of Jørn Utzon in the foyer areas, and Peter Hall in the Concert Hall and back-of-house areas are proposed to be retained and respected with these works in accordance with Policy 4.4. Refer to discussion below.

## Creative Learning Centre – Comment

The extent of changes proposed to accommodate the Creative Learning Centre would suggest this should be regarded as ‘major’ works and therefore Policy 4.5 applies. The proposal has been developed within the context of an overall plan to accommodate specific functions, and match these with appropriate spaces. These new functions will support and enhance the primary use of the place as a performing arts centre. The proposal is therefore consistent with this policy.

### ***Policy 4.6 – Approach to change – Utzon elements***

*In considering modification or change to any external space, Utzon element or internal space completed by Utzon, including infrastructure and furniture, Utzon’s concepts and design regime must be retained and respected, and be in accordance with Policies 1.1, 1.2, 4.2 and 20.18.*

## Comment

All of the spaces and elements affected by the proposals in this application are considered as either hybrid Utzon / Hall spaces (eg foyer spaces), or are entirely Peter Hall’s – such as the Concert Hall. Refer to discussion below.

### ***Policy 4.7 – Approach to change – hybrid Utzon / Hall spaces***

*Hybrid spaces, reflecting the work of both Utzon and Hall, such as the foyers surrounding the major auditoria, are to be retained or adapted to better accord with Utzon’s concepts and design principles. Any modification must retain the Utzon elements and qualities in accordance with Policies 1.1 and 1.2.*

## Comment

The only ‘hybrid Utzon / Hall’ spaces affected by these projects are the foyers surrounding the Concert Hall.

The intent of the works to these foyer spaces is to retain and respect Utzon’s concepts and design principles and the finishes selected by Hall. The insertion of the Level 2 passage and Lifts 29 and 30 are based on Utzon’s concepts to address accessibility in these complex spaces.

The designs for these changes have been developed from an understanding of the *Utzon Design Principles*, but also retain and re-work Hall elements in order to maintain consistency with surrounding finishes.

### ***Policy 4.8 – Approach to change – Hall elements***

*Any adaptation or modest functional improvement, as described in Policy 4.4, to elements or interiors designed by Hall must retain or recover the character of his original design regimes with their coordinated detailing.*

## Concert Hall – Comment

The proposed works to the Concert Hall auditorium aim to retain, respect and reflect Hall's original design intent and palette of materials and finishes. While there will be high impacts to the significant fabric and character of the auditorium arising from the proposed acoustic treatments, there are significant benefits with regard to improved acoustic performance and functionality of the Concert Hall. Similarly, the proposed changes to the back-of-house areas and stage will have significant benefits to the functionality of the auditorium, and potentially enhance the Concert Hall's reputation and ability to attract national and international performers.

In back-of-house performers' and service areas fitted out by Hall, it is appropriate that Hall's design regime is retained and continued in accordance with Policy 4.8, noting also that Hall's minimalist approach to these spaces followed Utzon's intent for them.

The proposed Concert Hall projects in this application comply with this policy.

## Creative Learning Centre – Comment

The Creative Learning Centre is within the Podium in administration areas fitted out by Peter Hall. The proposed works are more than modest functional improvements and constitute a major change, however this proposal retains and respects the character and design regimes used by Hall, noting that his work was inspired by Utzon's concepts. In this instance and for this proposed facility, this is considered an appropriate response and a positive impact.

### *CMP Section 4.4.11 Structural systems*

#### ***Policy 4.10 – Integrity of structure***

*The integrity and expression of the reinforced concrete structure for the whole building must be retained and respected including in changes and new work, all in accordance with Policy 1.2 Utzon's Concepts. Steel framed structure should be confined to those areas and functions (backstage and over auditorium) where it was used originally.*

*Modifications within the Podium structure must only be considered where there is a substantial and enduring benefit to the primary function of the Opera House.*

## Concert Hall – Comment

A number of reinforced concrete structural elements adjacent to the Concert Hall will be altered – particularly in the eastern side foyer and northern foyer spaces. The significant folded concrete beams at the south end of the Podium are not affected by the proposal.

The proposed Concert Hall works affecting the existing structural system of the Podium are as follows:

- Construction of a new eastern passageway at Level 2 to provide level access between the southern and northern foyers – some paving and structure to be altered or removed. Minimal impact on significant structure with substantial accessibility benefits.
- Construction of two new lifts in the northern foyer – Lift 29 (west end of foyer) and Lift 30 (east end of foyer) – for each lift, six cranked concrete beams at Level 3A-4, and two at Level 2-3, will be cut and modified to accommodate the lift shaft and associated landings. Refer to pages 37-38 and 51-64 of the ARM DA Report for drawings and illustrations.  
Very high impacts on significant form, fabric and structure in affected areas, but with substantial accessibility benefits.

While acknowledging that the proposed insertion of the Level 2 passageway within the eastern side foyer will have high visual impacts on the visual continuity and grandeur of the stairs, the form of the soaring fan pedestals and ribs, their association with both Utzon and Arup, and the majestic quality of the space remain unaffected. Similarly, while the insertion of Lifts 29 and 30 will have high impacts on the broad sweep of stairs and cranked concrete beams at each end of the Northern Foyer and east and west caves below, carefully considered location and detailing, and adoption of Utzon and Hall's palette of materials will lessen their overall impact on the aesthetic qualities of these spaces. These impacts must be considered in relation to the substantial positive impacts with regard to accessibility of the Concert Hall and its foyers for a broader section of the public.

- Reconfiguration of concrete side walls of auditorium associated with the expansion of prompt and opposite prompt wings, provision of automated stepped stage platforms and new accessible entryways. Minimal impact on significant structure with substantial improvements to functionality and accessibility.
- Additional structural works on Level 2 below the choir stalls is required due to the enlargement of the stage and realignment of the rear wall – no impact on significant fabric or structure.
- Modification of the podium concrete structure to accommodate a single new hooded opening for a new vent on the western side to match the configuration, materials and detail of other original hooded openings. Confined to a relatively small penetration to the outer wall of the podium, this will have minimal impact on significant structure.

Those structural components that will be altered as part of these projects have been assessed, and rectification works designed by Arup engineers.

#### **Creative Learning Centre – Comment**

The proposed structural works within the Podium to create enlarged spaces for the Creative Learning Centre and their impacts are noted below.

- Removal of a large section of a major curved loadbearing wall below approx. 3m, retaining ribs on each side, to create the primary learning space. This opening will require additional strengthening at the lintel and this is presently indicated as steel. Detail resolution of this opening should be refined in the documentation stage to minimise any potentially negative impacts and retain the integrity of this important concrete element. This will have a moderate but acceptable impact on significant structure within the Podium.
- Removal of a number of less significant walls and adjacent walls south of western entry to house the digital learning space and other facilities. These will have moderate but acceptable impacts on original structure and fabric.

#### ***CMP Section 4.4.12 Significance, tolerance and opportunities for change***

##### ***Policy 4.11 – Significance, tolerance and opportunities for change***

*All elements of the Sydney Opera House are to be maintained, used and managed in accordance with their relative level of significance, defined in Section 3.3 Summary Schedule of Levels of Significance, and the identified tolerance and opportunities for change for their component parts.*

#### **Comment**

Broadly the elements and areas listed below (following the main headings in the *Summary schedule of levels of significance* in Section 3.3 of the CMP 4th edition) will be potentially affected to varying degrees by the proposed works.



Significance rankings noted below are taken from the CMP 4th edition and are as follows:

- A – Exceptional significance
- B – Considerable significance
- C - Some significance
- D - Little significance
- Int – intrusive element

<i>Element</i>	<i>Level of significance</i>
<b>Sydney Opera House generally</b>	<b>A</b>
<ul style="list-style-type: none"> <li>– Its form and fabric as an iconic architectural sculpture in the round in its harbour and urban setting;</li> <li>– It's function as a world-renowned centre for the performing arts;</li> <li>– Original concept of sequential experiences on arrival, entry and circulation;</li> <li>– Its complete assemblage comprising flat open Forecourt and Broadwalk surrounding a massive pink granite clad podium, with Monumental Steps ascending from Forecourt, supporting 3 groupings of soaring curved, ribbed concrete shells, white ceramic tiled roof shells, and their associated structural systems of unpainted folded, cranked and post-tensioned concrete beams and ribs.</li> <li>– Planning hierarchy – front-of-house / back-of-house / support services – which manifests itself externally, internally, horizontally and vertically.</li> </ul>	
<b>Exterior</b>	
<ul style="list-style-type: none"> <li>• Podium exterior</li> </ul>	<b>A</b>
<b>Interior – 'Front-of-House' spaces above Podium levels</b>	
<ul style="list-style-type: none"> <li>• Foyers surrounding the major auditoria</li> <li>• Concert Hall</li> </ul>	<b>A</b>
<b>Interior – 'Back-of-House' spaces</b>	
<ul style="list-style-type: none"> <li>• Original administration reception area and offices (level +12) (north of the Drama Theatre)</li> <li>• Performers' assembly areas under Concert Hall (level +30) (1999)</li> <li>• Dressing rooms under Concert Hall (altered since 1993)</li> <li>• Lavatories and locker rooms in backstage areas</li> <li>• Service areas</li> </ul>	<b>C</b> <b>D</b> <b>D</b> <b>C</b> <b>C-D</b>

Potential impacts on each element arising from the Concert Hall and Creative Learning Centre renewal projects are complex, affecting both tangible and intangible aspects / values of the place. They cannot be considered in isolation.

The first sentence in the Statement of Significance in CMP 4th edition sums up the tension between the Opera House's tangible values that include the fabric of the building, and intangible values, including its original use and purpose, and the human experience of this:

*The Sydney Opera House is a masterpiece of 20th century architecture and a world renowned performing arts centre. Refer to discussion in 7.1 above.*

Potential impacts on both tangible and intangible values are discussed below in the context of the relevant conservation policies contained in CMP 4th edition. At the end of each discussion section the *Tolerance for Change* table from the CMP 4th edition sets out the components of each element with comments on the potential impacts arising from the current proposal. Issues identified in the Opportunities for Change tables are also discussed.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Concert Hall Renewal Project (Part of SSD 8663)*

*Summary assessment of impacts – Creative Learning Centre (Part of SSD 8663)*

*Summary assessment of impacts – All Renewal Projects*

## **7.2.2 The site & its fabric (CMP Sections 4.5 – 4.15)**

### **7.2.2.1 CMP Section 4.7 CONSERVING THE EXTERIOR**

#### **CMP Section 4.7.1 External form**

##### ***Policy 7.1 – Crucial elements in sculptural assemblage***

*It is essential that crucial elements and components in the sculptural assemblage of the Sydney Opera House, including their form, colour and materials, and the proportional, spatial and geometric relationships between the parts be retained unchanged. These elements comprise:*

- the three groupings of soaring curved, concrete ribbed, white ceramic tiled roof shells;*
- massive pink granite clad Podium with minimal openings; and*
- Monumental Steps ascending from the flat open Forecourt and Broadwalk surrounding the Podium to the perimeter of the site.*

#### **Comment**

Generally these crucial elements remain unaffected by the proposed works. The only change proposed is the insertion of a small hooded mechanical vent, high up on the western side of the Podium (refer to p146 of ARM Report). This is discussed under 4.7.4 below.

#### **CMP Section 4.7.3 Glass walls and bronze louvres**

##### ***Policy 7.9 – Alterations to glass walls***

*No alterations should be made to the glass walls above the projecting bronze transom. Any new openings or alterations below this transom must replicate the configuration and detail of existing openings and be located to avoid a 'missing tooth' effect when viewed towards any façade and to minimize visual impacts on the continuous sweep of the existing glass walls.*

#### **Comment**

The glass walls of the Opera House remain unaffected by the proposed projects except for two components. These are:

- Modifications to the eastern and western re-entrant sides of the Concert Hall Northern Foyer glass walls to enclose and protect the new Lifts 29 and 30.
- Proposed modifications include a small area of glazed infill above the level of the projecting bronze transom, in the same plane as adjacent glass. This will not affect the broad sweeping planes of the glass roof.
- The alignment of the glass wall, where it abuts the concrete fan pedestal for the roof shell structure, will move 2 ribs further south, but will replicate the existing detail and relationship to the ribs.



These modifications will remain largely out of view within the space formed by the re-entrant configuration of the glass where it abuts the shell ribs on east and west sides of the podium. The impact of the changes to the form and alignment of the glass walls, and related adjustments to its structure are relatively minor and considered acceptable. These proposed changes will therefore comply with these policies and are considered acceptable.

The *Tolerance for Change* table for the Roof shells externally from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:

Element: <b>Roof shells externally</b>  Significance ranking <b>A</b>  Three groupings of soaring, curved, concrete framed roof shells, clad with white ceramic tiled lid panels, surmounted by fine curved bronze lighting rails and infilled by glass walls.  <b>Selected components:</b>	<b>Tolerance for Change</b> 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				Further Considerations	Assessment / impact of proposal
	Form	Fabric	Function	Location		
Glazed tiles	1	1	1	1	Maintenance and replacement only were necessary. Refer to discussion and policies in Sections 4.7.2, 4.18.1, 4.18.2 and 4.18.10.	Not affected by proposal.
Tile lids	1	1	1	1	Maintenance and replacement only were necessary. Refer to discussion and policies in Sections 4.7.2, 4.18.1, 4.18.2 and 4.18.10.	Not affected by proposal.
Concrete ribs assembled from prefabricated elements supported on fan shaped pedestals	1	1	1	1	Maintenance only. Monitoring required to ensure structural integrity and finish are maintained. Refer to discussion and policies in Sections 4.7.2, 4.18.1, 4.18.2 and 4.18.3.  Preservation treatment may be required to protect pedestals in accordance Policies 4.6, 7.2, 18.6, 18.7 and 18.8. Refer to intrusive items below.	Not affected by proposal.
Lightning rails – stainless steel	1	1	1	1	Materials and configuration are most important. Refer to discussion and policies in Section 4.7.2.	Not affected by proposal.
Deeply recessed bronze louvre walls infilling spaces between shell ends	2	1	2	1	Repeated and standardised bronze components geometrically arranged to complement the ribbed structure are most important factors. Refer to discussion and policies in Section 4.7.3.	Not affected by proposal.
Glass walls and supporting structures	2	2	1	1	Maintain as existing unless 'Major change' applies. Minor modifications permitted in accordance with Policy 4.4. Refer to discussion and policies in Section 4.7.3.	Modification are required for the insertion of Lifts 29 and 30, but these are confined to relatively concealed ends of the glass wall over the Concert Hall northern foyer. Moderate but acceptable impact.

Shell uplighting at base of end pedestals (north and south)	3	3	2	1	Refer to discussion and policies in Section 4.14 <i>Lighting</i> .	Not affected by proposal.
Recent surface treatment of concrete pedestals externally	<b>Intrusive</b>				Explore less intrusive means of managing concrete deterioration, and protecting and exposing original surface – refer to Section 4.18.3 <i>Treatment of unpainted and precast off-form concrete</i> , and Policy 18.6.	Not affected by proposal.
Nose lights on shells	<b>Intrusive</b>				Both the fixtures and glare are intrusive. Explore less intrusive means of lighting public space – refer to Section 4.14.2 <i>Lighting of Forecourt, Broadwalk and Podium (monumental) steps</i> .	Not affected by proposal.

### **CMP Section 4.7.4 Podium**

The podium exterior is ranked as an element of exceptional significance as a fundamental part of Utzon's concept. The proposed works that affect the podium exterior are located on the western side and include:

- A single new hooded opening is proposed on the western elevation of the podium. Its details and configuration will match the existing adjacent opening such that it will not diminish the visual solidity of the podium. (Refer to p146 of ARM Report). A very similar configuration with two hoods already exists on the eastern side of the Podium.
- The steps in the Concert Hall eastern side foyer and within the northern foyer read as a continuation of the full width stepped surface profile of the podium. These will be interrupted, internally only, by the new eastern passageway and Lifts 29 and 30 in the northern foyer.
- Modification of the recessed entry from Western Broadwalk at its northern end with glazed entry doors relocated further west, reducing the depth to the precast cladding externally, to allow an entry lobby with internal access to spaces north and south, and modified precast paving slabs to provide a step ramp.

These changes will have negligible impact on views towards the podium or the significance of its role in Utzon's original concept.

The relevant conservation policies from CMP 4th edition are:

#### **Policy 7.11 – Podium solidity**

*No treatment of the Podium, including alterations and additions, should diminish the impressive effect of its solid side walls with their minimal horizontal fenestration shaded by hooded projections, nor disrupt the contrast between it and the ceramic tile clad shells and glass walls above.*

*Limited Broadwalk level openings may be acceptable provided they can be carried out in accordance with Policies 4.6, 7.1 and 18.15, and will achieve functions and effects that materially add to the significance of the place.*

#### **Policy 7.12 – Bronze framing in openings**

*All openings in the Podium must retain their original unpainted bronze joinery and finish and new joinery should match it. All glazing, including double-glazing, or other specialized glazing system, must be contained within exposed bronze framing to a design consistent with other original glazing.*

## Comment

The proposed new hooded opening in the western side of the Podium is consistent with the design, proportion, alignment, material and details of existing openings and does not adversely affect the sense of solidity for the Podium. It mirrors an original pair of hooded openings on the podium's eastern side. This change is considered minor and acceptable.

The western entry to the proposed Creative Learning Centre from the Western Broadwalk, will be minimally altered to provide a lobby space. This will involve a minor relocation of the existing bronze framed doors to the west, closer to the external wall. The entry will remain as a deeply shadowed recessed entry but shallower than the existing configuration. The existing precast cladding on the Podium remains unaffected, except within the recessed entry space. This should not visually alter the Podium externally.

The *Tolerance for Change* table for the Podium from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:

Element: <b>Podium externally</b>  Significance ranking <b>A</b>  Massive 'solid headland plateau' structure supporting white tiled shell groups with minimal external penetrations and clad in precast pink granite slabs of monumental size, including hoods protecting deeply shaded openings. Approach and ascent of Podium via uninterrupted sweep of full width Monumental Steps rising from Forecourt.  <b>Selected components:</b>	<b>Tolerance for Change</b> 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				Further Considerations	Assessment / impact of proposal
	Form	Fabric	Function	Location		
Precast granite cladding and paving in large units with bronze fixings	1	1	1	1	Configuration and material are most important. Refer to discussion and policies in Section 4.7.8.	The precast cladding paving within the recessed entry to the Creative Learning Centre will be adjusted to suit smaller depth of space. Existing details and materials will be retained. Minor but acceptable impact.  Refer to CMP Section 4.7.8 below for further detail.
Projecting precast granite hoods over openings	1	1	1	1	Configuration and material are most important. Refer to discussion and policies in Section 4.7.8. New hooded openings may be introduced, but character and balance of solid / hood relationship must be respected.	New single hooded opening on the western side will maintain visual solidity of the podium. It is virtually identical to an existing original feature adjacent, and in the eastern side of the podium.  Refer to CMP Section 4.7.8 below for further detail.
Continuous horizontal bands of deeply shaded windows on northern elevations	1	1	1	1	Location of door openings may vary, but fully glazed band should not be interrupted. Refer to discussion and policies in Section 4.7.4.	Not affected by proposal.
Monumental Steps – full width of south side of Podium	1	1	1	1	Retain unaltered. Configuration, openings, freedom from clutter and role in Utzon's approach sequence are most important. Refer to discussion in Section 4.7.5.	Not affected by proposal.

Access steps and balconies with solid precast granite balustrades on northern projections of Podium	1	1	1	1	Retain sense of being an integral part of solid masonry Podium. Refer to discussion and policies in Sections 4.7.4 and 4.7.8.	Not affected by proposal.
Western Colonnade structure of unpainted concrete and precast granite, shading openings to Western Foyer (2006)	1	1	1	1	Retain unaltered. Refer to discussion and policies in Section 4.7.4.	Not affected by proposal.
Splayed concrete framed openings in Podium beneath Western Colonnade (2006) (Refer to TfC table for Western Foyer)	1	1	1	1	Functional role to visually connect foyer with setting, as well as materials and quality of finish, are most important. Refer to discussion and policies in Section 4.7.4.	Not affected by proposal.
Existing pedestrian entries off the Eastern, Northern and Western Broadwalks	2	1	1	2	Entries may be altered but sense of solidity of Podium to be retained with deep reveals and deep shadowing. Refer to discussion and policies in Section 4.7.4.	Alterations to the entry to Creative Learning Centre from the Western Broadwalk are minimal and respect the deep shadowing of this entry. Changes retain and respect the form, details and material language of the Podium. Refer to CMP Section 4.7.8 below for further detail.
Bronze framed glass to openings in Podium	2	1	1	2	Use of bronze to be retained in any alteration. Refer to discussion and policies in Section 4.7.4.	Details of altered entry to Creative Learning Centre from the Western Broadwalk, copy the original materials and finishes.
Bronze vehicle doors to the Central Passage	2	1	1	1	Door configuration may change if required, but simplicity is essential. Bronze must be used.	Not affected by proposal.
1959 bronze disc in Monumental Steps marking setout for major halls. Designed by Jørn Utzon and fixed by J.J. Cahill	1	1	1	1	Must not be altered or moved. Preservation only. Refer to discussion and policies in Section 4.16.3.	Not affected by proposal.
Utzon shell geometry plaque unveiled by Lin Utzon (1993) and J.J. Cahill plaque and associated pedestals	2	2	2	2	Important message but could be moved to another location, as long as it is not in an obtrusive position – refer to Policy 5.1. Refer to discussion and policies in Section 4.16.3.	Not affected by proposal.
Former loading dock entry off Western Broadwalk	2	2	3	2	Intrusive function now relocated to new Opera House underground loading dock in Vehicle Access & Pedestrian Safety work. Space could be adapted for other uses that complement adjacent public spaces and support SOH primary function and / or the opening blocked and infilled with precast panels. Refer to discussion in Section 4.7.4 and <i>Opportunities for Change</i> table.	Not affected by proposal.
Tall picket additions to fence at the northern end of 'cleavage' at lip of the Podium	Intrusive				Explore less intrusive design of safety railing with minimal impact on views. Refer to Policy 7.20 and <i>Opportunities for Change</i> table.	Not affected by proposal

Radial palisade fencing introduced where the northern ends of the Podium decks meet the external steps	<b>Intrusive</b>	Explore less intrusive design of safety railing with minimal impact on views. Refer to Policies 7.19 and 7.20.	Not affected by proposal
Additional picket security fence midway along Podium on eastern and western sides, and in 'cleavage' space between major halls	<b>Intrusive</b>	Remove entirely if at all possible, and solve security issue by other less obtrusive means. Refer to Policies 7.19 and 7.20.	Not affected by proposal
Added acrylic panels to lower part of guardrails	<b>Intrusive</b>	Explore alternatives to address safety issues as part of review of all handrails and guardrails. Refer to Section 4.7.9. Refer to <i>Opportunities for Change</i> table below.	Not affected by proposal
Bronze-coloured pole with security camera towards eastern side of Podium	<b>Intrusive</b>	Remove entirely if at all possible, and solve security issue by other less obtrusive means.	Not affected by proposal
Large black sign pylon with associated security camera at Box Office landing of Monumental Steps	<b>Intrusive</b>	Intrusive to openness of Podium. Remove entirely if possible, or replace with more appropriate design as part of improved signage and wayfinding across the site. Refer to <i>Opportunities for Change</i> table – Exterior Furniture.	Not affected by proposal

### ***CMP Section 4.7.8    Precast paving and cladding***

#### ***Policy 7.18 – Precast paving and cladding system***

*The existing paving and cladding system of precast reconstituted granite slabs of monumental size, with their etched, satin polished pink granite aggregate finish, bronze fixings and concealed drainage, must be retained and conserved. When repair or replacement of precast panels becomes necessary, care must be taken to maintain quality control of colour, dimensions, form, finish and details including fixings to match existing fabric. Any replacement panels or new work must be finished with a sheen similar to that of adjacent weathered elements, and a highly reflective polished finish avoided.*

#### **Comment**

The proposed modifications to the precast paving and internal cladding to the entry lobby to the Creative Learning Centre, and construction of a new hooded opening on the western side of the Podium both comply with this policy.

These changes will have minimal impact and should remain largely unnoticed.

### **7.2.2.2 CMP Section 4.8    *CONSERVING THE INTERIOR: 'FRONT-OF-HOUSE' SPACES ABOVE PODIUM***

#### ***CMP Section 4.8.2    Foyers surrounding major auditoria***

These spaces are ranked as exceptionally significant and are a unique characteristic of Utzon's design.

Works are located within the Concert Hall northern, western and eastern foyers. Works are twofold.

- To improve accessibility of the Concert Hall for patrons by:
  - providing accessible auditorium entries within the eastern and western side foyers at Level 2,
  - creating a new eastern passageway connecting the southern and northern foyers at Level 2,
  - providing new Lifts 29 and 30 within the northern foyer to connect all levels.
- To improve the functionality of the stage for performers by:
  - enlarging the prompt and opposite prompt wings into the eastern and western side foyers.

Refer to ARM's Development Application Report Sections 3.3.1, 3.3.2, and 3.3.3.  
See also the Options Analysis Report, sections 1.4.1.1, and 1.4.1.2.

The following conservation policy, from the CMP 4th edition, is relevant with regard to works within the foyers surrounding the major auditoria:

***Policy 8.2 Foyers surrounding the major auditoria***

*The concept of continuous foyers surrounding the auditoria is significant and must be retained.*

*Views within and beyond the foyer spaces must remain open and uninterrupted by added installations or facilities. Views up between the auditoria and the concrete ribs should be improved, and where possible, increased.*

*All foyer spaces must be maintained in an uncluttered state.*

*Regardless of what action is taken under Policy 4.11, any changes to the foyer spaces must retain, respect and, if possible, strengthen the 'outside' space regime of materials, colours and finishes in accordance with Policy 4.7.*

**Comment**

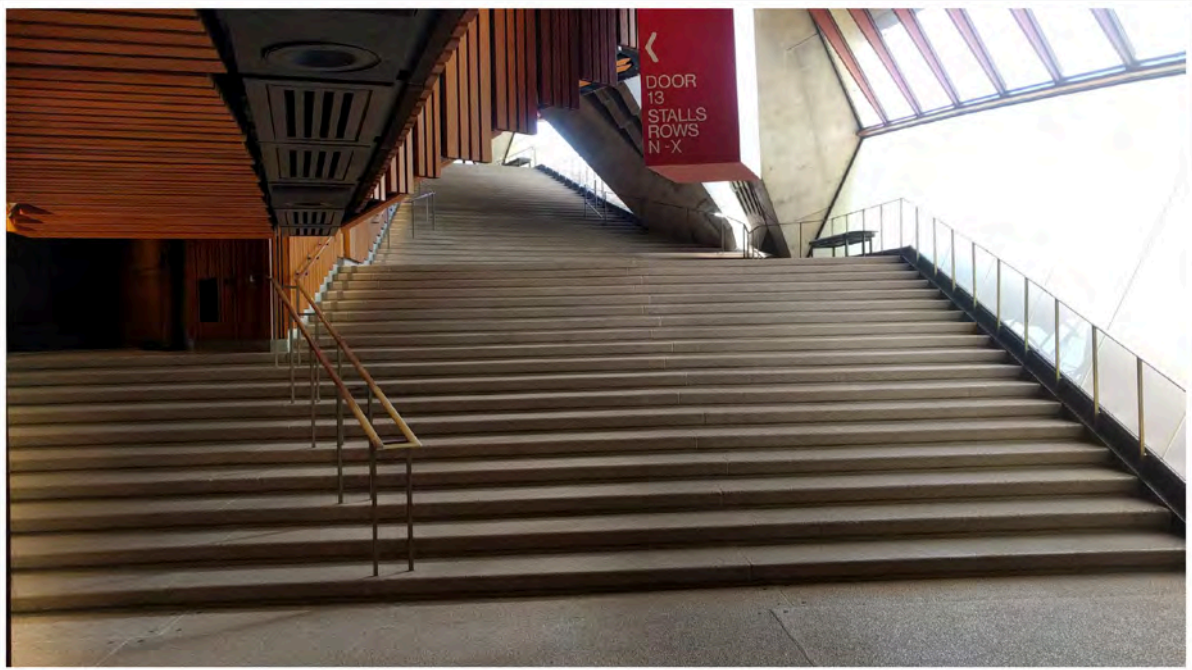
There are major accessibility and functionality benefits with these works, however there are a number of impacts, some of them negative. These impacts can be summarised as follows:

***Eastern side foyer and passageway***

- The existing stepped podium is cut through to create a new passageway at Level 2. The full width sweep of the stair will be interrupted and reduced by the entry to the passage, but its placement has been tested to determine its optimal location, both visually and functionally. Although the work will result in high visual and physical impacts on this exceptionally significant space, it is consistent with Utzon's design intent to provide an access passage to the northern foyer, originally only at Level 3 on both sides. These passages are actually built into the structure, but presently covered over by the unbroken width of the granite stairs. Utzon's 2005 Gold Book design for the Opera Theatre renewal proposed two passages in each side foyer, one at the original location on Level 3, with another adjacent to the auditorium wall at Level 2. (Refer to ARM report pages 14-30, and existing and proposed images below.)
- The material language of the passageway respects the Utzon and Hall palette of materials, but introduces prefabricated bronze panel elements in a stepped canted configuration to clad the eastern wall of this passage. This configuration reflects the brush box panels cladding the auditorium in the side foyer above.
- A grey curtain is proposed to conceal the raw concrete surface and service doorways on the western wall of the passage, with a simple bronze handrail on this side standing clear of the curtain. Honest exposure of the raw concrete would have been preferred as this would be more consistent with Utzon's design regime, but previous changes and service access made this difficult to achieve in an elegant manner.



- These new elements should not distract from the quality, character, form and details of the significant spaces at either end of the passage. The detail of the cuts in the paving and steps will match details that already exist elsewhere in the building.
- New guardrails and balustrades around the cut for the passage will be of bronze and glass from the suite of profiles and details developed for application across the site.
- Overall these works will result in some high impacts, however the general quality and character of the foyers will be retained and respected. The soaring fan pedestals and shell ribs and their visual dominance of this space remain unaffected.

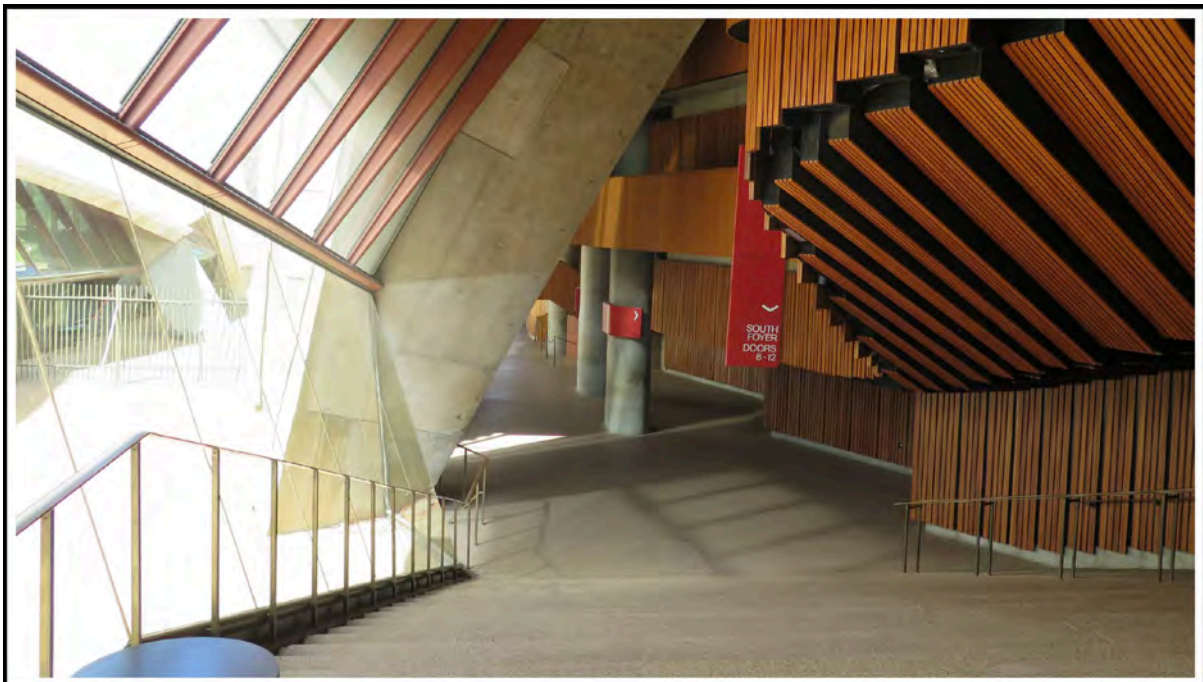


**EASTERN FOYER STAIR - EXISTING CONDITION**



**PASSAGEWAY ENTRY - LEVEL 2**

- The new passageway will reduce the width of the 'grand ascent' of these stairs, but this must be balanced with the dramatic improvement in accessibility to the northern foyer, its associated facilities and the circle level of auditorium seating. For patrons with impaired mobility, this access has not been available since the building opened.
- The 2015 *Accessibility Master Plan* proposed a Level 2 passage on both sides of the auditorium, consistent with Utzon's design for passages on Level 3, but in preliminary studies for this project it was decided, for both practical and aesthetic reasons, to limit impacts to the eastern side only. The eastern side foyer is not visible from longer distances, and thus there would be almost no potential impacts on the visual relationship of these foyer spaces to the setting of the Opera House.

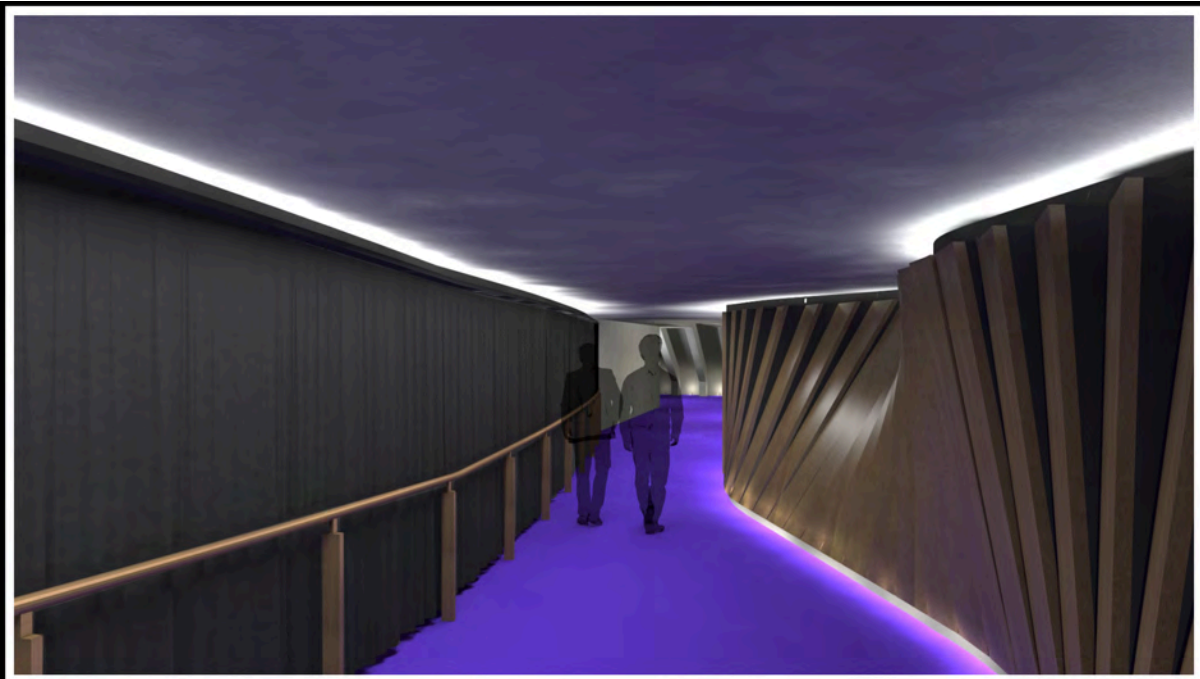


**EASTERN STAIR LOOKING SOUTH - EXISTING CONDITION**

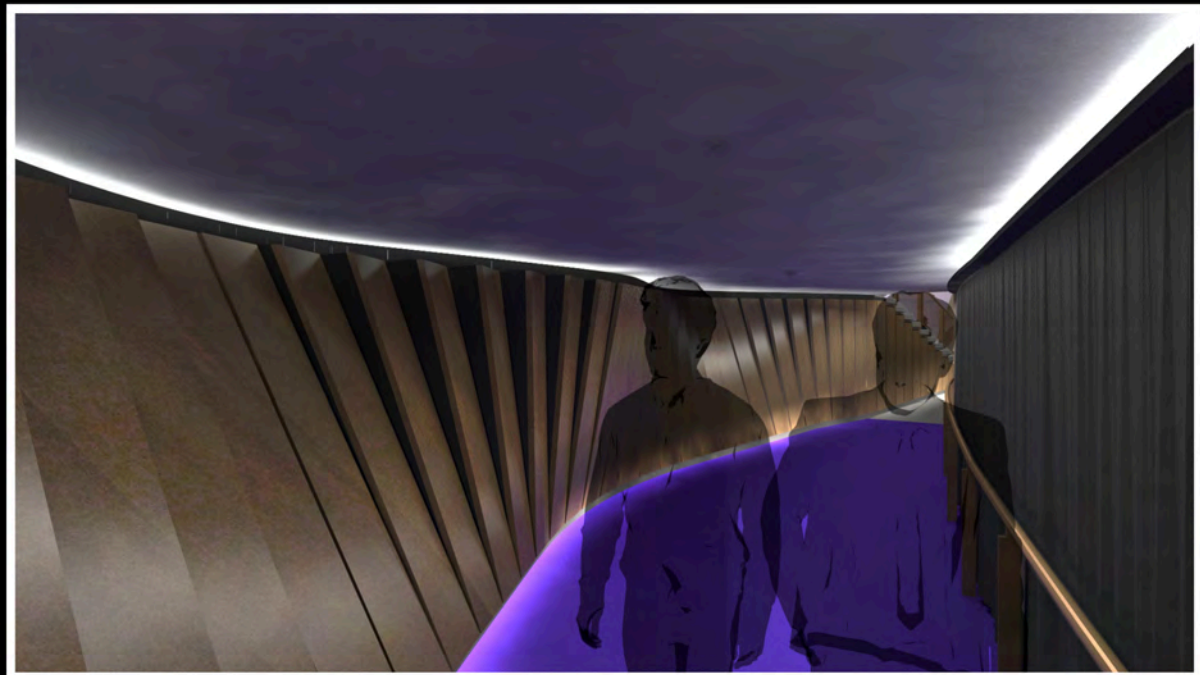


**EASTERN STAIR LOOKING SOUTH - LEVEL 3**





*PASSAGEWAY - LOOKING TOWARDS CAVES*



*PASSAGEWAY LOOKING SOUTH TOWARDS ENTRY*

#### *Eastern and western side foyers*

- Additional handrails are proposed in the side foyers to assist those who find the stairs difficult. These are as visually minimal as possible and follow the suite of profiles and details developed for eventual application across the site. On the east side, this additional handrail is only required between Levels 3 and 4 as there will be handrails surrounding the new Level 2 passage. These additional handrails will have moderate visual impact, but are considered of great benefit for the comfort of patrons.

- The proposed introduction of the automated stepped stage platforms requires the circulation space within the side wings (prompt and opposite prompt) to be extended downstage and doors to the stage relocated. This requirement, in conjunction with the new accessible theatre entries, require modifications to the public entry to the front stalls and associated brush box panelling in the side foyers. The changed configuration respects Hall's geometry and set out of the auditorium entries and side foyers and follows existing detailing and materials. Overall the works will result in moderate visual impacts as the overall width of the foyer is reduced, however the quality and character of space and the 'natural' palette of materials and colours is retained and respected. (Refer to pages 92 – 94 of the ARM report, and existing and proposed images from the ARM report below)

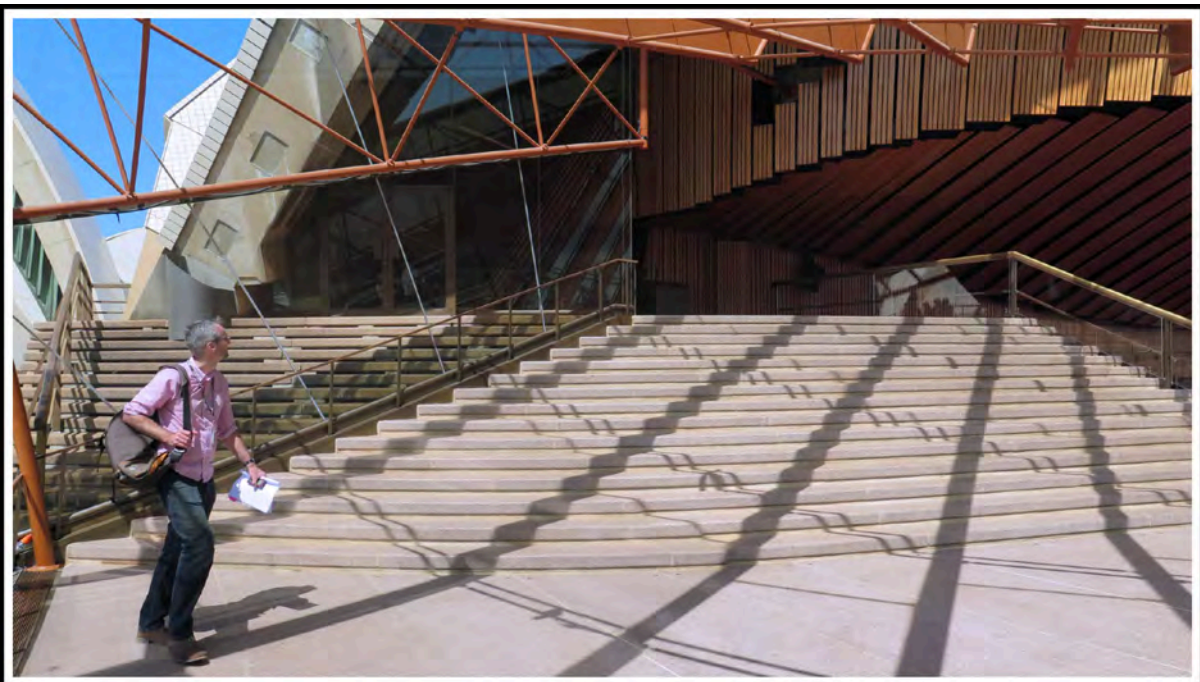


### *Northern Foyer lifts*

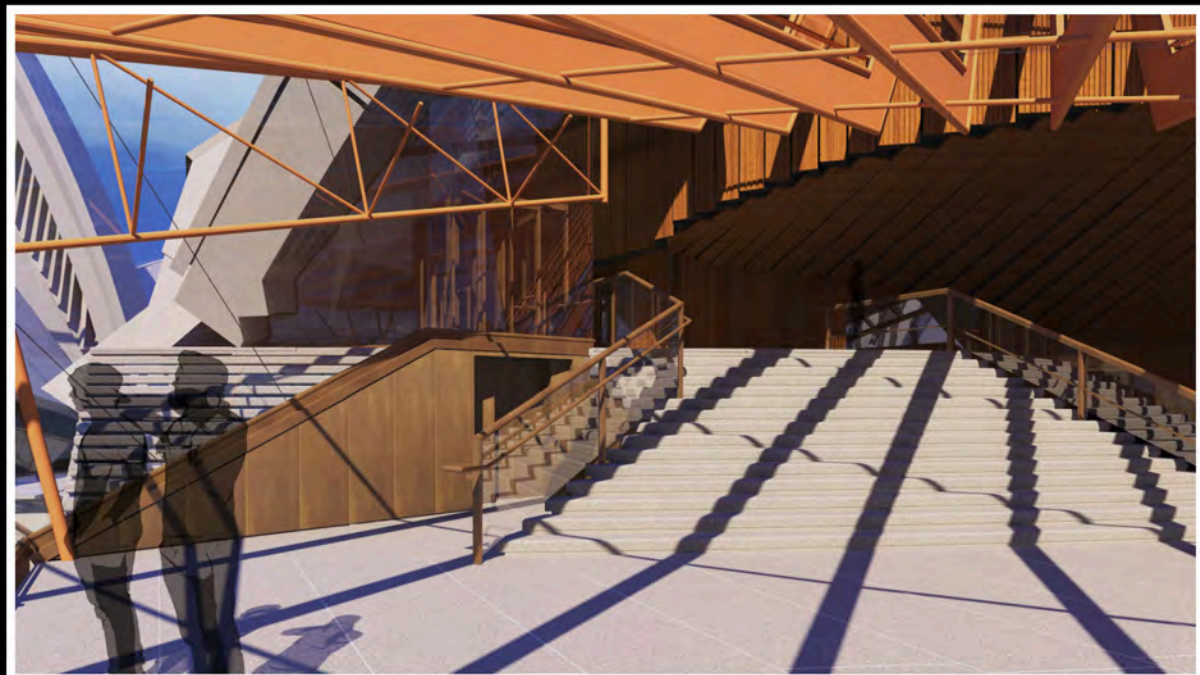
- Introduction of new glass Lifts 29 and 30, each requiring cutting and modification of two exposed radial concrete beams on Levels 2-3 and six on Levels 3A-4, slicing through the podium stairs, insertion of new concrete lift shafts clad in bronze between Levels 2 to 3A, and alterations to the glass wall structure and partial infill of the indented glass wall to enclose the glass lift shaft at Level 4. Of these impacts, the most significant is the cutting of the beams and slicing through the stairs. The beams are a significant and powerful structural expression in this space, however the placement of the lifts as close as possible to the outer ends of the foyer has been carefully considered to minimise its physical impact and visual interruption of these beams within the limits imposed by the curved roof shell ribs and sloping glass plane of the ceiling above.
- It is important to note that in the 2001 Strategic Building Plan, developed with Utzon himself, a lift is proposed further into the foyer space, requiring beams to be cut in a more prominent location. This location was considered, but the presently proposed location was preferred because it had less impact on the broad continuous sweep of stairs and cranked beams below, and provided more usable landing locations for the lifts. (Refer to ARM report – pages 31-66, Analysis of Design Options report – pages 22-32, and a selection of existing and proposed images from the ARM report below).



- While the cuts into each side of the broad sweep of precast granite stairs between Levels 3A and 4 to form a landing will have major impacts on significant fabric, particularly the beams below, their splayed geometry retains the generous visual continuity and “flow” of the stairs when viewed from the north and when descending and ascending the stairs. The solidity of the bronze clad lift shafts below the granite paved level 4 will result in some minor impacts to the views out across the stairs from Level 3 (Mural level), however these are offset by the improved accessibility to foyer facilities and the Concert Hall.
- The use of bronze panelling to clad these lower levels of the lift shaft, allows them to read as separate to the original structure, relating them to the new Level 2 passage.



**LEVEL 3A - EXISTING CONDITION PHOTO**



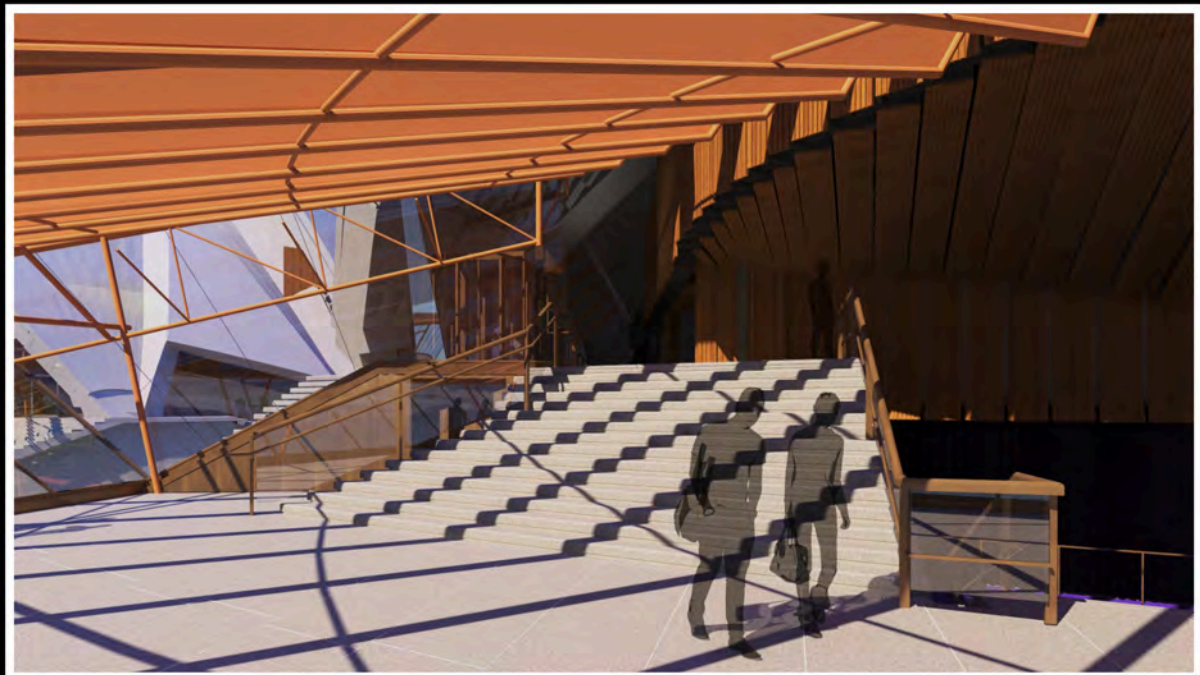
**LIFT 30 ENTRY - LEVEL 3A NORTHERN FOYER**

Note: Lift 29 on Western Side is a mirror image of Lift 30





**LEVEL 3A - EXISTING CONDITION PHOTO**

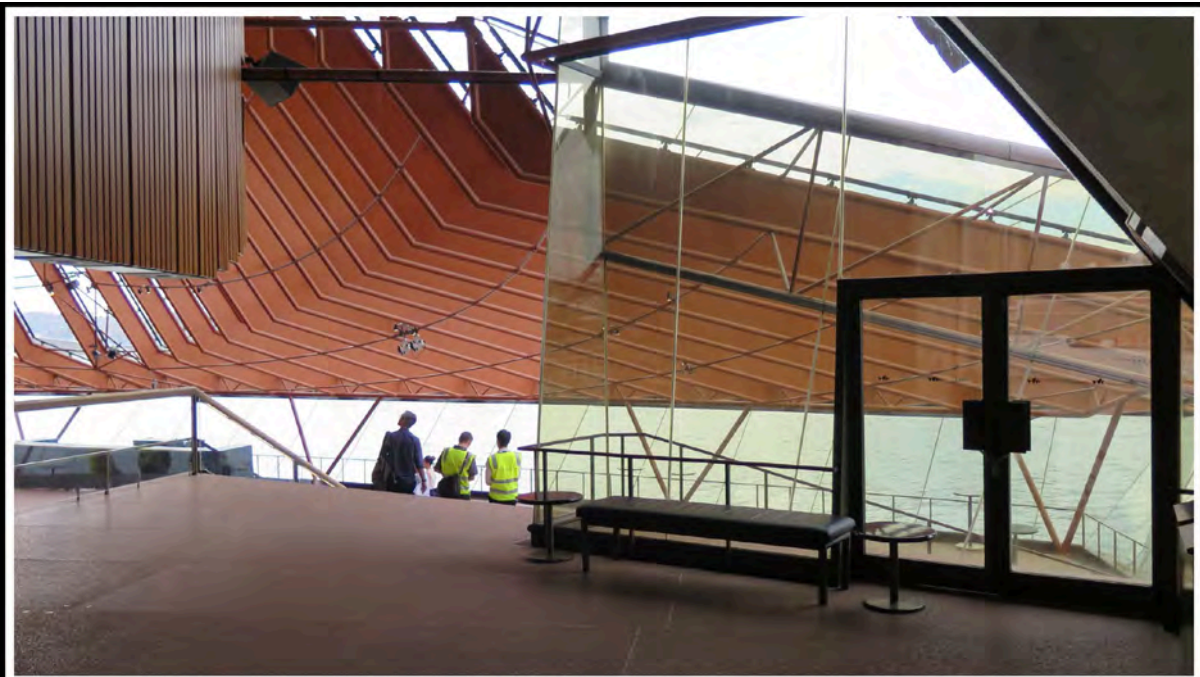


**LEVEL 3A NORTHERN FOYER**

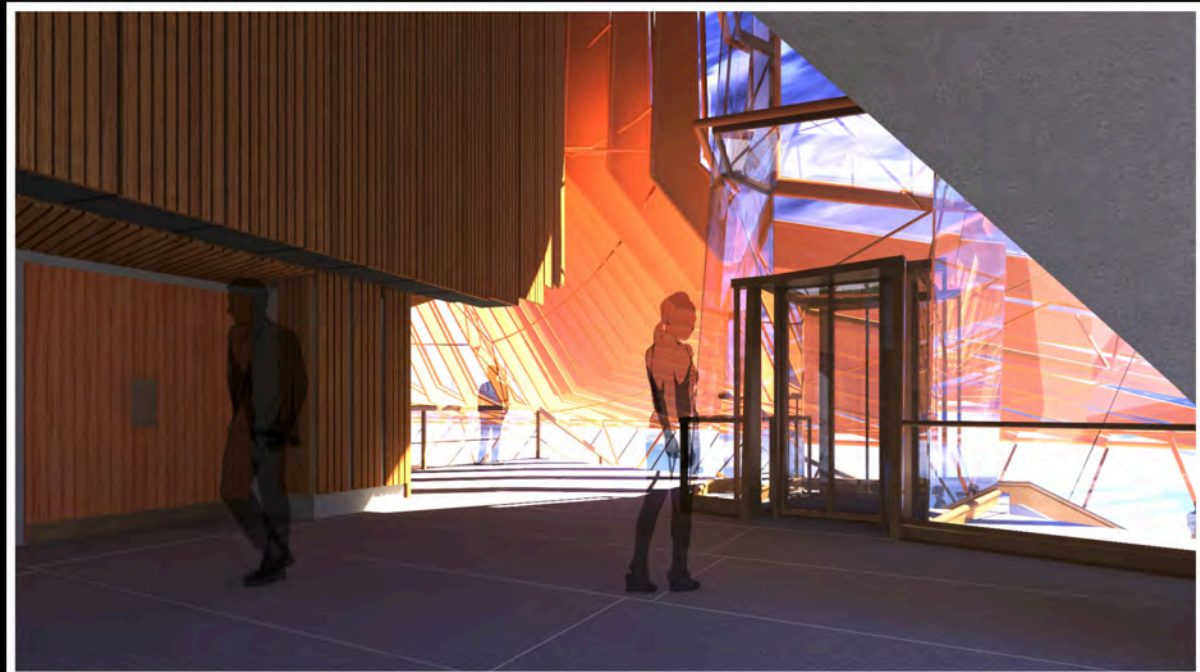
Note: Lift 29 on Western Side is a mirror image of Lift 30

- The illustrations included here are for Lift 30. Note that Lift 29 on the western side of the northern foyer will be the mirror image of Lift 30.
- The expression of the cuts through the stairs and beams has been carefully resolved and detailed not to distract from or diminish the quality and character of these elements or the space. Alignment of the stair cuts between Levels 3A and 4 coincide with the existing glass wall and are to be clad with bronze panels that reflect the configuration of the steps. Details of the modifications to beams below should retain and respect the line of the primary crank points. The sense of horizontal continuity of the stairs beyond the glass walls is an essential part of these stairs and is to be retained and respected as much as possible.

- Alteration of the glass walls at Levels 3A and 4, including extending further into the foyer in order to enclose Lifts 29 and 30, will have high impact on the fabric of the glass walls in affected areas but will require only minimal additional intrusion into the foyer space and minor changes to the steel structure. High but acceptable impact to achieve substantial accessibility benefits.
- The proposed configuration of the glass enclosure for the lifts above the pavement of Level 4, will not penetrate the broad planes of glass when seen from the outside and their presence should be largely concealed from the north.
- Generally the location, configuration, details and materials of the lifts and their shafts are considered appropriate and are supported.



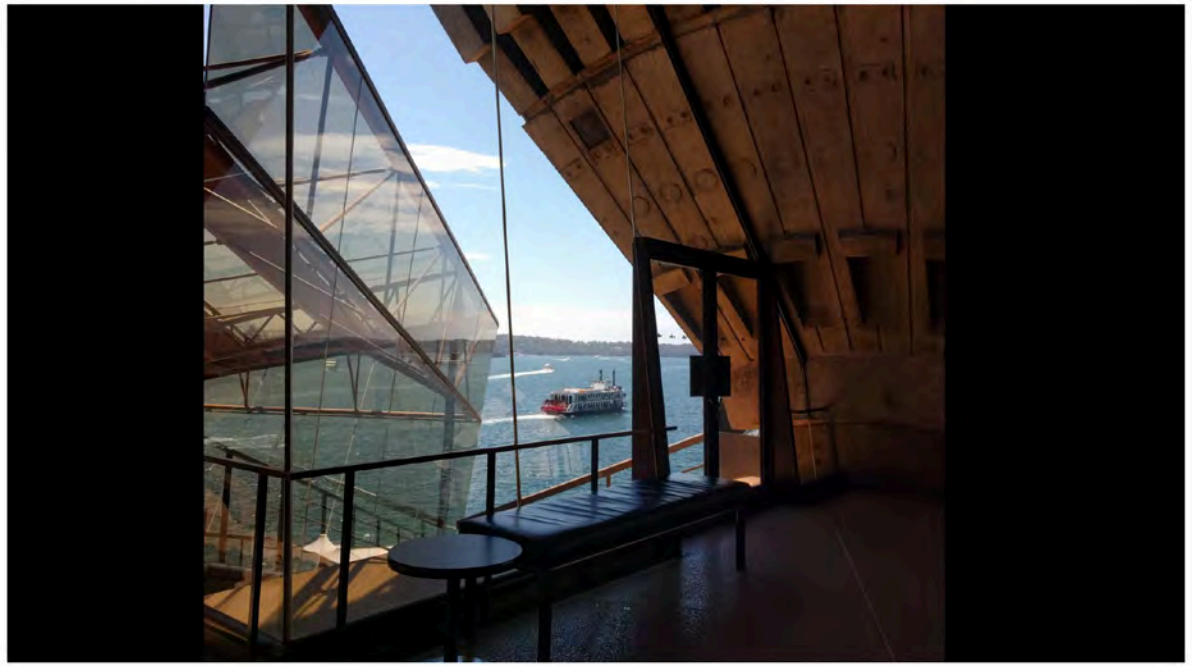
**LEVEL 4 - EXISTING CONDITION PHOTO**



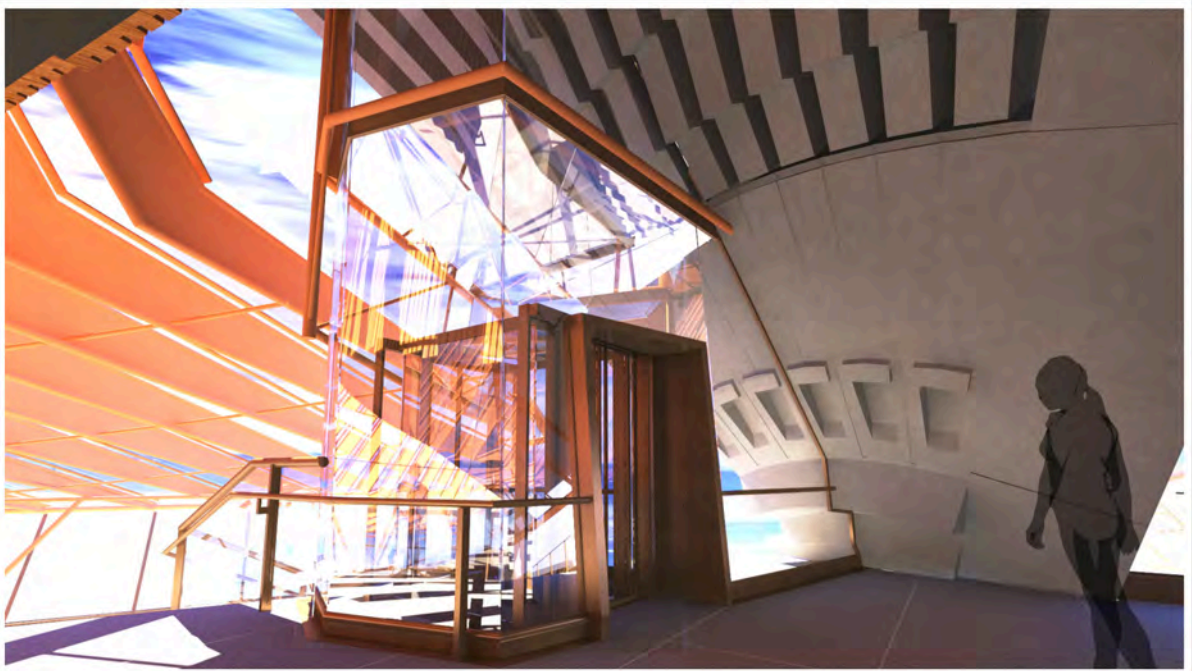
**LIFT 30 ENTRY - LEVEL 4**

Note: Lift 29 on Western Side is a mirror image of Lift 30





**LEVEL 4 - EXISTING CONDITION PHOTO**



**LIFT 30 ENTRY - LEVEL 4**

Note: Lift 29 on Western Side  
is a mirror image of Lift 30



**LEVEL 3 - EXISTING CONDITION PHOTO**



**LIFT 30 ENTRY - LEVEL 3 (MURAL LEVEL)**

Note: Lift 29 on Western Side is a mirror image of Lift 30

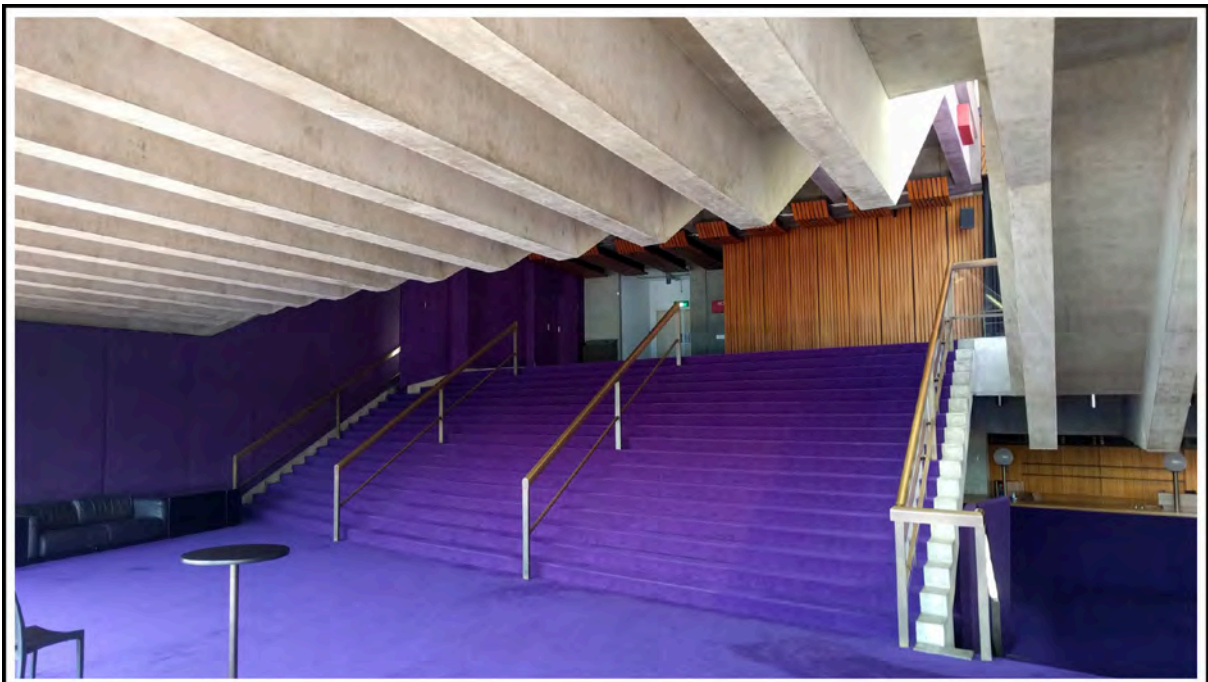
### *Northern Foyer – lower levels*

- The lift shaft below the Level 4 landing will be clad externally in bronze panels. As a new element in the space, this is consistent with the bronze cladding on the eastern side of the new Level 2 passage. The DA documents indicate this material will be continued into the caves area on Level 2, replacing the existing carpet linings on the southern concrete wall within this foyer space – refer to selected images from DA report below. This proposal results from the carpet wall linings having been assessed in the CMP as intrusive, the close proximity of the Level 2 passage and lift, and the need for some form of lining on this southern wall to conceal services and a hose-reel

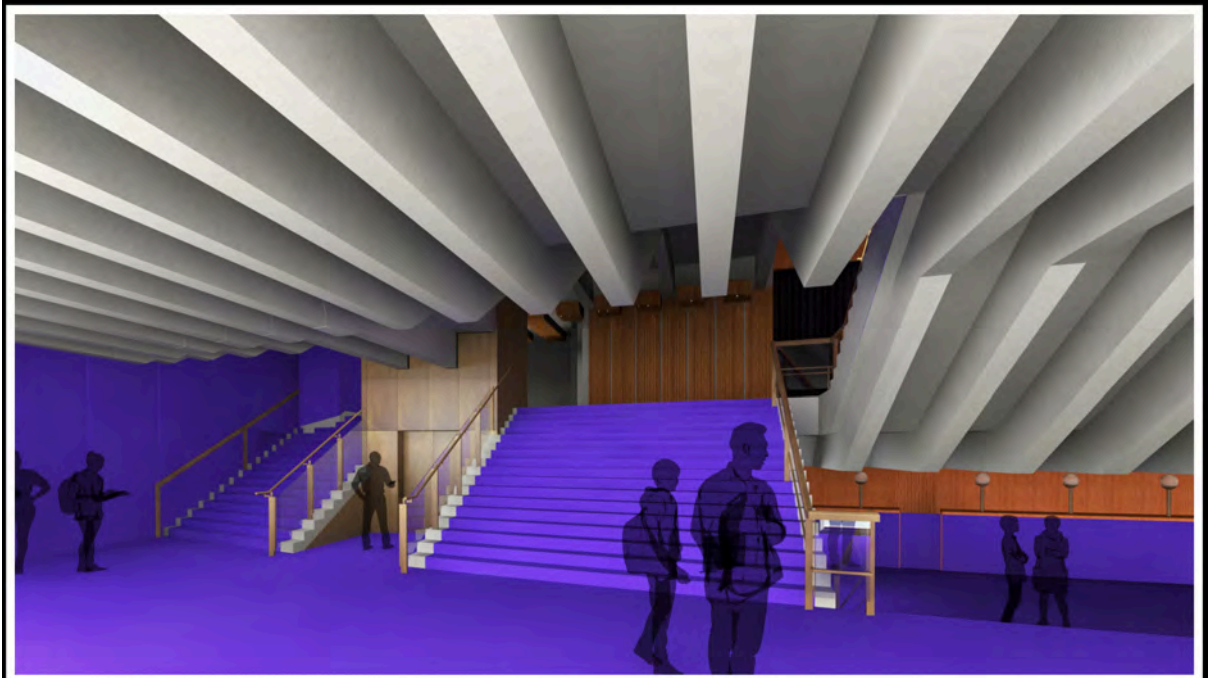


cupboard. The TfC table following the images below indicates Utzon's preferred lining material on the walls in these spaces was to be timber panels.

- It is recommended the use of bronze panelling on this southern wall in the caves area (Level 2) be tested and reviewed by the Opera House's Eminent Architects Panel and heritage architect, once the other walls are stripped back, to determine its appropriateness.
- The existing carpet cladding on the eastern wall of the east caves, and west wall of the west caves, and on their freestanding columns will be removed and the concrete left exposed and unpainted. This is consistent with the CMP and considered to be a positive impact.



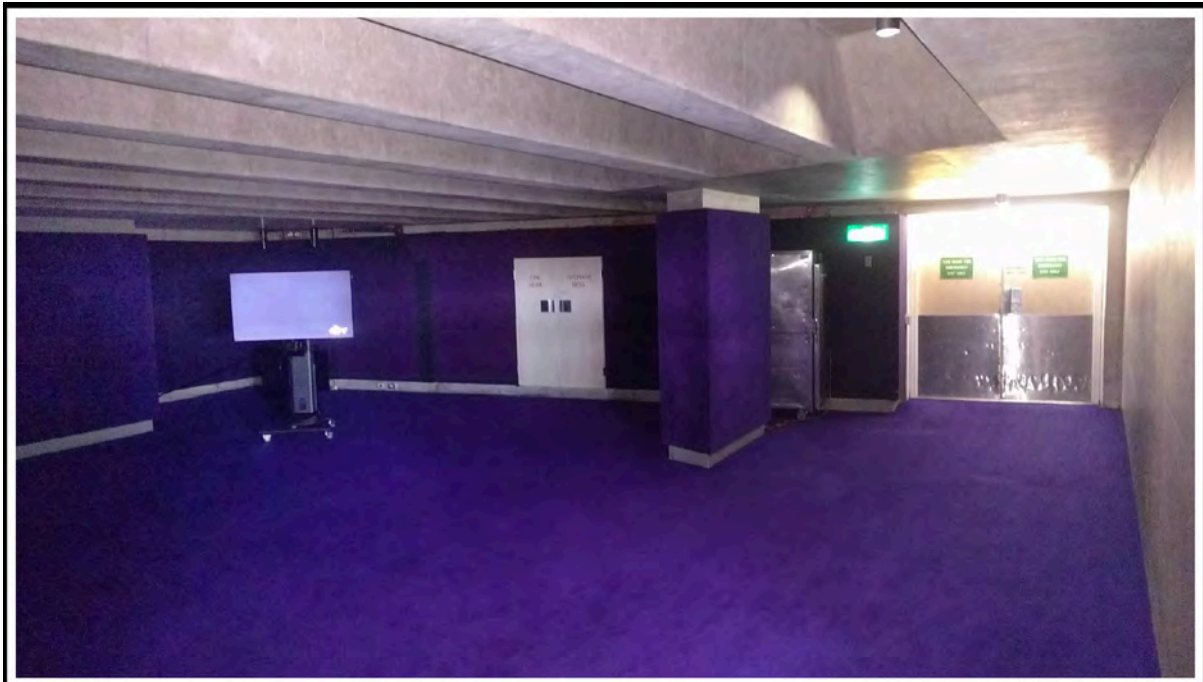
**LEVEL 2A - EXISTING CONDITION PHOTO**



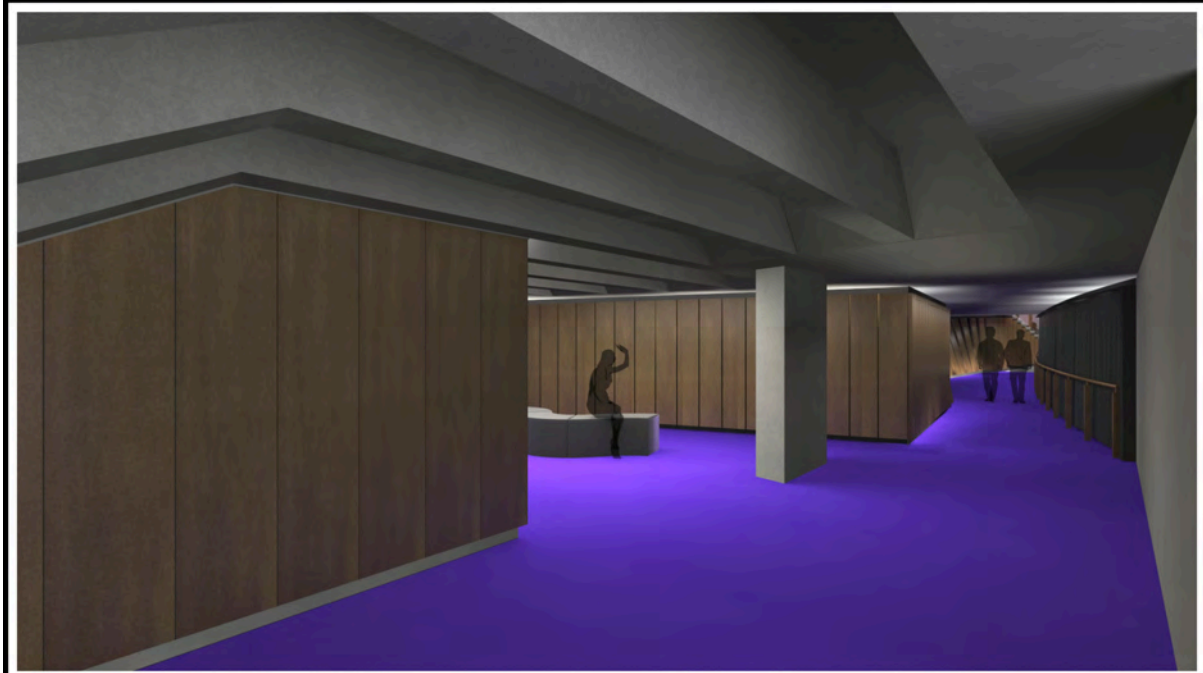
**LIFT 30 - LEVEL 2A**

Note: Lift 29 on Western Side  
is a mirror image of Lift 30





**LEVEL 2 (CAVES) - EXISTING CONDITION PHOTO**



**LIFT 30 - LEVEL 2 (CAVES)**

Note: Lift 29 on Western Side  
is a mirror image of Lift 30

The *Tolerance for Change* table for these foyers from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:

<p>Element: <b>Foyers surrounding major auditoria</b></p> <p><b>Significance ranking A</b></p> <p>Primary circulation, bar and foyer spaces encircling major auditoria with expansive views to surrounding setting, defined and articulated by building structure and auditoria</p> <p><b>Selected components:</b></p>	<p><b>Tolerance for Change</b> 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance</p>				Further Considerations	Assessment / impact of proposal
	Form	Fabric	Function	Location		
Foyer spaces defined by concrete ribbed shell structure, glass walls, cranked concrete Podium beams and precast granite paving and steps	1	1	1	1	Retain as continuous public foyer spaces with direct experience of structure, connection to setting and minimal obstruction. Nothing should obscure or be attached to the concrete roof shell structure. Modifications or attachments to exposed concrete beams permissible only in accordance with Policy 4.10 <i>Integrity of structure</i> .	Two beams are to be cut at Level 2-3, and six at Level 3A-4, on east and west sides to accommodate Lift 29 and Lift 30. The line of crank locations should be retained and respected in the modifications – high but acceptable impact when considering substantial positive impact on accessibility.  The junction of glass wall to fan pedestal at Level 4 (both sides) relocated further into foyer, but still aligning with rib crease – low neutral impact.
Glass wall system with steel mullions, bronze fittings and a slanted non-reflecting zone	2	2	1	1	To be considered with other glass walls and potential for changed or additional openings. Refer to Section 4.7.3 <i>Glass walls and bronze louvers</i> .	Modifications required at east and west ends of northern foyer to accommodate Lift 29 and Lift 30 – moderate impact.
Precast granite paving and stairs, including stairs from Box Office Foyer to Southern Foyers	1	2	1	1	Fabric may be replaced but must match original material, finish and configuration. Refer to Policy 7.18. Originally planned level access through and under side foyer stairs may be activated and stairs modified accordingly. Refer to <i>Opportunities for Change</i> table.	Granite steps in east side foyer cut for new passage at Level 2 connecting to north foyer. East and west ends of broad north foyer granite landing and steps cut for lift and associated access.  High but acceptable impact when considering substantial positive impact on accessibility.
Escalators and associated blade walls - Box Office Foyer to Southern Foyers 2009	2	2	1	1	Escalator itself may be changed but not location or overall extent.	Not affected by proposal.
Inverted 'U' section bronze handrail system to stairs in Southern and Northern Foyers	2	1	2	2	Consider any changes only as part of overall approach to handrails across site – refer to Policy 7.19. Posts should be minimised. Minimal visual obstruction below handrail is most important, allowing rails to reinforce stair geometry.	To be revised as part of site wide handrail review – high positive impact.  Additional handrails in side foyers considered of benefit for patrons, but will have moderate visual but acceptable impact.
Square section bronze guardrails at base of glass walls (1973)	2	1	2	1	Any changes should retain minimal section size and minimal impact on views.	Minor modifications required where intersected by new lifts and landings.
Brush box timber cladding and stairs to auditoria carcass (form and vertical extent)	3	3	2	2	Cladding appears 'heavy' and sometimes awkward in space – refer to discussion and <i>Opportunities for Change</i> table for options. Refer to relationship with shells (intrusive)	Minor modifications to east and west side foyers where wings to stage are extended and doors revised – moderate but acceptable impact.

Brush box timber cladding to back of auditorium / stage tower, facing southern foyers	3	3	2	2	Concealed or discreet integration of services, fixing points, lighting etc is important. Any signage, including sponsorship, should be appropriately discreet and not dominate panelling.	Not affected by proposal.
Olsen's and Tjakamarra's murals in the northern foyers	1	1	1	2	While significant pieces in themselves, this location exposes them to damage and deterioration from high light levels. Note the protective curtains are intrusive. Refer to Section 4.12.2 <i>Artworks and curtains</i> and <i>Opportunities for Change</i> table.	Not affected by proposal.
Painted and sculpted artworks in foyer areas	1	1	2	3	While significant pieces in themselves, for many of these works this is an inappropriate location, exposing them to damage and deterioration. Note the protective curtains are intrusive. Refer to Section 4.12.2 <i>Artworks and curtains</i> and <i>Opportunities for Change</i> table.	Not affected by proposal.
Circular bar counter in southern foyers (1973) – Hall design	2	2	1	2	Simple circular form and material is consistent with Utzon's intent and a sympathetic Hall element – retention preferred to removal.	Not affected by proposal.
Lighting tree over circular bars in southern foyers (1973) – Hall design	3	3	2	3	Light levels are important for bar but could be achieved by less intrusive means.	Not affected by proposal.
Brush box bar and fitout in northern foyers – Hall design	2	2	2	2	Function and location more important than fitout.	Not affected by proposal.
Mobile bar units	3	3	2	3	These are potentially intrusive. Form and location should have minimal impact on views. They should be removable. Storage when not in use is an important consideration. Refer to discussion in Section 4.8.2.	Not affected by proposal.
Foyer light fittings	3	3	2	3	Fittings not integrated with architecture, or that are sources of glare, are intrusive and should be removed. Refer to <i>Lighting Masterplan</i> . Consider as part of total lighting strategy for foyer.	Some affected by proposed works but existing system generally retained and modified for altered configurations as required – minimal impact.
Bronze and black leather bench seats (1973) – Hall selection but consistent with Utzon principles	2	2	1	2	Simple, elegant and minimal non-intrusive design is important; material is also important – retention preferred to removal.	Not affected by proposal.
Black leather lounges in northern foyers (possibly 1973)	2	2	2	2	Appropriate location and use of original furniture.	Not affected by proposal.
Small circular bronze-based tables (1973)	2	2	1	3	Simple, elegant and non-intrusive design is important; material is also important – retention preferred to removal.	Not affected by proposal.

Circular, tall drink tables with terrazzo base	3	3	3	3	Not as elegant as lower bronze based tables, but heavy base is required. Could be replaced with elegant and simple design.	Not affected by proposal.
Program seller's booth (mobile)	3	3	2	3	Replace with simple, modern, elegant, removable, minimal and non-intrusive design. Storage when not in use is an important consideration. Refer to discussion in Section 4.8.2.	Not affected by proposal.
Relationship of signature coloured carpets to northern foyers at bar and lounge level	2	3	2	3	Retention of carpet in these areas preferred to provide comfort and counter noise, but possibly pulled back from the glass wall line to reduce deterioration. Note intrusive list for carpet on levels above.	Carpets to be retained at lower levels as existing.
Public lavatories at Mural Level of northern foyers (Hall fitout 1973)	2	2	1	2	Retain Hall fitout in accordance with Policies 4.4 and 4.8, including minor alterations and upgrades.	Existing lavatories not affected by works. Modified Hall details for fitout in new accessible lavatories – similar to JST.
Relationship of carpets to northern foyers, at Mural Level and above	<b>Intrusive</b>				Ideally granite finish should prevail in these areas, but consider the comfort level for patrons seated on the steps for events. Refer to Policy 12.1.	Carpets to be retained in existing configuration.
Carpet-clad wall additions in northern foyers to provide storage, and carpet cladding to columns	<b>Intrusive</b>				Remove carpet and solve acoustic and aesthetic issues by other means. Utzon's original designs used moulded plywood panels.	To be removed at caves level only and replaced with bronze cladding on south wall. Outer walls and freestanding columns to be left exposed. – positive impact. Refer to discussion above.
Relationship of major auditoria carcasses above brush box timber walls to the interior of the roof shells	<b>Intrusive</b>				To be improved wherever and whenever the opportunity arises. Visible services should be relocated out of sight in accordance with Policy 8.2.	Opportunity to reduce visual intrusion of retained services into upper reaches of the foyer spaces, by placement of lighting and painting out of services – positive impact where this can be achieved.
Bronze guardrails in side foyers in areas of restricted head height (added after 1973)	<b>Intrusive</b>				Solve safety issues by other means where possible. If retained, minimal bronze sections are preferred.	Not affected by proposal.
Protective curtains over artworks	<b>Intrusive</b>				Vulnerable artworks could be relocated to a more appropriate place in accordance with Section 4.12.2. Refer to <i>Opportunities for Change</i> .	Not affected by proposal.
Technical overlay where not concealed or integrated with structure / fitout, including installations and loose items over 'dolphin' canopies	<b>Intrusive</b>				To be integrated with structure / fitout, concealed or removed.	Not affected by proposal.
Projection or display of any promotional or other material onto concrete structure or walls of side foyers other than for interpretation during tours	<b>Intrusive</b>				No part of these foyers should be considered a 'billboard'. Any display or promotional material must respect significance and character of space. Refer to Sections 4.15 <i>Signage</i> and 4.16 <i>Interpretation</i> .	Not affected by proposal.

Debris and fixings remaining from past activities	<b>Intrusive</b>	Ongoing housekeeping issue requiring attention to detail.	Not affected by proposal.
Chrome and black bar stools throughout foyers	<b>Intrusive</b>	Inappropriate design. If stools are required, they should be replaced with fine and elegant design, preferably in bronze or other appropriate material, in accordance with Policy 1.1 <i>Protecting Utzon's masterpiece.</i>	These stools have already been removed.
Collections of merchandising units, program seller stands, tables, etc. parked in corners of foyer spaces	<b>Intrusive</b>	Find solution for discreet storage out of sight and rationalise / redesign furniture / fittings. Refer to discussion in Section 4.8.2.	Not affected by proposal.

The *Opportunities for Change* table for these foyers from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:

<b>Explore Opportunities – Foyers surrounding major auditoria</b> Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below	<b>Comment</b>	<b>Response of proposal</b>
Redesign of timber panelling surrounding auditoria and stage tower	If major change of auditoria occurs, panelling facing foyers could be replaced with new design to a more appropriate scale, and to improve views and relationship to the structure above auditoria. Minor changes must retain and respect existing materials and details.	Beyond scope of this project
Redesign of bars and fitout	Redesign possible if it achieves improved functionality and better alignment with <i>Utzon Design Principles</i> and CMP. Potential to utilise space between stage back wall and foyer panelling.	Beyond scope of this project
Revised furniture	Potential to introduce furniture designed by Utzon for Sydney Opera House.	Beyond scope of this project
Level access between foyer levels	Potential to introduce / modify lifts to provide level access between Box Office and foyer levels, and also connect levels in Northern Foyer.  Lifts to achieve the latter should minimise change and visual disruption to cranked concrete beams and stairs.	New lifts in the Northern Foyer are a central part of this project and issues noted have been considered in the design.
Level access to Northern Foyer	Potential to utilise or modify original access tunnels buried beneath stairs in side foyers.	Access tunnel (passage) proposed at Level 2. Original access tunnel (buried) at Level 3 would not provide level access between main foyers
Protection for artworks	Explore options for alternatives to curtains - including sliding or folding panels.	Beyond scope of this project



### **CMP Section 4.8.3 Concert Hall**

The Concert Hall is ranked as exceptionally significant.

Works within the Concert Hall are fourfold:

- To improve acoustic performance of the space, including replacement of existing over-stage reflectors, installation of new side wall reflectors, acoustic drapes, modification of the treatment of box fronts and wall surfaces, and upgrading of the mechanical air-conditioning system;
- To better facilitate a greater variety of performance types (amplified / non-amplified) including modifications to the stage, installation of technical and lighting equipment;
- To provide additional accessible seating within the Concert Hall; and
- Improve the fire resistance properties of the Hall.

The following extracts and conservation policies, from the CMP 4th edition, are relevant with regard to works within the Concert Hall:

*Acoustic excellence has always been of paramount importance for this space and fine-tuning may occasionally be required. The Concert Hall was designed when acoustic performance enhancement in such venues was almost unknown, and some alteration and adaptation may now be necessary to elevate its acoustic performance to world-class status.*

*The Concert Hall has since been used for many other types of performances and functions not originally envisaged (including grand opera, circuses and amplified contemporary music), but has retained its primary focus as an orchestral concert venue, and this should remain. At the time of its opening, the Concert Hall's acoustics were generally acknowledged to range from good to excellent. In subsequent years, minor modifications have been made in response to calls for acoustic improvements and to accommodate increased demand for amplified performances, including larger suspended speaker clusters. Modest modifications have also been made to the configuration of the orchestra platform. Except for the speaker clusters, which for a variety of reasons have not followed the fine design, materials and colour tones of the originals, these 'improvements' have not had any long-term visual impact on the space.*

*Nonetheless, the cumulative impact of additional speaker arrays, lighting battens, projection screens and other technical equipment has been to substantially clutter the space, detracting from its impressive and powerful character and its significance as a container and setting for fine music performance.*

*It is therefore important that any additional technical equipment required to fulfil the needs of other performance types be non-intrusive and preferably temporary or concealed, and not detract from the significance and character of the space for its primary use.*

*The history and rationale for Peter Hall's design of the Concert Hall and all its components is explained in his 1990 report, but it is worth noting that the main driving force behind the configuration of many of them was acoustics. Thus, in fine-tuning the acoustics, some change may need to be considered.*

#### **Policy 8.3 – Concert Hall**

*The design, form and quality of the Peter Hall designed Concert Hall must be retained and its primary use remain as a state-of-the-art orchestral concert and performance venue.*

*Any changes to the Concert Hall auditorium must retain and respect the defining elements of Hall's design including:*

- *the form, character and quality of the singular concert hall space;*
- *the moulded white birch veneer plywood ceiling with radiating bands from a circular crown element above the orchestra platform and integrated lighting, services and acoustic housings;*
- *the grand organ as a focal element above the choir stalls, fully integrated with the design and arrangement of plywood ceiling panels;*
- *the laminated brush box walling, doors, orchestra platform and floors with minimally intrusive bronze rails and fittings;*
- *the continuous rows of moulded white birch plywood seating with magenta wool*

- upholstery; and
- acoustic reflectors and technical equipment that do not visually distract from the defining elements of the space.

Whatever the approach taken, consideration of acoustic improvements or additional elements in the space must be treated as follows.

**Policy 8.4 – Functional or acoustic improvements**

*In considering functional or acoustic improvements to the Concert Hall to achieve a level of excellence for a chosen priority use, any proposal must:*

- be based on adequately resourced expert advice and an agreed priority use of the space, as well as functional and / or acoustic objectives;*
- be tested wherever possible by the use of full-scale prototypes; and*
- only proceed when tests confirm that the agreed objectives can be met within the framework of Policy 8.3.*

*The design, installation and management of additional elements in the space, technical or otherwise, must:*

- not reduce the acoustic quality of the space as a concert hall;*
- not leave the fabric of the hall with a progressively increasing collection of unrepaired drilled holes, fixing points and minor alterations, to the ultimate detriment of both its visual and acoustic quality;*
- expose to view only the minimum necessary pendant winch cabling at any one time;*
- be contained in the least bulky housings possible so as to reduce and, finally, avoid visual intrusion into the auditorium space; and*
- be as least visually intrusive as possible, with consideration given to temporary solutions and their removal when not in use.*

**Comment**

The above CMP extracts confirm the need to address acoustic issues in the Concert Hall. The proposal in this application is firmly based on considerable research, prototype testing, and peer review of potential solutions by world-renowned acoustic experts. The proposed interventions are more extensive than what may be considered visually ideal, however they do retain and respect Peter Hall's interiors (as per Policy 4.8), retain its character and are consistent with Policies 8.3 and 8.4.

The heritage impacts associated with the various proposed modifications and installations in the Concert Hall are considered in further detail below.

***Stage Risers, Access and Backstage spaces***

Lowering of the default stage level by 400mm to improve sight lines from the stalls and facilitate level access from backstage wings.

- This alteration will have a positive impact on sightlines from the stalls and not adversely affect sightlines from other parts of the auditorium. The resultant level access between stage and backstage will considerably improve its functional amenity.

Enlargement of the rear stage area by removal of the front row of choir stalls seating and construction of profiled rear stage wall in laminated brush box in new alignment.

- Lost seating will be relocated to existing cross-over aisle at rear of choir stalls. Minor changes respecting Hall's original materials palette that will improve functionality of the stage but not adversely impact on the character of the Concert Hall.
- Refer to discussion below in regard to replacement of rear stage wall.

Replacement of the existing flat stage with automated semi-circular 'arena' platforms to improve the sense of intimacy and the ability of the orchestra to hear and see itself.

- These have been successfully tested by the orchestra with a full size mock-up, and were found to have no negative impact on the character of the Concert Hall. The

present forestage riser will be automated in association with automation of the front two rows of stalls seating to enable efficient setup. The flooring for the new stage platforms retains and respects Hall's palette of materials. The proposed changes to accommodate the automation of these risers will not impact on the significant fabric or character of the Concert Hall.

Modifications to the existing stage access including enlargement of the backstage areas on either side of the stage, the provision of additional doors, realignment of the box fronts as well as raising of the existing floor to be level with the default stage level.

- These works will have high physical impacts through the loss of mainly recent (2011) fabric, however they are considered acceptable, as they will not greatly alter the character of the Concert Hall. These works also have flow on impacts on the alignment of the auditorium walls within the eastern and western side foyers (discussed elsewhere) – moderate impact but considered acceptable.
- The replacement of the stairs to the choir stalls is required due to the automation of the stage. New steps are to be partially automated, partly moveable, to provide flexibility of access and use as required. Their construction should aim to reflect the existing palette of materials (brush box and bronze) so as to have minimal impact on the character of the interior.

Subdivision of the existing Anteroom on Level 2 to create a smaller Anteroom and new Rack room, including raising of floor level to match the default stage level, modifications to existing stairs from the Orchestra Assembly room below, and removal of original sliding doors.

- These works will respect the Hall palette of materials and have minimal impact on the spaces. However, there will be high positive benefits associated with the improved functionality of the backstage areas.

#### *Treatment to Box Fronts, Perimeter Wall and Stage Surround*

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

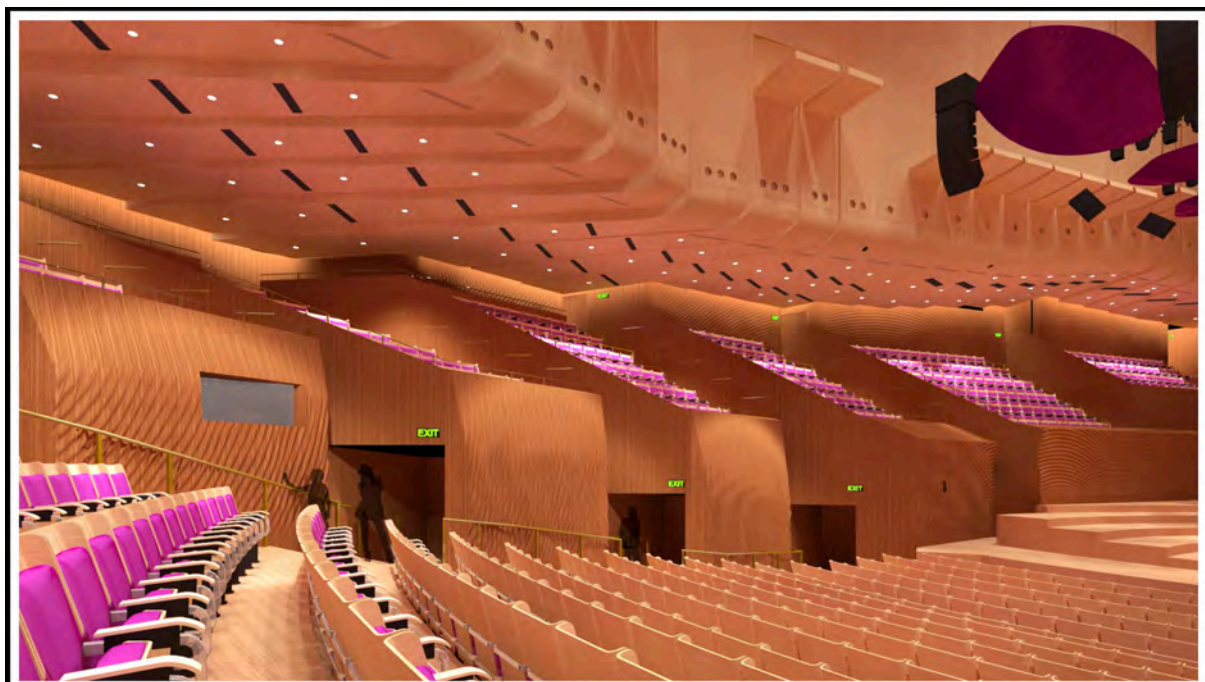
- These new panels are required in order to provide more diffused acoustic reflection to the orchestra and audience. Small panels (1.2m square) have been prototyped in laminated brush box to determine depth and finish of profile pattern. The proposed 'wave' surface profile could introduce a strong visual pattern into what is presently a relatively 'quiet' timber backdrop. This requires further testing to ensure impacts are acceptable – see below.
- It is important to note that all the original 'sawtooth' profile box fronts were replaced with flat panels in the same material in late 2011 as part of an earlier attempt to improve acoustic performance. Their replacement with new profiled panels of matching material will have little impact on original fabric. The original panels were archived as part of the Opera House collection of salvaged original fitout.
- The proposal retains bronze as the material for all handrails, guardrails and other fittings. Some handrails will require modification to meet current codes but these will be part of the suite of profiles developed for application across the site. It is important that all fittings be visually recessive with minimal impact on view lines. In this regard, the existing flat guard rails surrounding the boxes and the front of the circle should, if possible, be retained.
- The proposed works affect much of the original 1973 wall fabric, however the new panelling respects the original material of the auditorium by continued use of glue-laminated brush box – high impact on fabric but with overall positive acoustic benefits.
- It is recommended the visual impact of these new panels, particularly the diffusion pattern, be tested in situ with a full panel size prototype or mock-up.



Images below and on the following pages show the existing Concert Hall interior and as proposed. Unless otherwise noted, all images are selected from the ARM DA report.



Existing Box Fronts – installed late 2011  
photo – Alan Croker



**NEW BOX FRONTS - CENTRE OF STALLS**

### ***Acoustic Reflectors (for non-amplified performance)***

For non-amplified (acoustic) performance the proposed arrangement includes:

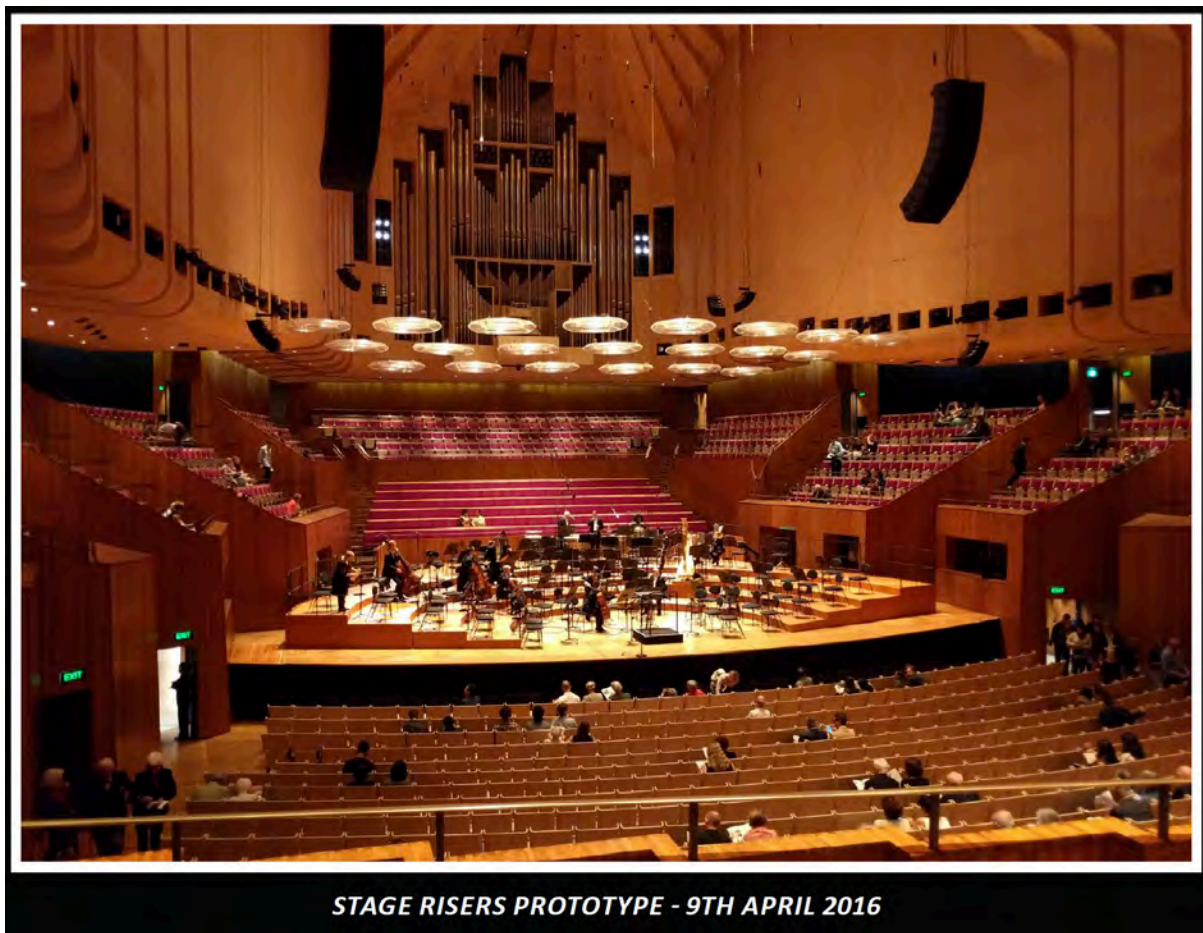
Removal of the existing array of acrylic 'clouds' and replacement with a radial array of adjustable 'petal' shaped solid reflector panels.

- The original acrylic 'clouds' (also referred to as 'doughnuts') were designed to provide early acoustic reflections back to the orchestra itself, thus countering the enormous volume above the stage. In his 1990 report *Sydney Opera House, The Design Approach to the Building with Recommendations on its Conservation*, Peter Hall described his concern that as proposed, they would visually 'divide the volume above the platform' and as a result were made smaller and transparent – as they are now. While they had some benefit, they have proved inadequate in their coverage. Refer to discussion on alternatives in section 5.2.3 of this report.
- While the proposed arrangement of reflectors is denser and less transparent than the existing arrangement, the proposed 'petals' retain partial views to the grand organ, the focal point of the Concert Hall, although much of the space between the reflectors will be occupied by suspended over-stage lighting arrays, required because of the solidity of the reflectors.
- These reflectors were mocked up for acoustic and visual tests and proved that the acoustic benefits were substantial, for both performers and audience. The mock-ups also suggested a high gloss or matte finish should be avoided, and a colour based on magenta should be further explored and refined.
- The reflector shape and use of magenta is supported for two reasons. Firstly it visually separates these suspended elements from the radiating geometry of the plywood ceiling, avoiding visual confusion and respecting Hall's design, and secondly, it strengthens the sense of 'celebration' of the performance space as intended by both Utzon and Hall, using Hall's original colour palette.
- These suspended over-stage reflectors will be the most highly visible components of the acoustic upgrade. High visual impacts however positive acoustic impact.
- The replacement of the existing acrylic acoustic 'clouds' and their replacement with a new array of petal shaped solid reflectors is supported provided they meet the following conditions:
  - 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; and
  - an original acrylic cloud reflector in good condition is identified and archived as part of the Opera House's collection.

Installation of fully operable sidewall reflector panels projecting from the vertical planes of the ceiling beside the stage and over the audience.

- Potentially a high visual impact but considered acceptable given that these panels respect the existing configuration and materiality of the white birch veneer plywood panels within the auditorium and contribute to improved acoustic performance of the Concert Hall. This has been supported by an acoustic peer review by Ramboll UK.
- These side wall reflectors over the stage have been mocked up and tested and found to provide a substantial acoustic improvement for both performers and audience.
- It is highly likely that full white birch panels will need to be taken down and modified on a bench to ensure the works are executed without unnecessary damage. Site investigations confirm these plywood panels are individually framed, but not physically joined, being separated by a flexible plastic strip. In this regard, and before commencement of works on any part of the plywood ceiling, the process and methodology for panel dismantling, cutting out, construction, and operation of these new inserted panels, should be tested via a full size operational prototype.



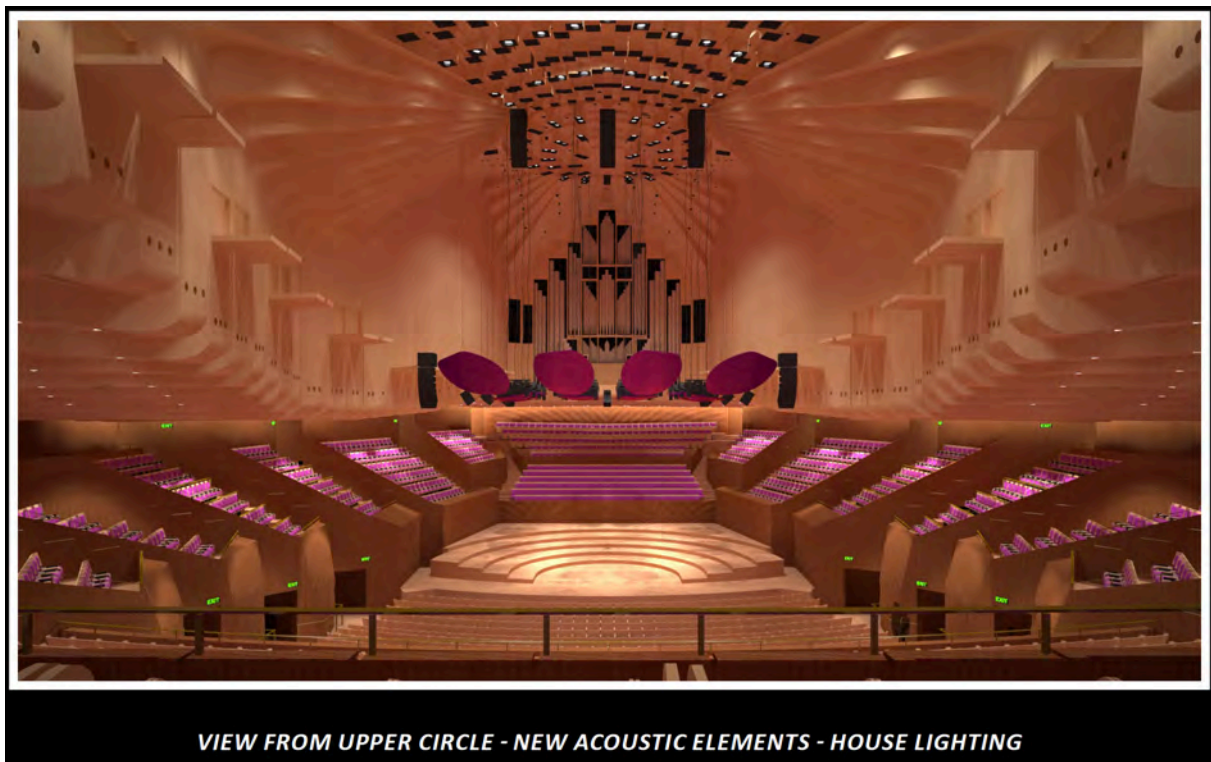


Mock-up and prototype test of acoustic reflector arrangement – 10th November 2016  
photo – Alan Croker





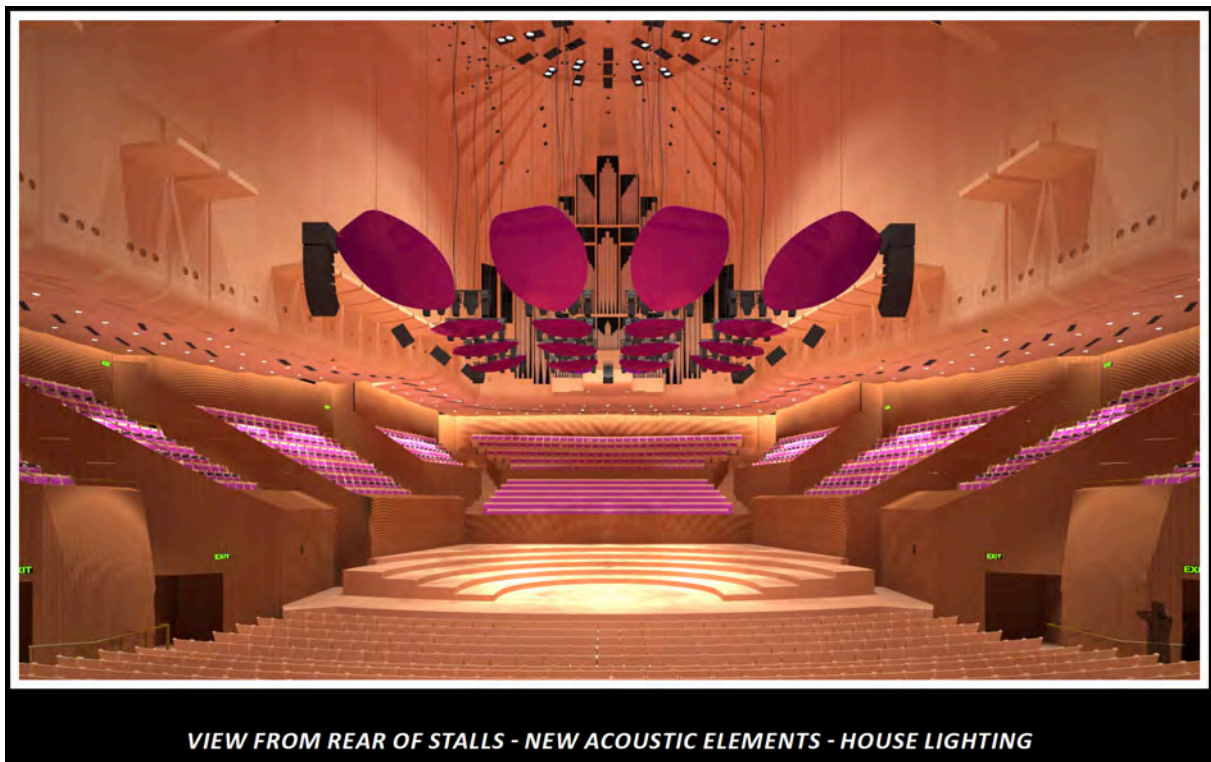
View from midway front circle – concert performance 28th October 2017  
photo – Alan Croker







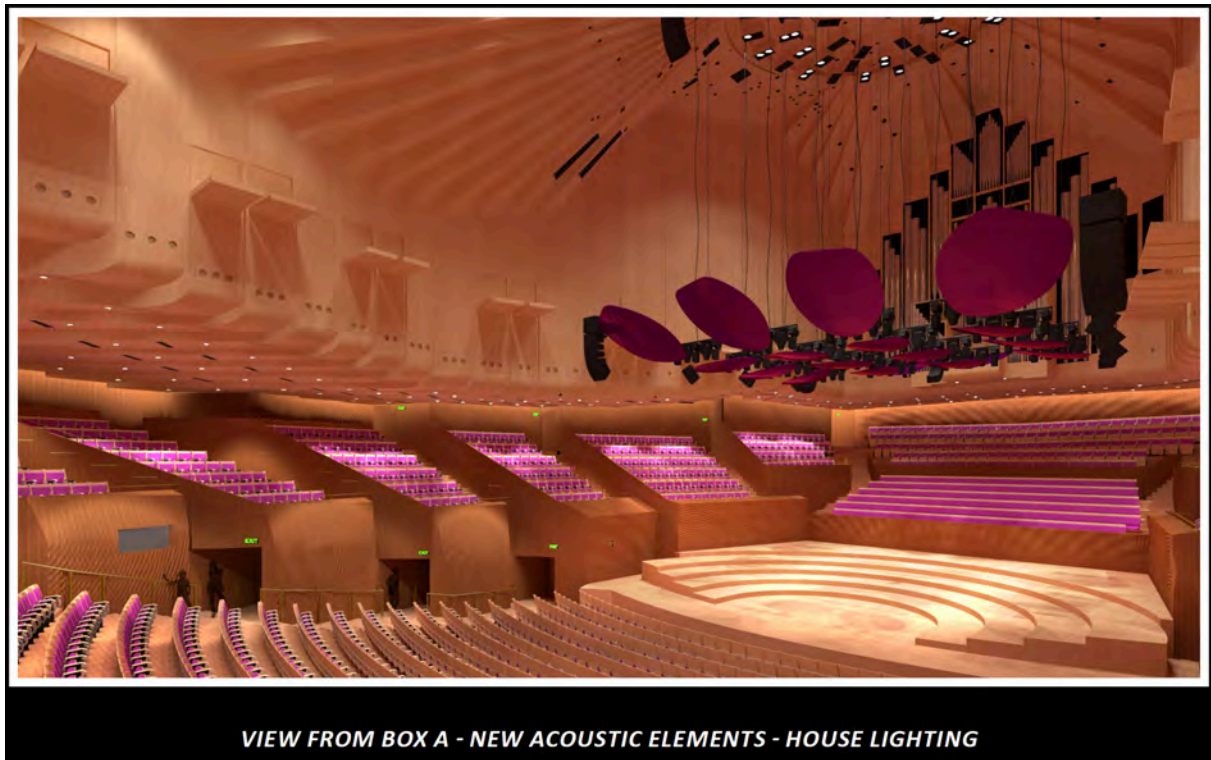
View from rear stalls – concert performance 22nd July 2017  
photo – Alan Croker







View from Box A – Concert performance 16th November 2016  
photo – Alan Croker



- These projecting operable reflector panels are considered to have a high visual and fabric impact but are acceptable provided they meet the following conditions:

- the existing white birch panels are retained and reinstated in their original locations, and not replaced with new as these are book and end-matched from a single log with panels above;
- cuts across an original sheet junction are avoided wherever possible, and where this is not possible, the sheet junction is retained in its existing location;
- there is minimal visual interruption of existing white birch plywood, and preferably, the cut out section to accommodate the reflector is used as the face of the new flap to ensure it matches;
- flaps are fully retracted and the original plywood surface finish flush with the existing plywood when these reflector flaps are not required.

### *Acoustic Drapes (for amplified performance)*

For amplified performance the proposed arrangement includes:

Automated acoustic absorption drapes / banners suspended from the ceiling crown and operable drawer units in adjacent vertical panels over the stage.

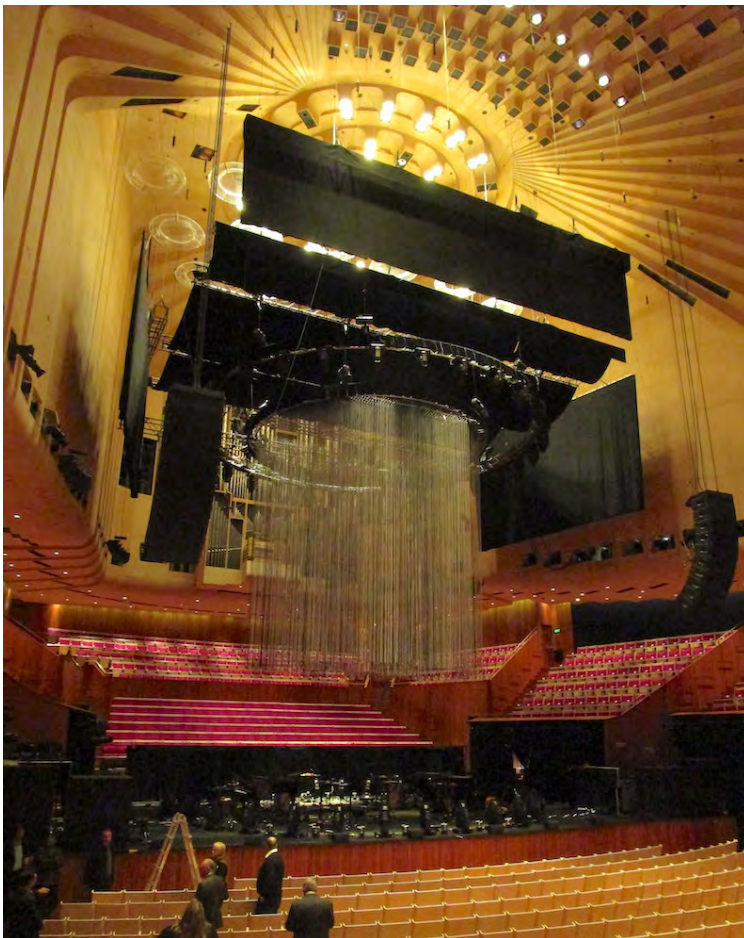
- The automated drapes from the crown require substantial modification of three of the plain concentric white birch plywood rings in the centre of Hall's exceptionally significant design of this space. In each of these rings, a number of short drapes will be deployed from opening hatches in the existing plywood. The drapes themselves will fold like Roman blinds, into an arrangement of short 'containers' between the existing plywood lining and the steel structure that supports it, and will not be visible unless deployed.
- The retractable 'drawer' units high on the side walls over the stage, deploying absorption drapes, will complement the absorption capacity of the drapes from the crown.
- The amplified performance type typically requires a more 'theatrical' approach to the presentation of the stage, and views to the grand organ are not considered important for this performance type. Their visual impact, when deployed, will be high, but this is considered appropriate and acceptable. The proposed graded magenta colour of the drapes are an extension of this dramatic effect and is supported.
- For amplified performance, the 'petal' reflector panels can be tilted and raised to reduce their visual impact in the space and allow deployment of the acoustic drapes from the crown. In their tilted and raised position, they will also reflect sound towards the arrangement of drapes.
- It is highly likely that full plywood rings may need to be taken down and modified on a bench to ensure the works are executed properly and without unnecessary damage. Site investigations suggest that individual rings are not physically joined to adjacent panels, but separated by a flexible plastic jointing strip. In this regard, and before commencement of works on any part of the plywood ceiling, it is recommended the process and methodology for cutting out, constructing, and operating these new panels, be tested via a full size operational prototype that includes a full size drape.
- Modifications to these plywood ring panels are considered to have a high impact on original fabric but are acceptable provided they meet the following conditions:
  - 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



- drapes and access panels are fully retracted and sit flush with the existing plywood when acoustic drapes are not required.

Automated acoustic absorption drapes to the stage surround, box fronts, and rear wall of the stalls; and automated acoustic absorption drapes rising from concealed hatches in the floor along side and perimeter walls.

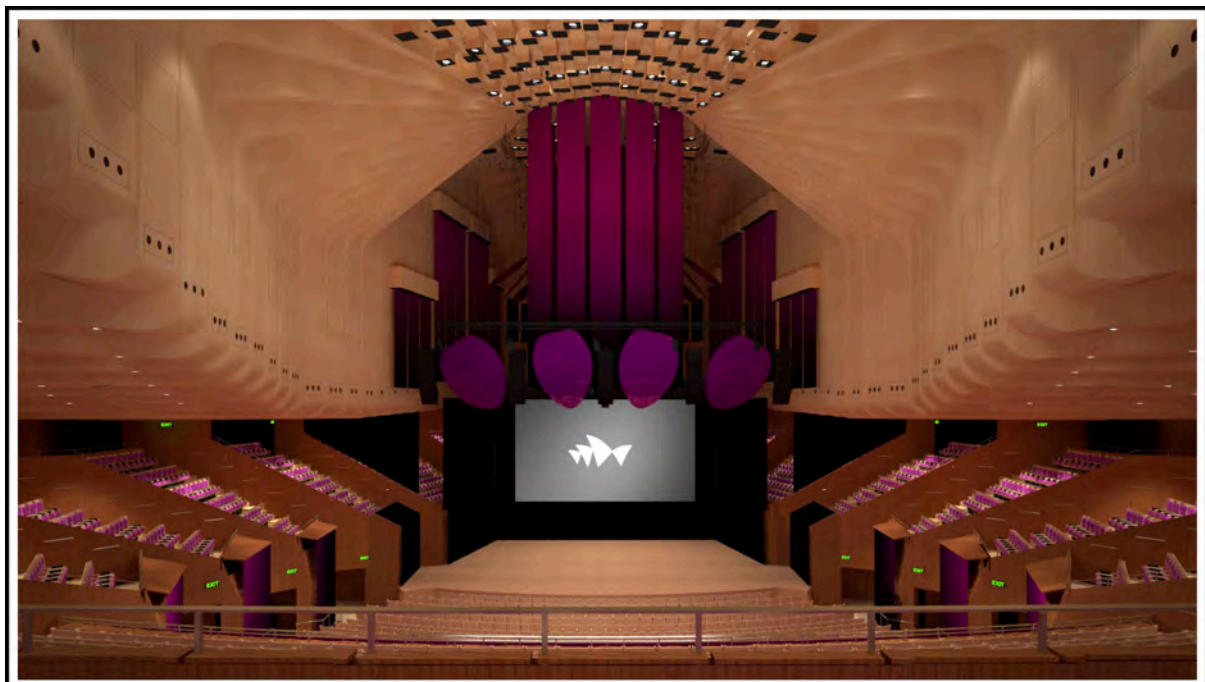
- The automated acoustic absorption drapes rising from the floor along side and perimeter walls, will allow wall and ceiling details to remain unaffected. A mock-up of this mechanism should be trialled to ensure all technical issues are resolved.
- The automated drapes on the box fronts, stage surround, and rear wall of the stalls should also be tested with a full-sized mock-up.
- While the acoustic drapes throughout the auditorium will have high impacts on the significant fabric and character of the Hall interior they are generally considered acceptable provided they meet the following conditions:
  - the location and configuration of the drapes respects the geometry of the interior;
  - 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 indirect lighting of wall and ceiling panels around the perimeter of the hall is retained and not impacted by the drapes, regardless of their deployment;
  - all drapes are fully retractable and the machinery / hardware for their automation / deployment is fully concealed;
  - covers and hatches over acoustic drape units should finish flush with the surrounding brush box when not required.



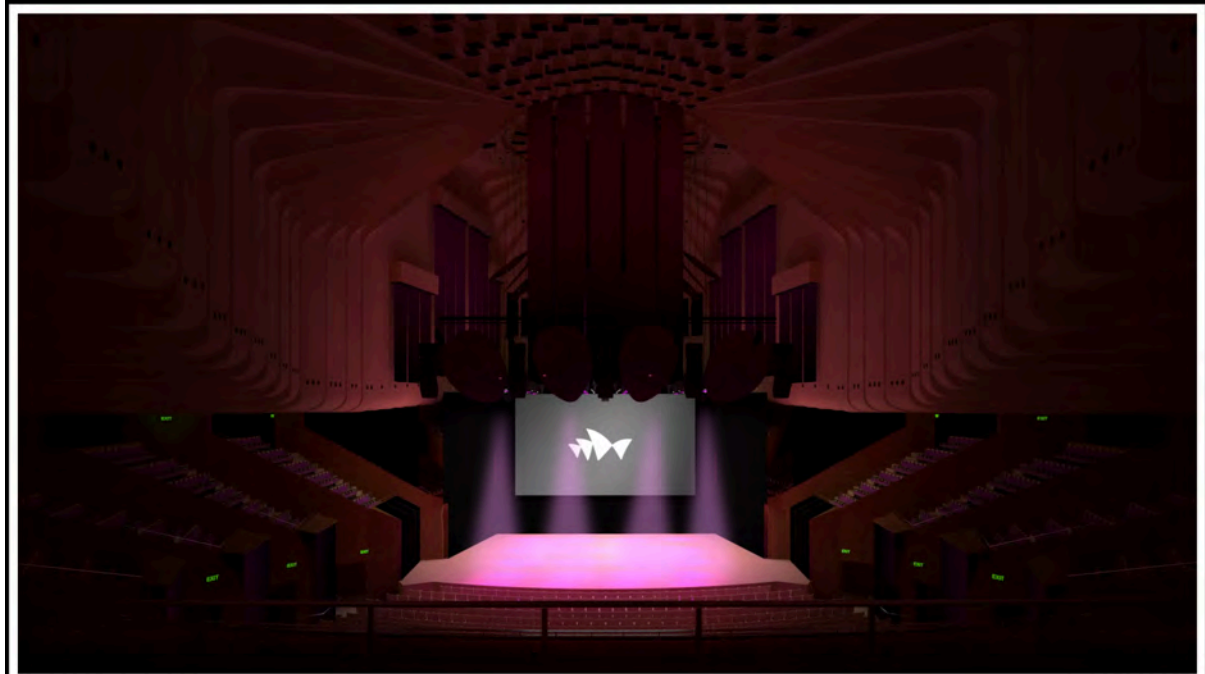
Existing acoustic drape set-up for amplified concert performance 30th May 2016  
photo – Alan Croker



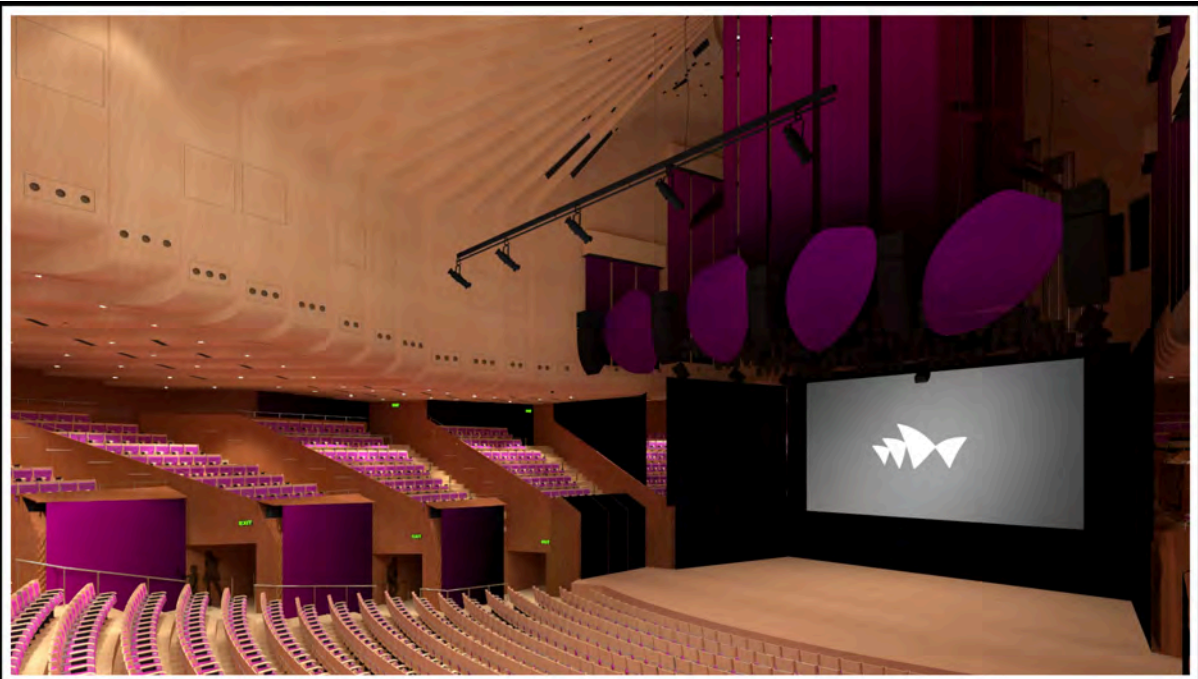
The images below show the proposed arrangement for acoustic drapes and demonstrate the effect of the more dramatic lighting frequently employed during this type of performance. These images have been selected from the ARM Development Application report.



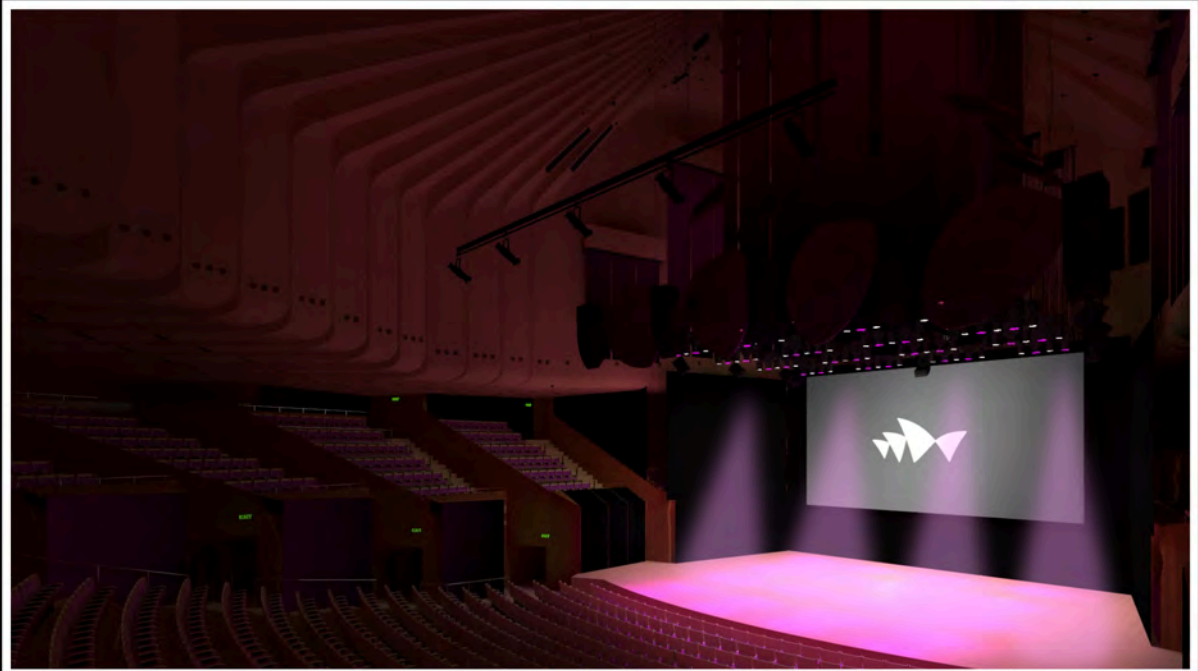
**VIEW FROM UPPER CIRCLE - AMPLIFIED MODE - HOUSE LIGHTING**



**VIEW FROM UPPER CIRCLE - AMPLIFIED MODE - PERFORMANCE LIGHTING**



**VIEW FROM BOX A - AMPLIFIED MODE - HOUSE LIGHTING**



**VIEW FROM BOX A - AMPLIFIED MODE - PERFORMANCE LIGHTING**

### *Lighting arrays*

The existing lighting arrangement for non-amplified performance is generally achieved from the crown and ceiling level or via the cannon-port penetrations in the vertical panels, with additional lighting bars only rarely suspended within the space. This allows open views to the grand organ with minimal clutter in the void above the stage and seating. For amplified performances, a number of lighting bars are used, particularly over the stage and stalls, but their visual impact is frequently lessened by the more dramatic lighting effects for this performance type.

The lighting arrangement proposed in this project includes augmentation of the existing stage lighting from the ceiling crown with new lighting arrays suspended between the acoustic reflectors, for use for both amplified and non-amplified performances.

Existing lighting in the ceiling over the stalls and circle, will be supplemented with new positions in the same manner as existing to achieve adequate and appropriate lighting on the stage. For non-amplified performances generally, there will be no suspended lighting except between the acoustic reflectors.

- These additional lighting arrays are required as a result of the proposed opaque over-stage acoustic reflectors and have the potential to clutter the space and detract from views to the grand organ as well as the auditorium itself. A range of lighting options were considered, including tidy 'box' enclosures for each group of lights. It was found this created a 'ceiling' effect, visually blocking any transparency between the reflectors and visually dividing the space, especially when viewed from close to the stage. The selected option in this proposal utilises a number of short lighting bars in the same alignment as the reflectors, each with the lights required and unenclosed to maximise visibility through and beyond them.
- For amplified performance, additional lighting bars may be required forward of the stage, however these will be removed (as they are now) for acoustic performance.
- These additional lighting arrays suspended within the space will have negative visual impacts, but as they arise from the acoustic improvements, they will also enable positive acoustic impacts. Negative impacts are acceptable provided that:
  - the lighting bars and fittings deployed for any performance are minimum in number and as efficient as possible;
  - the lighting arrays between the reflectors are not enclosed, and are 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; and
  - every effort is made by production and technical crews to minimise clutter from suspended lighting infrastructure for each performance.

### *Speaker arrays*

For non-amplified performance, speakers are only required for general announcements.

At present, there are two large black speaker arrays suspended over the front of the stage, one on each side, with a pair of smaller speakers over each side of the rear of the stage. These speakers were designed for amplified performance, but remain flown within the space when not in use. They are used for announcements but are visually very dominant. They do however, allow open views to the grand organ with otherwise minimal clutter in the void above the stage and seating.

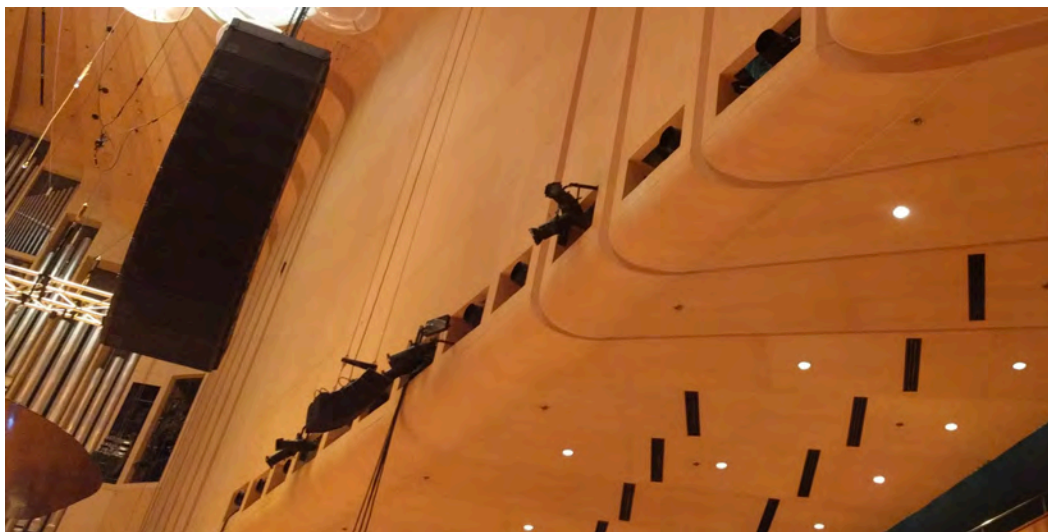
The proposal to replace the two speaker arrays over the front of the stage with five smaller ones, will have a higher visual impact, particularly with their placement as proposed, between the acoustic reflector 'petals' with one in the centre.

- This proposed arrangement effectively blocks or substantially masks remaining views towards the grand organ and reinforces the visually 'solid' character of the combined acoustic, lighting and speaker arrays. This is considered a high negative impact, especially if these speakers are not raised for non-amplified performances when houselights are generally less dimmed.
- The renders provided show that the centre three speakers would be raised high towards the ceiling during non-amplified performances, but they are then seen against the crown – a highly significant element in Peter Hall's design.
- The proposal includes replacement of the rear stage speakers with a greater number of smaller speakers to both the sides and rear of the stage.
- For amplified performance this more intense speaker array will be less intrusive due to the lighting focus on the performance and the deployment of acoustic absorbent drapes and banners.

- The cumulative impacts of the lighting, speaker and acoustic reflector proposals will be high, particularly for non-amplified performance. Ongoing management of these installations will be necessary to determine and maintain the least intrusive and most effective balance for each performance.
- Negative impacts from the speaker arrays are acceptable provided that:
  - the 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; and
  - the speaker arrays deployed anywhere in the space for any performance are minimum in number.

#### *'Canon-port' openings and air delivery registers*

- The 'cannon-port' openings require modification to accommodate the upgraded air delivery system and address acoustic leakage. It is proposed to infill the existing rectangular openings with matching white birch veneered ply, with a discrete shadow line to delineate the extent of the original opening. Where they are to accommodate new air diffusers, these should be closely fitted within the patched area. A full size mock-up should be assembled and approved first, before these particular works commence.
- Additional air diffusers are required forward of the existing rectangular ones on the ceiling soffits over the boxes and sides of the auditorium. These should have minimal impact as long as the existing plywood is retained and the order and proportion of existing registers and the ceiling geometry is retained and respected with the new work. As these new registers are close to the radius junction with the vertical ceiling panels, they should be as discrete as possible so as not to visually weaken the panels.
- These new registers are proposed to have white birch surrounds and should therefore sit 'quietly' in their new location. Their setout, as proposed, respects the geometry of the auditorium. Refer to images below.
- Potentially negative impacts from the revised 'cannon-port' openings and new air delivery registers are acceptable provided that:
  - 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;
  - the 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.

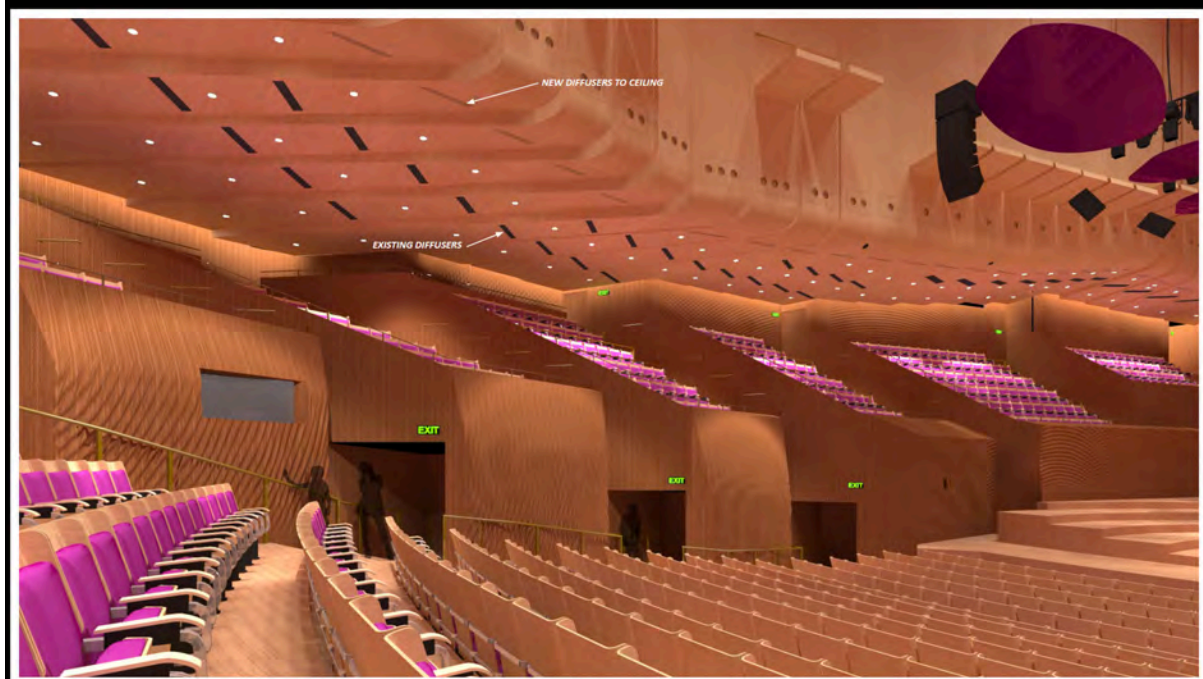


Existing 'cannon-port' openings and air conditioning registers in ceiling – ARM image





**EXISTING SLOT DIFFUSERS & CANNON PORT OPENINGS**



**PROPOSED SLOT DIFFUSERS**

### *Seating*

Modification to a number of rows of seating (4 rows to the front stalls – accessible from Level 2, the east and west ends of the rear 3 rows in the lower circle, and the rear row of circle level boxes A, B, C, U, V, and W – accessible from Level 4) to provide the compliant number of accessible wheelchair positions in accordance with current building code requirements. Up to 34 removable accessible wheelchair and associated companion positions will be provided, implemented as bookings demand.

Refer to pages 71-76 of ARM's Development Application report.

Only the wheelchair positions at the rear of the lower circle require a removable platform and guardrails. This is in addition to the alteration to the front 2 rows of the stalls to accommodate the extended stage.

- The magenta upholstered white birch plywood seating itself will be retained with modified supports and fixings to enable rapid changeover in response to bookings. This work also requires removal of the rear wall to the 6 circle boxes. Although this work modifies the original Hall interior, it retains and respects the original geometry and will not detract from the significant character of the Concert Hall. Moderate but acceptable impact.
- Modification of the front two rows of seating to the stalls associated with the automation and enlargement of the stage. The existing seating in these rows will be retained and modified to enable them to automatically fold and be stored under an enlarged stage. As this mechanism is in three parts, a gap will result between the rows of automated seats. This gap will be filled with a manually fitted quick release standard seat to avoid a 'missing tooth' effect. Moderate but acceptable impact.

Re-cushioning and re-upholstery of 50% of the magenta upholstered white birch plywood seats to the stalls and lower circle, to improve the fire rating performance of the seating.

- This work retains the existing form, details, materials, colour and finish of the Concert Hall seating. Low impact.
- The white birch plywood seat shells should only be replaced with matching if they are beyond repair.

The front row of the choir stalls is to be removed and relocated to allow enlargement of the stage.

- To retain choir seat numbers, new seating is to be constructed in the existing cross-over aisle at the rear of these stalls. To avoid unnecessary wastage, it is recommended that as much of the removed seating as possible be used in the new position. Note this choir stalls seating is without arms.

The works discussed above will considerably enhance the acoustic quality, functionality and code compliance of the Concert Hall, thereby making it more attractive for a wide range of performances types and ensuring it continues to be used as a major concert venue. The project should strengthen the reputation of Sydney Opera House as a world-class performing arts centre enhancing Australia's cultural vitality.

The Concert Hall *Tolerance for Change* table from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:

Element: <b>Concert Hall</b>  Significance ranking <b>A</b>  Major auditorium used as a state-of-the-art concert hall and performance venue  <b>Selected components:</b>	<b>Tolerance for Change</b> 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				Further Considerations	Assessment / impact of proposal
	Form	Fabric	Function	Location		
Moulded white birch veneer plywood ceiling with purpose-made openings and housings for lighting, air conditioning and technical services	1	1	1	1	Any changes or new service openings must be carefully integrated and respect geometry and material of existing. New penetrations of any kind should be avoided and all redundant holes for winch lines and services repaired to match adjacent finish.	There are a number of moving and fixed parts proposed however, in summary, these retain and respect the white birch ceiling – high impact, however with positive acoustic impact.  Refer to discussion preceding this table.

						Retention of existing plywood linings rather than replacement with new is considered essential.  All patches for holes and cannon-ports must utilise matching white birch.
Laminated brush box timber wall linings, doors, floors and stage	2	1	1	1	Use of brush box is important. Configuration may be minimally modified to address acoustic and functional issues but materials and quality of finish should be retained. Reversibility is important. Climate control in the space should maintain appropriate conditions for all joinery fitout. Refer to Policy 18.13.	The proposed profiled diffusion panelling respects the existing brush box wall material.  Full size mock-ups of proposed diffusion pattern should be tested for visual impact.  High impact on original fabric and space, however with positive acoustic impact.
Bronze fittings generally, including tapered and angled guardrails to boxes and circle, stair lights and door hardware	2*	1	2	2	Bronze as the primary material is the most important factor. These should be considered as part of a site-wide study on bronze handrails. * Form / configuration of tapered guardrails = 1.	Minor modifications to lighting fixtures.  Replacement of bronze handrails to achieve compliance where required, as part of site-wide upgrade, but tapered guardrail profiles retained where possible.  Moderate positive impact.
Organ pipes and case including associated bells	1	1	1	1	Retain as fully functional focal element in space. Refer to Section 4.8.3.	Physically not affected, but will be partially obscured by new acoustic reflectors and lighting arrays.  Dust protection will be a vital concern throughout the duration of the works.
Seating of white birch moulded plywood and magenta wool upholstery	1	2	1	2	Form, colour and materials are important. Repair preferred over replacement, which should match existing.	50% of stalls and lower circle seating re-cushioned and re-upholstered. Fixings modified where required for wheelchair positions. Impacts on configuration visually evident only when accessible seating implemented as per demand and bookings – moderate impact.
Acoustic reflector rings ('doughnuts' or 'clouds')	2	2	1	2	1973 elements related to acoustic excellence of primary function of hall, and may be modified to improve this for current requirements. Explore modification in preference to removal / replacement.	Acoustic reflector rings are to be completely removed and replaced with opaque coloured reflectors.  Organ will be partially masked by these reflectors and lighting will visually intrude and potentially 'divide' the space. This could be further exacerbated by the proposed speaker arrays if they are not flown out or removed for non-amplified performance.  Refer to discussion above.  High visual impact, however with positive acoustic benefits.



Technical overlay where concealed or fully integrated with structure / fitout	2	3	1	3	Distracting and discordant elements should be avoided.	Refer to discussion above regarding acoustic, lighting and speaker arrays.  Minimum visual impact with positive acoustic benefits if various overlays deployed only when required.
Existing backstage space	3	3	1	2	Efficient function of this space is essential.	Reconfiguration improves functionality and accessibility – high positive impact.
Steel structure supporting ceiling	3	3	1	3	Structure could be modified if required but should not negatively impact on, and should improve where possible, views upwards from foyers.	Substantially retained but with minor modifications and strengthening to accommodate revised loadings and access. Views upwards from foyers not affected. Minimal impact.
Technical overlay including lighting battens, lights, screens and speakers, microphones and counterweights, where not integrated with structure / fitout or concealed	<b>Intrusive</b>				Suspended speakers and other elements should be either removed (when not in use) or lifted as high as possible to minimise visual clutter. They should be finished with materials and colours that minimise visual intrusion.	Existing speaker arrays and lighting battens are to be replaced / supplemented by additional speakers and lighting battens. This could potentially exacerbate this issue.  Further resolution is required to minimise impacts as there is the potential to create visual clutter – high visual impact, although rationalisation should be explored as part of ongoing performance and event management. Refer to discussion above, and CMP Policy 8.4.

The Concert Hall *Opportunities for Change* table from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:

<b>Explore Opportunities – Concert Hall</b>  Items listed as intrusive in TFC table above are opportunities for change. Additional opportunities listed below	<b>Comment</b>  Generally, all changes must comply with the Utzon Design Principles and CMP, and may be subject to statutory approval	<b>Response of proposal</b>
Acoustic upgrade	Potential to finesse the acoustic properties of hall with modified and / or new components, and potentially reduce clutter. Rigorous analysis, prototyping and testing essential.	Acoustic upgrade is a central objective of this project.  Project design has developed with rigorous analysis, prototyping, testing and peer review.
Functional upgrade	Potential to improve stage functionality and backstage access with additional automation, minor changes to brush box linings and minor level changes.	Functional upgrade is a central objective of this project. Issues noted are included.
Accessibility upgrade	Potential to improve access to and provision of accessible seating and wheelchair positions. With any changes, existing materials, finishes and details should be respected.	Accessibility upgrade is a central objective of this project. Issues noted are addressed in the design.

### **7.2.2.3 CMP Section 4.9 CONSERVING THE INTERIOR: 'FRONT-OF-HOUSE' SPACES WITHIN PODIUM**

#### **CMP Section 4.9.9 Front-of-house lavatories**

No alterations are proposed to the existing front-of-house lavatories in the Northern Foyer. These retain their original fitout and finishes designed by Peter Hall. Additional accessible lavatory facilities are proposed in spaces adjacent to the existing facilities.

##### ***Policy 9.9 – Front-of-house lavatories by Hall***

*Retention, conservation and minimal refurbishment of Hall's original front-of-house lavatory facilities in accordance with Policy 4.4 is, except in exceptional circumstances, preferred to their complete remodelling, and further safeguards the integrity of the whole place. Where appropriate, original off-form concrete Podium beams could be exposed and cleaned as part of such refurbishment. If major change becomes necessary, this must be carried out in accordance with Policy 4.5.*

#### **Comment**

To maintain consistency within the foyer area, the new accessible lavatories will receive fitout and finishes that relate to the adjacent original fitouts. 50x50 wall and floor tiles in a similar colour to the originals are proposed, but the basins, tapware and toilets will be different as these are required to meet accessibility compliance standards. This is considered acceptable.

### **7.2.2.4 CMP Section 4.10 CONSERVING THE INTERIOR: 'BACK-OF-HOUSE' PERFORMERS' & STAFF AREAS**

#### **CMP Section 4.10.1 Back-of-house spaces generally**

Back-of-house spaces have been ranked as elements of high-moderate significance.

Alterations are proposed to Concert Hall related back-of-house spaces to provide upgraded technical capabilities, and improved and accessible performers' facilities.

The following excerpt and conservation policies from the CMP 4th edition provide guidance for works within back-of-house spaces:

*The structure, planning and configuration of the back-of-house spaces within the Podium were determined by Utzon, but the finishes were determined by Peter Hall.*

*Adherence to these Hall design regimes in back-of-house areas is just as important as front-of-house areas and essential if the Opera House is to retain the integrity of its original design. This includes maintaining all finishes and fittings in good condition and sound working order.*

##### ***Policy 10.1 – Hall design regime for back-of-house***

*In any modifications to the back-of-house areas, the Hall design regime and suite of finishes must be retained or reinstated in accordance with Policies 4.2 and 4.8 and, where appropriate, continued into related new spaces.*

##### ***Policy 10.2 – Removal of Hall elements***

*If temporary removal of Hall components such as wobbly panels or fittings is necessary to accommodate other uses, and the proposal satisfies the requirements of Policy 18.15, they must be appropriately recorded and retained in safe storage until such time as they can be reinstated in their original locations, in accordance with Policy 18.16.*

*Where major changes are proposed in accordance with Policy 4.5, necessitating the*

*permanent removal of Hall elements, these must be appropriately recorded and retained in safe storage and utilized to strengthen previously damaged or diminished Hall spaces elsewhere in the Podium, in accordance with Policies 4.8, 18.15 and 18.16.*

## Comment

Service areas were originally fitted out in accordance with Peter Hall's back-of-house regime of white or unpainted and unlined walls, floors and ceilings, with exposed carefully arranged colour coded services and conduits. Door finishes, numbering and hardware were consistent.

In affected back-of-house areas, it will be important to continue the Hall design regime with simple finishes into new or altered spaces and the drawings and finishes schedule provided suggest this is the intent.

The heritage impacts associated with the various proposed alterations to back-of-house spaces are considered in further detail below.

- Reconfiguration of entry / air lock to lower Orchestra Assembly Room on Level 1 with new opening off curved passage – minor impact.
- Additional Store Room west of this new entry, accessed via modified existing opening off curved passage – minor impact.
- Modifications to the existing upper Orchestra Assembly and adjacent Rack and Locker Rooms (1999) on Level 1 including new lowered ceiling and finishes below new Concert Hall stage structure, new accessible ramp and reconfigured office, but Hall's lockers and other fitout will be retained – minimal impact.
- New stairs and platform lift to the Ballet (Main) Rehearsal room on Level 1 to provide equitable access – minimal impact. The new stairs and lift can be accommodated within the existing palette of materials of off form painted concrete walls and brown-carpeted floor. No changes are proposed within the Ballet Rehearsal room itself.
- Refurbishment of the existing Office and Training room on Level 1 arising from the insertion of new lift pits for Lifts 29 and 30. The proposed retention of the wobbly ceiling system in these reconfigured spaces maintains consistency with the Hall regime. This is supported.
- Minor modifications to the wall configuration of existing plantrooms on Levels 2 and 3, including the insertion of new plant equipment – low impact.
- Modifications to the existing Ante Room and adjacent Rack Room on Level 2 including revised partitions, raised floor height to enable level access to the modified stage, but Hall's fitout will be retained and modified – minimal impact.
- Conversion of existing storage room on the western side of Level 2 to a new plantroom – low impact.
- Upgrades and refinishing of back-of-house lavatories on Level 2 around the Ante Room – required as a result of raised floor levels. The Hall fitout and design regime will be repeated in these spaces.
- Conversion of the ABC and Sound control rooms on Level 3 are proposed to be converted to theatre equipment Rack rooms, requiring minor reconfiguration of walls facing the stage – minimal impact.
- Minor upgrades of existing control rooms at the rear of the Concert Hall on Level 7, including the insertion of new equipment racks. All existing racks are to be retained in these rooms – low impact.
- Replacement of the existing spiral stair between Levels 7A & 8 – low impact.
- Provision of an upgraded technical zone above the Concert Hall stage on Levels 8 and 9, including replacement of existing and provision of new catwalk. The existing plant room located on Level 9 is to be expanded on both east and west sides, partly converted into a dedicated winch room, and plant relocated to a revised Level 10 above. The expanded Level 9 area should not be visible from the exceptionally

significant side foyers below. Minimal impact to significant fabric and spaces.

- All existing winches are to be replaced, thereby reducing the structural loads on the ceiling and improving access and efficiency for technicians. Repair of existing and provision of new penetrations into the white birch ceiling should be undertaken by skilled tradespersons. Minimal impact to significant fabric and spaces.

Existing control rooms will have minor upgrades as part of exempted works and are not included in this application. Significant fabric remains unaffected.

The *Tolerance for Change* table for Back-of-house spaces generally, from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:

Element: <b>Back-of-house spaces generally</b>  Significance ranking <b>B-C</b>  Signature components of back-of-house spaces, applied as per Hall's finishes schedules throughout the Podium  <b>Selected components:</b>	<b>Tolerance for Change</b> 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				Further Considerations	Assessment / impact of proposal
	Form	Fabric	Function	Location		
Unpainted off-form concrete ceilings, beams and roof piers	2	2	1	3	All unpainted areas and surfaces to remain unpainted. Plasterboard or false ceiling systems, other than wobblies, should not be used unless they are found to be original.	Most areas remain unaffected.  In affected areas Hall's back-of-house design regime is retained.
White painted off-form concrete and brick wall surfaces, and white painted off-form concrete ceilings	2	3	1	3	No rendering or plastering over these surfaces. Flat white is preferred unless required by use (e.g. black-out).	Most areas remain unaffected.  Affected areas, such as the modified entrances to the Orchestra Assembly and Ballet Rehearsal rooms are to continue Hall's back-of-house design regime.
White birch veneered moulded plywood wobbly panel system with integrated lighting and sprinklers, fitted below services to conceal them but also allow access.  Wobbly panel system fitted to walls (without lighting) to conceal services, and with hinged wobbly panels to access services	2	2	1	3	Lighting and other services can be adjusted to suit requirements but configuration should be retained. Hall's system, including its many variations, can be adapted and extended into new areas. System includes associated hardware and signage, and unmoulded plywood panels in some smaller spaces.	Most areas remain unaffected.  These are retained where they exist in affected areas and adjusted to suit revised room configurations where required.
Precisely aligned and fitted services laid in colour-coded or banded steel conduits, trays and ducts with neat saddle fixings, surface mounted on ceilings and walls	2	1	1	3	Use of rigid steel conduits, cable trays and ducting is essential to maintain precision of layout and alignment, and minimise fixings. Retain existing colour-coding in all work.	Most areas remain unaffected.  In affected areas it will be important to continue Hall's back-of-house services design regime.
Back-of-house floor finishes of chocolate brown carpet in office and performer spaces, and concrete or dark brown or grey sheet vinyl flooring in service areas	2	2	1	1	Consistent colour and treatment are essential to maintain unity of back-of-house spaces.	Most areas remain unaffected.  Affected areas are to continue Hall's back-of-house design regime of chocolate brown carpet.

Clear finish, white birch veneered doors with associated hardware, numbering, lettering and signage to administration, artists' and performers' areas Painted solid core doors with associated hardware, numbering, lettering and signage to service areas, and all spaces below Level +12	2	2	1	2	Original 1973 hardware, numbering and lettering are important. Refer to Section 4.11.1 <i>Doors and door furniture</i> . Refer to Section 4.15 <i>Signage</i> . Painted door colours signify location and level.	Most areas remain unaffected.  Affected areas and doors are to be salvaged for either reinstatement in the same or a different location or stored for SOH future use. Affected doors are to continue Hall's back-of-house design regime with regard to signage, numbering, and door furniture.
Lighting control and projection room spaces with walls and ceilings lined by perforated ribbed metal sheeting and fire rated insulation	3	3	1	3	Proper function is essential. Materials and finish of lesser significance.	Upgrades of the technical zone and provision of new winch room located over the ceiling crown. Care required in the repair and reconfiguration of penetrations in the white birch ceiling. Refer to discussion above.
Partitions masking roof piers in dressing room corridors under Concert Hall and Joan Sutherland Theatre (Opera Theatre)	<b>Intrusive</b>				Partitions should be removed, columns exposed and stripped of paint. Refer to Policy 10.3.	Not affected by the works.  Many partitions have already been removed and columns stripped.

The *Opportunities for Change* table for Back-of-house spaces generally, from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:

<b>Explore Opportunities – Back-of-house spaces generally</b>  Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below	<b>Comment</b>  Generally, all changes must comply with the Utzon Design Principles and CMP, and may be subject to statutory approval	<b>Response of proposal</b>
Design consistency	Retain and where possible strengthen consistency of Hall's design regime in existing and new work in back-of-house areas.	Works in areas nominated should achieve this.
Functional and accessibility upgrades	Upgrades possible – must support primary use of the place as a performing arts centre.	This is the primary purpose of proposed works in back-of-house areas.

#### ***CMP Section 4.10.4 Offices Level +12***

Administration offices on Level +12 have been identified as of Moderate significance.

The CMP 4th edition notes:

*This was the intended location for the administration offices before Utzon's departure and included a public entry from the Western Broadwalk. With the change in use of the major hall, the executive administration areas were relocated to Level +30. These Level +12 areas are finished in the same wobbly regime as those on Level +30 with a double height space, originally intended as an entry foyer. They are used as administration offices, currently for Theatre Production.*

*While the quality of the finish and detail in this area is high, it could be modified to suit a changed configuration in accordance with Policy 4.4 or substantially altered with a change in function in*

*accordance with Policy 4.5, but only where the latter would result in enhancing the function of both front-of-house and back-of-house spaces and activities. Changes could include opening up these spaces for public use and possibly connecting them to the Western Foyer.*

## **Comment**

The proposed Creative Learning Centre will transform these administration offices into a more public suite of spaces that support and strengthen the primary use of the Opera House as a performing arts centre. This use, with appropriate connections to the Western Foyer and Western Broadwalk, is very much in accord with policies and recommendations in the CMP.

The existing configuration of this area will be considerably altered by this proposal and it therefore fits the definition for 'major change'. The architects have chosen not to introduce a different design regime that accords with the Utzon Design Principles, but to retain and adapt the Peter Hall regime, adding flexibility, colour and delight for its transformation into a suite of creative spaces for children.

The proposal includes removal and salvage of Hall's 'wobbly' panels and then modifying and re-installing them in a new and dynamic configuration once the spaces have been altered.

The northern most sections of the two main spaces will be fitted out completely with the wobbly panels in the same manner as Peter Hall had intended within the administration areas of the Podium while other parts will have pared back finishes to closely reflect the character of service and backstage areas. Wobbly panels on the walls will conceal storage and other facilities, providing order and flexibility in the manner intended by Hall.

A new lobby is proposed to connect the Western Foyers with the Creative Learning Centre. This involves reconfiguration of the existing walls enclosing the existing stair and Lift 9, and modification of existing storage units at the north end of the Western Foyer. The proposal retains the existing materials and finishes of these elements, using the language of other walls in the Western Foyer and will have little visible impact. The new double door entry to the Creative Learning Centre from within the Western Foyer, will match other venue entry doors in this space, but with the addition of a vision panel providing a glimpse of the 'magic' beyond. Signage over the door will be consistent with other venue signage in this foyer.

The proposed use of stretched membrane on the ceiling to create a light box in the entry lobby is supported, but should not be extended into other areas. This light box will allow this 'Sound + Light Tunnel' to be 'coloured' by indirect lighting, providing a sense of entry to a world of theatre magic – an idea that is consistent with Utzon's concept for approaching the performance spaces.

Strong colours are proposed in this learning centre, within the wobbly fronted storage units, and on other selected surfaces. This is considered appropriate in a creative learning environment and is supported. Colour was an important part of Peter Hall's interior schemes for the Opera House and it is suggested that the selected colours could potentially have some connection with the history and / or aesthetics of the building. However this does not mean that colours should be restricted to only those already used at the site.

The alterations proposed to form the new Creative Learning Centre will retain and respect Hall's regime within these modified spaces and are supported.

It is strongly recommended that doors, door finishes and hardware within the creative learning spaces should retain and respect the Hall regime, rather than the Utzon regime within the Western Foyer.

The images below show the existing and proposed. Unless otherwise noted, images are selected from the TZG DA documents.





North end of the Western Foyer – existing (taken 2009) photo – Jack Atley



Proposed entry from north end of Western Foyer to Creative Learning Centre





Existing Level +12 offices – looking north. Visibility through to Northern Broadwalk is blocked by existing curved wall clad in ‘wobbly’ panels. photo – Alan Croker



Proposed Primary Learning Space looking north. This is the same space as the existing shown above. Note ‘wobbly’ lined space at north end, visible through new opening in curved wall and facing onto Northern Broadwalk.



Proposed Digital Learning Space looking north.



Proposed Digital Learning Space as seen from the Northern Broadwalk.

The *Tolerance for Change* table for Management suites and offices (Level +30 & +12), from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:



Element: <b>Management suites and offices (Levels +30 &amp; +12)</b>  <b>Significance ranking B-C</b>  Management suites on Level +30, including corridors, executive offices and boardroom Offices and associated corridors on Level +12, north of Drama Theatre  <b>Selected components:</b>	<b>Tolerance for Change</b> 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				Further Considerations	Assessment / impact of proposal
	Form	Fabric	Function	Location		
Wobbly treatment to ceilings of offices and boardroom, and ceilings and selected walls of corridors with integrated lighting and other services Purpose is to both conceal and access services	2	2	1		Consistent application of rationale, and use of Hall's wobbly system are important in accordance with Policy 4.8. Level +12 could be modified to suit changed configuration if required.	Original Peter Hall wobbly fittings salvaged and reconfigured to suit new configuration and use – positive impact.
Inserted glazed partitions to create individual offices on Level +30	2	3	2	3	Sensitive fitting within and around wobbly system to allow it to remain and dominate the space is important. Could be altered or removed.	Not affected by these works.
Painted off-form concrete walls	2	2	1	1	New or altered openings should be avoided wherever possible.	New openings are proposed in the main curved wall and some minor walls – moderate impact.
Signature dark brown carpet	2	2	1	1	Aberrant carpet colours and types should be replaced with correct carpet in accordance with <i>Carpet Strategy</i> .	The carpet is to be replaced by resilient flooring. Colour TBC however should ideally be consistent with other back-of-house areas.
Glazed partitions in original administration entry space on Level +12 (west end)	<b>Intrusive</b>				If partitions are required, replace with more sensitive alternative.	Intrusive glazed partitions are to be removed – positive impact.

The *Opportunities for Change* table for Management suites and offices (Level +30 & +12), from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:

<b>Explore Opportunities – Management suites and offices (Levels +30 &amp; +12)</b>  Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below	<b>Comment</b>  Generally, all changes must comply with the Utzon Design Principles and CMP, and may be subject to statutory approval	<b>Response of proposal</b>
Boardroom	Consider hanging one or more of the larger artworks owned by SOH in this important space. Potential pieces include the original work by Jutta Feddersen. Consider furnishing this space with significant mid-late 20th century classic furniture designs more consistent with Utzon and Hall concepts.	Not affected by works

Level +12 offices on Northern Broadwalk	Potential to relocate offices and provide uses / activities of a more public nature behind glass on Northern Broadwalk below Concert Hall. Refer to <i>Virtual Tour of the Sydney Opera House with commentary by Jørn Utzon</i> , p19.	Creative Learning Centre responds very positively to this opportunity
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#### ***CMP Section 4.10.6 Artists / performer's areas, including dressing rooms & artists' locker rooms***

Artists' / performers' areas including dressing rooms have been identified as being of high to Low significance.

In addition to works described in CMP Section 4.10.1 above, proposed works include:

- Refurbishment of three dressing rooms on Level 1 to provide accessible lavatory facilities and new furniture, retaining Hall's design regime – minor impact.

#### **Comment**

Three of the original performers' dressing rooms, each with associated bathroom, are affected in order to provide accessible facilities. New makeup desks are proposed to match existing detail, and should be finished in accordance with Hall's palette of materials, including the use of white birch veneer – minimal impact.

The *Tolerance for Change* table for Artists' / performers' areas, from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:

Element: <b>Artists' / performers' areas, including dressing rooms</b>  Significance ranking <b>B-D</b>  Original Peter Hall fitout to performers' areas, including dressing rooms under Joan Sutherland Theatre (Opera Theatre) and Concert Hall  <b>Selected components:</b>	<b>Tolerance for Change</b> 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				Further Considerations	Assessment / impact of proposal
	Form	Fabric	Function	Location		
All 1973 joinery, fittings, fixtures and furniture	2	2	1	2	Retention, repair and conservation to keep in working condition. Replacements to match originals.	Affected areas should retain and incorporate Hall's palette of materials, including painted off form concrete and white birch veneer fittings and plasterboard ceiling panelling.  Limited potential to reuse existing make-up desks due to poor condition.  New bathroom finishes should use Hall's original palette.
All joinery, fittings, fixtures and furniture since 1973, where not consistent with Peter Hall design	3	3	2	3	Replace with new or re-located components in accordance with Policy 4.8 and Section 4.10.6.	Affected areas should reinstate/incorporate Hall's palette of materials including timber veneer finish.

The *Opportunities for Change* table for Artists' / performers' areas, from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:

<b>Explore Opportunities – Artists’ / performers’ areas, including dressing rooms</b>  Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below	<b>Comment</b>  Generally, all changes must comply with the Utzon Design Principles and CMP, and may be subject to statutory approval	<b>Response of proposal</b>
Non-intact but original performers’ areas	Re-introduce Peter Hall’s fitout and design regime for these spaces in accordance with Policies 4.8 and 10.1.	This is proposed in some areas, where budget and project scope allows.
New performers’ areas	Introduce modified Peter Hall fitout in accordance with Policy 10.1, retaining chocolate brown carpet.	New fitouts are proposed to relate to the Hall design regime, including chocolate brown carpet.

### ***CMP Section 4.10.11 Lavatories and locker rooms***

Back-of-house spaces have been ranked as elements of high-moderate significance.

Alterations are proposed to some back-of-house spaces to provide accessible performers’ facilities.

Proposed works to lavatories and locker rooms include the following:

- Provision of one additional unisex accessible WC for performers on Level 1, using the Hall design regime as much as possible – minor impact.
- Reconfiguration of existing Male Performer Amenities to accommodate accessible WC, including an additional entry off the curved passage, all using the Hall design regime – minor to moderate impact.
- Upgrades and refinishing of back-of-house lavatories on Level 2 around the Ante Room – required as a result of raised floor levels. The Hall fitout and design regime will be repeated in these spaces – minor impact.

#### **Comment**

The Peter Hall design regime should be extended into new and reconfigured spaces and facilities in accordance with the CMP.

Most of the original lavatories with their Peter Hall fitout remain unaffected by the proposed works. The new unisex accessible lavatory is to be located within the reconfigured entry to adjacent to the existing performers’ lavatories. Finishes should reflect Hall’s original palette of materials. Minimal impact.

The *Tolerance for Change* table for lavatories and locker rooms, from the CMP 4th edition is included below. The added right-hand column provides further assessment of the proposal:



Lavatories & locker rooms  Significance ranking <b>C</b>  1973 Hall fitout of lavatories and locker rooms – back-of-house  Selected components:	Tolerance for Change 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				Further Considerations	Assessment / impact of proposal
	Form	Fabric	Function	Location		
All 1973 fitout including floor and wall tiles, white birch fitout, fittings and sanitary ware	2	2	1	2	Upgrading sanitary fittings (only where required), with retention, repair and continued use of tiles and white birch fitout preferred to complete removal – refer to Policy 4.8. Retain recessed ceramic wall fittings.	Limited potential to reuse existing lavatory finishes and fittings due to changes in wall configuration and provision of accessible fixtures.  New tiled wall and floor finishes continue Hall's palette of materials.
All fitout since 1973, where not consistent with Hall design	3	3	1	3	May be upgraded or renewed. Compliance with Hall's regime is important.	This will be carried out where this is feasible.
Metal towel dispenser units (design)	Intrusive				Replace with better design to Sydney Opera House standard of excellence.	New towel dispenser units will be installed in affected areas

#### 7.2.2.5 CMP Section 4.11 DOORS, FURNITURE & FITTINGS

##### CMP Section 4.11.1 Doors and door furniture

###### Policy 11.1 – Door hierarchy

*The original 1973 design and hierarchy of finishes for doors and door furniture must be retained, respected and extended into all maintenance activities and new work across the site.*

###### Policy 11.2 – Door furniture

*The original door furniture, including locking systems, must be retained and maintained in working order. Where in need of replacement, the new element must be of superior quality and as close as possible to the original hardware in design, dimension and finish.*

###### Policy 11.2 – Door numbering and text

*The door numbering system appropriate to the door location, as instigated under Peter Hall, must be retained. Where the system involves individual letters / numbers, these must be retained and fixed or replaced (as required) with precision using the original Helvetica medium typeface.*

*Fixed plates with engraved letters and numbers may only be considered for areas below Level +12, new areas added since 1973, and for spaces only accessed by service or maintenance personnel. The Helvetica medium typeface must be retained for all door numbering and text.*

#### Comment

The documents indicate that these policies will be respected. The detail will be checked at tender documentation stage .

### ***CMP Section 4.11.2 Furniture and fittings***

This section of the CMP identifies issues relating to furniture and fittings and refers back to *Policy 4.4 – Minor change*, and *Policy 4.8 – Approach to change – Hall elements* for guidance.

#### **Comment**

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.

Refer to discussion above in Section 4.4, and also in the TfC tables for relevant spaces.

### **7.2.2.6 CMP Section 4.12 CARPETS, ARTWORKS & CURTAINS**

#### ***CMP Section 4.12.1 Carpets***

##### ***Policy 12.1 – Carpet***

*The original Hall carpet colours and types must be followed, and maintenance and replacement be in accordance with the endorsed 2006 Carpet Strategy or its updated equivalent. The use and extent of carpet in the Northern Foyers could be reconsidered to better align with Utzon's intent.*

#### **Comment**

Hall's regime of carpet types and colours will be retained and respected in the Concert Hall Renewal Project in accordance with this policy. Adjustments to carpet extent in the Northern Foyer are not included in these projects. This will have neutral impact.

In the Creative Learning Centre, it is proposed to replace the back-of-house chocolate brown carpet with a lighter woven vinyl floor finish, more suited to a front-of-house creative learning space. This is considered appropriate and is supported.

### **7.2.2.7 CMP Section 4.13 SERVICES & MACHINERY**

#### ***CMP Section 4.13.1 Repair or alteration of service lines***

##### ***Policy 12.2 – Repair of alteration of service lines***

*The design and installation of new, upgraded or altered services, including those in new areas, must retain and respect the configuration, order, palette of materials, fixing methods and colour-coding used in the original service installations in the particular area concerned. Services with no likely future use could be removed.*

#### **Comment**

All works to services at the Opera House are governed by a specific document – the BSSS standard, which complies with this policy. This document will guide all new works.

## **CMP Section 4.13.2 Machinery and equipment**

### **Policy 12.2 – Machinery and equipment**

*A comprehensive inventory of all machinery and equipment in the Sydney Opera House must be compiled and maintained, including information related to its manufacture, date of installation, location and functionality. All pieces must be assessed in terms of their significance and association with original installations.*

*Retention and adaptation of original technical equipment or machinery are preferred to decommissioning and / or removal, unless operational, safety, structural or space constraints prevent this. A strategy should be put in place for their ongoing use, management and care.*

*Where decommissioning and removal are necessary, components must be fully recorded while in operation before removal and selected examples of each type of equipment safely stored offsite. A strategy should be implemented for their ongoing care and management. Options for their future could include care by an appropriate collection institution.*

*Disposal of significant pieces must be considered only when other options have been explored and proved unsuccessful. Records and recordings must be archived in accordance with Policy 19.1.*

### **Comment**

Much of the existing machinery and equipment associated with the Concert Hall dates from the original installation in the early 1970s. With technological advancements, including the change to digital systems, and changes to operational safety standards, this equipment is approaching the end of its life and requires replacement. If it is not replaced, safety and other compliance issues will remain and the efficient operation and management of the Concert Hall as a venue will be hindered. In order to continue its use and strengthen its reputation as the major auditorium in Australia's pre-eminent performing arts centre, (key aspects of its significance), this machinery and equipment needs to be replaced and updated.

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.

## **7.2.2.8 CMP Section 4.14 LIGHTING**

### **Policy 14.1 – Lighting and visitor experience**

*All lighting at the Sydney Opera House, both externally and of public spaces internally, must enhance their sequence and architectural form, in accordance with the Utzon Design Principles. It is also essential that both external and internal spaces are sufficiently lit to allow their safe and proper intended use without distracting glare or interference with views, but this must not diminish the subtlety and drama of the approach and arrival sequence of public spaces or the patron and visitor experience of them.*

### **Comment**

All projects in this application propose to comply with this policy. All fine adjustments will be tested on site.

### **Policy 14.6 – Internal lighting**

*Lighting internally, including any form of upgrade or redesign, must:*

- *utilise indirect, concealed or unobtrusive light sources that reveal and enhance the architectural form and character of important spaces, whether they be front- or back-of-*

- house, and the off-form concrete structural elements which define them;*
- *retain the sequence of contrasting effects in accordance with the spatial sequence intended by Utzon to heighten the experience for arriving patrons, culminating in entering the auditorium;*
- *maintain reflection-free views of the harbour and setting from the foyers;*
- *render the colour of natural materials as accurately as possible;*
- *achieve reasonable levels of visual acuity for specific functions and visitor safety, without compromising the above requirements and without the inappropriate location of equipment and conduits;*
- *retain those fittings chosen by Utzon in his recent work, unless they require replacement or are no longer available, in which case they must follow the original as closely as possible in form as well as light quality and colour temperature; and*
- *follow the Utzon Design Principles, and accord with the Lighting Masterplan.*

## Comment

Lighting is an essential part of all components of the proposed projects.

### ***Concert Hall Renewal Project***

The proposed lighting works in the Concert Hall Renewal Project include:

- Refurbishment of the aisle lighting located in the stair risers within the Concert Hall auditorium;
- Renewal of the perimeter pelmet lighting within the auditorium with new LED luminaires;
- New RGBW (colour changing) LED downlights to match and supplement the existing downlights within the timber ceilings;
- New linear RGBW LED colour changing luminaires concealed within the vertical slot in the wall to illuminate the organ from the front, (use of existing slots in the eastern wall and the ceiling above the stage and new slot within the western wall of the Concert Hall);
- New LED RGBW fixtures within high level ceiling and wall cavities to illuminate the acoustic banners above the stage;
- Refurbishment of the perimeter wall lighting inside the Concert Hall;
- New concealed linear lighting within the eastern passageway and above the doors to Lifts 29 and 30;
- Replacement of existing downlights with new surface mounted LED downlight;
- Replacement of existing concealed uplight along the south wall in the caves in the northern foyer with new LED lamps;
- New wall mounted LED uplights to replace existing uplights to highlight the cranked beams within the 'caves' on Level 2 of the northern foyer;
- New recessed downlights to replace the existing downlights in brush box timber panelling at Level 3 of the northern foyer;
- New recessed directional LED wall washer to the Concert Hall northern foyer;
- New lighting to entry thresholds to Lifts 29 and 30;
- New wall recessed luminaires to the lift cutout and 'caves';
- New LED lighting to Rehearsal Rooms and support areas;
- New LED lighting to Assembly Room, Locker Room, connecting Staircase leading to the Ante Room and Prompt, Dressing Rooms and WCs;
- New LED white and blue lighting within the Ante Room for performance and non-performance Mode. New LED lighting to support areas around the Ante Room including WCs; and
- New lighting to back of house equipment and support areas around Concert Hall which includes the Level 6, Level 8 Catwalks, plantrooms, winch rooms and rack rooms.

The proposed lighting refurbishment aims to achieve the following:

- Retain the deliberately different lighting levels to emphasise the character of each space in Utzon's arrival sequence;
- Refine the indirect lighting system in handrails as part of a future site wide upgrade of handrail systems;
- Continue indirect lighting regimes and systems into new or refurbished spaces, consistent with similar spaces.

The proposed works in relation to lighting in the Concert Hall Renewal Project are considered appropriate and consistent with Policy 14.6, and are supported. Refer to discussion in relation to CMP Sections 4.8.2 *Foyers surrounding major auditoria* and 4.8.3 *Concert Hall* for additional detail.

### ***Creative Learning Centre***

The proposed lighting works in the Creative Learning Centre project include:

- Retention and modification of downlight system in external entry from Western Broadwalk;
- Installation of ceiling 'lightbox' system with RGBW lighting in entry passage off Western Foyer to allow programmed lighting and projections on walls and floor;
- Suspended metal pipe 'stage' rigging over primary learning space – this will allow flexible lighting; and
- Hall's system of baffled linear lighting between wobbly ceiling panels in spaces adjacent to north glass wall.

The purpose of this Creative Learning facility is to give participants a taste of how to create and present theatre, to engage and encourage them to become involved in the performing arts. Thus a broad range of theatre lighting techniques and effects, depending on the activity, could be utilised in these spaces. Flexibility of lighting fixtures and installations within the main learning spaces will be important.

The proposed retention of Hall's wobbly lighting system adjacent to the Northern Broadwalk will retain a visual consistency with other parts of the podium when viewed from outside.

Refer to discussion on the entry passage off the Western Foyer under *CMP Section 4.10.4 Offices Level +12* above. The lighting proposal for this entry passage is considered to be consistent with Utzon's concepts and very appropriate for this facility.

The proposed works in relation to lighting in this suite of spaces are considered to be appropriate and consistent with both Utzon and Hall's concepts and are supported.

## **7.2.2.9 CMP Section 4.15 SIGNAGE**

### ***Policy 15.1 – Signage***

*The Signage Manual should be reviewed and if necessary revised / updated to ensure it accords with this CMP and the Utzon Design Principles.*

*All signage externally and internally, including for corporate and sponsorship purposes, should:*

- *follow the recommendations and details set out in the Sydney Opera House Signage Manual, following its revision;*
- *belong to a consistent design 'family' and complement the quality and character of the remaining original 1973 signage, as well as the space for which it is designed;*
- *not clutter or detract from the space or element; and*
- *be kept to a minimum and, as far as possible, given common design and graphic characteristics.*



## Comment

For the Concert Hall Renewal Project there is little information on proposed signage as most of the existing signage will remain relevant and not be altered. Where signs need to be relocated, they will follow existing principles. Where new signage is required, it should follow the same design family as the existing.

For the Creative Learning Centre, proposed signage has been kept to a minimum. The proposed sign over the entry from the Western Foyer will remain consistent with other signage in this foyer. Details of the external blade sign next to the entry from the Western Broadwalk, have not been given, but they should be consistent with other signage units elsewhere on the site. The proposed location and scale of this sign is consistent with this policy and is supported.

### ***Policy 15.2 – Significant signage***

*Significant original (1973) sign elements should be retained and adapted, or replaced with replicas only if required for code compliance, improved legibility, functionality or name change. These signs are:*

- *bronze-faced back-lit signs over entry doors in the Covered Concourse;*
- *colour-coded red and green box signs in foyers surrounding the Concert Hall and Joan Sutherland Theatre, unless / until there is a major change which accords with Policy 4.5;*
- *moulded perspex signs with alloy fixings in back-of-house areas;*
- *any other signage elements identified in the review of the Signage Manual.*

*If their present location becomes meaningless, these signs can be moved to a relevant location.*

*Where existing significant signage cannot be adapted or retained and is to be removed, its location must be recorded photographically and on plan and it must then be placed in safe and secure storage as part of the Collections Management Policy and strategy.*

## Comment

The works proposed in these three projects comply with this policy.

- The colour coded red and green box signs in the Concert Hall foyers will be retained, although exact locations of some signs will need to be adjusted to suit new wall configurations.
- Some moulded Perspex back-of-house signs may need relocating to suit altered openings etc, but will be retained close to their original locations.

### ***Policy 15.3 – Promotion and merchandising***

*Any signage installations or facilities required for promotional, exhibition or merchandising purposes must be carefully considered, designed and located so that they do not obscure or interrupt views to, from or within the Opera House, and enjoyment of the significance and character of the spaces is not compromised. Such installations must be temporary, reversible, not fixed to fabric, and dismantled and removed when not in use.*

## Comment

Signage for promotion and merchandising has not been proposed in the Concert Hall Renewal Project or the Creative Learning Centre.

## 7.2.3 Operations & Management (CMP Sections 4.16 – 4.20)

### 7.2.3.1 CMP Section 4.16 INTERPRETATION

*Significant and powerful places ideally speak for themselves, and in many ways the Sydney Opera House does this eloquently. In this respect lighting plays an important role in interpretation, highlighting or emphasising structural and spatial qualities, without need for signage.*

*In some areas, important evidence of construction techniques remains visible and should not be covered over or removed. One of the finest examples of this is to be found on the unpainted surface of the cranked and folded beams over the Covered Concourse. Here the clear impressions left by chalk marks made on the plywood formwork to indicate the location of the post-stressing cables are a graphic indicator of the construction process and the form of the internal structure.*

#### Comment

Lighting to emphasise the structural and spatial qualities of the particular element plays an essential part in all of these projects, particularly in the public foyers. This has already been discussed in relation to *Section 4.8.2 Foyers surrounding major auditoria*, *Section 4.83 Concert Hall*, and under *Section 4.10.4 Offices Level +12* above.

#### **Policy 16.3 – Interpretation through fabric**

*Other than replacement of fabric to exactly match existing, such as replacing an existing roof tile, paving panel or seat, reconstruction or adaptation of missing elements should be carried out in a manner that allows them to be identified on close inspection as new elements, in accordance with the Burra Charter and its associated Practice Notes. Where reconstruction or adaptation incorporates relocated or salvaged original elements, this should be noted and documented.*

#### Comment

While not specifically mentioned in any of the DA documents, it is intended that, where possible and appropriate, new elements may be identified by discrete date stamping. This may include the new brush box panels with the diffusion pattern in the Concert Hall. Other methods for identification or interpretation of changes and new fabric will be considered on a case-by-case basis in accordance with this policy.

### 7.2.3.2 CMP Section 4.17 ACCESSIBILITY

*Both community expectations and statutory requirements for accessibility have changed considerably since the Opera House opened. Utzon's lifts, for example, were intended in his original design to be accessed via a public thoroughfare in Central Passage but when the Opera House opened, this passage was not public and was back-of-house. This access route may have been acceptable in 1973, but such facilities are now expected to be part of the front-of-house and accessible to everyone.*

*Another major change in our perceptions is that accessibility is no longer just about providing facilities for people with impaired mobility. It includes people with sensory disabilities (including hearing and vision impairment) and, increasingly, older people generally and families with young children.*

*For those in wheelchairs or with impaired mobility, changes made within the three lower venues as part of the Western Foyer upgrade and the associated introduction of the Bennelong Lift to the Box Office Foyer and escalators connecting to the Southern Foyers of the main auditoria have been successful in adhering to the Utzon Design Principles. They have provided an experience consistent with Utzon's vision without major impacts on the quality of the arrival experience or the space, and have been inclusive rather than exclusive; however, access between various foyer levels, and within the Concert Hall and Joan Sutherland Theatre themselves remains difficult to achieve.*

*In 2013, it was announced that the Sydney Opera House would initiate a program of renewal to*

*improve accessibility and functionality for a range of venues on the site. Presently in design stage, these projects include significantly improved accessibility to the Concert Hall, Joan Sutherland Theatre, and their associated foyers and facilities. The projects include additional lifts and passages connecting all foyer and most auditoria levels.*

## **Comment**

The above quotation from the CMP 4th edition, clearly summarises the issues and notes that the projects proposed in this application are part of a larger suite of renewal projects intended to address these accessibility issues as a major priority.

All of the accessibility projects proposed have their genesis in the suite of projects and options presented in the 2015 *Accessibility Master Plan*. These projects were the result of extensive research into Utzon and Hall documents and the configuration of the building itself, including concealed spaces, and subsequent investigation and exploration of options. As well as public access to Central Passage and the lifts noted above, Utzon's original design included passages, presently concealed beneath the stairs, in all the side foyers at Level 3 to provide mid-level access to auditoria seating and foyer facilities. The present accessibility projects are therefore firmly based in Utzon's concepts and vision.

It is acknowledged that for some of these projects there will be substantial impacts on original fabric and significant spaces. The most sensitive would be the proposed insertion of the Level 2 passageway within the eastern side foyer of the Concert Hall but it is important to note that no such passageway is proposed for the western side foyer which will remain as it is, except for the addition of a simple central handrail. Similarly, the insertion of Lifts 29 and 30 will have high impacts on the broad sweep of stairs and cranked concrete beams at each end of the Northern Foyer and east and west caves below. However, these impacts must be considered in relation to the substantial and positive impacts with regard to accessibility of the Concert Hall and its foyers for the broader public, some of whom have never had access to these spaces before. This is completely in line with Utzon's concept and vision for the building to elevate and celebrate the experience of attending a performance. With completion of these projects, this experience will be available to many more than before.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Concert Hall Renewal Project (Part of SSD 8663)*

*Summary assessment of impacts – Creative Learning Centre (Part of SSD 8663)*

*Summary assessment of impacts – All Renewal Projects*

### **CMP Section 4.17.1 Wheelchair access**

*There is no lift or level access for the public to the upper levels of the main auditoria or the Northern Foyers and bars. Utzon's original public circulation route around the major auditoria included level passages connecting Level +51 (mid-level) of the Side Foyers to the lounge level of the Northern Foyers, and each was adjacent to a lift connecting to the back-of-house areas below. It remains buried beneath the existing stairs in the Side Foyers. A significant problem is the location of the lift shafts, which makes it difficult for them to be extended to reach the upper levels of the foyers. As they are within back-of-house areas at lower levels, it is also difficult for the general public to reach them. Additional lifts are proposed in the Northern Foyers as well as connecting passages to the Side Foyers as part of the renewal projects accessibility upgrade.*

*If in the longer term, the Central Passage was to become a public space, as proposed by Utzon in the Strategic Building Plan 2001, the original lifts could be more readily accessed by the general public. However, this would require substantial change to back-of-house and may not happen for some considerable time. The suite of projects currently proposed to both the Concert Hall and Joan Sutherland Theatre should substantially improve this situation.*

## Comment

This quotation from the CMP 4th edition, summarises Utzon's original intent to address wheelchair access, including the Level 3 passage mentioned above and the rationale for the present proposal for the Level 2 passage and Northern Foyer lifts in the Concert Hall foyers. Refer to comments above, and to discussion in relation to *Section 4.8.2 Foyers surrounding major auditoria* and *Section 4.83 Concert Hall* for additional detail.

The proposed Level 2 passage, Lifts 29 and 30, and the additional wheelchair and companion seating positions within the Concert Hall at both Level 2 (stalls), and Level 4 (mid circle and boxes) will substantially improve the available range of options for wheelchair patrons and those with impaired mobility, allowing them far more equitable access to performances and facilities.

### ***CMP Section 4.17.3 Monumental steps and mobility aids***

*The use of tactiles on the Monumental Steps, or anywhere on the Podium or within significant spaces presents a challenge as they could have a substantial and negative visual impact and are considered by many as potential trip hazards. A design appropriate to the Opera House and the specific location should be developed, tested and approved before any implementation is commenced.*

#### ***Policy 17.2 – Tactiles***

*The use of tactiles on the Monumental Steps or anywhere on the Podium must be avoided. Should they be considered anywhere on the site, a design appropriate to the Opera House should be developed, tested with prototypes and approved by the Eminent Architects Panel and Conservation Council before their installation is commenced. The approved solution or suite of solutions must be applied consistently across the site.*

## Comment

The accessible routes for persons with impaired mobility, from first entry to the Opera House site, through to patron seating in the auditorium have been designed to be entirely within front-of-house spaces, and to provide all patrons with the sequence and quality of experience intended by Utzon to celebrate attendance at a performance. The only link missing from this front-of-house sequence in the projects in this application is access from the Box Office Foyer to the Concert Hall Southern Foyer via Lift 1. This lift is presently accessed via a back-of-house passage at Box Office level, but will become a fully 'front-of-house path as part of the current 'Entry Foyer' project. These routes avoid reliance on sensitive elements such as the Monumental Stairs, grand stairs from the Covered Concourse, and side foyer stairs. As long as there is adequate lighting and minimal handrails, tactiles are therefore not strictly required on these stairs. Wherever some form of tactile indicator or signal may be required, a non-intrusive solution is designed and tested first and approved by the Opera House's heritage architect, Conservation Council and Eminent Architects Panel.

### ***CMP Section 4.17.4 Hearing and vision support***

Hearing loops are installed in most of the Opera House venues, including the Concert Hall. It is proposed that this facility will be retained

Improved visual contrast on stairs may not be achievable in all areas affected by these projects, however, where possible this will be an important objective with any changes or adjustments to lighting.

## **CMP Section 4.17.5 Access compliance**

*The realities of an ageing demographic among patrons and visitors will place increasing demands on providing improved and more equitable access across the site. The Discrimination Act 1992 (DDA), and the introduction in 2011 of the Disability (Access to Premises – buildings) Standards 2010 (the Premises Standards) place further obligations to find solutions, many of which may conflict with or diminish significant values, including World Heritage Values.*

### **Comment**

The main project affected by compliance issues is the Concert Hall Renewal Project, particularly in regard to accessibility and the number of wheelchair positions required within the auditorium. The primary aim of this project is to address these requirements as much as possible, but balance this with any impacts that may result so that significant values are retained and respected as much as possible.

The *Accessibility Master Plan 2015* identified that ideally there should be a passage at Level 2 in both side foyers of the Concert Hall. After further testing and consideration it was decided to construct this passage on the eastern side only, leaving the western side foyer untouched, thereby limiting high impacts to the less visible side. This achieves a level of compliance that may be less than ideal, but substantially better than doing nothing where non-compliance and potential cessation of public use would be the outcome.

Likewise Lifts 29 and 30 should ideally be larger, but this would have resulted in considerably greater impact on the cranked concrete beams, broad sweep of stairs, and available space, particularly at the top granite level, Level 4. Various locations for these lifts were investigated and tested with digital renders but in the preferred option (this application) these lifts have been pushed as far as possible towards the outer ends of the foyer to minimise these impacts. The various options are illustrated in the ARM report accompanying this application. With considerable collaboration between consultants and the lift manufacturer, a fully glazed lift car within a fully glazed enclosure, both with minimum structure and no visible lift machinery, will be seen above the granite stairs and paving of the upper levels. All machinery and structure will be below and out of site within a bronze clad concrete shaft.

The Concert Hall project includes the introduction of an additional open bronze handrail in the centre of both side foyer stairs. The eastern side is partially achieved with the barrier / handrails around the Level 2 passageway opening, while the western side will have the new handrail the full length of the stair. This handrail is not required by the code or DDA, however with the ageing demographic of Opera House patrons, it will make these stairs easier to negotiate. The visual impact will be high, but is considered acceptable in this instance. All other handrails in these foyers will be altered and upgraded to achieve current code compliance. The present handrails / guardrails in the Northern Foyers have been fitted with acrylic panels to achieve temporary compliance until a site wide study and design exercise was undertaken. This has now been completed and all handrails and guardrails across the site will be progressively upgraded with the suite of complying bronze profiles arising from this study.

### **Policy 17.1 – Improving accessibility between levels**

*Any proposal to improve access between levels, either externally or internally, should:*

- *not vitiate Utzon's concept for the hierarchy and sequence of public spaces (see Policy 4.6);*
- *avoid interrupting or obscuring any of the original structural systems (for example, folded and radial cranked beams);*
- *not result in the subdivision or cramping of elements or spaces with an assessed significance of 'high' (B) or 'exceptional' (A).*



## Comment

The foyers surrounding the Concert Hall are assessed as being exceptionally significant (A). Addressing each point in the policy separately:

- The proposed Level 2 passage and Lifts 29 and 30 do not vitiate Utzon's concept for the hierarchy and sequence of public spaces. They do in fact strengthen them and make them more accessible to a broader public. Positive impact.
- The Level 2 passage does interrupt a minor part of the original structural system, that is the stepped podium. However, this cut through the podium was always intended by Utzon, albeit at Level 3. Very high but acceptable impact given the substantial benefits to accessibility and patron amenity
- Lifts 29 and 30 do cut through a number of the original radial cranked beams – total of 2 on Level 2-3 and 6 on Level 3A-4 for each lift. The splayed cut through the granite stairs for the landing on Level 3A results in the cutting of additional beams (included in the above figures) but does provide a better visual result in that there is less interruption and reduction to the broad sweep of stairs at each end. The beams between the lift and the outer wall have to be modified anyway to carry the loads from the lift shaft area. The crease line in the beams is retained on the underside to minimise visual impacts and retain the sense of the full extent of the structure. Insertion of these lifts result in very high but acceptable impacts given the substantial benefits to accessibility and patron amenity.
- Lifts 29 and 30 reduce the size of the existing Level 4 landing, but only marginally as the existing glass line already extends well into this space. These lifts sit almost entirely within the space that is presently outside of the existing glass line. Minor impacts.
- The Level 2 passage will subdivide the stair rising on the surface of the podium in the eastern side foyer and to some extent, visually cramp this space. Utzon's original Level 3 passage was towards the outer side of these stairs, closer to the glass line. This was possible due to the fact that Lift 7 is not accessed at this level and the passage can pass immediately in front of its shaft. At Level 2, Lift 7 requires access and there is additional structure that prevents the passage from being formed immediately below the original Level 3 path. Options for the location of this new passage were explored and discussed with the Eminent Architects Panel. These are illustrated on pages 14-26 in the ARM report accompanying this application. The preferred option provides the least awkward and most direct passage. It is worth noting that in Jørn Utzon's design for the complete renewal of the Opera Theatre (Gold Book 2005), he provides 2 passages in each side foyer, one at Level 2 adjacent to the auditorium wall, and one at Level 3 in the original location constructed in the podium.
- The stair width remaining after the passage documented in this proposal is formed, has been checked for compliance in terms of required exit widths and it meets these requirements.
- There is no doubt that this passageway interrupts the grand continuous sweep of the side foyer stair, however it is the only way that level access to the Northern Foyer can be achieved for those not able to negotiate the stairs. Constructing this passage within the eastern side foyer only, limits these negative impacts to the side foyer that has the least visibility from longer views. Very high but acceptable impact given the substantial benefits to accessibility and patron amenity.

### 7.2.3.3 CMP Section 4.18 CARE OF THE FABRIC & HOUSEKEEPING

#### ***Policy 18.1 – Approval or alterations prior to works***

*No holes, fixings or alterations are to be made, or coatings applied, to any original concrete structure, tiles, bronze or 1970s fitout or finishes without prior assessment and approval from an authorised supervisor with appropriate knowledge of the significance of the affected fabric.*

## Comment

This policy applies to the management of works on site and will form an essential part of any induction and site management systems.

### **Policy 18.15 Checklist for removal or alteration of fabric**

*Any proposal to remove or alter any fabric should:*

- *be checked to determine if it is part of an original or significant element or fitout;*
- *have regard to its tolerance for change and the impact on the character, quality and significance of the element or place affected;*
- *be checked to ensure there is no feasible alternative; and*
- *only be considered in the context of an overall plan such as the Strategic Building Plan 2001 or Opera House Renewal Plan 2014.*

### **Policy 18.16 – Removal of fabric**

*Where significant fabric is removed and capable of subsequent re-use on site, its location should be recorded, and the items catalogued and stored safely for possible future replacement or relocation in a space of appropriate character.*

*Where individual original components, such as handrail or balustrade sections, are to be removed and replaced with a different form, their location and configuration should be recorded and representative sections of the original material retained, and safely and securely stored with Sydney Opera House archives in accordance with the Collections Management Strategy.*

## Comment

The Concert Hall renewal project involves the removal or alteration of significant fabric, often to allow other works behind. Wherever possible this material should be carefully and securely stored and re-instated in its original location. In determining the nature and configuration of each aspect of each project, considerable regard was made for the significance of the fabric affected and the potential impacts on the space concerned. Where the removal of significant fabric cannot be avoided, it is proposed to be retained for subsequent reuse in another location in accordance with policy 18.16, or a sample retained in the SOH archive.

Alternative options have been explored and tested, often to check that the preferred option in the SOH *Accessibility Master Plan* was in fact the most appropriate.

These projects are part of a broader program of renewal, a major objective of which is to upgrade the accessibility of facilities and venues across the Opera House site.

### **Policy 18.17 Removal of Intrusive items**

*Items identified as intrusive should be removed or altered in accordance with the guidelines in the Tolerance and Opportunities for Change tables in Section 4.6 to 4.10 of this CMP.*

*Priorities and a time-based program for the removal or modification of intrusive items should be established and incorporated into any program of works.*

## Comment

Some items, such as the acoustic reflectors, acoustic absorption drapes, lighting and speaker arrays in the Concert Hall, are tolerable because they are only present for particular events or performances. They have been designed to minimise their potential to be intrusive and enhance the experience of the performance. However, their ongoing use, deployment and management will determine if they become intrusive items.

#### 7.2.2.4 CMP Section 4.20 MANAGING THE PROCESS OF CHANGE

##### **CMP Section 4.20.1 Use and compatibility**

###### **Policy 20.1 Change of use of spaces**

*Proposed changes of use of any internal or external space should only be considered where they satisfy the following criteria:*

- *they relate to and support the primary use of the building and site as a performing arts centre;*
- *proposed use and location does not weaken, confuse or threaten original (1973) functional relationships;*
- *changes must have minimal impact on significant fabric and fitout;*
- *change is consistent with coordinated planning for the whole site in accordance with Policy 3.2.*

*A co-ordinated long-term plan for the use of spaces across the whole site should be prepared to guide the above.*

###### **Policy 20.2 Unacceptable uses**

*Uses are unacceptable if they:*

- *dilute or impede the primary use of the place as a performing arts centre;*
- *impair or invalidate the original concept of the designers of those elements of the place that are assessed as being of exceptional or high significance;*
- *degrade the character and quality of fabric, spaces and relationships;*
- *are likely to cause excessive wear and tear or disfigurement of significant fabric;*
- *encroach on public access routes, or otherwise impede the use, experience and appreciation of public spaces; and*
- *require alterations, additions and facilities that may result in any of the above.*

#### **Comment**

It is our conclusion that the projects in this application are all appropriate in terms of their proposed use. This is discussed below.

##### ***Concert Hall Renewal Project***

- The Concert Hall renewal project supports and strengthens the primary use of the site as a performing arts centre. It improves accessibility to its public spaces, the Concert Hall itself, and to performers' spaces beneath the Concert Hall within the podium. The proposed accessibility upgrades are consistent with the *Accessibility Master Plan* prepared in 2015.
- The changes proposed in this project have some negative impacts, however they do not endanger or diminish the original concepts of either Utzon or Hall for the affected spaces, or the Opera House generally. Nor do they degrade the character and quality of fabric, spaces and relationships of the affected areas.
- The changes and interventions proposed for amplified performances could, if they were left in place when not required, threaten the primary use of the Concert Hall 'as a state-of-the-art orchestral concert and performance venue.' It is therefore essential that these interventions are meticulously constructed, maintained and managed so that they can be fully withdrawn or removed when not in use.
- In determining the nature and configuration of each part of each project, considerable regard has been made for the significance of the fabric affected, the potential impacts on the space concerned, and the role of the particular project in supporting the broader significance of the place. Where negative impacts do occur, the disfigurement of significant fabric is mitigated by careful consideration of details, junctions and linings.

##### ***Creative Learning Centre***

- The change in use of the Level +12 administration areas for the Creative Learning Centre is a positive change. The present use of these spaces is back-of-house and not

dependant on being in this location. They address an important public promenade, the Northern Broadwalk, and should, ideally, have a use that is visibly engaging for the public. Their proposed use as public spaces will enhance the flexibility of the Opera House to host activities and events that support its primary use as a performing arts centre, including talks and ideas and adult learning.

- The Opera House's education programs presently occupy whatever public space is available, frequently the Western Foyers, and this sometimes conflicts with the primary use of these areas. Providing a dedicated suite of spaces in a location that is accessible from existing foyer spaces and the Western Broadwalk is a good outcome for this important facility. It is important this facility be on-site to maximise public engagement.
- This use does not weaken or threaten the primary use of the building for the performing arts. It will in fact support it.

### ***CMP Section 4.20.3 Sequence of heritage advice in developing proposals***

#### ***Policy 20.7 Heritage advice***

*Continuity of relevant and experienced heritage conservation and Conservation Council advice should be provided as part of the process by which temporary or permanent changes to the Sydney Opera House and its setting are developed and executed. The timing of this advice is important. For major projects it should be drawn upon:*

- *initially, at the concept stage;*
- *during the development and refinement, or alteration, of the proposal;*
- *for a formal statement of heritage impact, or its equivalent, in response to the completed development application; and*
- *to keep a watchful eye on work actually underway.*

*Likewise, masterplans, strategies, manuals or guidelines should be developed in close consultation with appropriate and experienced heritage and conservation advice, including the Conservation Council, and be consistent with this CMP, the Utzon Design Principles and the Heritage Risk Management Plan.*

#### **Comment**

Heritage conservation advice has been sought and provided throughout the design stages for this project and this HIS assesses the completed development application. It is important that this specialist advice continue through to completion of the project to ensure the broader as well as detailed conservation objectives are achieved.

### ***CMP Section 4.20.5 The Burra Charter***

#### ***Policy 20.9 Burra Charter***

*All conservation (including maintenance and repair), future changes and development at the Sydney Opera House should be carried out in accordance with the Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (Burra Charter) as revised in 2013 or later, including its associated Practice Notes and the Code on the Ethics of Co-existence.*

#### **Comment**

All decisions thus far relating to the suite of projects in this application have been in accordance with Burra Charter principles and processes. This should continue to the completion of the project.

#### ***Policy 59.1 Managing the process of change – External processes***

*Changes that may have a 'significant effect' on the heritage significance of the Sydney Opera House and its site should be referred to the relevant consent authority.*

## Comment

The suite of projects proposed in this application involve some major changes that will have a high impact on significant fabric and spaces. These impacts have been assessed in this Heritage Impact Statement and this will accompany an application for approval from the relevant consent authorities.

### 7.3 Conclusion re CMP compliance

The suite of projects proposed in this application will affect a number of very significant parts of the Sydney Opera House. The impacts are described in detail above but are summarised here.

#### 7.3.1 Generally

Both of the proposed projects (Concert Hall Renewal and Creative Learning Centre) have been guided by the CMP and an understanding of what had been done in the past, and particularly on what Utzon had intended, both in the original design and since his re-engagement in 1999. The proposals within the Concert Hall and back-of-house areas retain and respect Peter Hall's work, while also bringing them into closer alignment with Utzon's Design Principles.

All of the accessibility projects proposed have their genesis in the suite of projects and options identified in the 2015 *Accessibility Master Plan*, and opportunities identified in the CMP. These projects were the result of extensive research into Utzon and Hall documents and the configuration of the building itself, including concealed spaces, and subsequent investigation and exploration of options. The present accessibility projects are therefore firmly based in Utzon's concepts and vision. This is particularly relevant in understanding the rationale for the proposed Level 2 passage and Lifts 29 and 30 in the Concert Hall foyer areas.

The design process for both of these projects has been facilitated by regular input and reviews by the Opera House's heritage conservation architect, and periodic reviews by the Eminent Architects Panel and Conservation Council.

Both projects comply with the policies and guidelines in the CMP, however it is acknowledged that a number of aspects of the Concert Hall project will have substantial impacts on existing fabric, as well as significant spaces. These impacts are summarised below.

#### 7.3.2 Externally

The proposed works that affect the exterior of the Sydney Opera House are located on the western half of the podium and include:

- Modification of the recessed entry from the Western Broadwalk at its northern end with glazed entry doors relocated further west.
- A single new hooded opening proposed on the western elevation of the podium with details and configuration to match the existing adjacent hooded opening. A very similar configuration with two hoods already exists on the eastern side of the Podium.
- The steps in the Concert Hall eastern side foyer and within the northern foyer read as a continuation of the full width stepped surface profile of the podium. These will be interrupted, internally only, by the new eastern passageway on Level 2, Lifts 29 and



30, and their associated landings in the northern foyer. The eastern passage will not be seen from the outside, except within the 'cleavage' area between the two main shell groups. The modifications to the glass walls for the lift 30 will be visible from the northern foyer of the Joan Sutherland Theatre, and modifications for both lifts potentially from longer views towards the Opera House.

The above external changes will have minor impacts on external fabric and negligible impact on views towards the Opera House or the significance of Utzon's original concept.

### 7.3.3 Concert Hall Renewal Project

The proposed works to the exceptionally significant Concert Hall auditorium aim to retain, respect and reflect Hall's original design intent and palette of materials and finishes. While there will be high impacts to the significant fabric and character of the auditorium, there are significant benefits with regard to improved acoustic performance and functionality. Similarly, the proposed changes to the back-of-house areas and stage will have significant benefits for performers, and the functionality of the auditorium.

In back-of-house performers' and service areas fitted out by Hall, it is appropriate that Hall's design regime is retained and continued in accordance with Policy 4.8, noting also that Hall's minimalist approach to these spaces followed Utzon's intent for them.

The works proposed will considerably enhance the acoustic quality, functionality and code compliance of the Concert Hall, thereby making it more attractive for a wide range of performances types and ensuring it continues to be used as a major concert venue. The project should strengthen the reputation of Sydney Opera House as a world-class performing arts centre enhancing Australia's cultural vitality.

The public spaces affected by the Concert Hall Renewal Project, in order of their position in Utzon's approach sequence, include the following:

- Concert Hall eastern and western side foyers
- Concert Hall Northern Foyer
- Concert Hall auditorium

The back-of-house spaces affected include the following:

- Level 2
- Back stage and wing space both sides of stage
- Level 1
- Dressing Rooms 58, 75 and 78
- west entry to Main Rehearsal Room
- Male performers' amenities
- Performers' locker room
- Stair to Level 2 Ante Room
- Training Room and Offices beneath Lifts 29 and 30

#### *Level 2 passageway*

- The 2015 *Accessibility Master Plan* proposed a passage at Level 2 on both sides of the auditorium, consistent with Utzon's design for passages on Level 3, but in preliminary studies for this project it was decided, for both practical and aesthetic reasons, to limit impacts to the eastern side only. Another consideration was that the eastern side foyer is not visible from longer distances, and thus there would be almost no potential impacts on the visual relationship of these foyer spaces to the setting of the Opera House.

- The cut through to create the Level 2 passageway will interrupt the full-width sweep of the eastern side foyer stair, but its placement has been tested to determine its optimal location, both visually and functionally. Although the work will result in high visual and physical impacts on this exceptionally significant space, it is the only feasible option to provide level access to the northern foyer and to upper levels of the Concert Hall auditorium. This proposal is consistent with Utzon's design intent to provide an access passage to the northern foyer, originally on both sides and only at Level 3. These passages are actually built into the structure, but presently covered over by the unbroken width of the granite stairs. Utzon's 2005 Gold Book design for the Opera Theatre renewal proposed two passages in each side foyer, one at the original location on Level 3, with another adjacent to the auditorium wall on Level 2.
- The material language of the passageway respects the Utzon and Hall palette of materials. It introduces prefabricated bronze panel elements in a stepped canted configuration to clad the eastern wall of this passage in a similar manner to the brush box cladding in the side foyer above, and a grey curtain to conceal the raw concrete and service doorways on the western wall. These new elements should not distract from the quality, character, form and details of the significant spaces at either end of the passage. The detail of the cuts in the paving and steps will match details that already exist elsewhere in the building.
- New guardrails and balustrades around the cut for the passage will be of bronze and glass from the suite of profiles and details developed for application across the site.

Overall these works will result in high impacts to the fabric of the stair, however the general quality and character of the foyers will be retained and respected. The soaring fan pedestals and shell ribs and their visual dominance of this space remain unaffected. The new passageway will reduce the width of the 'grand ascent' of these stairs, but this must be balanced with the dramatic improvement in accessibility to the northern foyer, its associated facilities and the circle level of auditorium seating. For patrons with impaired mobility, this access has not been available since the building opened.

### *Eastern and western side foyers*

- The proposed introduction of the automated stepped stage platforms requires the circulation space within the side wings (prompt and opposite prompt) to be extended downstage and doors to the stage relocated. This requirement, in conjunction with the new accessible theatre entries, require modifications to the public entry to the front stalls and associated brush box panelling in the side foyers. The changed configuration respects Hall's geometry and set out of the auditorium entries and side foyers and follows existing detailing and materials.

Modification of these entries will result in moderate visual impacts as the overall width of the foyer is reduced, however the quality and character of space and the 'natural' palette of materials and colours is retained and respected. The visual reduction in width is mitigated by the retention and continuation of Hall's geometry and materials.

- Additional handrails are proposed in the side foyers to assist those who find the stairs difficult. These are as visually minimal as possible and follow the suite of profiles and details developed for eventual application across the site. On the east side, this additional handrail is only required between Levels 3 and 4 as there will be handrails surrounding the cut-out for the new Level 2 passage.

These additional handrails will have moderate visual impact, but are considered of great benefit for the comfort of patrons.

### *Northern Foyer lifts*

- Introduction of Lifts 29 and 30, each requiring cutting and modification of a total of 16 exposed radial cranked concrete beams (8 for each lift) on Levels 2-3 and 3A-4, slicing through the podium stairs, insertion of new concrete lift shafts clad in bronze between Levels 2 to 3A, and alterations to the glass wall structure and partial infill of the indented glass wall to enclose the glass lift shaft at Level 4.

The most significant impact will be the cutting of the original radial cranked concrete beams and slicing through the stairs. The beams are a significant and powerful structural expression in this space, however the placement of the lifts as close as possible to the outer ends of the foyer has been carefully considered to minimise its physical impact and also its visual impact on the broad continuous sweep of stairs and cranked beams below, within the limits imposed by the curved roof shell ribs and sloping glass plane of the ceiling above.

The cuts into each side of the broad sweep of precast granite stairs between Levels 3A and 4 to form a landing will have major impact on the sense of visual continuity of the granite steps from outside to inside, and on significant fabric, particularly the cranked beams below. However, their splayed geometry reduces this visual impact and respects the generous “flow” of the stairs when viewed from the north and when descending or ascending the stairs. The panelled vertical bronze linings to the splayed cuts are configured to reflect the steps they have cut through.

The solidity of the lift shafts below the granite paved level 4 will result in some minor impacts to the views out across the stairs from Level 3 (Mural level), however these are offset by the improved accessibility to foyer facilities and the Concert Hall.

Alignment of the stair cuts between Levels 3A and 4 coincide with the existing glass wall and are to be clad with bronze panels. The sense of horizontal continuity of the stairs beyond the glass walls is an essential part of these stairs and is to be retained as much as possible.

Alteration of the glass walls at Level 3A and 4 to enclose Lifts 29 and 30, will have high impact on the fabric of the glass walls in affected areas but will require only minimal additional intrusion into the foyer space and minor changes to the steel structure. High but acceptable impact to achieve substantial accessibility benefits. The proposed configuration of the glass lift enclosure will not penetrate the broad horizontal planes of glass when seen from the outside and their presence should be largely concealed from the north.

Generally the location, configuration, details and materials of the lifts and their shafts are considered appropriate and are supported.

### *Northern Foyer – lower levels*

- The lift shaft below the Level 4 landing will be clad externally in bronze panels. As a new element in the space, this is consistent with the bronze cladding on the eastern side of the new Level 2 passage.
- The existing carpet cladding on the eastern wall and the freestanding column within the foyer at level 2 (caves level), and the corresponding elements on the western side, will be removed and the concrete left exposed and unpainted.

The removal of the carpet cladding from the walls and columns on Level 2 and exposure of the concrete is considered a positive impact.

The DA documents indicate bronze panelling will be continued from the Level 2 passage into the caves area, replacing the existing carpet linings on the southern concrete wall within this foyer space. This proposal results from the carpet wall linings having been assessed in

the CMP as intrusive, the close proximity of the Level 2 passage and lift, and the need for some form of lining on this southern wall to conceal services and a hose-reel cupboard. The CMP notes Utzon's preferred lining material on the walls in these spaces as timber panels.

**Conditions:**

- 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.

Two new accessible lavatories are to be constructed adjacent to existing lavatories in the northern foyer. These will receive fitout and finishes that relate to the adjacent original fitouts by Peter Hall with modifications required to meet accessibility compliance standards. This is considered acceptable.

***Stage Risers, Access and Backstage spaces***

- Lowering of the default stage level by 400mm to improve sight lines from the stalls and facilitate level access from backstage wings.

This alteration will have a positive impact on sightlines from the stalls and not adversely affect sightlines from other parts of the auditorium. The resultant level access between stage and backstage will considerably improve its functional amenity.

- Enlargement of the rear stage area by removal of the front row of choir stalls seating and construction of profiled rear stage wall in laminated brush box in new alignment. Replacement of stairs to choir gallery with partially automated stairs. Lost seating will be relocated to existing cross-over aisle at rear of choir stalls.

Minor changes respecting Hall's original materials palette that will improve functionality of the stage but not adversely impact on the character of the Concert Hall.

- Replacement of the existing flat stage with automated semi-circular arena style platforms to improve the sense of intimacy and improve the ability of the orchestra to hear and see itself.

These have been successfully tested by the orchestra with a full size mock-up, and were found to have no negative impact on the character of the Concert Hall. The present forestage riser will be automated in association with automation of the front two rows of stalls seating to enable efficient setup. This compares favourably with the existing setup where three rows of seating are manually removed to extend the stage for large orchestral performances. The proposed changes to accommodate the automation of these risers will not impact on the significant fabric or character of the Concert Hall.

- Modifications to the existing stage access including enlargement of the backstage areas on either side of the stage, the provision of additional doors, realignment of the box fronts as well as raising of the existing backstage floor to be level with the default stage level.

These works will have high physical impacts through the loss of mainly recent (2011) fabric, however they are considered acceptable, as they will not greatly alter the character of the Concert Hall. These works also have flow on impacts on the alignment of the auditorium walls within the eastern and western side foyers (discussed elsewhere) – moderate impact but considered acceptable.

- Modifications to the existing Anteroom and Rack room on Level 2, including raising of floor level to match the default stage level, modifications to existing stairs from the Orchestra Assembly room below.

These works will respect the Hall palette of materials and have minimal impact on the spaces. However, there will be high positive benefits associated with the improved functionality of the backstage areas.

### *Treatment to Box Fronts, Perimeter Wall and Stage Surround*

- Replacement of the existing laminated brush box panels to the box fronts (2011), rear wall of the side boxes, rear wall of the stalls and upper circle, and side (2011) and rear walls of the stage, with new laminated brush box panels with a profiled three-dimensional surface pattern to provide improved acoustic diffusion.

The proposed works affect much of the original 1973 laminated brush box wall fabric, however the new panelling respects the original material of the auditorium by continued use of glue laminated brush box – high impact on original fabric but with overall positive acoustic benefits. The proposed surface diffusion profile could introduce a strong visual pattern into what is presently a relatively ‘quiet’ timber backdrop. This should be tested in situ with a full size prototype panel. Bronze handrails are modified where required to meet current codes but the original tapered guard-rails surrounding the boxes and the front of the circle should, if possible, be retained.

Note – 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.

#### **Conditions:**

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

### *Acoustic Reflectors (for non-amplified performance)*

For non-amplified (acoustic) performance the proposed arrangement includes:

- Removal of the existing array of acrylic ‘clouds’ and replacement with a radial array of adjustable ‘petal’ shaped solid reflector panels finished in a magenta based colour.

While the proposed arrangement of reflectors is denser and less transparent than the existing arrangement, the proposed ‘petals’ retain partial views to the grand organ, the focal point of the Concert Hall, although much of the space between the reflectors will be occupied by suspended over-stage lighting arrays, required because of the solidity of the reflectors. Prototype testing confirms the reflectors should be neither high gloss or matte finish. While a very prominent new element in the space, the ‘magenta’ reflectors visually separate themselves from and respect Peter Hall’s ceiling geometry, and are consistent with both Utzon and Hall’s intent to use strong celebratory colours in each auditorium.

These suspended over-stage reflectors will be the most highly visible components of the acoustic upgrade. High visual impacts however positive acoustic impacts that potentially strengthen the reputation and standing of the Opera House, and both Utzon and Hall’s design intent. This proposal is supported provided it meets the following conditions:



**Conditions:**

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

**Side-wall reflector panels**

- Installation of fully retractable sidewall horizontal reflector panels projecting from the vertical planes of the ceiling beside the stage and over the audience.

Potentially a high visual impact but considered acceptable given that these panels respect the existing configuration and materiality of the white birch veneer plywood panels within the auditorium and.

These projecting side reflector panels are considered to have a high visual and fabric impact but contribute to improved acoustic performance of the Concert Hall. These impacts are acceptable provided they meet the following conditions:

**Conditions:**

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

***Acoustic Drapes (for amplified performance)***

For amplified performance the proposed arrangement includes:

- Automated acoustic absorption drapes / banners suspended from the ceiling crown and retractable drawer units in adjacent vertical panels over the stage.
- Automated acoustic absorption drapes to the brush box stage surround, box fronts, and rear wall of the stalls; and automated acoustic absorption drapes rising from concealed hatches in the floor along side and perimeter walls.

The automated drapes from the crown require substantial modification of three of the plain concentric white birch plywood rings in the centre of Hall's exceptionally significant design of this space. This is a high impact on original fabric, but if executed as planned there should be minimum visual impact when the drapes are not deployed.

The retractable 'drawer' units high on the side walls over the stage, deploying absorption drapes, will complement the absorption capacity of the drapes from the crown. These drawer units will also have a high impact on original fabric.

The visual impact of these acoustic drapes, when deployed, will be high, but this is considered appropriate and acceptable for amplified performances. The proposed graded magenta colour of the drapes are an extension of this dramatic effect and is supported.

Modifications to the white birch plywood rings in the ceiling crown and panels in the side walls are considered to have a high impact on original fabric but potentially high acoustic benefit for amplified performances.

The acoustic drapes throughout the auditorium will similarly have high impacts on the significant fabric and character of the Hall interior, but also with positive acoustic benefit for amplified performances.

These impacts are considered acceptable provided they meet the following conditions:

**Conditions:**

- 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 all drapes respect 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 and side walls to accommodate the drapes and their machinery is as least intrusive as possible, so that when retracted, the crown and side walls look as close as possible to their original configuration.
- The existing white birch rings are 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.
- Drapes and access panels are fully retracted and sit flush with the existing plywood or brush box when acoustic drapes are not required.
- The indirect lighting of wall and ceiling panels around the perimeter of the hall is retained and not impacted by the drapes, regardless of their deployment.

***Lighting arrays***

- The proposed lighting arrangement for both amplified and non-amplified performances includes augmentation of the existing stage lighting from the ceiling crown with new lighting arrays suspended between the acoustic reflectors.
- Existing lighting in the ceiling over the stalls and circle, will be supplemented with new positions in the same manner as existing to achieve adequate and appropriate lighting on the stage.
- For non-amplified performances generally, there will be no suspended lighting except between the acoustic reflectors.
- For amplified performance, additional lighting bars may be required forward of the stage, however these will be removed (as they are now) for acoustic performance.

New openings for lights in the ceiling forward of the stage, similar to existing, will be required. This is considered acceptable and is preferred to the alternative of suspended lighting forward of the over-stage acoustic reflectors.

Lighting arrays suspended between the acoustic reflectors for non-amplified performance, or within the space for amplified performance, will have negative visual impacts, but as they arise from the acoustic improvements, they will also enable positive acoustic impacts.

These impacts are considered acceptable provided they meet the following conditions:

**Conditions:**

- 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.

***Speaker arrays***

- Proposal includes replacement of the two speaker arrays over the front of the stage with five smaller ones between the acoustic reflector 'petals' with one in the centre.
- Replacement of the rear stage speakers with a greater number of smaller speakers to both the sides and rear of the stage.
- The renders provided show that the centre three speakers would be raised high towards the ceiling during non-amplified performances, but they are then seen against the crown – a highly significant element in Peter Hall's design.

This proposed speaker arrangement effectively blocks or substantially masks remaining views towards the grand organ and reinforces the visually 'solid' character of the combined acoustic, lighting and speaker arrays.

This is considered a high negative impact, especially if these speakers are not raised for non-amplified performances when houselights are generally less dimmed.

For amplified performance this more intense speaker array will be less intrusive due to the lighting focus on the performance and the deployment of acoustic absorbent drapes and banners.

The cumulative impacts of the lighting, speaker and acoustic reflector proposals will be high, particularly for non-amplified performance. Ongoing management of these installations will be necessary to determine and maintain the least intrusive and most effective balance for each performance.

These negative impacts are considered acceptable provided the installation meets the following conditions:

**Conditions:**

- 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.

### *Technical overlay*

- The proposed works include substantial upgrade of over-stage winches and technical equipment above the auditorium ceiling. This involves strengthening of the existing steel structure and substantial change to some of the mechanical and other equipment.
- As part of the technical upgrade, new winch positions are required involving new or revised penetrations in the white birch plywood ceiling.

These upgrades are out of public sight and completely within the existing technical zone.

The only potential impact is the additional ceiling penetrations. These should, wherever possible, be adjusted to re-use the existing penetrations, and all old / disused penetrations carefully patched in white birch ply to match the existing.

### *'Canon-port' openings and air delivery registers*

- Proposal is to infill the existing rectangular 'cannon-port' openings with matching white birch veneered ply, with a discrete shadow line to delineate the extent of the original opening and fitted with new air diffusers, closely fitted within the patched area.
- A row of additional air diffusers are required forward of those existing on the ceiling soffits over the boxes and sides of the auditorium. These new diffusers are to have white birch surrounds and their setout respects the geometry of the auditorium.

These infilled and modified 'cannon-port' openings and new ceiling registers / diffusers should have minimal impact as long as the existing plywood is retained and the order and proportion of existing openings registers and ceiling geometry is retained and respected with the new work.

As these new ceiling registers are close to the radius junction with the vertical ceiling panels, they should be as discrete as possible so as not to visually weaken the panels.

Potentially negative impacts are considered acceptable provided the installation meets the following conditions:

#### **Conditions:**

- A full size mock-up of the 'cannon-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.

### *Seating*

- Modification to a number of rows of seating (4 rows to the front stalls, the east and west ends of the rear 3 rows in the lower circle, and the rear row of circle level boxes A, B, C, U, V, and W) to provide up to 34 removable accessible wheelchair and associated companion positions. The wheelchair positions at the rear of the lower circle require a removable platform and guardrails.
- This work also requires removal of the rear wall to the 6 circle boxes.

- Modification of the front 2 rows of seating to the stalls associated with the automation and enlargement of the stage. At present the front 3 rows are manually removed to extend the stage.
- The magenta upholstered white birch plywood seating itself will be retained with modified supports and fixings to enable rapid changeover in response to bookings.
- The front row of the choir stalls is to be removed and relocated to the existing cross-over aisle to allow enlargement of the stage.
- Re-cushioning and re-upholstery of 50% of the magenta upholstered white birch plywood seats to the stalls and lower circle, to improve the fire rating performance of the seating.

Although this work modifies the original Hall interior, it retains and respects the original setout, form, details, materials, colour and finish of the Concert Hall seating and will not detract from the significant character of the Concert Hall.

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

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

Low to moderate but acceptable impact.

#### *Back-of-house performers' areas*

- One new unisex accessible lavatory is to be located within the reconfigured lobbies adjacent to the existing performers' lavatories. Proposed finishes reflect Hall's original palette of materials.
- Existing white birch lockers in affected areas will be retained, repaired and incorporated into new areas. If new lockers are required, they should match the Hall originals.

The proposed works are required to address accessibility issues. They are confined to discrete areas and will continue the existing Hall regime of materials, fittings and finishes as closely as requirements permit, in accordance with CMP policies. Impact of these works will be minimal.

#### *Theatre machinery*

- The Concert Hall project includes a major upgrade of the theatre machinery including winches over the auditorium. The layout will be revised and winches replaced.

A full heritage assessment of existing machinery and equipment in the Concert Hall will be undertaken, and any significant pieces identified.

It must be acknowledged that the Concert Hall Renewal Project will have a range of substantial impacts on significant aspects of the Opera House, particularly on the fabric of the exceptionally significant Concert Hall eastern side foyer, northern foyer, and the Concert Hall itself. However, the aim of this project is to address identified significant deficiencies in the following areas:

- accessibility compliance and expectations for patrons and performers;
- acoustic performance for both non-amplified and amplified music;
- functionality, efficiency and operational safety of its technical equipment.



The suite of projects proposed to address these issues have been thoroughly researched and carefully designed to minimise and contain adverse impacts, but these must be considered in relation to the substantial and positive impacts, particularly with regard to improved accessibility, functionality and acoustic excellence, three fundamental qualities that will determine the future status and viability of this venue and that of the Opera House. With completion of these projects, the Concert Hall and all its foyers will be accessible by the broader public, some of whom have never had access to these spaces before. This is completely in line with Utzon's concept and vision for the building to elevate and celebrate the experience of attending a performance.

#### **7.3.4 Creative Learning Centre**

The proposed change in use of the Level +12 administration areas for the Creative Learning Centre is considered a positive change. These spaces, originally fitted out by Peter Hall, address an important public promenade, the Northern Broadwalk, and should have a use that is functionally and visibly engaging for the public. This is consistent with the CMP and an opportunity for change identified by Jørn Utzon.

This dedicated facility will support the primary use of the Opera House and enhance its ability to engage with and inspire the next generation of theatre craftspeople and performers, both locally and nationally. This will strengthen its association with the wider performing arts community and its standing as a world-renowned performing arts centre.

The project involves minimal change externally, confined to minor modifications to the western entry off the Broadwalk, within the existing entry space with minimal and acceptable impacts.

The proposed works internally are more than modest functional improvements and constitute a major change, however this proposal retains and respects the character and design regimes used by Hall, noting that his work was inspired by Utzon's concepts. In this instance and for this proposed facility, this is considered an appropriate response and a positive impact.

The proposal involves some modification (opening up) of original structural walls within the Podium to create the required spaces, but these impacts are considered acceptable.

A connecting entry foyer to the Creative Learning Centre is proposed off the northern end of the Western Foyer. This will involve the reconfiguration of walls enclosing the existing stair and Lift 9, and modification of existing storage units at the north end of the Western Foyer. Proposed finishes on the Western Foyer side retain the design language, materials and finishes of this Utzon space, and will have little visible impact. The new double door entry to the Creative Learning Centre from within the Western Foyer, will match other venue entry doors in this space, but with the addition of a vision panel providing a glimpse of the 'magic' beyond. Signage over the door will be consistent with other venue signage in this foyer.

This connecting entry foyer is potentially a light box 'coloured' by indirect lighting will provide a theatrical entry to a world of magic – an idea that is consistent with Utzon's concept for approaching the performance spaces. The proposed use of a stretched membrane ceiling in the entry lobby to create this light box is supported, but should not be extended into other areas.

The proposal includes salvage and adaptation of Hall's 'wobbly' panels in a new and dynamic storage / display configuration adding flexibility, colour and delight in a manner that is consistent with the Utzon Design Principles and Hall's design concepts for the interiors.

The use of strong colours within the wobbly fronted storage units, and on other selected surfaces, is considered appropriate in a creative learning environment and is supported. Colour was an important part of Peter Hall's interior schemes for the Opera House and it is suggested that the selected colours could potentially have some connection with the history and / or aesthetics of the building. However this does not mean that colours should be restricted to only those already used at the site.

The northern most sections of the two main spaces will be fitted out on walls and ceilings with the wobbly panels in the same manner as Peter Hall had intended within the administration areas of the Podium, providing a consistent character with adjacent spaces when viewed from the Broadwalk. Other parts of the Creative Learning Centre will have pared back finishes to closely reflect the character of service and backstage areas. These spaces will be enlivened by the use of colour on the rear and internal faces of storage units, as mentioned above.

It is strongly recommended that doors, door finishes and hardware within the creative learning spaces should retain and respect the Hall regime, rather than the Utzon regime within the Western Foyer.

The proposed Creative Learning Centre constitutes a major change within the Podium of the Sydney Opera House. However, it retains and respects the significant design regime introduced by Peter Hall, while also being consistent with the Utzon Design Principles. The proposal complies with the policies and guidelines in CMP 4, and will have a positive impact on the significant values of Sydney Opera House, including those that are enshrined at State, National and World Heritage level.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Concert Hall Renewal Project (Part of SSD 8663)*  
*Summary assessment of impacts – Creative Learning Centre (Part of SSD 8663)*  
*Summary assessment of impacts – All Renewal Projects*

## 8.0 IMPACT ON STATE HERITAGE VALUES OF THE SYDNEY OPERA HOUSE

The following is the Statement of Significance of the State Heritage values of the Sydney Opera House. **Emphasis added** on aspects of significance relevant to the assessment of heritage impact of this project.

*The Sydney Opera House is of State significance as a twentieth century architectural masterpiece sited on a prominent peninsular in Sydney Harbour. In association with the Sydney Harbour Bridge it has become an internationally recognised symbol of Sydney and Australia, which is also widely admired by local citizens. Designed for the NSW Government by renowned Danish architect Jørn Utzon between 1957 and 1966, and completed in 1973 by Hall, Todd and Littlemore, the building has exceptional aesthetic significance because of its quality as a monumental sculpture in the round, both day and night, and because of the appropriateness of its design to its picturesque setting. **Its public spaces and promenades have a majestic quality, endowed by powerful structural forms and enhanced by vistas to the harbour and the city.** An icon of modern architecture, the Sydney Opera House uses the precise technology of the machine age to express organic form. It has scientific and technical significance for the ways in which its construction continually pushed engineering and building technologies to the limit. It also has significance for the extensive associations of the site with many famous people and important themes in Australian history. Abutting the site of the first settlement of Europeans in Australia at Sydney Cove, the Sydney Opera House stands on Bennelong Point, Aboriginal land which was named after a Wangal Aboriginal man and which is of significance in the history of the entanglements and interactions between Aboriginal and non-Aboriginal cultures in Australia. Other historic themes associated with the site include the arrival of the First Fleet in Sydney Cove, scientific investigation, defence, picturesque planning, marine and urban transport and most recently, cultural showcasing. Since its official opening by the Queen (Queen Elizabeth) in 1973, the Sydney Opera House has been the scene of many notable achievements in the performing arts and has associations with many nationally and internationally renowned artistic performers. **The Sydney Opera House provides an outstanding visual, cultural and tourist focal point for Sydney and Australia.***

### Concert Hall Renewal Project / Creative Learning Centre – Comment

The suite of projects forming this application include works to the Concert Hall and its associated side and northern foyers – all exceptionally significant public spaces defined by their majestic and powerful structural forms. In the Concert Hall, these qualities will be enhanced by the proposed works with the removal of clutter, provision of improved user and patron access, amenity and comfort, and improved acoustic performance.

In the side and northern foyers, these qualities will be impacted by the new Level 2 passage and the insertion of Lifts 29 and 30, however, the majestic roof forms rising from the podium remain unaffected and fully visible, with minimal interruption to views of the harbour. Importantly, these majestic spaces will, for the first time, be accessible and appreciated by a much broader public, including those with reduced mobility.

Along with the proposed Creative Learning Centre, these projects will strengthen the identity of the Opera House as a nationally important visual, cultural and tourist focus.

## 8.1 State Heritage Register criteria

The Sydney Opera House is listed on the SHR for meeting all its listing criteria (a)-(g). The values of the Sydney Opera House that meet the SHR criteria are set out in full in the NSW Heritage Database, available online at:

<http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5054880>

The extracts from the SHR values, under each of the criteria below, summarise and draw attention to those aspects of significance that are relevant to the assessment of heritage impact of the suite of proposed projects in this application. Design 5's assessment of heritage impact is summarised at the end of this section.

**SHR criterion a) Historical significance**

*An item is important in the course, or pattern, of NSW's cultural or natural history.*

Relevant key values from SHR values:

- The Sydney Opera House has historical significance as a modern architectural masterpiece, recognised internationally as a symbol of Sydney and Australia,

**Concert Hall / Creative Learning Centre – Comment**

There are no significant historical values from the SHR listing that are impacted by this proposal.

**SHR criterion b) Associative significance**

*An item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history.*

Relevant key values from SHR values:

- "Many significant people are associated with the construction of the Sydney Opera House, including Eugene Goossens, Joe Cahill, Jørn Utzon, Eero Saarinen and Ove Arup."
- "its success as a performing arts centre has been described as 'spectacular' partly because of the building's 'ability to attract great artists from all over the world'."

**Concert Hall / Creative Learning Centre – Comment**

The significant associations with Jørn Utzon, Ove Arup, and Peter Hall of Hall, Todd & Littlemore will be strengthened and better appreciated with these projects.

The Concert Hall renewal project will potentially enhance the ability of the Sydney Opera House to attract national and internationally recognised performers with the improved functionality, acoustic performance and accessibility. Similarly, the Creative Learning Centre project will enhance the Opera House's ability to engage with and inspire future generations of performers. These aspects have a direct and positive impact on the standing and reputation of the Opera House as a performing arts venue.

**SHR criterion c) Aesthetic significance**

*An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW.*

Relevant key values from SHR values:

- "Its public spaces and promenades have a majestic quality endowed by powerful structural forms and enhanced by vistas to the harbour and the city."
- "Its aesthetic quality is largely attributed to the 1957 prizewinning design by Jørn Utzon."
- "Its aesthetic quality was also enhanced by the high-quality completion work by Hall, Todd & Littlemore, by the technical support given throughout by the internationally renowned engineering firm of Ove Arup & partners, and finally by M.R. Hornibrook, the contractor of stages two and three (Kerr, 2003, 32)."
- "Widely recognised as a masterpiece of twentieth century architecture, the Sydney

Opera House combines an expressive freedom of form with the precise technology of the machine age."

- "It has scientific and technical significance for the ways in which its construction continually pushed engineering and building technologies to the limit.
- "Australian architectural historian Max Freeland stated: "This Sydney Opera House was a voyage of architectural and engineering discovery in which new oceans were charted, new frontiers of knowledge and technology were conquered and the resources of science and technology were employed to solve design, erection and quality of finish problems beyond the capacity of conventional method"."

### **Concert Hall – Comment**

While acknowledging there will be high negative impacts on fabric in regard to the introduction of Lifts 29 and 30 and the consequent cutting of a number of the significant cranked beams in the Concert Hall Northern Foyer, and the diminished width of the stairs in the Concert Hall eastern side foyer resulting from the new passageway on Level 2, the overall impacts with regard to accessibility of the Concert Hall and its foyers for a broader section of the public will be positive. The soaring majestic quality of the fan shaped roof shell pedestals and ribs and their association with both Utzon and Arup remain unaffected. The western side foyer stair and the majestic qualities of its space and structure with views towards Circular Quay and the Harbour Bridge will remain unaffected, except for the addition of a central handrail.

The proposed functional and acoustic upgrades within the Concert Hall auditorium will result in some adverse visual impacts on the significant character of the Concert Hall auditorium. However Peter Hall's design aesthetic and choice of materials and finishes will be respected by these changes.

These impacts arise primarily because of the non-transparent nature of the proposed automated over-stage reflectors and their increased coverage, combined with the associated over-stage and fore-stage lighting that must be suspended at the same level. Depending on viewing position, these will partially mask views from the auditorium towards the grand organ and the faceted ceiling above. This will be most evident from the stalls and the front of the circle.

These visual impacts are acknowledged as not insubstantial, but the mock-ups and acoustic testing, as well as the peer review process, have confirmed that improvements in the acoustic performance of the Concert Hall should be considerable. These impacts are therefore considered necessary if this venue is to maintain its status as a world class performance venue.

Operable acoustic reflectors in the side walls of the white birch ceiling have been mocked up and tested as an important part of the suite of enhancements for non-amplified acoustic performance within the Concert Hall space. While quite visible in themselves when deployed, they should not detract from the strong geometric character of Peter Hall's interior. It is proposed that these will only be deployed during the actual performance.

In order to minimise visual clutter, the set-up for each performance should deploy the minimum technical and acoustic equipment and be flown out or removed when not in use. This includes speaker clusters and lighting. This will be an ongoing housekeeping and management issue and has already been discussed in relation to CMP Policy 8.4.

The Concert Hall frequently presents performances that use acoustic amplification. These require acoustic dampening and the drapes used to achieve this are currently deployed manually and often in an ad-hoc manner, resulting in visual impacts on the quality and character of the space. Acoustic treatments for amplified performances proposed in this application include retractable acoustic drapes on side walls and box fronts as well as



retractable drapes suspended from the ceiling crown. These will result in high but transient impacts to the character of Hall's original interior of the Concert Hall. However it is noted that for many amplified performances, the auditorium is often darkened during performance and the overall impacts in terms of acoustic performance should be positive.

Changes required within the auditorium to accommodate additional wheelchair positions at mid-circle level (Level 4), involve removal / modification to brush box walls at the rear of the seating in the boxes, but in reality these changes will have only minimal visual impact on the quality and character of the space and Peter Hall's design regime will be respected. Some existing seating will be altered to enable sections to be removable to accommodate these wheelchair positions, implemented only as required to cater for specific demand for each performance. A number of rows of seating will be refurbished to provide improved fire resistance and acoustic performance. These changes should have minimal impact on the character, material and configuration of the seating.

The automated stage risers, providing a concentric tiered arrangement have been mocked up and successfully tested in performance. Changes below the stage to accommodate the automation of these risers will not impact on significant fabric or spaces. This work is considered a positive change and will provide a more 'intimate' stage setting, improve sightlines from the auditorium, and improve functionality of the stage.

The proposed upgrade of the air-conditioning system for the Concert Hall involves removal of the existing 'cannon-port' air delivery system and replacement with a more efficient diffuser system in approximately the same or similar locations. Works should be detailed to minimise impact on the fabric and avoid discordant patching of the existing plywood linings.

Alterations to the Back-of-House performers' areas, including dressing rooms, toilets, corridors and assembly rooms, to improve access and functionality, will generally have minimal heritage impact. Additional refinement during the Tender Documentation phase is required to ensure that the design incorporates / reinstates Hall's palette of materials and finishes for back-of-house areas. While the enlargement of the prompt and opposite-prompt side wings will require reconfiguration of the walls to the eastern and western side foyers and entry doors to the stalls, these changes continue Hall's geometry and palette of materials and finishes, and are considered acceptable and appropriate.

Utzon's original design concepts will be strengthened and made accessible to a broader public than before, and Peter Hall's contributions will be retained and respected in the Concert Hall auditorium, foyer and back-of-house areas.

### **Creative Learning Centre – Comment**

The proposal to retain and highlight significant features by Peter Hall within the area of the Creative Learning Centre, including bronze framed glazing and the white birch moulded timber 'wobbly' panels, will retain and respect these aesthetic values.

### **SHR criterion d) Social significance**

*An item has strong or special association with a particular community or cultural group in NSW for social, cultural or spiritual reasons.*

Relevant key values from SHR values:

- "The Sydney Opera House is of social significance as an internationally recognised symbol of Sydney, one of Australia's leading tourist attractions and a focal point for community events. It is also widely admired by Sydneysiders, and can be seen to contribute importantly to the sense of place in the Sydney CBD."
- "As a world-class performing arts centre, the Sydney Opera House has enhanced the cultural vitality of the nation."

- “In offering this remarkable accessibility to a broad public, Sydney Opera House can be seen to be fulfilling Cahill’s hope that it would be “a monument to democratic nationhood”.”

### **Concert Hall Renewal Project – Comment**

The Concert Hall Renewal Project should strengthen the reputation of Sydney Opera House as a world-class performing arts centre enhancing Australia’s cultural vitality.

The accessibility projects in particular will make the Concert Hall and its foyers more accessible to an even broader public, and potentially strengthen its ability to fulfil Cahill’s hopes.

### **Creative Learning Centre – Comment**

The proposed creation of a dedicated Creative Learning Centre within the Podium at Broadwalk level, will enhance the ability of the Opera House to engage with and promote the performing arts to younger generations, both locally and nationally. This will strengthen its association with the performing arts and wider community and its important role in the cultural vitality of the nation.

### **SHR criterion e) Research potential**

*An item has potential to yield information that will contribute to an understanding of NSW’s cultural or natural history.*

Relevant key values from SHR values:

- none relevant

### **Concert Hall / Creative Learning Centre – Comment**

There are no significant research potential values identified from the SHR listing that are impacted by this proposal.

### **SHR criterion f) Rarity**

*An item possesses uncommon, rare or endangered aspects of NSW’s cultural or natural history.*

Relevant key values from SHR values:

- “It is an exceptional landscape (and seascape) monument because of its quality as a sculpture in the round, both day and night, and because of the appropriateness of its design to its setting and the picturesque quality of the setting.”

### **Concert Hall / Creative Learning Centre – Comment**

The ability of the Sydney Opera House, (as an exceptional architectural monument in response to its harbour setting), to attract visitors and performers from all over the world will be enhanced with these projects by the improved amenity, accessibility and patron comfort offered by the proposed works.

### **SHR criterion g) Representativeness**

*An item is important in demonstrating the principal characteristics of a class of NSW’s cultural or natural places; or cultural or natural environments.*

Relevant key values from SHR values:

- "... an internationally recognised building representative of major performance arts centres."
- "It is outstanding because of its innovative design appropriate both to its entertainment functions and to its harbour-side setting, and because of the esteem in which it is held in Australia and internationally."
- "Its success as a performing arts centre has been described as 'spectacular' partly because of the building's 'ability to attract great artists from all over the world'."

### **Concert Hall / Creative Learning Centre – Comment**

Like the rarity values discussed above, the ability of the Sydney Opera House to attract visitors and performers from all over the world will be enhanced by the Concert Hall and Creative Learning Centre projects by the improved amenity, functionality, accessibility, patron comfort and public engagement offered by the proposed works. This will in turn enhance the esteem in which The Sydney Opera House is held nationally and internationally.

## **8.2 Summary assessment of heritage impact on State Heritage values**

### **Concert Hall Renewal Project**

While acknowledging that the proposed insertion of the Level 2 passageway within the eastern side foyer will have high fabric impacts on the stepped podium, the form of the soaring fan pedestals and ribs, their association with both Utzon and Arup, and the majestic quality of this side foyer space remain unaffected. It is important to note that no passageway is proposed for the western side foyer which will remain as it is, except for the addition of a simple central handrail. Similarly, while the insertion of Lifts 29 and 30 will have high impacts on the broad sweep of stairs and cranked concrete beams at each end of the Northern Foyer and east and west caves below, carefully considered location and detailing, and adoption of Utzon and Hall's palette of materials will lessen their overall impact on the aesthetic qualities of these spaces. These impacts must be considered in relation to the substantial positive impacts with regard to accessibility of the Concert Hall and its foyers for a broader section of the public, some of whom will never had access to these spaces before.

The proposed functional and acoustic upgrades within the Concert Hall auditorium will result in some adverse visual impacts from the proposed over-stage acoustic reflectors, associated stage lighting and speaker arrays on the significant character of the Concert Hall auditorium. Depending on viewing position, these will partially mask views towards the grand organ and the faceted ceiling above. This will be most evident from the stalls and the front of the circle. However Peter Hall's design aesthetic and choice of materials and finishes will be respected by these changes.

These visual impacts are acknowledged as not insubstantial, but the mock-ups and acoustic testing, as well as the peer review process, have confirmed that improvements in the acoustic performance of the Concert Hall should be considerable. These impacts are therefore considered necessary if this venue is to maintain its status as a world-class performance venue.

Operable acoustic reflectors in the side walls of the white birch ceiling, when deployed, should not detract from the strong geometric character of Peter Hall's interior. It is proposed that these will only be deployed during the actual performance.

In order to minimise visual clutter, the set-up for each performance should ideally deploy the minimum technical and acoustic equipment and be flown out or removed when not in use. This includes suspended speaker clusters and lighting. This will be an ongoing

housekeeping and management issue and has already been discussed in relation to CMP Policy 8.4.

The proposed acoustic treatments within the Concert Hall for amplified performances, including retractable acoustic drapes on side walls and box fronts, as well as retractable drapes suspended from the ceiling crown, will result in high visual impacts to the character of Hall's original interior of the Concert Hall, however these impacts are transient with the auditorium often darkened during performance. The overall impacts in terms of acoustic performance should be positive.

Changes required within the auditorium to accommodate additional wheelchair positions at mid-circle level (Level 4) will have only minimal visual impact on the quality and character of the space and Peter Hall's design regime will be respected. These and other adjustments to existing seating to accommodate these wheelchair positions and provide improved fire resistance and acoustic performance should have minimal impact on the character, material and configuration of the seating and the Concert Hall space.

The automated stage risers and changes below the stage to accommodate them will not impact on significant fabric or spaces and will improve sightlines from the auditorium, and functionality of the stage. The associated reconfiguration of the wing space, stage entries and southern most auditorium entry doors on both sides of the stage will impact on the fabric and space of the adjacent foyers, but as they retain and respect Hall's geometry and setout, materials and finishes, should remain primarily unnoticed when completed.

The proposed upgrade of the air-conditioning system for the Concert Hall involves removal of the existing 'cannon-port' air delivery system and replacement with a more efficient diffuser system in approximately the same or similar locations. Works should be detailed to minimise impact on the fabric and avoid discordant patching of the existing plywood linings.

Alterations to the Back-of-House performers' areas, including dressing rooms, toilets, corridors and assembly rooms, to improve access and functionality, will generally have minimal heritage impact. Additional refinement during the Tender Documentation phase is required to ensure that the design incorporates / reinstates Hall's palette of materials and finishes for back-of-house areas.

Utzon's original design concepts will be strengthened and made accessible to a broader public than before, and Peter Hall's contributions will be retained and respected in the Concert Hall auditorium, foyer and back-of-house areas.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Concert Hall Renewal Project (Part of SSD 8663)*

### **Creative Learning Centre – Comment**

The works proposed for the Creative Learning Centre will retain and respect the significant contribution of Peter Hall in fitting out the Podium interiors and completing the project.

The proposed creation of this dedicated facility within the Podium at Broadwalk level, will enhance the ability of the Opera House to engage with and promote the performing arts to younger generations, both locally and nationally. This will strengthen its association with the performing arts and wider community and its important role in the cultural vitality of the nation.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Creative Learning Centre (Part of SSD 8663)*

## 9.0 IMPACT ON NATIONAL HERITAGE VALUES OF THE SYDNEY OPERA HOUSE

### 9.1 National Heritage Values – Summary Statement of Significance

The following is the Summary Statement of Significance of the National Heritage values of the Sydney Opera House. *Emphasis added* on aspects of significance relevant to the assessment of heritage impact of the works in this current application.

*The Sydney Opera House, constructed between 1957 and 1973, is a masterpiece of modern architectural design, engineering and construction technology in Australia. It exhibits the creative genius of its designer, the Danish architect Jørn Utzon and the contributions to its successful completion by the engineering firm Ove Arup and Partners, the building contractors M.R. Hornibrook, and the architects Hall, Todd and Littlemore. It is an exceptional creative and technical achievement in the national history of building design and construction in Australia.*

*Since its completion the Sydney Opera House has attracted world wide acclaim for its distinctive design, enhanced by its prominent location on Bennelong Point within a superb harbour setting. With its soaring white roof shells set above a massive podium, the Sydney Opera House is a monumental urban sculpture, internationally acclaimed as an architectural icon of the twentieth century. Its many national and international awards reflect its pivotal place in the national story of creative and technical achievement in Australia. The challenges involved in executing Utzon's design inspired innovative technical and creative solutions that were groundbreaking in the history of architectural design and building construction in Australia, particularly the roof shells that were based on the geometry of the sphere and demonstrated the extraordinary creative potential of the assembly of prefabricated, repeated components.*

*The interior spaces also reflect the creative genius of Utzon and his successors, Todd, Hall and Littlemore, who completed the building after Utzon's departure from the project in 1966.*

*The Sydney Opera House is the most widely recognised building in Australia, and is cherished as a national icon and world-class performing arts centre. It represents an enduring symbol of modern Sydney and Australia, both nationally and internationally, reflecting changing social attitudes towards Australian cultural life in the decades after World War II. The Sydney Opera House has played a seminal role in the development of Australia's performing arts, enhancing the cultural vitality of the nation. It continually attracts nationally and internationally acclaimed performers, and is a mecca for visitors from around Australia and overseas.*

*The peninsula on which the Sydney Opera House now stands has a special association with Bennelong, an Aboriginal man who became a prominent and influential figure in the early colony and played a significant role in mediating interactions between Aboriginal people and early settlers.*

#### 9.1.1 Concert Hall Renewal Project – Comment

The Concert Hall renewal project, particularly the acoustic enhancements and modifications, stage upgrades, eastern passageway and lift connections between the various foyer and auditorium levels, will involve a range of changes and new insertions to spaces of exceptional significance and their associated fabric. The proposed acoustic enhancements and modifications have been prototyped and tested and proven to provide substantial benefit to both performers and audience. They will strengthen the standing of the Opera House as a world-class performing arts centre.



Those changes within the Concert Hall have been designed to retain and respect the design, configuration, materials and colour palette of Peter Hall's work. Some of the changes proposed within the foyer areas will be substantial, but all have been designed to retain and respect the design, configuration, materials and colour palette of both Jørn Utzon and Peter Hall's work.

Some of the proposed changes, particularly the eastern side passage and Lifts 29 and 30, involve substantial impacts on significant fabric, however the functional benefits for the Concert Hall will be substantial and will greatly improve the accessibility and amenity of all of these spaces. This improved accessibility and amenity will strengthen the ability of the Opera House to attract performers, patrons and visitors, both nationally and internationally.

All details throughout this project have been resolved to a consistent language and quality and they comply with the *Utzon Design Principles* and the CMP 4th edition. They have been reviewed during the detail design development stage by means of regular 'design consistency' workshops, attended by the SOH heritage architect, members of the Eminent Architects Panel and Conservation Council.

The Concert Hall Renewal Project will enhance the patron experience, performance and operational capability of the Sydney Opera House to continue to host and celebrate world standard performance art. In this respect, this proposal will help sustain the iconic international standing of this Opera House.

### **9.1.2 Creative Learning Centre – Comment**

The Creative Learning Centre will retain and respect the significant contribution of Peter Hall and enhance the ability of the Opera House to engage with and promote the performing arts to younger generations. This will strengthen its *seminal role in the development of Australia's performing arts, enhancing the cultural vitality of the nation.*

The impacts arising from each of the Concert Hall and Creative Learning Centre projects on the values of the place under each of the individual National Heritage criteria is discussed below. Design 5's assessment of heritage impact is summarised at the end of that section.

## **9.2 National Heritage criteria**

The Sydney Opera House is registered on the National Heritage List for meeting its listing criteria A, B, E, F, G and H.

The values of the Sydney Opera House that meet the National Heritage criteria are set out in full in Appendix B of the CMP 4th edition and also in the listing of the Sydney Opera House on the National Heritage List, available at <http://www.deh.gov.au/cgi-bin/ahdb/search.pl>

The extracts from the National Heritage values, under each of the criteria below, summarise and draw attention to those aspects of significance that are relevant to the assessment of heritage impact of this suite of projects. Design 5's assessment of heritage impact is summarised at the end of this section.

### **9.2.1 NHL Criterion A – Events, Processes**

*The place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history.*

Relevant key values from National Heritage values:

- “The Sydney Opera House represents a masterpiece of modern architectural design, engineering and construction technology in Australia.”
- “It is a national icon that has become an internationally-recognised symbol of modern Australia and of Sydney, Australia’s largest city”
- “The challenges involved in executing the design inspired innovative developments in technologies, construction engineering and building methods in Australia, creating the building’s distinctive form, fabric and structural systems.”
- “a seminal role in Australia’s performing arts history, enhancing the cultural vitality of the nation and continuously attracting nationally and internationally recognised performers from around the world”

### **Concert Hall Renewal Project – Comment**

The Concert Hall renewal project will not have any adverse impacts on these values and will potentially enhance the ability of the Sydney Opera House to attract national and internationally recognised performers with its improved functionality, acoustic performance and accessibility. With changing standards and public expectations, these works, particularly the substantially improved access for patrons, will ensure the Opera House retains its status as Australia’s pre-eminent performing arts centre.

### **Creative Learning Centre – Comment**

The proposed works to accommodate the new Creative Learning Centre will have no adverse impact on these values. The Creative Learning Centre will retain and respect the significant contribution of Peter Hall in completing and fitting out the Podium, and enhance the ability of the Opera House to engage with and promote the performing arts to younger generations.

#### **9.2.2 NHL Criterion B – Rarity**

*The place has outstanding heritage value to the nation because of the place’s possession of uncommon, rare or endangered aspects of Australia’s natural or cultural history.*

Relevant key values from National Heritage values:

- “The Sydney Opera House is a cultural icon that has no counterpart in Australia. With its distinctive sail-like concrete shell roofs standing boldly upon a massive granite-faced platform, located prominently on the Sydney Harbour foreshore, the Sydney Opera House is the most widely recognised building in Australia, and one of the most definitive national architectural icons of the twentieth century. It is also a rare example of a national cultural centre that has gained widespread recognition and respect as a performing arts venue.”

### **Comment**

The projects included in this application will not have any adverse impacts on these values and will likely enhance the Opera House’s recognition and respect as a performing arts centre accessible to all.

#### **9.2.3 NHL Criterion E – Aesthetic characteristics**

*The place has outstanding heritage value to the nation because of the place’s importance in exhibiting particular aesthetic characteristics valued by a community or cultural group.*

Relevant key values from National Heritage values:

- “With its distinctive sail-like concrete shell roofs standing boldly upon a massive granite-faced platform, located prominently on the Sydney Harbour foreshore, the

Sydney Opera House is the most widely recognised building in Australia, and one of the most definitive national architectural icons of the twentieth century."

- "The building's ability to emotionally move people and invoke a strong aesthetic response is enhanced by the experience of approaching, entering and moving around the building and surrounds."
- "The large forecourt and sweeping podium steps prepare the visitor for the majestic quality of the soaring internal spaces including the folded concrete beams throughout the building, and the reinforced radial cranked beams in the northern foyers. These are complemented by the vast coloured glass panels in the main foyers of the Concert Hall and Opera Theatre wings, through which the harbour and city views reinforce the building's magnificent setting."
- "The distinctive interiors including the foyers surrounding the major auditoria, the Reception Hall (now the Utzon Room), the Box Office foyer, and the Bennelong Restaurant designed by Utzon and Peter Hall, enhance the relationship between the interior and exterior of the building."

### **Concert Hall Renewal Project – Comment**

The proposed works in this Concert Hall project will not impact on the iconic architecture of the Opera House when viewed within its context and setting. The works will have some impact on the experience of moving around within the eastern side foyer and Northern Foyer of the Concert Hall, but this relates to the visual interruption of the ascending flight of stairs in the side foyer, and the outer ends of the broad sweep of steps and cranked beams across the northern foyer. In both cases, the location and design of the insertions have been selected to minimise visual intrusion into the space and not interrupt the relationship of these spaces with the harbour setting. Alterations required to Peter Hall's glass walls to accommodate the lifts sit within their existing geometry and upper surface and should remain unnoticed on completion, both internally and externally.

It is important to note that the genesis of the Level 2 passage and Lifts 29 and 30, is in Utzon's original design, and since his re-engagement with proposals to address accessibility issues in the 2001 Strategic Building Plan, and then in the 2005 Gold Book scheme for the Opera Theatre renewal.

With these insertions, the experience of these spaces, their power, drama, and grandeur, will be available to people who may never have been able to access them before. This is completely in line with Utzon's original concepts, and the identified National Value: *The building's ability to emotionally move people and invoke a strong aesthetic response .. enhanced by the experience of approaching, entering and moving around the building and surrounds.*

The greatest impact will be on the fabric of the precast granite paving and stair, and on 8 radial cranked beams at each end of the Concert Hall Northern Foyer. However, these impacts on fabric must be considered in relation to the substantial improvements on function and accessibility.

The impacts of proposed functional and acoustic upgrades within the Concert Hall auditorium on national aesthetic values are discussed below under Criterion F.

### **Creative Learning Centre – Comment**

The works to accommodate the Creative Learning Centre will retain and respect the significant contribution of Peter Hall and enhance the ability of the Opera House to engage with and promote the performing arts to younger generations. They will have no impact on the aesthetic values identified in the National Heritage listing.

#### 9.2.4 NHL Criterion F – Creative or technical achievement

*The place has outstanding heritage value to the nation because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period.*

Relevant key values from National Heritage values:

- "In every aspect it is a structure at the leading edge of endeavour.
- "The 'hybrid' interior spaces of the Sydney Opera House reflect the creative genius of both Utzon and Todd, Hall and Littlemore, who completed the building and interior finishes after Utzon's departure. The major public spaces with outside views, for example were designed by Utzon (and completed by Peter Hall) to be finished in natural materials, textures and colours similar to those on the exterior of the building in order to bring the outside inside (Kerr 2003, 69)."
- "the creation of sensory experiences to bring pleasure to the building's users, particularly the experience of approaching, mounting the grand staircase to the podium, passing through the low ribbed box office, up to the foyers flanking the auditoria with their harbour views, and the climax of the performance itself. 'Both ideas were...reinforced by Utzon's application of counterpointing techniques using light and dark tones, soft and hard textures and richly treated warm and cool interior colours.'"
- "The interior spaces designed by Peter Hall, including the major auditoria known as the Concert Hall and Opera Theatre, and the minor performance spaces, performers' and staff areas, and rehearsal rooms, known collectively as 'Wobbly Land' because of the distinctive 'U' shaped timber panelling, demonstrate the distinctive design solutions that made the Opera House a functioning performing arts centre in the 1970s, and reflect the prevailing aesthetic values, building standards, and financial constraints of the day."

#### Concert Hall Renewal Project – Comment

The Concert Hall renewal project will generally retain and respect these values.

While acknowledging there will be some negative impacts to fabric in regard to introduction of Lifts 29 and 30 and the consequent cutting of a number of the significant cranked beams in the Concert Hall Northern Foyer, and the diminished width of the stairs in the Concert Hall eastern side foyer resulting from the new passageway on Level 2, the overall impacts to accessibility will be positive. Utzon's original concepts will be strengthened and made accessible to a broader public than before, and Peter Hall's contributions will be retained and respected in back-of-house areas.

It is important to note that Utzon's original concept and indeed the structure of the Podium, included a passage in both side foyers on Level 3 in a similar location, but slightly closer to the glass walls. Since his re-engagement in 1999, Utzon proposed a lift in both Northern Foyers along with other proposals to address accessibility issues in the 2001 Strategic Building Plan, and then in the 2005 Gold Book scheme for the Opera Theatre renewal, he proposed side foyer passages to link the Northern Foyer on both Levels 2 and 3. This current proposal, therefore, closely accords with Utzon's concepts and intent.

The acoustic upgrades to the Concert Hall auditorium will have high impacts on a limited amount of significant fabric and on key views towards the grand organ and adjacent areas of the faceted ceiling. There will be some impact on the character of the original Hall interior, however this is considered acceptable given the potentially high positive impact in the overall acoustic performance and functionality of the Concert Hall. The acoustic interventions on the sidewalls have been specifically designed to be retractable so as to be hidden from view when not in use. Generally, the proposed interventions reference Hall's palette of materials and colours of white birch, brush box, and his signature magenta colour for the Concert Hall. The curved shape and profile of the suspended 'petal' over-stage reflectors have been resolved to provide optimal acoustic performance while retaining

partial views to the Grand Organ, and can be rotated or flown upwards depending on the acoustic needs of the performance type.

Due to the solid nature and extent of the over-stage reflectors, it will not be possible to light the stage from the circular 'crown' as is done presently. This will be achieved by suspended lighting arrays between the acoustic reflectors and via suspended lighting trusses over the stalls.

Visual impacts from these new elements are acknowledged as not insubstantial, but the mock-ups and acoustic testing have confirmed that improvements in the acoustic performance of the Concert Hall will be considerable. The proposed acoustic design has also been through a rigorous peer review process that supported the proposed changes. The visual impacts are therefore considered necessary if this venue is to maintain its status as a world class performance venue.

In order to minimise visual clutter, the set-up for each performance should deploy the minimum technical and acoustic equipment and be flown out or removed when not in use. This includes suspended speaker clusters and lighting. This is an ongoing housekeeping and management issue for the Opera House and the performing companies who use the Concert Hall. Policy 8.4 in the CMP addresses this issue.

The proposed upgrade of the air-conditioning system for the Concert Hall involves replacement of the existing air delivery system in the 'cannon-port' openings with a more efficient diffuser system in approximately the same or similar locations. Acoustic considerations also require openings such as these to be blocked wherever possible. It is proposed to infill the openings with matching plywood and fit new diffusers within the patched area to minimise impact on the original fabric. Works should be detailed and executed to ensure this is achieved and discordant patches are avoided.

Additional air diffusers are required in the Concert Hall in the lower horizontal sections of the ceiling over the boxes. This will improve patron comfort and more evenly distribute the air supply. The proposed design utilises longer and finer diffusers and should be visually recessive, sitting comfortably with the configuration of existing diffusers.

While there are many parts to the proposed interventions in the Concert Hall, they have all been designed with the aim of respecting the technical and aesthetic excellence of Peter Hall's original design. It is our assessment that when these works are completed, this will be achieved.

### **Creative Learning Centre – Comment**

The proposal to retain and strengthen significant features by both Utzon and Hall, including unpainted off-form concrete walls and the white birch moulded timber 'wobbly' wall and ceiling panels, will retain and respect these national values. The character and qualities of these original features will be highlighted by the works and demonstrated to those who use and experience this important education facility.

### **9.2.5 NHL Criterion G – Social value**

*The place has outstanding heritage value to the nation because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.*

Relevant key values from National Heritage values:

- "building's role as a cultural icon is also derived from the numerous performances conducted there (100,000 since 1973), and the place's role as a focal point for community events. The Sydney Opera House is a mecca for both Australian and international visitors to Sydney, attracting over 100 million visitors since the opening in 1973."



## **Concert Hall Renewal Project/ Creative Learning Centre – Comment**

The proposed projects in this application will strengthen the core function of the Opera House as a nationally significant performing arts centre and provide greater opportunity for public engagement with and appreciation of, its iconic architecture and structure.

The Concert Hall renewal project should strengthen the Sydney Opera House's role as a cultural icon accessible to all, and potentially enhance its ability to attract both national and international visitors and performers.

The Creative Learning Centre will enhance the ability of the Opera House to engage with and promote the performing arts to younger generations, both locally and nationally. This will strengthen its association with the performing arts and wider community.

### **9.2.6 NHL Criterion H – Significant people**

*The place has outstanding heritage value to the nation because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history.*

Relevant key values from National Heritage values:

- "The Sydney Opera House is directly associated with Jørn Utzon"
- "The design of the interiors was completed by Todd, Hall and Littlemore after the departure of Utzon in 1966. The general experience of the interiors of the Sydney Opera House is one of majestic spaces defined by strong structural forms."
- "It was, however, widely acclaimed as Utzon's creation, with the outstanding contribution by Hall, Todd and Littlemore in turning his masterpiece into a fully functioning performing arts centre."
- "The engineering firm on the project, Ove Arup and Partners, and the building contractors, M.R. Hornibrook, both made important contributions to the realization of Utzon's project"

## **Concert Hall Renewal Project – Comment**

This project affects Peter Hall's most important and accomplished interior – the Concert Hall. The works proposed respect the character, materials and finishes selected by Hall and strengthen its status as a world class performance venue in the Opera House complex.

While a limited amount of the fabric in the eastern side and Northern Foyers will be affected by the works, the proposed Level 2 passage and Lifts 29 and 30 are consistent with Utzon's concepts and will provide greater access and opportunity for visitors and patrons to appreciate the original majesty of the reinforced concrete structure, the product of both Utzon and Arup's genius and the work of the contractor, Hornibrook.

## **Creative Learning Centre – Comment**

With the proposed use of Hall's white birch 'wobbly' panels in the fitout of the Creative Learning Centre, this project will strengthen the connection with Peter Hall for spaces within the Podium. The work of Utzon will also be referenced in the fitout (exposed and painted concrete walls). In summary, this project will provide visual links to the Opera House's original architect as well as those that completed the project.

### 9.3 Summary assessment of heritage impact on National Heritage values

#### 9.3.1 Concert Hall Renewal Project

While acknowledging there will be some negative impacts to significant fabric and spaces arising from the Concert Hall Renewal project in regard to introduction of Lifts 29 and 30 and the consequent cutting of a number of the significant cranked beams in the Northern foyer, the cutting and diminished width of the stairs in the Eastern side foyer resulting from the new passageway at Level 2, and the acoustic upgrades within the Concert Hall auditorium, the overall impact of this project will be positive.

With these insertions, the experience of these spaces, their power and grandeur, will be available to people who may never have been able to access them before. This is completely in line with Utzon's original concepts, and the identified National Values.

The improved functionality and accessibility of the Concert Hall and its foyers, will potentially enhance the reputation and ability of the Sydney Opera House to attract national and international visitors, patrons and performers.

The proposed functional and acoustic upgrades within the Concert Hall auditorium will result in some adverse impacts on the significant character and fabric of the Concert Hall auditorium. However Peter Hall's design aesthetic and choice of materials will be respected by these changes. These impacts are acknowledged as not insubstantial, but the mock-ups and acoustic testing, as well as the peer review process, have confirmed that improvements in the acoustic performance of the Concert Hall will be considerable. These impacts are therefore considered necessary if this venue is to maintain its status as a world-class performance venue.

Our conclusion is that the accessibility, functional and acoustic related works in the Concert Hall and its foyers will strengthen the core function of the Opera House as a performing arts centre and have a positive impact on its National Heritage values.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Concert Hall Renewal Project (Part of SSD 8663)*

*Summary assessment of impacts – All Renewal Projects*

#### 9.3.2 Creative Learning Centre

The proposed works to accommodate the Creative Learning Centre will have negligible impact on the external architecture and setting of the Opera House and no adverse impact on its National Heritage values.

Proposed alterations to form the spaces for the Creative Learning Centre affect some original structure within the Podium but not the unique folded and cranked beams or the ribbed shell roof structure.

The Creative Learning Centre project will retain and respect the design regimes of both Utzon and Hall and provide a unique facility that closely relates to the Western Foyers and other spaces within the Podium. This facility will enhance the ability of the Opera House to engage with and promote the performing arts to younger generations, both locally and nationally. This will strengthen its association with the performing arts and wider community.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Creative Learning Centre (Part of SSD 8663)*

*Summary assessment of impacts – All Renewal Projects*

#### 9.4 Summary assessment of impact on National Heritage values according to the National Heritage significant impact criteria

The *Significant impact criteria* for a National Heritage place, as stated in the *Significant Impact Guidelines* are as follows:

*An action is likely to have a significant impact on the National Heritage values of a National Heritage place if there is a real chance or possibility that it will cause:*

- *one or more of the National Heritage values to be lost*
- *one or more of the National Heritage values to be degraded or damaged, or*
- *one or more of the National Heritage values to be notably altered, modified, obscured or diminished.*

##### **Comment**

The above assessment concludes that none of the National Heritage values of the Sydney Opera House will be lost, degraded or damaged through either the Concert Hall Renewal or Creative Learning Centre projects.

For the Creative Learning Centre project, none of the National Heritage values will be altered, modified, obscured or diminished. For the Concert Hall project, some significant fabric and spaces that contribute to these National Heritage values, will be altered, modified, and in the instance of the Grand Organ, partially obscured by the proposal.

However, it is important not to consider the 'significant impacts' of the proposed action (Concert Hall renewal project) in isolation. The changes proposed will substantially improve access and amenities for patrons and performers, and potentially enhance the ability of the Sydney Opera House to attract patrons and national and internationally recognised performers with its improved functionality and acoustic performance, thus retaining its status as Australia's pre-eminent performing arts centre, and respecting its National Heritage values.

Further clarification is provided in the *Significant Impact Guidelines* as follows with a comment / response on each:

*An action is likely to have a significant impact on historic heritage values of a National Heritage place if there is a real chance or possibility that the action will:*

for historic heritage values:

- *permanently remove, destroy, damage or substantially alter the fabric of a National Heritage place in a manner which is inconsistent with relevant values*
- *extend, renovate, refurbish or substantially alter a National Heritage place in a manner which is inconsistent with relevant values*

##### **Comment**

Works proposed in the Concert Hall Renewal project will permanently and substantially alter some of the fabric of the eastern side foyer, northern foyer, and the Concert Hall itself. A number of back-of-house spaces will be refurbished. All these works will be carried out in a manner that is consistent with the relevant values.

The proposed changes in the Creative Learning Centre project will be permanent but are consistent with the relevant values.

- *permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a National Heritage place*

**Comment**

No archaeological deposits will be affected by the proposed works.

- *involve activities in a National Heritage place with substantial and/or long-term impacts on its values*

**Comment**

Notwithstanding the substantial impacts on fabric and spaces in the Concert Hall project, on balance, the proposed works will have no substantial or long-term adverse impacts on the National Heritage values of the place. On the contrary, the works will have substantial and long-term positive impacts on these values with improved functionality, acoustics and accessibility.

- *involve the construction of buildings or other structures within, adjacent to, or within important sight lines of, a National Heritage place which are inconsistent with relevant values, and*

**Comment**

The proposed works will have some impact on important sight lines within the building, particularly the views northwards up the stairs in the eastern side foyer, at each end of the northern foyer where Lifts 29 and 30 and their associated landings interrupt the broad sweep of stairs and cranked beams, and within the Concert Hall towards the Grand Organ. However, the substantial and positive impacts of these works on the ongoing functionality, accessibility and acoustic performance of the Opera House must also be considered.

The proposed works in the Creative Learning Centre will have no adverse impact on important views or sight lines.

- *make notable changes to the layout, spaces, form or species composition of a garden, landscape or setting of a National Heritage place in a manner which is inconsistent with relevant values.*

**Comment**

The proposed works will have no impact on the setting of the Opera House.

for other cultural heritage values:

- *restrict or inhibit the continuing use of a National Heritage place as a cultural or ceremonial site causing its values to notably diminish over time*

**Comment**

The proposed changes in both the Concert Hall and Creative Learning Centre projects will not restrict or inhibit the continued use of the Opera House as a performing arts centre. On the contrary, it will substantially enhance this use both in the immediate and longer term.

- *permanently diminish the cultural value of a National Heritage place for a community or group to which its National Heritage values relate*

**Comment**

The proposed changes in both the Concert Hall and Creative Learning Centre projects will not diminish the cultural heritage value of the Opera House as a performing arts centre. On the contrary, both of the projects will strengthen the value and appreciation of the Opera House for both performers and patrons by substantial improvements in accessibility, amenities, acoustic performance, functionality, and enhanced public engagement.

- *destroy or damage cultural or ceremonial, artefacts, features, or objects in a National Heritage place, and*

**Comment**

No cultural or ceremonial artefacts, features or objects will be affected by the proposed works.

- *notably diminish the value of a National Heritage place in demonstrating creative or technical achievement.*

**Comment**

The proposed works in the Concert Hall project will have an adverse impact on the broad sweep of cranked concrete beams supporting the stairs and landings at each end of the northern foyer where Lifts 29 and 30, the sweep of stairs in the eastern side foyer, and the views within the Concert Hall itself.

However, the creative and technical achievements of its principal designers, Jørn Utzon, Ove Arup and Peter Hall are most evident in the form, character and configuration of the affected spaces and their defining structures, and these will not be substantially diminished.

The works proposed in the Creative Learning Centre project will not diminish these values.

**9.4.1 Summary conclusion of impact on National Heritage values according to the National Heritage significant impact criteria**

Works proposed in the Concert Hall Renewal project are substantial and will have some adverse impacts on fabric of the eastern side foyer, northern foyer, and the Concert Hall itself and also on views within these spaces. However, the creative and technical achievements of its principal designers, Jørn Utzon, Ove Arup and Peter Hall will be respected and not diminished by these works.

The impacts on fabric and spaces in the Concert Hall project are assessed as having a 'significant (adverse) impact' on some of the National Heritage values of the Opera House.

The proposed changes in the Creative Learning Centre project will be permanent but none will have a 'significant impact' on the National Heritage values of the Opera House.

It is important to note the changes proposed in both of these projects will substantially improve access and amenities for patrons and performers, and potentially enhance and strengthen the ability of the Sydney Opera House to attract patrons and national and internationally recognised performers with its improved functionality and acoustic performance, thus retaining its status as Australia's pre-eminent performing arts centre, and respecting its National Heritage values.

Nonetheless, it is concluded that due to the nature, extent and complexity of the works proposed in the Concert Hall Renewal and Creative Learning Centre projects, they should be considered as a 'controlled action' under the EPBC Act and a referral made to the Commonwealth Minister for the Environment.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Concert Hall Renewal Project (Part of SSD 8663)*

*Summary assessment of impacts – Creative Learning Centre (Part of SSD 8663)*

*Summary assessment of impacts – All Renewal Projects*



## 10.0 IMPACT ON WORLD HERITAGE VALUES OF THE SYDNEY OPERA HOUSE

In 2007, the Sydney Opera House was inscribed on UNESCO's World Heritage List (WHL) for its Outstanding Universal Value (OUV) and as a "masterpiece of human creative genius" under criterion (i) of the Operational guidelines for the implementation of the World Heritage Convention.

The Sydney Opera House was inscribed on the WHL for the following:

### ***Outstanding Universal Value***

*The Sydney Opera House constitutes a masterpiece of 20th century architecture.*

*Its significance is based on its unparalleled design and construction; its exceptional engineering achievements and technological innovation and its position as a world-famous icon of architecture. It is a daring and visionary experiment that has had an enduring influence on the emergent architecture of the late 20th century. Utzon's original design concept and his unique approach to building gave impetus to a collective creativity of architects, engineers and builders. Ove Arup's engineering achievements helped make Utzon's vision a reality. The design represents an extraordinary interpretation and response to the setting in Sydney Harbour. The Sydney Opera House is also of outstanding universal value for its achievements in structural engineering and building technology. The building is a great artistic monument and an icon, accessible to society at large.*

### ***Criterion (i)***

*The Sydney Opera House is a great architectural work of the 20th century. It represents multiple strands of creativity, both in architectural form and structural design, a great urban sculpture carefully set in a remarkable waterscape and a world famous iconic building.*

*All elements necessary to express the values of the Sydney Opera House are included within the boundaries of the nominated area and buffer zone. This ensures the complete representation of its significance as an architectural object of great beauty in its waterscape setting. The Sydney Opera House continues to perform its function as a world-class performing arts centre. The Conservation Plan specifies the need to balance the roles of the building as an architectural monument and as a state of the art performing centre, thus retaining its authenticity of use and function. Attention given to retaining the building's authenticity culminated with the Conservation Plan and the Utzon Design Principles.*

## 10.1 Concert Hall Renewal Project

### **Comment**

Many components of the Concert Hall Renewal Project will greatly improve access to the Concert Hall side of the Opera House to a wider section of society, both performers and patrons – particularly those with reduced mobility, many of whom will never have experienced some of these spaces before. These accessibility upgrades, including the eastern passageway and Lifts 29 and 30, require some alterations to exceptionally significant spaces and will have a substantial impact on components of their fabric. However these impacts must be considered in relation to the substantial accessibility benefits offered by these changes for both performers and patrons. The carefully considered design, configuration and placement of these new facilities retains and respects Utzon's intent and design regime for these spaces and will not adversely affect the OUV that underpins its World Heritage Listing.

The proposed acoustic enhancements and modifications, stage and theatre machinery upgrades will also have a substantial impact on affected spaces and their fabric, particularly the exceptionally significant Concert Hall. The design and configuration of these proposed changes and upgrades retains and respects Peter Hall's design intent and design regime for this space and is consistent with retaining and enhancing its primary use. The functional

benefits will be substantial and the impacts will not adversely affect the OUV that underpin its World Heritage Listing.

Details throughout this project have been resolved to a consistent language and very high quality and comply with the *Utzon Design Principles* and the CMP 4th edition. This design development process has been reviewed by means of regular 'design consistency' workshops, attended by the SOH heritage architect and members of the Eminent Architects Panel and Conservation Council.

The Concert Hall renewal project will enhance the patron experience, performance and operational capability of the Sydney Opera House to continue to host and celebrate world standard performance art. In this respect, this proposal will help sustain the iconic international standing of this Opera House – a key part of its OUV.

In conclusion, it is considered the proposed works in this Concert Hall Renewal Project will be consistent with and respect Utzon's vision for the place and Peter Hall's highly significant contribution to its completion. The works substantially improve the functionality and accessibility of the foyer spaces and the Concert Hall itself. They will also substantially improve its acoustic performance, and together, improve its ability to '*function as a world-class performing arts centre*'.

The impacts of these works are significant but will be ultimately positive and not threaten or diminish the Outstanding Universal Value that enshrines Sydney Opera House on the World Heritage List.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Concert Hall Renewal Project (Part of SSD 8663)*

*Summary assessment of impacts – All Renewal Projects*

## 10.2 Creative Learning Centre

### Comment

The proposed works to accommodate the new Creative Learning Centre will have negligible impact on the architecture and setting of the Opera House. The works involve removal of limited sections of the curved structural walls within the Podium, but this is assessed as having very little impact on significant fabric and spaces within the building. These works will respect the work of both Jørn Utzon and Peter Hall, and do not adversely impact Utzon's original design concept.

The Creative Learning Centre will enhance the ability of the Opera House to engage with and promote the performing arts to younger generations within a new dedicated facility within the Podium. In this respect the proposal strengthens the primary function of the Opera House, as well as the high public esteem with which it is held.

In summary, it is considered that the proposed works and changes to accommodate the Creative Learning Centre will have a positive impact on the Outstanding Universal Value that enshrines Sydney Opera House on the World Heritage List.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Creative Learning Centre (Part of SSD 8663)*

*Summary assessment of impacts – All Renewal Projects*

### 10.3 Summary assessment of impact on World Heritage values according to the World Heritage significant impact criteria

The *Significant impact criteria* stated in the *Significant Impact Guidelines* are as follows:

*An action is likely to have a significant impact on the World Heritage values of a declared World Heritage property if there is a real chance or possibility that it will cause:*

- *one or more of the World Heritage values to be lost*
- *one or more of the World Heritage values to be degraded or damaged, or*
- *one or more of the World Heritage values to be notably altered, modified, obscured or diminished.*

#### **Comment**

Considering the discussion in 10.1 above, and these criteria, it is concluded that the works proposed in the Concert Hall Renewal and Creative Learning Centre projects, are substantial and will have negative impacts on some fabric and spaces, but will have no significant (adverse) impact on the Outstanding Universal Value that enshrines Sydney Opera House on the World Heritage List, either in the short or long term.

Nonetheless, it is concluded that due to the nature, extent and complexity of the works proposed in the Concert Hall Renewal and Creative Learning Centre projects, they should be considered as a 'controlled action' under the EPBC Act and a referral made to the Commonwealth Minister for the Environment.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Concert Hall Renewal Project (Part of SSD 8663)*

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*Summary assessment of impacts – All Renewal Projects*

## 11.0 COMPLIANCE WITH THE UTZON DESIGN PRINCIPLES

The *Utzon Design Principles* (UDP 2002) provide important guidance on the intended role of particular spaces and elements and on how they should be treated in the future. Relevant quotes from the UDP are provided and commented on below.

### ***Need to adjust to changing standards***

*"So what was good back in the 60's was okay then, but as people develop and as music develops, as our perception of music and place develops, our demands become higher and this development will probably in the future change a lot of features of the Opera House simply because you need to adjust to instruments, as such." (UDP page 52)*

### **Comment**

Jørn Utzon clearly did not see the technical aspects of this building as frozen in time. He foresaw that adjustments would be needed to meet audience expectations and changing standards. The suite of projects in this application, particularly those that are part of the technical upgrade of performance spaces, respond to this same principle.

### ***Heavy and light***

*"The difference in character of the two components forming the building, the massive and imposing base, and the light and graceful shells on top of it..." (UDP page 70)*

### ***Solidity of base is important***

*"If you open the sides of the base to create day-light... then suddenly the base becomes an office building, and that will reduce drastically the dramatic expression of the Opera House." (UDP page 50)*

### **Comment**

The importance of the visual solidity of the podium is clearly articulated in the first quote and a warning about introducing more openings in the second quote. The scale, proportion, configuration and detail of the proposed new ventilation hood in the west wall of the podium has been guided by these principles and matches the original adjacent. This principle is respected.

### ***Beautiful experience oriented in the harbour***

*"...People have a beautiful experience entering and walking up the stairs and entering the auditoria, while they are all the time oriented in the beautiful harbour and have the views of the spectacular Sydney Harbour setting." (UDP page 59)*

### ***Being in another world***

*"This feeling of moving upwards was a determining factor in the shaping of the large platform."*

*"The patrons will receive on their way to the theatre halls an impression of restful and dignified surroundings with a generous spacious layout." (UDP page 59)*

### ***Feeling detached from the city***

*"During intermission you remain around the auditorium and can retain the feeling of being in another world."*

*"After the performance the bars and lounges will present for the patrons a second opportunity to enjoy these views and will underline their feeling of being detached from the city in a world of its own." (UDP page 60)*

### ***Spans expressed by ribs and folds***

*"This resulted in a building where all spans are clearly expressed by ribs and folds." (UDP page 78)*

### **Comment**

These quotes describe Utzon's intended character for the foyer spaces leading to and surrounding the major auditoria.

This character in the Concert Hall side and northern foyers is retained and respected in the proposed works within these spaces.

The proposed tunnel on Level 2 of the CH eastern side foyer intrudes on the width of the stair, however the dignity of surroundings and sense of ascent is retained. It is important to note that this tunnel is very close to the location of a tunnel originally proposed by Utzon and built, albeit located on one level above, and closed over due to the program changes after his departure in 1966.

### ***Cultural symbol***

*"The conception and the design of the Sydney Opera House is based on... the desire to create a building which will form a home for those activities essential to the cultural life of a big city." (UDP page 62)*

### ***Inspiration to artists***

*"When completed, the Sydney Opera House will serve as a home for the cultural activities of the city and will inspire artists and technicians to present to the public the highest quality performance for many years to come." (UDP page 62)*

### **Comment**

Presentation of the performing arts is at the very heart of this building, as is the pursuit of excellence. The proposed projects in this application, particularly the accessibility projects, will allow the Opera House to pursue both these objectives and be available to a wider section of the community than it has ever been before. Likewise, the acoustic and functional upgrades in the Concert Hall will ensure it continues to be able to present 'the highest quality of performance for many years to come.'

### ***Disabled access***

*"For patrons unable to walk, there will be provided special elevators to take them direct to the auditorium level in the vicinity of the seating."*

*"A total of ten lifts will service the Opera House, each lift being carefully located for a specific purpose. Lift No.1 with landings at the 12', 30' and 42' levels has a primary function of transporting disabled persons from ground floor level to the auditorium level. (Major Hall)."*

*"Lift No.2 in the stage area (Minor Hall) has the primary function of carrying a total of 16 disabled persons from ground level to auditorium level with one intermediate stop." (UDP) page 69)*

### **Comment**

These Utzon quotes, the first from his 1965 Descriptive Narrative, describe the intended access to the auditoria for patrons with mobility issues. The change in program after his departure and the decision to close the Central Passage to the public, meant this would no longer be a front-of-house approach. The works proposed in this application are intended to address this problem for the Concert Hall and its associated foyers. These works will result in some negative impacts to significant fabric and spaces, however their location and



configuration have been carefully designed to minimise these impacts. Further detail resolution should minimise them even further.

The Concert Hall plays a key role in the suite of venues provided at the Opera House. If the ability of the building to house and present performance art is not extended to those with impaired mobility, the place will be diminished and Sydney Opera House will potentially lose its international status as a performing arts venue.

By undertaking these projects, the Opera House will demonstrate excellence, responsibility and generosity to those patrons and performers that have previously been excluded because of their impaired mobility. This responsibility and generosity was originally intended and proposed by Utzon himself.

***Concrete and ply***

*"The walls will show the concrete as it was constructed, contrasting with the moulded plywood panels which form the components of the furniture and fixings."*

*"The cubicles themselves for coats and toilets are made of moulded plywood panels in contrast to the impression of severity left by the structure." (UDP page 71)*

**Comment**

These quotes refer primarily to the character of back-of-house spaces within the podium and are from Utzon's 1959 description of his intended fitout. It is now clear that Peter Hall followed Utzon's ideas and principles in his fitout of these spaces.

The DA documentation for the proposed works in these areas demonstrates the intention to retain and respect these ideas in altered and new work. It is important that detailed resolution and documentation of these projects are carefully coordinated and resolved to a consistent language and high quality, and comply with these *Utzon Design Principles* and the CMP 4th edition.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Concert Hall Renewal Project (Part of SSD 8663)*

*Summary assessment of impacts – Creative Learning Centre (Part of SSD 8663)*

*Summary assessment of impacts – All Renewal Projects*

## 12.0 SUMMARY CONCLUSION

The suite of projects proposed in this application will affect a number of very significant parts of the Sydney Opera House. The impacts are assessed and described in detail with recommendations in the body of this report. The summary conclusion of this report is provided here below.

For more detail, including recommendations and conditions, refer to the following sections of this report:

- 7.3 Conclusion re CMP compliance
- 8.2 Summary assessment of heritage impact on State Heritage values
- 9.3 Summary assessment of heritage impact on National Heritage values
- 10.0 Impact on World Heritage Values of the Sydney Opera House
- 11.0 Compliance with the Utzon Design Principles

### 12.1 Concert Hall Renewal Project

It is our conclusion that with the works proposed in the Concert Hall auditorium, foyer and back-of-house areas, Utzon's original design concepts will be strengthened and made accessible to a broader public than before, and Peter Hall's contributions will be retained and respected. The improved functionality and accessibility of the Concert Hall and its foyers, and improved acoustic performance in the hall itself, will potentially enhance the reputation and ability of the Sydney Opera House to attract national and international visitors, patrons and performers.

While acknowledging that the proposed insertion of the Level 2 passageway within the eastern side foyer will have high fabric impacts on the stepped podium, and the generosity of its stair width, the form of the soaring fan pedestals and ribs, their association with both Utzon and Arup, and the majestic qualities of this side foyer space remain unaffected.

Utzon's original concept was to have passages on both sides of the two main auditoria, with lifts in the northern foyers. The structure for these Level 3 passages survives beneath the grand stairs in the side foyers. It is important to note that in this project no passageway is proposed for the western side foyer which will remain as it is, except for the addition of a simple central handrail. Similarly, while the insertion of Lifts 29 and 30 will have high impacts on the broad sweep of stairs and cranked concrete beams at each end of the Northern Foyer and east and west caves below, carefully considered location and detailing, and adoption of Utzon and Hall's palette of materials will lessen their overall impact on the aesthetic qualities of these spaces.

These impacts must be considered in relation to the substantial positive impacts with regard to accessibility of the Concert Hall and its foyers for a broader section of the public. With these insertions, the experience of these foyer spaces, their power and grandeur, will be available to people who may never have been able to access them before. This is completely in line with Utzon's original concepts, and the identified State, National and World Heritage Values.

The proposed functional and acoustic upgrades within the Concert Hall auditorium will result in some adverse visual impacts, particularly for non-amplified performance, from the proposed over-stage acoustic reflectors, associated stage lighting and speaker arrays on the significant character of the Concert Hall auditorium. Depending on viewing position, these will partially mask views towards the grand organ and the faceted ceiling above. This will be most evident from the stalls and the front of the circle. However Peter Hall's design aesthetic and choice of materials and finishes will be respected by these changes. The use of the signature magenta colour from the upholstery as the basis for the over-stage acoustic reflectors should strengthen, in an elegant and respectful manner, both Utzon and Hall's concept of using celebratory colours in the auditoria.

Operable acoustic reflectors in the side walls of the white birch ceiling, when deployed, will be prominent, but should not substantially detract from the strong geometric character of Peter Hall's interior. It is proposed that these will only be deployed during the actual performance.

The 'wave' form diffusion panels on the box fronts, stage surrounds and side walls, will have high impacts on original and more recent fabric and be highly visible, but their configuration, material and details will retain and respect the original Hall design. These components of the project play an important and positive role in the acoustic quality of the hall for non-amplified performance, the primary use of the space.

The proposed acoustic treatments within the Concert Hall for amplified performances, including retractable acoustic drapes on side walls and box fronts, as well as retractable drapes suspended from the ceiling crown, will result in high visual impacts to the character of Hall's original interior of the Concert Hall, however these impacts are transient with the auditorium often darkened during this type of performance. Their well considered design and placement fits neatly with Hall's geometric interior and should be a considerable improvement on the present somewhat ad-hoc arrangements. The overall impacts in terms of acoustic performance should be positive.

In order to minimise visual clutter, in accordance with Policy 8.4 in the CMP, the set-up for each performance should ideally deploy the minimum technical and acoustic equipment and be flown out or removed when not in use. This includes suspended speaker clusters and lighting. This will be an ongoing housekeeping and management issue for the Opera House and the performing companies who use the Concert Hall and guidance on this issue is already included in the CMP. With this proposed suite of projects, the considerably enhanced operability and functional efficiency of the technical overlay will assist in achieving this objective.

These visual impacts are acknowledged as not insubstantial, but the mock-ups and acoustic testing, as well as the peer review process, have confirmed that improvements in the acoustic performance of the Concert Hall should be considerable. The visual impacts are therefore considered necessary if this venue is to maintain its status as a world class performance venue.

Changes required within the auditorium to accommodate additional wheelchair positions at stalls and mid-circle level (Level 4) will have only minimal visual impact on the quality and character of the space and Peter Hall's design regime will be respected. These and other adjustments to existing seating to accommodate these wheelchair positions and provide improved fire resistance should have minimal impact on the character, material and configuration of the seating and the Concert Hall space.

The automated semi-circular stage risers and changes below the stage to accommodate them will not impact on significant fabric or spaces and will improve sightlines from the auditorium, and functionality of the stage. The associated reconfiguration of the wing space, stage entries and southern most auditorium entry doors on both sides of the stage will impact on the fabric and space of the adjacent foyers, but as they retain and respect Hall's geometry and setout, materials and finishes, should remain relatively unnoticed when completed.

The proposed upgrade of the air-conditioning system for the Concert Hall involves removal of the existing 'cannon-port' air delivery system and replacement with a more efficient diffuser system in the same locations, with additional slot diffusers close to the edge of the ceiling soffits over the boxes and sides of the auditorium. These changes and additional elements have been designed and detailed to minimise impact on the fabric and avoid discordant patching of the existing plywood linings. Visually this should have a neutral impact.

Alterations to the Back-of-House performers' areas, including dressing rooms, toilets, corridors and assembly rooms, to improve access and functionality, will generally have minimal heritage impact. The aim of the design is to incorporate / reinstate Hall's palette of materials and finishes for affected back-of-house areas. This accords with the policies and objectives of the CMP.

While acknowledging that there will be substantial impacts to significant spaces and some original fabric, it is our assessment that the proposed Concert Hall Renewal Project will deliver an essential suite of sensitively designed accessibility, acoustic and functional improvements that comply with the Utzon Design Principles and the policies and guidelines in the CMP.

The works in the Concert Hall project are therefore assessed as having a 'significant (adverse) impact' on some of the State and National Heritage values of the Opera House, particularly those that relate to fabric and views within significant spaces, but these cannot be considered in isolation from the substantial positive impacts on those values that relate to its iconic status as an architectural masterpiece accessible to the broader public, and its core function and reputation as a world-class performing arts centre.

Weighing up the positive outcomes against the significant impacts, the proposed works have been assessed as not having an overall (net) adverse impact on Sydney Opera House's Outstanding Universal Value, and will not threaten or diminish it in either the short or long term.

Considering the above, our conclusion is that the proposed works in the Concert Hall project will strengthen the core function of the Opera House as a performing arts centre and have an overall positive impact on its State, National, and World Heritage values.

## **12.2 Creative Learning Centre**

The proposed change in use of the Level +12 administration areas for the Creative Learning Centre is considered a positive change. These spaces, originally fitted out by Peter Hall, address an important public promenade, the Northern Broadwalk, and should have a use that is functionally and visibly engaging for the public. This is consistent with the CMP and an opportunity for change identified by Jørn Utzon.

This dedicated facility will support the primary use of the Opera House and enhance its ability to engage with and inspire the next generation of theatre craftspeople and performers, both locally and nationally. This will strengthen its association with the wider performing arts community and its standing as a world-renowned performing arts centre.

The project involves minimal change externally, confined to minor modifications to the western entry off the Broadwalk, within the existing entry space with minimal and acceptable impacts.

The proposed works internally are more than modest functional improvements and constitute a major change, however this proposal retains and respects the character and design regimes used by Hall, noting that his work was inspired by Utzon's concepts. In this instance and for this proposed facility, this is considered an appropriate response and a positive impact.

The proposal involves some modification (opening up) of original structural walls within the Podium to create the required spaces, but these impacts are considered acceptable.

A connecting entry foyer to the Creative Learning Centre is proposed off the northern end of the Western Foyer. Proposed finishes on the Western Foyer side of this entry retain the

design language, materials and finishes of this Utzon space, and will have little visible impact. This connecting entry foyer, potentially a light box 'coloured' by indirect lighting, will provide a theatrical entry to a world of magic – an idea that is consistent with Utzon's concept for approaching the performance spaces.

The proposal includes salvage and adaptation of Hall's 'wobbly' panels in a new and dynamic storage / display configuration adding flexibility, colour and delight in a manner that is consistent with the Utzon Design Principles and Hall's design concepts for the interiors.

The use of strong colours within the wobbly fronted storage units, and on other selected surfaces, is considered appropriate in a creative learning environment and is supported. Colour was an important part of Peter Hall's interior schemes for the Opera House and it is suggested that the selected colours could potentially have some connection with the history and / or aesthetics of the building.

The northern most sections of the two main spaces will be fitted out on walls and ceilings with the wobbly panels in the same manner as Peter Hall had intended within the administration areas of the Podium, providing a consistent character with adjacent spaces when viewed from the Broadwalk. Other parts of the Creative Learning Centre will have pared back finishes to closely reflect the character of service and backstage areas.

The proposed Creative Learning Centre constitutes a major change within the Podium of the Sydney Opera House. However, it retains and respects the significant design regime introduced by Peter Hall, while also being consistent with the Utzon Design Principles.

The proposed changes in the Creative Learning Centre project will be permanent but none will have a 'significant impact' on the National or World Heritage values of the Opera House. The proposal complies with the policies and guidelines in the CMP and will have a positive impact on the significant values of Sydney Opera House, including those that are enshrined at State, National and World Heritage level.

For a summary of impacts in table format, refer to Appendix A of this report:

*Summary assessment of impacts – Concert Hall Renewal Project (Part of SSD 8663)*

*Summary assessment of impacts – Creative Learning Centre (Part of SSD 8663)*

*Summary assessment of impacts – All Renewal Projects*



Alan Croker  
Design 5 – Architects

17th October 2018



## **APPENDIX A**

Summary assessment of impacts – Concert Hall Renewal Project

Summary assessment of impacts – Creative Learning Centre

Summary assessment of impacts – All Renewal Projects

SOH - Concert Hall Renewal Project (Part of SSD 8663)

Summary assessment of impacts

		ASSESSED IMPACT ON SIGNIFICANT VALUES																					
		TANGIBLE									→			INTANGIBLE					SUMMARY			COMPLIANCE	
		original Utzon fabric	original Hall fabric	visual impact on significant internal spaces	visual impact on significant external spaces	SOH primary function - performing arts centre	accessibility (patrons, performers & staff)	Utzon's approach and arrival sequence	visitor/patron experience	Summary impact on State Heritage values	Summary impact on National Heritage values	Summary impact on World Heritage values	Compliance with Accessibility Masterplan	Compliance with Utzon Design Principals	Compliance with CMP	Comments							
Acoustic Upgrade																							
Non amplified performance	Overstage acoustic reflectors																		Colour and reflectivity important. High impact on views to organ, but substantial acoustic benefits.				
	Side wall reflectors																		Match with existing veneer and finish flush. Only deployed during performance.				
	Diffusion panels to stage surrounds, box fronts and wall.																		Use of brush box essential - laminated. All box fronts are not original.				
	Lighting array over stage between reflectors																		Careful management needed to minimise visual intrusion.				
Amplified performance	Operable acoustic drapes above stage																		Requires fine detailing and execution to minimise impact on plywood ceiling. Deployed only during amplified performance.				
	Operable acoustic drapes to the stage surround and box fronts, side and rear walls																		Deployment should be simple and non-intrusive but will have some visual impact. Deployed only during amplified performance.				
	Speaker array																		To be removed or flown out for non-amplified performance to reduce visual impacts.				
Summary of Impacts																							
Functional and Technical Upgrade																							
Front-of House	Adjustable stage risers																		Proposed configuration has substantial benefits.				
	Forestage riser																		Edge detailing important to achieve best visual outcome. Substantial functional benefit.				
	Lower stage height																		Improves sight lines from the stalls. Better intimacy between performers and audience. Enables level access from back-of-house.				
	Choir stalls change																		Minimal impact, seat numbers maintained.				
	Retractable seating to front of stalls																		This seating to match existing when in use. Automation improves functionality.				
	Changes prompt and off-prompt wings																		Additional downstage wing entries, realignment of the walls to the side foyers and reconfiguration of the stalls level entry doors. Minimum visual impact but substantial functional benefits				
	Seat refurbishment - 50% stalls																		Retains plywood seat elements, and upholstery. Ensures compliance with statutory fire regulations and improves acoustic performance.				
Back-of-House	Technical upgrade over Concert Hall																		Allows for improved function, safer access, flexibility, and capacity of the technical equipment. Ceiling fabric and finishes respected.				
	Air delivery upgrade into Concert Hall																		Requires modifications to the existing 'cannon-port' openings and additional air conditioning grilles within the plywood ceiling. A/C plant upgrade assists acoustics and comfort.				
Summary of Impacts																							
Accessibility																							
Front-of House	Level 2 east side Foyer passage																		Requires alteration to the eastern foyer stairs and relocation of existing back-of-house services. Substantial access benefit but major visual impact. Consistent with Utzon's concepts.				
	Northern Foyer Lifts 29 and 30																		Potentially providing unique experience to patrons and allows full access to all foyer levels and facilities.				
	New wheelchair positions at the front of the stalls																		Positions deployed depending on bookings - minimal impact				
	New wheelchair positions at the rear of the boxes																		High impact on existing low walls but substantial access and patron benefit.				
	Accessible toilet facilities (Level 3 Northern Foyer)																		Hall regime respected with new fitout.				
	Additional handrails in side foyers.																		Visually intrusive but substantial benefit to less able patrons, particularly during exit.				
	Compliant handrails within Concert Hall																		Complies with CMP policies				
Back-of-House	Dressing room and bathroom upgrades																		Improves accessibility, Hall regime respected in fitout.				

SOH - Creative Learning Centre (Part of SSD 8663)

Summary assessment of impacts

		ASSESSED IMPACT ON SIGNIFICANT VALUES															COMMENTS
		TANGIBLE								INTANGIBLE			SUMMARY				
		original Utzon fabric	original Hall fabric	visual impact on significant internal spaces	visual impact on significant external spaces	SOH primary function - performing arts centre	accessibility (patrons, performers & staff)	Utzon's approach and arrival sequence	visitor/patron experience	Summary impact on State Heritage values	Summary impact on National Heritage values	Summary impact on World Heritage values	Compliance with Accessibility Masterplan	Compliance with Utzon Design Principals	Compliance with CMP		
Creative Learning Centre																	
	Change of use to Creative Learning Centre																New use provides greater opportunity to engage with younger generations and others and encourage involvement in performing arts.
	Alteration of entry off Western Broadwalk																Minor modification retains and respects Utzon and Hall. Provides functional benefits internally.
	Entry off Western Foyer																Provides enticing glimpse of magic of theatre from Western Foyer
	Alterations to existing spaces and fit out for Creative Learning Centre																Limited openings in internal walls. Hall's wobbly regime retained in northern spaces and reinterpreted elsewhere.
Summary of Impacts																	Important support function for primary use and role of SOH in performing arts.

SOH - All Renewal Projects

Summary assessment of impacts

		ASSESSED IMPACT ON SIGNIFICANT VALUES										SUMMARY			COMPLIANCE
		TANGIBLE					INTANGIBLE								
		original Utzon fabric	original Hall fabric	significant internal spaces	significant external spaces and settings	SOH primary function - performing arts centre	accessibility (patrons, performers & staff)	Utzon's approach and arrival sequence	visitor/patron experience	Summary impact on State Heritage values	Summary impact on National Heritage values	Summary impact on World Heritage values	Compliance with Accessibility Masterplan	Compliance with Utzon Design Principals	Comments
Key to Impact Assessment															
		Positive	Moderately Positive	Very Little / No Impact	Not Applicable	Moderately Negative	High Negative								
SSD 7665 - Safety Accessibility and Venue Enhancement Works and Entry Foyer Refurbishment															
	JST West Side Foyer Passage														High impact on fabric but substantial benefit to accessibility and function. Utzon's original design intent strengthened.
	North Foyer Lift (Lift 31)														High impact on fabric at west side only but substantial benefit to accessibility and function providing level access to all levels.
	North Foyer Lavatories														New fitout in women's lavatory but Hall regime retained
	Other JST Accessibility Work (seating)														Changes only when bookings require otherwise no impact.
	JST Follow Spot Room														New configuration respects Hall's intentions. Substantial functional benefit.
	Entry Foyer (Box Office Foyer)														Substantial improvement in patron amenity and character of space. Utzon's original design intent strengthened.
	Lift 36 in Southern Foyer glass wall														Important FOH link in accessibility path for less abled to Utzon foyers and performance space.
SSD 7881 - Function Centre and Related Works															
	Function Centre														Key positives: Removal of marquee; creation of signature function venue to support SOH
	Ballet Rehearsal Room														Important BoH facility but relocation acceptable to enable Function Centre. Hall regime retained.
SSD 8663 - Concert Hall and Creative Learning Centre															
	Creative Learning Centre														Important support function for primary use and role of SOH in performing arts.
	Concert Hall Acoustic Upgrade														Impacts on significant fabric and space acceptable to achieve substantial acoustic benefit. Primary function strengthened.
	Concert Hall Functional Upgrade														Upgrade necessary if venue to present to world standards and expectation. Primary function strengthened.
	Concert Hall East Side Foyer Passage														Impacts on fabric are limited and accessibility benefits substantial. Utzon's original design intent strengthened.
	Concert Hall Northern Foyer Lifts														Impacts on fabric are limited and accessibility benefits substantial. Utzon's original design intent strengthened.
Other potential projects															
	Southern Foyers Upgrades														
	Under the Steps (Vehicle Concourse)														Space becomes a principal arrivals foyer as Utzon intended.