RESPECTING THE VISION

Sydney Opera House – a Conservation Management Plan

Fourth Edition

Alan Croker

Respecting the Vision: Sydney Opera House - a Conservation Management Plan
July 2017

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Sydney Opera House is built upon Tubowgule, Gadigal country.
We acknowledge the Gadigal,
the traditional custodians of this place,
also known as Bennelong Point.

Aboriginal and Torres Strait Islander readers are advised that this document contains the names and images of Aboriginal people that have passed away.

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Fourth Edition
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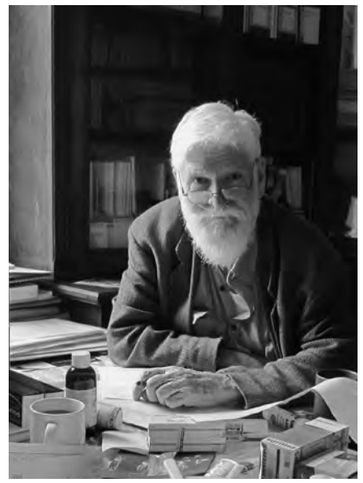
DESIGN BY LIVERSEDGE WEIR

COVER PHOTOGRAPH BY JACK ATLEY

An earlier document, ***A Conservation Plan for the Sydney Opera House,*** December 1991, by Adrian Avis (prepared as a submission for a university course) remains unpublished.



This fourth edition is dedicated to the late Dr James Semple Kerr (6.7.1932 - 15.10.2014), for his exemplary contribution to our understanding of the Sydney Opera House and its conservation management, and more widely to conservation practice in Australia and overseas.

OVERTURE

RESPECTING THE VISION
SYDNEY OPERA HOUSE – A CONSERVATION MANAGEMENT PLAN
4th EDITION 2017

The Sydney Opera House is one of the world's greatest 20th-century buildings. Its daring design by Jørn Utzon pushed the boundaries of human endeavour, and is inextricably linked to the building's sculptural presence within Sydney's spectacular harbour setting. It is the product of exceptional creativity and unyielding pursuit of excellence through innovation.

The Opera House is also an internationally renowned performing arts venue and Australia's premier tourism destination, attracting more than 8 million visitors a year and hosting 2000 performances attended by more than 1.5 million people.

UNESCO's 2007 World Heritage assessment of the Opera House's Outstanding Universal Value noted the significant challenges involved in balancing the roles of "*the building as an architectural monument and as a state of the art performance centre, thus retaining its authenticity of use and function*".

Dealing with these challenges is central to the Opera House's organisational mission:

- To treasure and renew the building for future generations of artists, audiences and visitors; and
- To inspire, and strengthen the community, through everything we do.

The organisation's *Enterprise Strategy* states:

> *As custodians we will do the building justice, honouring the Utzon design principles, its standing as one of the world's pre-eminent works of architecture and performing arts venues. To do this, we will work to conserve and renew the building, preparing it for future generations of artists, audiences and visitors.*

Treasure and inspire, conserve and renew. These words encapsulate the balancing act at the heart of caring for and managing a world-renowned architectural icon, while retaining its authentic function as Australia's foremost performing arts venue. This is the subject of the 4th edition Conservation Management Plan (CMP). Its purpose is to identify policies that conserve these significant values and manage change.

Since the publication of the 3rd edition of *Sydney Opera House: A plan for the conservation of the Sydney Opera House and its site* by Dr James Semple Kerr in 2003, the Sydney Opera House has been inscribed on UNESCO's World Heritage List, as well as the State and National Heritage lists, and a revised legislative and management framework has been put in place to protect its significance.

Kerr's 3rd edition of the Conservation Management Plan is often cited as a benchmark in conservation policy writing and highly regarded for its clarity and succinctness. A major contribution of this edition was to establish a hierarchy between Jørn Utzon and Peter Hall's work and a methodology for addressing change. This 4th edition retains and builds on the excellent work of its predecessor. Before commencement of this edition, Dr Kerr very generously gave permission for use of his work as the basis for this edition and much of his text has been integrated into this document.

Jørn Utzon was formally re-engaged by the Sydney Opera House Trust in 1999. In the years until his death in late 2008, Utzon was involved in a number of important projects, some of them completed. The *Utzon Design Principles*, compiled in 2002 with the assistance of Richard Johnson, is an invaluable resource that documents in Utzon's own words his vision, principles and methodology. Developments at the Opera House since 2003, and the requirement to review the CMP as the need arises (Policy 54.2 CMP 3rd edition), have been catalysts for this present edition.

This 4th edition – to be formally known as *Respecting the Vision: Sydney Opera House – a Conservation Management Plan, 2017* – revises and updates the history and significance of the place and considers recent changes. It has been prepared by a team led by Alan Croker of Design 5 – Architects, and has been extended to cover issues and areas not fully addressed previously and to anticipate future refurbishment and change. In addition, certain policy areas have been clarified or expanded, based on management and staff experience. A significant change for this edition is the inclusion of *Tolerance for Change* (TfC) and *Opportunities for Change* (OfC) tables, providing detailed guidance for implementation of the policies. The TfC tables give the 'here's how' or 'how to manage or reduce impact'; and the OfC tables identify where further change could be explored.

OVERTURE

Preparation of this CMP has involved a collaborative effort on the part of the authors, contributors, and those who have reviewed the document including Opera House advisors, management and staff. These are detailed in Section 1 of this document.

Importantly, this edition responds to a range of pressures that intensify the challenges faced in caring for and managing the Sydney Opera House. These include progressive technological advances, constantly increasing visitation (mainly by tourists), subsequent demands on the use of the building and its site for performance and other events, and threats to the site's significant setting by development around Sydney's foreshore precincts.

The complexity of the Sydney Opera House and the remarkable depth of thinking behind its design and construction mean that addressing these pressures is no easy task. The Sydney Opera House is an exceptional place that aspires to achieve excellence in everything it does, whether that be in performance, engineering, design, presentation, or visitor and patron services. All must strive for the established benchmark of excellence in a manner worthy of Utzon's vision.

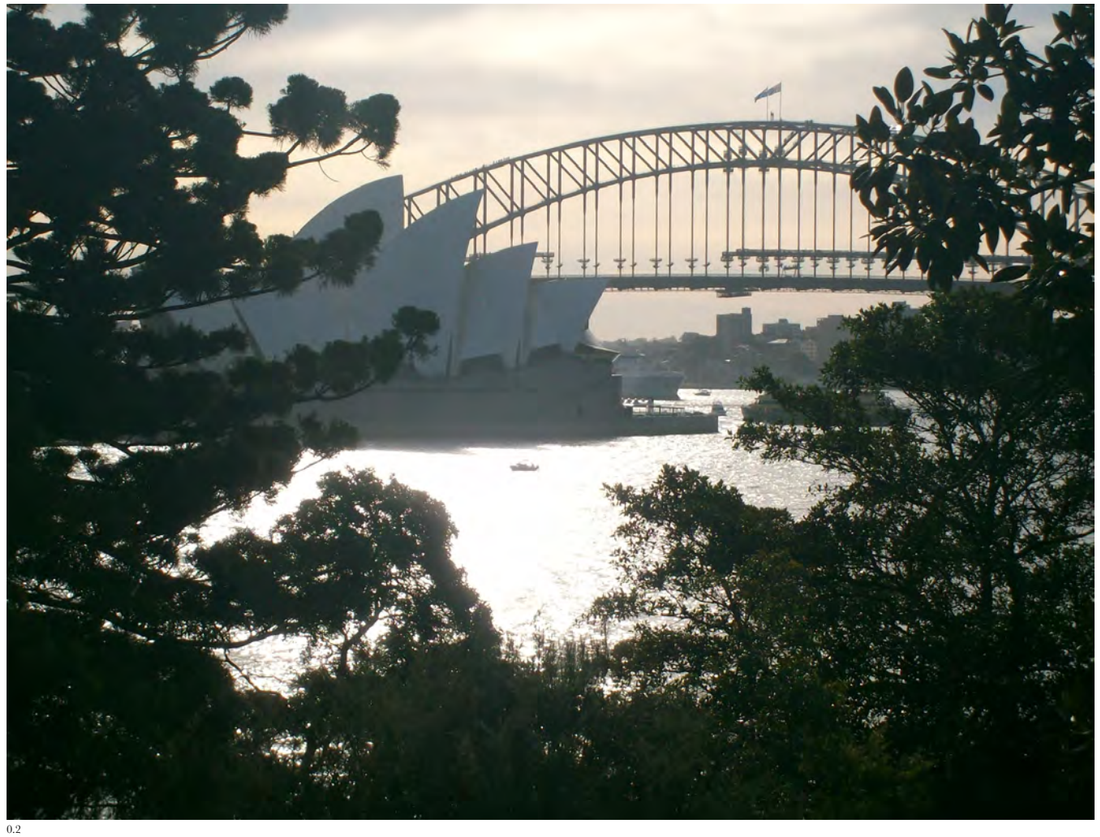
With these points in mind, this CMP provides both the philosophical and practical framework for change, conservation and care at the Sydney Opera House.

KEY ISSUES:

- Respecting the **primacy of Utzon's vision** as the inspiration for the use, care and management of the Sydney Opera House, and all change and future development at the site.
- Ensuring that no uses, activities or changes within or beyond the site threaten or diminish Utzon's vision for the **extraordinary setting, form, character, approach** and **arrival experience** of the Sydney Opera House.
- Ensuring that no uses, activities or changes at the Sydney Opera House threaten or diminish its **primary use** as a nationally significant **performing arts centre**.
- Understanding and respecting the **contribution of others** when considering any changes, particularly Peter Hall and Ove Arup and their teams, in completing the Sydney Opera House.
- **Upholding excellence in presentation** of the place in all aspects of its care, management, performance and change, commensurate with Utzon's extraordinary and inspired vision for the Sydney Opera House.
- Uphold and protect the **State, National and World Heritage values** of the place.

0.1

OVERTURE



0.2

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SECTION 01
INTRODUCTION

"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".

Jørn Utzon, *Descriptive Narrative*, 1965

01

Section 1.1

1.1 PREAMBLE

This 4th edition of the Sydney Opera House Conservation Management Plan (CMP) has been commissioned by the Sydney Opera House Trust, in response to changes and developments since 2003, including the place's listing at state, national and world heritage levels.

At the commencement of the review process, it was anticipated that James Semple Kerr's 3rd edition would require a relatively simple update of its history, additional discussion on significance, and a review of all the policies. Consultation with various managers and stakeholders at the Opera House indicated a more comprehensive review was required, with more detail and direction on both fabric and operational issues.

In short, the process grew from a simple review to a comprehensive and substantial revision of the whole document. This resulted in an inevitable tension between the desire to have a brief and concise document for higher-level management, with one that provided detailed guidance, particularly on sensitive issues. The latter prevailed; however, the design of the document should facilitate access and ease of navigation. Refer to Section 1.2 *Document Structure*. It is intended that this 4th edition may be adapted at some future stage to a digital document with hyperlinks, and integrated with the Building Information Management Model (BIMM).

This 4th edition retains the principles and philosophical approach that underpinned the 3rd edition, and with the kind permission of its author, Dr James Semple Kerr, much of its text and policies have been integrated into this edition. It has benefitted considerably from an extensive review process including Sydney Opera House management, staff and stakeholders, the CMP working group, the Conservation Council, a specially appointed peer review panel, representatives of statutory bodies and the public. They are listed in Section 1.8 *Acknowledgements*.

This CMP is not a definitive account of the history of the Opera House, nor does it catalogue every aspect or part of its fabric. It briefly reviews the significant values of the place, discusses relevant issues, and then sets out policies to retain and conserve these values. It is intended, along with the *Utzon Design Principles*, as a primary resource and management tool for those involved with developing proposals or making decisions about the use, maintenance, management and future of the Sydney Opera House.

INTRODUCTION

1.2 DOCUMENT STRUCTURE

The overall structure of this CMP is as follows:

Section 1 provides introductory material about the CMP and the site.

Section 2 discusses the significant cultural values of the Sydney Opera House, including:

- 2.2 - A masterpiece of late modern architecture
- 2.3 - Structural engineering and technological innovation
- 2.4 - Iconic building of the 20th century
- 2.5 - Performing arts centre
- 2.6 - Important past events, activities and uses at Bennelong Point
- 2.7 - Significant contributors
- 2.8 - Comparative analysis

Section 3 summarises these values in a Statement of Significance and identifies the various levels of significance of its elements and component parts.

Section 4 provides more detail on each aspect and element of the place, discussing issues that affect these and setting out policies and guidelines as to how they should be treated and managed into the future. These include:

Overarching Policies

- 4.1 - The primacy of Jørn Utzon's vision
- 4.2 - Importance of setting
- 4.3 - Protecting the values
- 4.4 - Utzon, Hall & the approach to change

The Site and its Fabric

- 4.5 - Open & uncluttered setting
- 4.6 - Events & uses externally
- 4.7 - Conserving the exterior
- 4.8 - 4.10 - Conserving the interior
- 4.11 - Doors, furniture & fittings
- 4.12 - Carpets, artworks & curtains
- 4.13 - Services & machinery
- 4.14 - Lighting
- 4.15 - Signage

Operation and Management

- 4.16 - Interpretation
- 4.17 - Accessibility
- 4.18 - Care of the fabric & housekeeping
- 4.19 - Managing records & information
- 4.20 - Managing the processes of change

Section 5 sets out an illustrated chronology of the site, the building and important occasions including relevant social and political events.

It is not the intent that this CMP be read in its entirety before one can understand a particular issue, however there are key sections that should be understood before considering them.

Section 3 should be read first to gain an overview of what is important. Sections 2 and 5 provide background and depth as to why these things are important.

Sections 4.0 to 4.4 provide broad principles as to how any issue should be approached in order to retain the significant values summarised in Section 3. These overarching policies provide the 'rules of engagement' that underpin all other policies and should be read in conjunction with them.

Sections 4.5 to 4.20 then provide guidance on all aspects of the place, its use, maintenance, repair, management, interpretation and future changes.

It is essential that the building, its setting, use and management be considered as an integrated whole, and that not one issue is treated in isolation. All activities and actions must have as their primary goal the celebration and respect of Utzon's vision and the care and protection of his masterpiece, the basis for its State, National and World Heritage values. In accordance with two of Jørn Utzon's most important design principles, they should ultimately strive in the pursuit of excellence, and uplift and celebrate the human experience of the performing arts for all involved, be they visitor, patron, performer, technician or manager.

This document has been prepared using the methodology outlined in J.S. Kerr's *The Conservation Plan*, 7th edition, Australia ICOMOS, 2013. This methodology is based on the principles and processes described in the Australia ICOMOS Burra Charter, 2013 (known as the Burra Charter) and its associated Practice Notes (*Understanding and Assessing Cultural Significance*, and *Developing Policy*). A copy of the 2013 Burra Charter can be accessed from the Australia ICOMOS website (http://australia.icomos.org/). The Assessment of Cultural Significance (Section 2) incorporates the justification for the inscription of the Sydney Opera House on UNESCO's World Heritage List.

1.3 SOURCES

All sections of this 4th edition, especially the Policy section, have been informed by a considerable amount of published and unpublished material, in particular the following documents:

By Jørn Utzon

- *Descriptive Narrative*, dated January 1965, a detailed description by Utzon of his intentions for the project, both in terms of concepts and ideas, as well as details and material selections. The document gives details of construction methods, finishes, services and equipment, and provides a snapshot of the status of the resolution and documentation for each part of the project at the time. It was one of a number of historical documents used by Richard Johnson in collating the *Utzon Design Principles* (see below).
- Sydney Opera House, *Utzon Design Principles* (May 2002), comprising extracts from Utzon's earlier writings and discussions recorded after his re-engagement in 1999 with architect Richard Johnson. This document, in Utzon's own words, articulates the sources of his inspiration and vision, and the principles underpinning the design and execution of the Sydney Opera House. This material was collated by Johnson in a form approved by Utzon himself and titled *Utzon Design Principles*.
- Collection of drawings by Jørn Utzon, his office and studio. These include drawings from Ove Arup and Steensen Varming's offices, as well as other consultants. The originals are held in various archives, primarily at the State Library of NSW. Digital copies are held at Sydney Opera House. They provide insight into the original design and details, including proposed fittings and furnishings. They include exploration of options and ideas, many not executed.

By Jørn Utzon and Richard Johnson of Johnson Pilton Walker

- Sydney Opera House, *Strategic Building Plan* (December 2001), identifies functional and design deficiencies. It proposed conceptual ideas developed by Utzon and Richard Johnson for addressing these issues to ensure the long-term viability of the Opera House.
- Sydney Opera House, *Venue Improvement Plan* (May 2002), briefly outlines a program of works developed by Richard Johnson in collaboration with Utzon for the Sydney Opera House Trust.

By Peter Hall

- *Sydney Opera House, The design approach to the building* (Sydney 1990), sometimes referred to as Hall's Principles, provides valuable information and insights into the problems Hall faced when he took over the project from Utzon and how he resolved them.
- Collection of drawings by Peter Hall and Hall, Todd and Littlemore's office, including consultants. Originals are held in public archives, with digital copies at Sydney Opera House.

By James Semple Kerr

- *Sydney Opera House, A Revised Plan for the Conservation of The Sydney Opera House and its Site,* 3rd edition 2003. Published by the Sydney Opera House Trust, the 3rd edition provides the basis for this 4th edition of the Conservation Management Plan.

By the Australian and New South Wales Governments

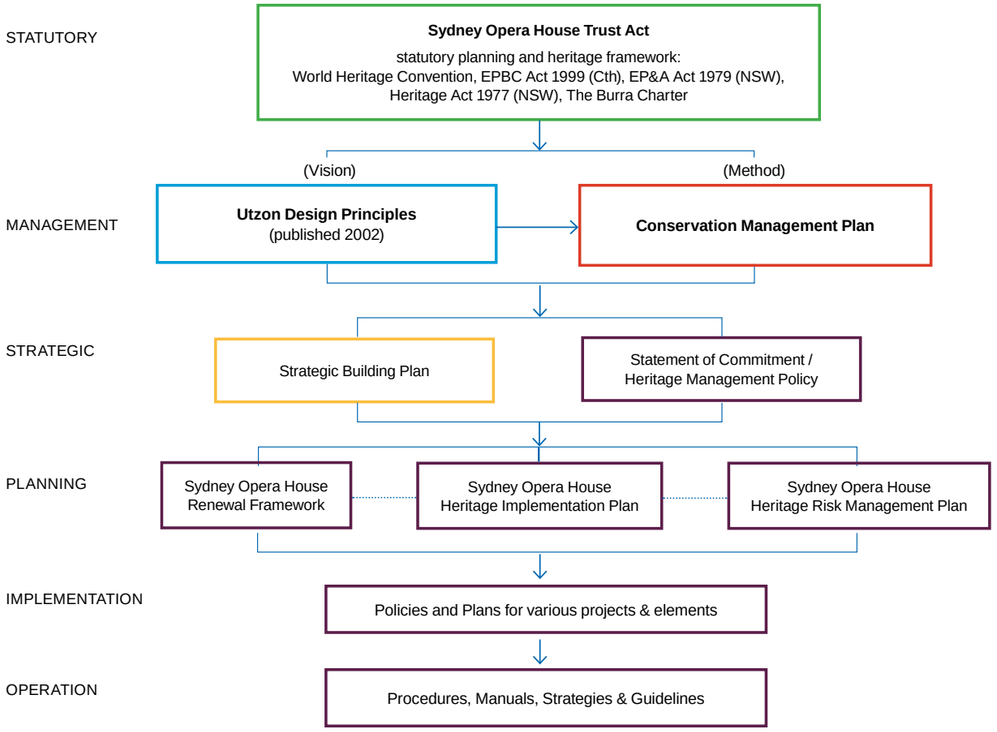
- *Sydney Opera House Nomination by the Government of Australia for inscription on The World Heritage List 2006.* This nomination sets out the justification for inscription and discusses factors affecting its conservation, use and management. It outlines mechanisms and procedures for monitoring and maintaining the significant values of the place.

A full list of sources is given in Appendix A.

1.4 RELATIONSHIP OF CONSERVATION MANAGEMENT PLAN TO OTHER DOCUMENTS

The *Utzon Design Principles* and the *Conservation Management Plan* are considered the chief guiding documents on matters relating to the conservation and management of the significant values of the Sydney Opera House, including those listed at World, National and State Heritage levels. The CMP sets out 'how to retain' these values in relation to Utzon's principles and how to implement and manage change. The two documents are an integral part of the accredited *Management Plan* for the Sydney Opera House, prepared under a bilateral agreement (now expired) between the Federal Government and the NSW Government to protect and conserve the World Heritage and National Heritage values of the place.

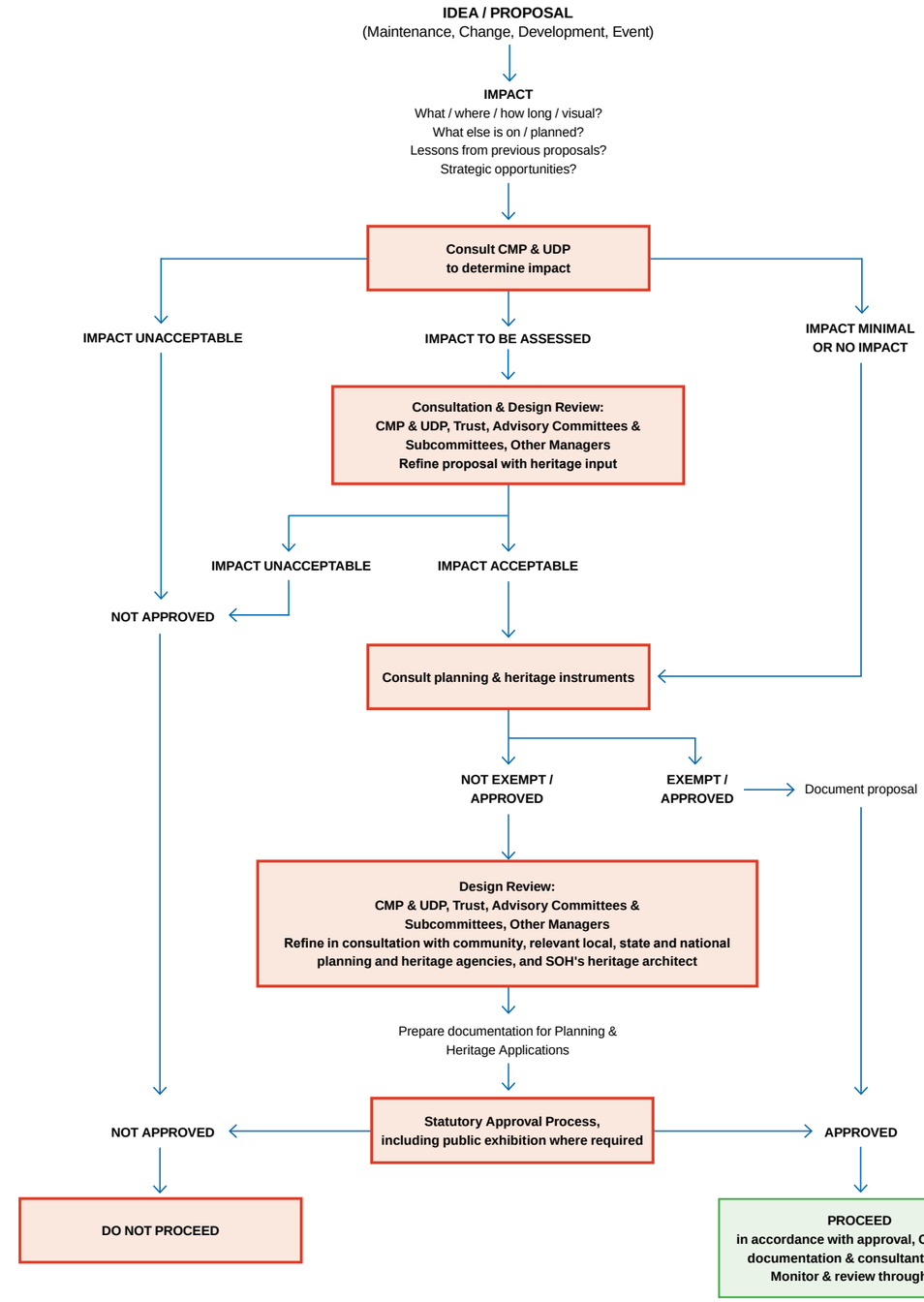
The *Strategic Building Plan 2001* is an important document as it was prepared with input by Jørn Utzon. Sydney Opera House has committed to regularly update this document, in the first instance by December 2018. A number of other documents have been prepared by the Sydney Opera House Trust to guide the detailed implementation of conservation work; it is anticipated that further specific strategies or guideline documents will be prepared, as required. The relationship between these documents is set out in the diagram below.



1.5 ASSESSMENT & APPROVAL PROCESS FOR DEVELOPMENT WITHIN SYDNEY OPERA HOUSE BOUNDARY

As the Sydney Opera House is listed at a Local, State, National and World Heritage level, any proposal for change or development must undergo a rigorous assessment to determine its compliance with this CMP, and then, if required, submitted to the relevant authority for approval. The statutory framework for this approval process is complex and subject to changes in legislation. It is set out in the *Sydney Opera House Management Plan*.

The diagram below illustrates in general terms the Opera House's internal assessment and approval process prior to applications for statutory approval or commencement of works. Refer also to Section 4.20.14 *Statutory approvals*.



1.6 TERMINOLOGY

Throughout this document, the terms *place, cultural significance, fabric, conservation, maintenance, preservation, restoration, reconstruction, adaptation, use, compatible use, setting, related place, related object, associations, meanings,* and *interpretation* are used as defined in the Burra Charter (see below). It should be noted that, as a consequence, the meanings used here may differ from their popular meanings.

Place	means a geographically defined area. It may include elements, objects, spaces and views. Place may have tangible and intangible dimensions.
Cultural significance	means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the *place* itself, its *fabric, setting, use, associations, meanings*, records, *related places* and *related objects*. Places may have a range of values for different individuals or groups.

It is important to note that 'culture' in the Burra Charter sense refers to all aspects of a particular society or group transmitted from one generation to another; whereas in the field of literature and the arts, 'culture' generally refers only to aspects expressed or produced by the various strands of the arts world, such as the literary arts, fine arts or performing arts. In this latter sense, cultural expression has a more limited meaning than that defined in the Burra Charter and this *Conservation Management Plan* (CMP).

Fabric	means all the physical material of the *place* including elements, fixtures, contents and objects.
Conservation	means all the processes of looking after a *place* so as to retain its *cultural significance*.
Maintenance	means the continuous protective care of a *place* and its *setting*. Maintenance is to be distinguished from repair, which involves *restoration* or *reconstruction*.
Preservation	means maintaining a *place* in its existing state and retarding deterioration.
Restoration	means returning a *place* to a known earlier state by removing accretions or by reassembling existing elements without the introduction of new material.
Reconstruction	means returning a *place* to a known earlier state and is distinguished from *restoration* by the introduction of new material.
Adaptation	means changing a *place* to suit the existing *use* or a proposed use.
Use	means the functions of a *place*, including the activities and traditional and customary practices that may occur at the place, or are dependent on the place.
Compatible use	means a *use* which respects the *cultural significance* of a *place*. Such a use involves no, or minimal, impact on cultural significance.
Setting	means the immediate and extended environment of a *place* that is part of or contributes to its *cultural significance* and distinctive character.
Related place	means a *place* that contributes to the *cultural significance* of another place.
Related object	means an object that contributes to the *cultural significance* of a *place* but is not at the place.
Associations	mean the connections that exist between people and a *place*.
Meanings	denote what a *place* signifies, indicates, evokes or expresses to people.
Interpretation	means all the ways of presenting the *cultural significance* of a *place*.

In addition to the above Burra Charter terms, the following have specific meanings within the context of this document:

Element	means a major part or space of the whole building or site, such as the Podium, the Joan Sutherland Theatre (Opera Theatre), or group of spaces such as those within the western part of the Podium.
Component	means a part of an element, such as the Monumental Steps (a component of the Podium), orchestra pit (a component of the Joan Sutherland Theatre), or individual spaces within an element group.

Intrusive item	relates to an item or component that obscures, impedes, diminishes or otherwise damages the significance of an element or its component parts.
Repair	is to put something that is damaged, faulty or worn back in good condition or working order. This is achieved by retaining sound fabric and replacing damaged or worn with matching new fabric.

The following definitions have been drawn from the 'Operational Guidelines for the Implementation of the World Heritage Convention' 2013:

Authenticity	is a measure of the honesty of a place as an authentic product of its history and of historical processes. Cultural heritage places may meet the conditions of authenticity if their cultural values are truthfully and credibly expressed through a variety of attributes such as form and design, materials and substance, traditions, techniques and management systems, location and setting, language and other forms of intangible heritage, spirit and feeling. Sources of information about these cultural values should also be credible and truthful.
Integrity	is a measure of the wholeness and intactness of the place and its attributes. Examining the conditions of integrity, therefore, requires assessing the extent to which the property: (a) includes all elements necessary to express its Outstanding Universal Value; (b) is of adequate size to ensure the complete representation of the features and processes which convey the property's significance; (c) suffers from adverse effects of development and / or neglect.

This CMP has utilised the concept of 'tolerance for change' developed by Sheridan Burke in recent Conservation Management Plans prepared by GML Heritage. This methodology is based on Burra Charter principles.

Tolerance for change	is a judgement about the role each of the attributes (form, fabric, function and location) of each component play in supporting the significant values of their respective element and consequently, how tolerant they are to change without adverse impacts.

The following definitions are based on relevant dictionary meanings, adapted for this CMP:

Tangible	means something that can be perceived by touch, and can be measured, and includes the form and fabric of the place. (E.g. form and fabric of the shells.)
Intangible	means an abstract quality, value or aspect of the place that cannot be perceived by touch. It includes cultural practices and performance, and may be perceived at an emotional, intellectual or cultural level, but cannot be precisely measured. (E.g. the ability of the place to encourage excellence in the performing arts; its use as a venue for community celebrations; and the sense of anticipation and arrival evoked by the deliberately designed sequence of spaces, culminating in the performance.)

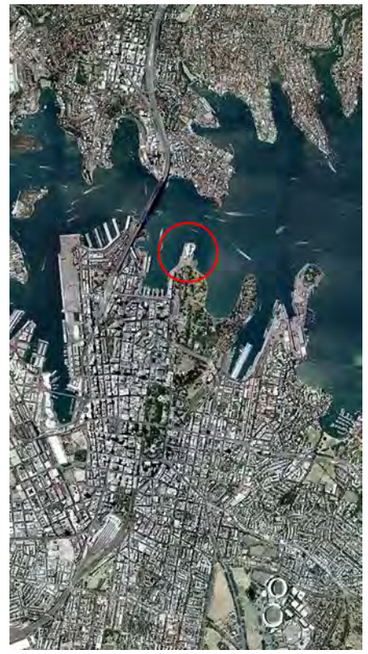
The Sydney Opera House roof structures are referred to in this CMP as **shells**, consistent with Jørn Utzon's own reference. The roofs are sometimes referred to by others as 'sails'.

The auditorium originally known as the 'Opera Theatre' is now known as the **Joan Sutherland Theatre**. Both titles are used in this document, depending on the context of the reference.

The space originally known as the Vehicle Concourse is now referred to as the **Covered Concourse**.

The **Lower Concourse** has also been known as the Lower Forecourt. In this document, only the former is used.

For definitions of the **levels of significance** attributed to spaces and elements at the site, including those components assessed as 'Intrusive', refer to Section 3.3.1 *Definitions of levels of significance*.



1.1 *Location map showing Sydney Opera House in Sydney Harbour and in relation to the city (Source: Google Maps)*

10 INTRODUCTION

1.7 AUTHORSHIP

The 4th edition of this CMP was written by Alan Croker with considerable research, editorial and other assistance from Hendry Wan, Charlotte Simons and Sarah Mannion, all of Design 5 – Architects.

1.8 ACKNOWLEDGMENTS

The author wishes to acknowledge the contribution, review and feedback of a working group comprising Evan Williams, Sheridan Burke, Rajeev Maini and Peter Mould, representing the Sydney Opera House Conservation Council; Louise Herron AM, Maria Sykes, Greg McTaggart PSM and Lisa Taylor, representing Sydney Opera House management; as well as Peter Marshall, Ray Dick, Chris Linning, Ralph Bott PSM, Rhoda Roberts AM, Jenny Spinak and Shani Moffat.

As well as review and feedback, Lisa Taylor, Shani Moffat, Caroline Grandjean-Thomsen, Alexandra Gray, Catherine Sarlas and Kya Blondin provided invaluable support and assistance throughout the process. The final editing and indexing was done by Julie Wilcox of EnglishMatters.

The author wishes to thank the Australian Government's former Department of the Environment and Energy for permitting them to incorporate an extensive amount of material from the World Heritage nomination document (2006) in Section 2 – *Assessment of Cultural Significance*.

Thanks to Liversedge Weir for their patience in the design of this document, its clarity, flexibility and layout.

This CMP was reviewed in draft form by many people including the late James Semple Kerr, who provided much sage advice on policies, Jan Utzon, Joan Domicelj AM, Grahame Crocket, Ilse Wurst and the Commonwealth Department of the Environment, Water, Heritage and the Arts (now Department of the Environment and Energy).

Following public exhibition of the draft document in 2015, a Peer Review Panel was appointed by Sydney Opera House Trust to guide the CMP to completion. The panel comprised Sheridan Burke, Joan Domicelj AM, Louise Herron AM, Richard Johnson AO MBE, Ken Maher, Greg McTaggart PSM, Peter Mould, Joseph Skrzynski AO and Jan Utzon. Their review, comments and suggestions have greatly assisted its refinement and completion.

Thanks also to Anne Watson for providing a copy of various chapters of her then draft PhD thesis on Peter Hall. Her work has contributed greatly to our understanding of Hall's work and assisted the author in providing a more balanced view.

Acknowledgment must be made to GML Heritage for permission to use the *Tolerance for Change* conservation management tool developed by them. It has been adapted to suit the Sydney Opera House CMP in consultation with Sheridan Burke.

The preparation of this revised *Conservation Management Plan* has been greatly assisted by trusty and patient colleagues at Design 5, particularly Hendry Wan, who researched and prepared most of the material in Sections 2 and 5, and Charlotte Simons, Clare Moore and Sarah Mannion, whose attention to detail helped its completion.

Last but certainly not least, the author thanks the late James (Jim) Semple Kerr for his contribution to the form and structure of this CMP, his comments and suggestions on the draft document, and his generous permission to use and incorporate his previous work. Jim passed away on the 15th of October 2014. It is hoped his legacy will endure for future editions.

1.9 THE SITE – PLANS & SECTIONS

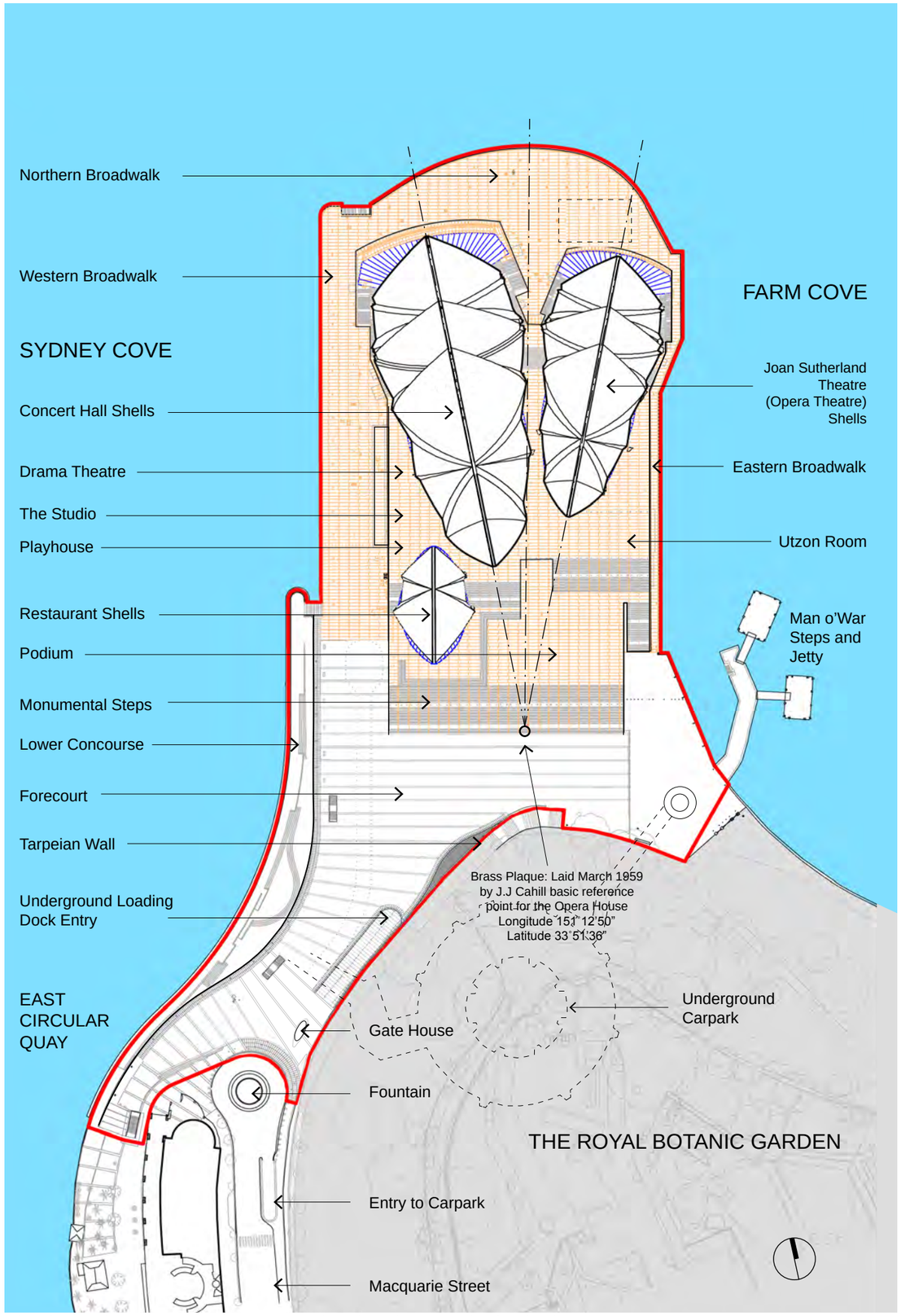
The Sydney Opera House is located on the peninsular on the eastern side of Circular Quay known as Bennelong Point, on the south side of Sydney Harbour, as shown in Figure 1.1. The site is legally described as Lot 5 in DP 775888 and Lot 4 in DP 787933.

The site is surrounded on the east, north and west sides by the waters of Sydney Harbour and on the south by the Royal Botanic Garden and the north end of Macquarie Street and East Circular Quay. The Opera House comprises four main structures (see Figure 1.2) being:

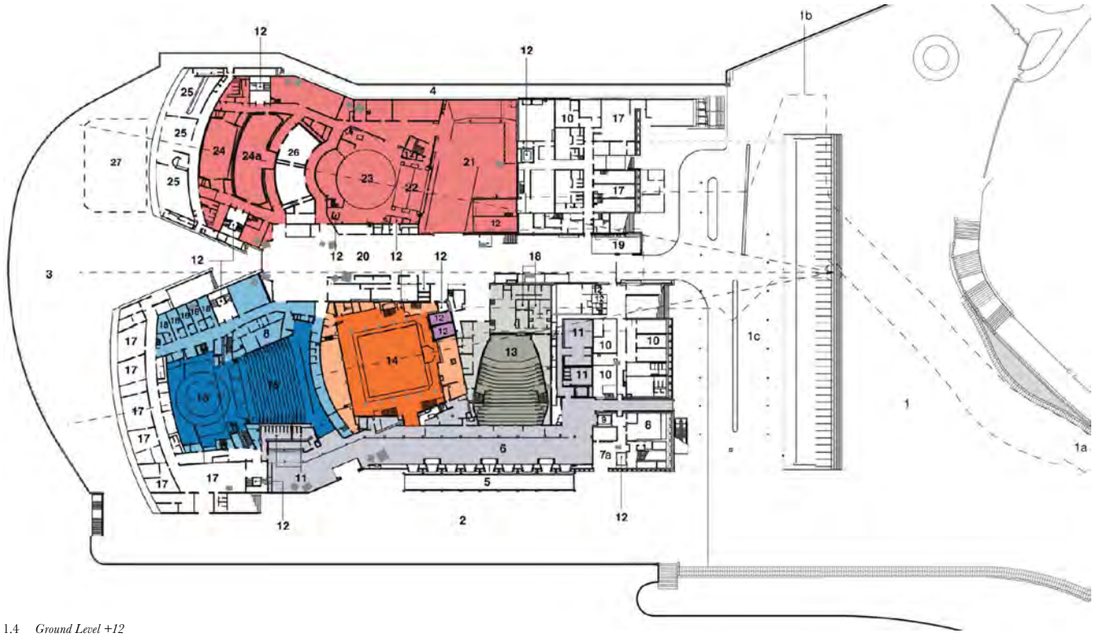
- The broad flat platform comprising the Forecourt and Broadwalks
- The Concert Hall on the western side of Bennelong Point
- The Opera Theatre (Joan Sutherland Theatre) on the eastern side
- The Bennelong Restaurant, to the south of the two main venues

The broader area included within the World Heritage Buffer Zone is identified in Figure 4.10 in Section 4.2 *Importance of setting*.

The following plans and sections show the main levels of the building.



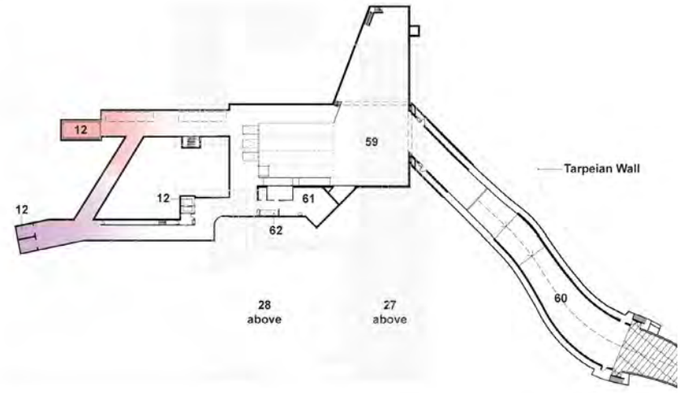
1.2 *Sydney Opera House site plan - property boundary is shown by the red line. This coincides with listing boundaries for the State, National and World Heritage listings. Refer to Appendix B.*



1.4 *Ground Level +12*

Ground Level +12

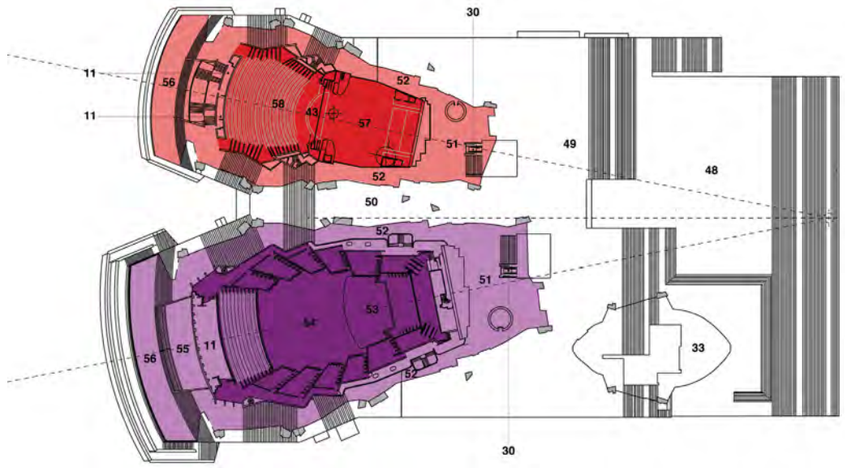
1	Forecourt
1a	Underground loading dock entry
1b	Underground loading dock (dotted)
1c	Covered Concourse
2	Western Broadwalk
3	Northern Broadwalk
4	Eastern Broadwalk
5	Colonnade
6	Western foyers
7a	Old loading dock
8	Stores
9	Bennelong lift
10	Catering, stores and staff facilities
11	Lavatories
12	Lift
13	Playhouse
14	The Studio
15	Drama Theatre
16	Drama Theatre stage
17	Offices
18	Dressing room
19	Stage Door
20	Central Passage
21	Set storage and scene changing area
22	Joan Sutherland Theatre stage lifts
23	Former revolve, now storage
24	Rehearsal room
24a	Former rehearsal room, now Production Store
25	Northern Function Room facility
26	Former rehearsal rooms, now Recording Studio
27	Extendable marquee



1.3 *Underground Loading Dock Level -33*

Underground Loading Dock -33

59	Delivery dock
60	Delivery dock entry ramp
61	Garbage collection
12	Lift
62	Cool store



1.6 *Auditorium Level +61*

Auditorium Level +61

11	Lavatories
30	Escalator
33	Bennelong Restaurant
48	Lower Podium
49	Upper Podium
50	'The Cleavage'
51	Southern Foyer
52	Side Foyer
53	Orchestral platform
54	Concert Hall auditorium
55	Lounge
56	Northern Foyer
57	Joan Sutherland Theatre stage
58	Joan Sutherland Theatre auditorium

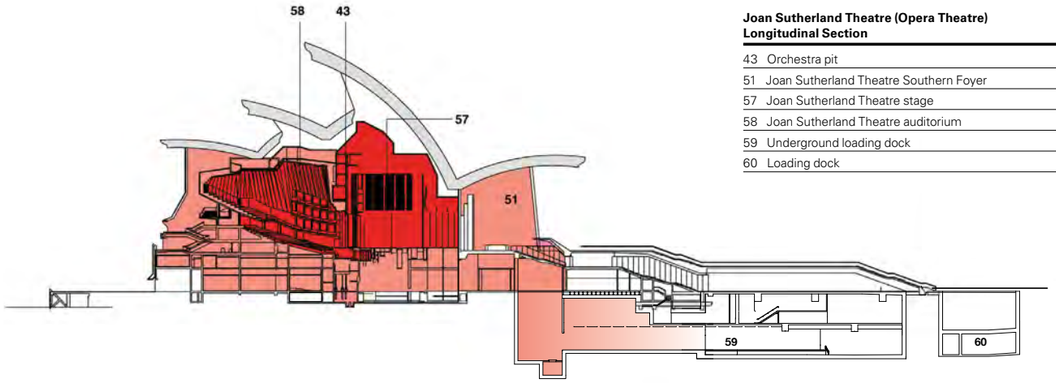
1.5 *Podium Level +30*

	Auditoria	Foyers and Back-of-House
Concert Hall		
Joan Sutherland Theatre (Opera Theatre)		
Utzon Room		
Drama Theatre		
The Studio		
Playhouse		
Western Foyer		

Podium Level +30

9	Bennelong lift
11	Lavatories
12	Lift
13	Playhouse
27	Monumental Steps
28	Lower Podium
29	Box Office
30	Escalator
31	Cloaks
32	Box Office Foyer
33	Bennelong Restaurant
34	Kitchen
35	Performers' assembly area
36	Main rehearsal room
37	Drama Theatre stage tower
38	Boardroom
39	Management suites
40	Offices
41	Utzon Room
42	Joan Sutherland Theatre below stage
43	Orchestral pit
44	Dressing room
45	Locker room
46	Production facility
47	Green Room

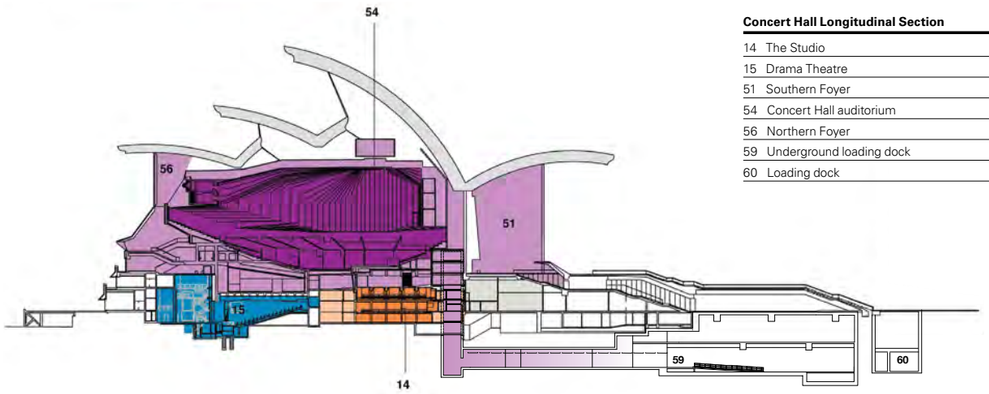
INTRODUCTION



Joan Sutherland Theatre (Opera Theatre) Longitudinal Section

43	Orchestra pit
51	Joan Sutherland Theatre Southern Foyer
57	Joan Sutherland Theatre stage
58	Joan Sutherland Theatre auditorium
59	Underground loading dock
60	Loading dock

1.7 *Longitudinal section of the Joan Sutherland Theatre (Opera Theatre), showing auditorium, foyers and back-of-house spaces*



Concert Hall Longitudinal Section

14	The Studio
15	Drama Theatre
51	Southern Foyer
54	Concert Hall auditorium
56	Northern Foyer
59	Underground loading dock
60	Loading dock

1.8 *Longitudinal section of the Concert Hall, showing auditorium, foyers and back-of-house spaces*

	Auditoria	Foyers and Back-of-House
Concert Hall		
Joan Sutherland Theatre (Opera Theatre)		
Utzon Room		
Drama Theatre		
The Studio		
Playhouse		
Western Foyer		

SECTION 02
ASSESSMENT OF CULTURAL SIGNIFICANCE

"So going to the Opera House is a succession of visual and audio stimuli, which increase in intensity as you approach the building, as you enter and finally sit down in the halls, culminating with the performance".

Jørn Utzon, *Descriptive Narrative*, 1965

02

2.1 BASIS OF ASSESSMENT

The Australia ICOMOS (International Council on Monuments and Sites) Charter for Places of Cultural Significance 1999 (known as the Burra Charter) is a best-practice standard for the conservation and management of culturally significant places in Australia.

Assessment of the cultural significance of a place is usually discussed separately under each of the Burra Charter's definitions of cultural significance (aesthetic, historic, scientific, social or spiritual). In the case of Sydney Opera House, its multiple values are so intertwined and synthesised that to consider them separately would involve considerable repetition. They are therefore discussed together.

In 2006 the Australian Government and the New South Wales Government jointly prepared a nomination of Sydney Opera House for inscription on the World Heritage List of the UNESCO World Heritage Convention (1972). Following international assessment and consideration by the World Heritage Committee, Sydney Opera House was inscribed on this list on 28 June 2007, meeting criterion (i) as representing 'a masterpiece of human creative genius'. Under this criterion it was inscribed for these outstanding universal values:

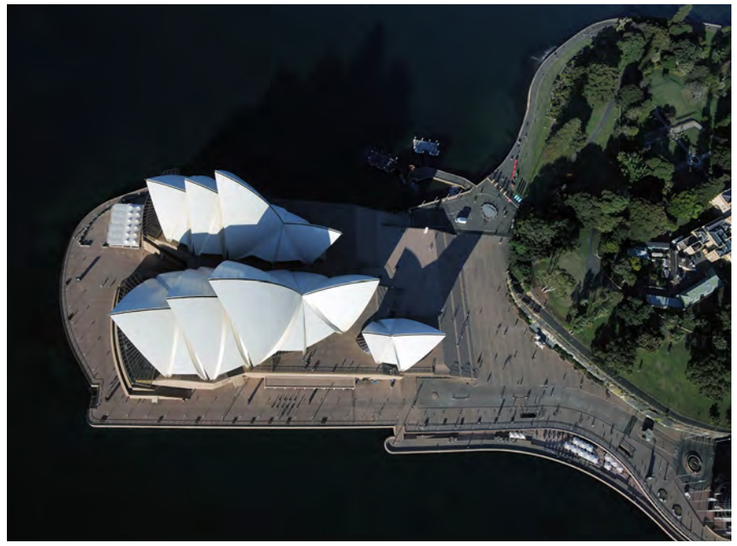
> ***The Sydney Opera House is a great architectural work of the 20th century. It represents multiple strands of creativity, both in architectural form and structural design, a great urban sculpture carefully set in a remarkable waterscape and a world famous iconic building.***

The discussion in this section has been largely extracted and summarised (with permission) from Part 3.A of the 2006 World Heritage List nomination document[1], supplemented with additional information and comment by the authors of this CMP, including elaboration on Sydney Opera House's use as a performing arts centre – one of the main aspects of its significance.

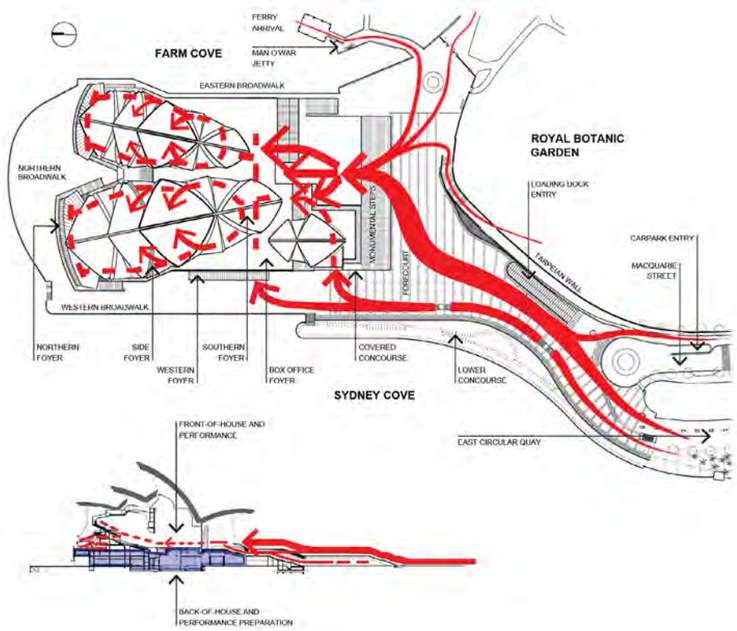
Another important source has been the 1996 World Heritage List nomination, extensively cited in the 2006 document.

A comprehensive chronology of the Opera House, its site and use is provided in Section 5 of this document.

The significance of Sydney Opera House is summarised in the Statement of Significance (Section 3.1).



2.1



2.2

2.1 *Aerial view*
2.2 *Plan and section of Sydney Opera House, showing the patron's approach, based on Utzon's vision*

2.3

2.4

2.5

2.6

2.3 *Mid-day sun, 2010*
2.4 *Evening approach*
2.5 *Stairs to Concert Hall in side foyer*
2.6 *Fan pedestal for roof shell inside foyer*

2.2 A MASTERPIECE OF LATE MODERN ARCHITECTURE

And in the Sydney Opera House Jørn Utzon realised the great synthesis of earth and sky, landscape and city, vista and intimacy, thought and feeling, in terms of a unity of technological and organic form. Hence we may safely say that the Sydney Opera House represents a masterpiece of human creative genius, and a most significant step in the history of modern architecture.[2]

The Sydney Opera House is a great architectural work of the 20th century and is renowned as Jørn Utzon's masterwork. This has been acknowledged by many experts in the field, and also the public, both nationally and internationally.

Jørn Utzon's exceptional creativity and response to the competition brief, and Sydney's harbour setting has given us the Sydney Opera House we have today – its conceptual arrangement, its powerfully expressive structure with spectacular white tiled shells supported on the solid podium and broadwalk, as a man-made headland at the end of Bennelong Point. Together, these elements determine the Sydney Opera House's visual character and its primary significance.

These values are best demonstrated through an understanding of the way Utzon worked and via specific characteristics of the Sydney Opera House

2.2.1 Utzon's fundamental principles

There are two principles that were fundamental to Jørn Utzon's architecture and set him dramatically apart from most of his contemporaries:

- Drawing inspiration for structure and organic form from nature,
- Creating architecture that is predominantly experiential in character.[3]

These principles underpin his vision for the Sydney Opera House and are infused throughout its design.

Inspiration from nature

At a macro level, the 'headland' form of the granite-clad podium projecting into the harbour, with its vertical cliff faces and grand stair approach from the city, surmounted by the white 'sail' or 'cloud' form roofs, protecting the auditoria platforms, is an inspired response to the natural landforms surrounding the harbour.

At a more subtle level, the influence of nature is seen in Utzon's frequently cited analogies to natural forms such as the 'palm leaf' structure of the vaulted shells and the idea of the 'walnut kernel' for the performance spaces within the shells.[4]

His familiarity with the difference in the quality of light reflected by ice and snow (though far from the experience of Sydneysiders) provided inspiration and a solution to the arrangement of gloss and matt tiles on each lid section covering the shells.[5] Each tile could catch the sunlight in a manner which made the order and geometry of the lids and the shell structure more evident.

Living things as a source of inspiration also extended to the human body.[6] To describe the contrast between the shells' gloss tiles and their edging of matt tiles, Utzon used the metaphor of 'fingernails' surrounded by skin.[7] He also conceived the structure holding the vaulted shells as ribs and the pathway for service delivery between the two main halls within the Podium as the 'spine'.[8]

These ideas arose not from mere superficial observation but from Utzon's deep understanding of the forces and processes which shaped these natural phenomena, and how their structure and form expressed these with clarity and honesty. It is known that Utzon drew on D'Arcy Wentworth Thompson's *On Growth and Form* (1917), an influential treatise on this subject.[9]

An architecture of human experience

A fundamental principle of Utzon's work is the creation of an architecture with spaces and experiences that bring joy to society.[10] At the Sydney Opera House, this is expressed in many ways.

For example, the sequence of public spaces, from the approach and ascent to the place of arrival, both externally and internally, were all carefully articulated and designed to provide a sense of anticipation and joy, culminating in the performance itself (Figure 2.2). Utzon intended that all materials, finishes, colour and lighting be chosen to support and enhance this experience.

This was linked to the concept of containing all the activities for the preparation of the performance within the Podium, separated from and out of sight of theatre patrons.[11] In Utzon's words:

> ***The idea has been to let the platform cut through like a knife, and separate primary and secondary function completely. On top of the platform the spectators receive the completed work of art and beneath the platform every preparation for it takes place.[12]***

This ceremonial ascent of the platform, to arrive at a special place where a performance is offered, physically above and symbolically detached from the mundane world, is the essence of sacred buildings from many of the great cultural traditions. At Sydney Opera House, Utzon synthesised these ancient principles and concepts to celebrate the act of producing and experiencing theatre and performance in a contemporary and masterful way. Here on Bennelong Point, Utzon and his team have configured function, material and form in space and time to create an exceptional twentieth-century building which elevates and celebrates the human spirit.

2.2.2 Multiple strands of creativity: Utzon and collective ingenuity

The Sydney Opera House is the result primarily of the creative genius of Jørn Utzon and the ingenuity of a collaborative team of architects, engineers, building contractors and manufacturers.[13] The design, with its unique planning and radical sculptural form, was conceived in response to the 1956 international competition brief. It was developed and refined by Utzon and his team up until his departure in 1966, by which time the main structure was almost complete.

Utzon's unique design concept and his distinctive approach to the construction of the building fostered an exceptional collective creativity and demanded exceptional engineering and technological feats.[14] These included outstanding design and construction solutions achieved by London-based engineers Ove Arup & Partners, main contractors Hornibrooks, Australian architects Hall, Todd & Littlemore and many others in the construction industry.[15]

Utzon's design was integrally linked to his radical way of working.[16] His distinctive approach was marked by an early and close integration between design and engineering; a readiness to explore the possibilities of industrial production and the building crafts; a passion for working at 'the edge of the possible'; and an uncompromising pursuit of perfection.[17]

The construction site was characterised by an outpouring of plans and drawings, the building and testing of numerous full-scale prototypes, and architects and engineers working together over months and even years to solve the many complex challenges that arose. Utzon had a special inventive style and sought an intriguing marriage of experimentation with new materials and technologies and diverse architectural ideas, including modern and organic forms.[18] This continual pushing of the boundaries of human endeavour turned the Sydney Opera House into a test bed for new technologies and stretched everyone involved in the construction processes to the limit.[19]

Examples of the design, engineering and construction challenges, and the outstanding solutions developed by Utzon and his collaborative teams are described below in *Structural engineering and technological innovation.*[20] Refer to Section 2.3.

2.2.3 Synthesis of architectural ideas

> ***Utzon's brilliance – genius, if you like – is in his multiple-problem-solving ability. He analyzes the complex, conflicting series of problems, which constitute practically any architectural brief and he comes up with a single answer which solves all of them simultaneously.[21]***

Utzon's creative genius is exemplified in his masterful synthesis of different architectural ideas and aesthetic cultures within a single building. The building represents a defining moment in the search by mid-20th century architects for an appropriate formal, structural and material vocabulary to reflect monumentality and civic value in contemporary architecture.[22] Utzon himself wrote about this in the *Utzon Design Principles*:

> ***This happened at a time where the reigning functionalism had not yet yielded to the idea of giving buildings a more humane expression. This is explained by S. Gideon in a remark he has in one of his books. He explains that the right to express oneself is back in architecture with this building.[23]***

Utzon's design is rooted in an inspired understanding of the formal language of traditional architecture and the devices used to create environments which elevate the human experience. He found his sources in ancient as well as modern architecture, and cited examples from the Mayan, Japanese, Chinese, Indian, Islamic and western cultures. The influence of the ancient Mayan step-pyramids in Mexico on the podium of the Sydney Opera House, and the analogy of Japanese houses with their 'floating' roofs is well documented in his article in *Zodiac.*[24] Utzon's use of ideas inspired by other places and times is also apparent in many other aspects of the design.[25]

> ***The architecture emphasises the character of the Bennelong Point and takes the greater advantage of the view. The approach of the audience is easy and as distinctly pronounced as in Grecian theatres by uncomplicated staircase constructions…Light, suspended concrete shells accentuate the plateau-effect and the character of the staircase constructions.[26]***

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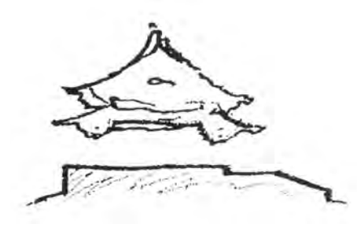
2.8



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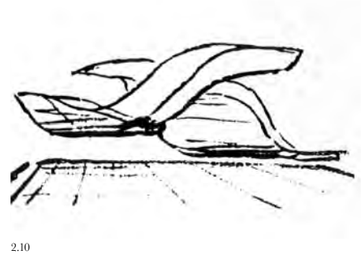


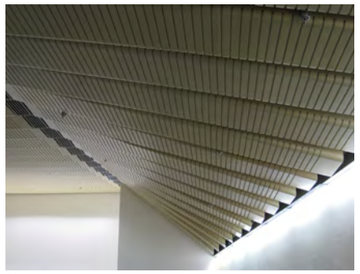
2.10

2.7 *Zapotec ruins, Mexico*
2.8 *Utzon clouds sketch,* Zodiac *No.10*
2.9 *Utzon Japanese house sketch,* Zodiac *No.10*
2.10 *Utzon vaults sketch,* Red Book, Zodiac *No.10*

2.11

2.11 *Utzon palm leaf sketch*, Red Book
2.12 *'Palm leaf' in Bennelong Restaurant*
2.13 *Context and setting*
2.14 *Plywood seating*
2.15 *Plywood ceiling in Main Rehearsal Room*
2.16 *Gloss and matt - like fingernails*
2.17 *Sydney Harbour from 20,000 feet, 1992*
2.18 *Morning departure from Sydney Airport, 2010*

2.14



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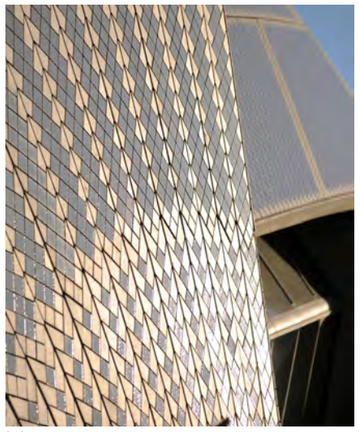

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2.2.4 Additive architecture and prefabrication

The Sydney Opera House is an exceptional testament to the modern ideal of using prefabrication to realise a unified theme that remains flexible, economic and incremental.[27] Prefabrication was used for the concrete ribs that support the shells, the mass-produced ceramic tiles that constitute the surface of the shells, and the moulded granite blocks that clad the podium. Utzon's quest for an architecture of standardised elements used prefabrication not only as a means of achieving economies but also for achieving the perfection of a machine-made object in a way that retained the qualities of hand-made articles (such as the roof tiles).[28] This was aided by the precise geometric order which underpinned many elements of Utzon's design. Drawing on his understanding of natural forms, he was able to assemble and create elements of great beauty and finesse from these prefabricated components. Hence the great architectural historian Sigfried Giedion could write that here (at Sydney Opera House) 'the machine is subordinated to the creative process'.[29]

A distinctive feature of Utzon's design concept for the interiors was his intention to use prefabricated consistently-sized plywood elements to clad walls and ceilings of corridors and spaces in the podium. These were to be assembled in a way that provided opportunities for lighting as well as concealing services. He had also intended to use moulded plywood elements for the seating and fitouts. This concept was executed by Peter Hall in a modified form.

Utzon understood the relationship between design, the technology of manufacturing and the choice of materials and finishes, and was highly respected by consultants and those on site for this understanding. Utzon consistently developed new and advanced technologies. He 'used whatever technology would best accomplish his objectives and was determined to create, or appropriate, industrially fabricated modular systems with sufficient flexibility to facilitate the often extremely complex construction programs. In all this Utzon was helped by a variety of firms and people but until 1966 it was his vision that directed the project'.[30]

2.2.5 Urban sculpture

With its soaring white shells set upon a massive podium encircled by harbour waters, the Sydney Opera House is a spectacular sight – a monumental urban sculpture, from whatever angle it is viewed by day or night.[31] Utzon understood that the Opera House would be viewed from all sides – from water and land as well as from above, where the city's tall buildings and the nearby Sydney Harbour Bridge provide viewing platforms for thousands of Sydney's workers, commuters and visitors.[32] He knew this required a sculpturally beautiful roof, which he described as its 'fifth façade'.[33]

Utzon's design was an exceptional response to the harbour setting.[34] 'It is a mark of his genius that he so brilliantly interpreted the location, the light and the landscape with its sculptural forms'.[35]

The design was also a brilliant response to the cultural purpose of a performing arts centre, a place that excites the human imagination. It did not just provide a new performing arts venue, but offered the dream of a cultural centre for the city, a place in which the imaginative life and culture of the people might flourish.[36]

It is today as Utzon envisaged it in 1959, when he predicted: 'The Sydney Opera House will perform its own exciting drama on the harbour'.[37] His son, Jan Utzon, described it as being 'like a flower in the centre of the harbour.'[38]

One of the great architectural contributions of the Sydney Opera House is the introduction at a civic scale of the podium as a means of affording views of the surrounding landscape. The Podium offers continuity with the peninsular landscape and functions as a ceremonial stage, a high altar to the arts and culture of Australia.[39]

The roofs hover over platforms, 'leaving the spaces between free, like in Japanese houses', suggesting an elemental contrast of rock against cloud.[40] This opposition is a theme within Utzon's work and is skilfully realised in the Sydney Opera House where the visually solid, earthy podium supports the vaulted white shells that rise into the sky. In Utzon's works, the earthbound base has become a 'free' man-made continuation and interpretation of the site, while the roof is understood as a visualisation of the qualities of the sky.[41] Refer to Figures 2.7 to 2.10.

2.17

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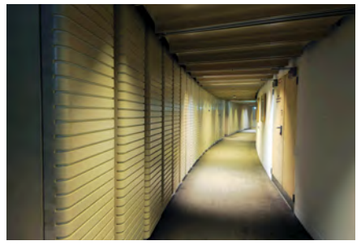

2.19

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2.19 *Corridors with 'wobblies', 2010*
2.20 *Artists' area, 2010*
2.21 *Service area corridor, 2010*
2.22 *Concert Hall, 2008*

2.22

2.2.6 Peter Hall's contribution

Following Utzon's departure from Sydney in April 1966, the NSW Minister for Public Works, Davis Hughes, and the Government Architect, Ted Farmer, appointed a panel of Sydney architects to complete the project. It consisted of Peter Hall (from NSW Department of Public Works) as design architect, Lionel Todd (of Hanson, Todd & Partners) to oversee contract documentation, and David Littlemore (of Rudder, Littlemore & Rudder) to manage construction.[42] They became Hall, Todd & Littlemore and played a significant role in the completion of the Opera House, and their work is integral to the authenticity and integrity of the place.

At the time of opening in 1973, all interior spaces had been fitted out under the direction of Peter Hall. He was responsible for the selection of fittings, finishes, furnishings, colours, lighting and signage – everything that was required for completion of the complex. It is clear from his own words, and from comparison of his work with that documented by Utzon, that he took as his starting point what he knew of Utzon's design concepts and ideas, and tried to retain and respect these in his own contribution to the place.[43] In this respect some of his spaces are more successful than others.

For both the exterior and interior, many of Utzon's ideas for materials, details and finishes were already determined or well developed. However, for the interiors, much had to be revised following the decision to change the uses of the main halls after his departure. There is evidence to support an assumption that Peter Hall may have been unaware of some of the Utzon documentation that we have access to now.[44] Where he had very little or nothing to work with, Hall established his own concepts and design regimes, while trying to maintain a level of quality and design he considered appropriate for Utzon's building.[45]

Except for the major re-organisation of the spaces formerly occupied by stage machinery and associated service areas for the major hall, the structural configuration of the spaces within the podium were already determined and substantially complete by 1966. Comparing the present plan with that published in the *Gold Book* of 1959, it is clear that very little of Utzon's structural configuration has been changed.

In finishing off these spaces, Hall was constrained by a considerably altered building program, and an imperative to limit budget and time overruns.[46] As a consequence his team established a hierarchy of the various parts of the building, with an appropriate palette of finishes for each. This hierarchy was:

1. Exterior and external works
   (elements and finishes determined primarily by Utzon)
2. Main auditoria
   (entirely redesigned by Hall to address an altered program of use)
3. Other public spaces
   (elements and finishes determined by both Utzon and Hall)
4. Administration and artists' areas
   (spatial qualities and finishes determined primarily by Hall)
5. Service areas
   (spatial qualities and finishes determined primarily by Hall)

Even within the limited budget, Hall 'thought it desirable that all the spaces of the Opera House be recognizably part of the same building. This implies some commonality of character throughout.'[47] To achieve this, he introduced a number of key design concepts which unified the interior spaces.

The most notable of these was the use of moulded white birch veneered plywood panels throughout the more important spaces.

It had already been decided to use this material for the Concert Hall ceiling and chair shells, and extending its use into other areas strengthened the consistent identity of the interiors.

Affectionately known as 'wobblies', they were used on ceilings and selected walls to conceal, and enable ready access to, services within the administration and artists' areas, as well as the auditoria within the Podium.[48] They were also used in a modified form for the joinery fitout in these areas, and provide an appropriate and consistent level of detailing and finish which accord with Utzon's concepts, particularly in the back-of-house areas.

Other key unifying aspects of Hall's design concepts were the use of signature colours for each auditoria and associated foyers, and a consistent carpet colour and design language for finishes and fitout in the administration and artists' areas.[49] All exposed masonry was painted white, and all services carefully laid out and arranged in exposed colour-coded conduit - fully visible in the service areas.[50]

This 'commonality of character' was extended to light fittings, door furniture, typefaces and signage, and all details throughout the Podium.

2.2.7 Utzon's re-engagement

Jørn Utzon's re-engagement with the project in 1999, coupled with the engagement of Richard Johnson and his firm Johnson Pilton Walker, signalled a new era and a return of Utzon's design ideas. This new era was different from the original Utzon period in that the problems to be addressed were born out of almost thirty years of experience of the building's use and evolution, especially in terms of performance requirements. In addition, Utzon's own ideas had evolved and matured in the years since he left the project and technology had progressed considerably. Many of these were articulated in the *Utzon Design Principles* published in 2002. The *Utzon Design Principles* include sections on vision, future and design principles. The latter consist of Utzon quotations, arranged with the assistance of Richard Johnson, and approved by Jørn Utzon. The document was endorsed by the Sydney Opera House Trust in 2002.

The refurbishment of the public lavatories behind the Box Office cloaking areas, designed by Richard Johnson and peer reviewed by Jørn Utzon, was completed in 2003. This refurbishment followed Utzon's design concepts and re-exposed the overhead concrete folded beams in these areas. The 2004 refurbishment of the former Reception Hall [51] as the Utzon Room by Jørn Utzon has become a signature space in the Sydney Opera House and, predictably, aligns seamlessly with the *Utzon Design Principles*. It incorporates a tapestry designed by Utzon.

The more recent Western Colonnade (opened 2006) and the Western Foyers and access upgrade (opened 2009), by Jørn Utzon in association with Johnson Pilton Walker, have demonstrated how change can be accommodated within the framework of the *Utzon Design Principles*.

The Utzon Room, and to a lesser extent the Western Colonnade, have both adhered strongly to the character and design palette of Utzon's original work. The Western Foyers project has introduced a slightly different but nonetheless related design palette.

Utzon's most substantial contribution to the place since his re-engagement was his (as yet unexecuted) design for the renewal of the Opera Theatre (now Joan Sutherland Theatre), described and documented in the *Gold Book* presented to the Sydney Opera House Trust in 2005.

2.3 STRUCTURAL ENGINEERING & TECHNOLOGICAL INNOVATION

Sydney Opera House is of Outstanding Universal Value for its engineering and technological achievements and other innovations. Its value derives in part from Utzon's unique design and his distinctive approach, which included the integration of design, engineering and construction. A vibrant and creative interaction emerged between architects, industrial designers, engineers, manufacturers and the construction industry — all striving to meet the challenges of his unprecedented design concept as well as the constantly evolving and exacting design requirements encountered during construction of the building.[52]

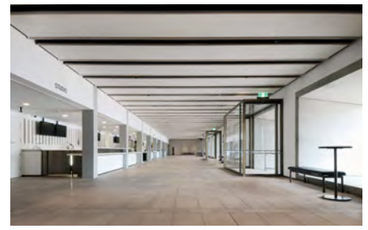
A vital element of Utzon's approach was the fusion of, and interplay between, the aesthetic, scientific and abstract; and between the traditional crafts of the building industry, and new materials and technologies.[53]

> ***'I like to be on the edge of the possible,' is something Jørn Utzon has said. His work shows the world that he has been there and beyond – he proves that the marvellous and seemingly impossible in architecture can be achieved. He has always been ahead of his time. He rightly joins the handful of Modernists who have shaped the past century with buildings of timeless and enduring quality.[54]***

Utzon's desire to express the nature of each material truthfully is exemplified in his comparison of concrete and plywood.

> ***These two materials supplement each other, the concrete being the load carrying structural material, and the plywood being the suspended secondary material. I have treated the concrete in this building in its pure form and arrived at structures which express their load carrying function (the ribs and the folds), and now I want to express truthfully, the plywood as a thin membrane which achieves its stiffness in bent form.[55]***

Utzon's radical design, which included unprecedented architectural forms such as the shells, required new solutions including new technologies and materials.[56] These challenges were resolved through the collaborative efforts of Utzon and the engineering and construction teams.[57]



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2.23 *Western Foyers, 2009*
2.24 *Utzon Room, 2004*
2.25 *Western Colonnade, 2006*
2.26 *Utzon and Johnson discussing Opera Theatre renewal, c.2005*
2.27 *Utzon's signature on Utzon Room tapestry*

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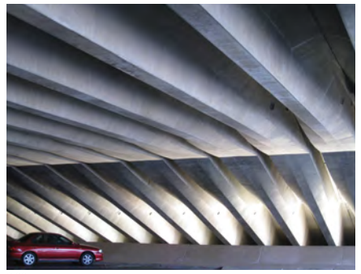

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2.28 *Under construction, 1971*
2.29 *Covered Concourse beams, 2009*
2.30 *Northern Foyer beams, 2010*
2.31 *Roof schema evolution, 1957-63 (opposite page)*

The outstanding contribution of engineers Ove Arup & Partners who worked on the building for 16 years, led by Copenhagen-trained engineer Ove Arup, was pivotal to the realisation of Utzon's design. In some cases, groundbreaking research and development were needed in several engineering fields involving close collaboration between the engineering design team and university teams in Britain and Australia.[58]

Examples of engineering and technological feats that helped to transform Utzon's design into a built reality are detailed below.

2.3.1 The Podium

The construction of the Podium was a significant design and engineering achievement. The challenge was to construct a podium that simultaneously created a sense of the continuation of the natural landscape and a bold modern structure of continuous reinforced concrete that rose out of the ground and overlooked the harbour.[59] Utzon's initial design concept was for the [Covered] Concourse to be supported by a number of columns. Ove Arup investigated ways to better reflect Utzon's precepts: 'Express honestly the characteristics of the material used' and 'Let the structure speak for itself'.[60] The bold solution was a beam system that integrated the techniques of folded plate structures and prestressing. The single-span design created a form both sculptural and efficient.[61] This design provided the ability, long sought by architects, to create huge spaces unencumbered by structural supports. Utzon credited the design as 'Ove's invention'.[62]

The finish on the beams over the Vehicle Concourse disappointed Utzon and convinced him to pursue prefabrication for the shell structures.[63] On the other hand, the cranked concrete beams spanning the lower northern foyers present arguably the finest off-form finish of all the in-situ casting on the site.

2.3.2 The shells and the spherical solution

After many attempts at fulfilling the promise that the competition proposals promised, an intensive collaboration between architects and engineers ended with an absolutely clear solution with ball [spherical] geometry that gave the right answer to all the many problems that such a huge and complicated task could throw up. We had no precedent to go on … only through [a] series of experiments did we come to understand all aspects and find ourselves able to reach the result. It was like climbing Mount Everest for the first time.[64]

The design solution for the shells was a major feat by Utzon and Ove Arup & Partners. Experimentation with new concrete forms such as shells and large-scale concrete structures had been going on since the early 20th century. However, there was no precedent for Utzon, his architects or the engineers to follow in developing a design solution for the shells.[65]

Intensive efforts were made to retain the integrity of the initial design comprising shell roofs that remained self-supporting without reinforcements.[66]

Ove Arup & Partners undertook extensive engineering research and calculations over four years, including 'tens of thousands of man-and-computer-hours' at their London office.[67] They proposed over a dozen different geometries for the shells and different ways of studying them, starting with parabolic surfaces, moving to ellipsoid schemes and then on to circular arc rib proposals.[68]

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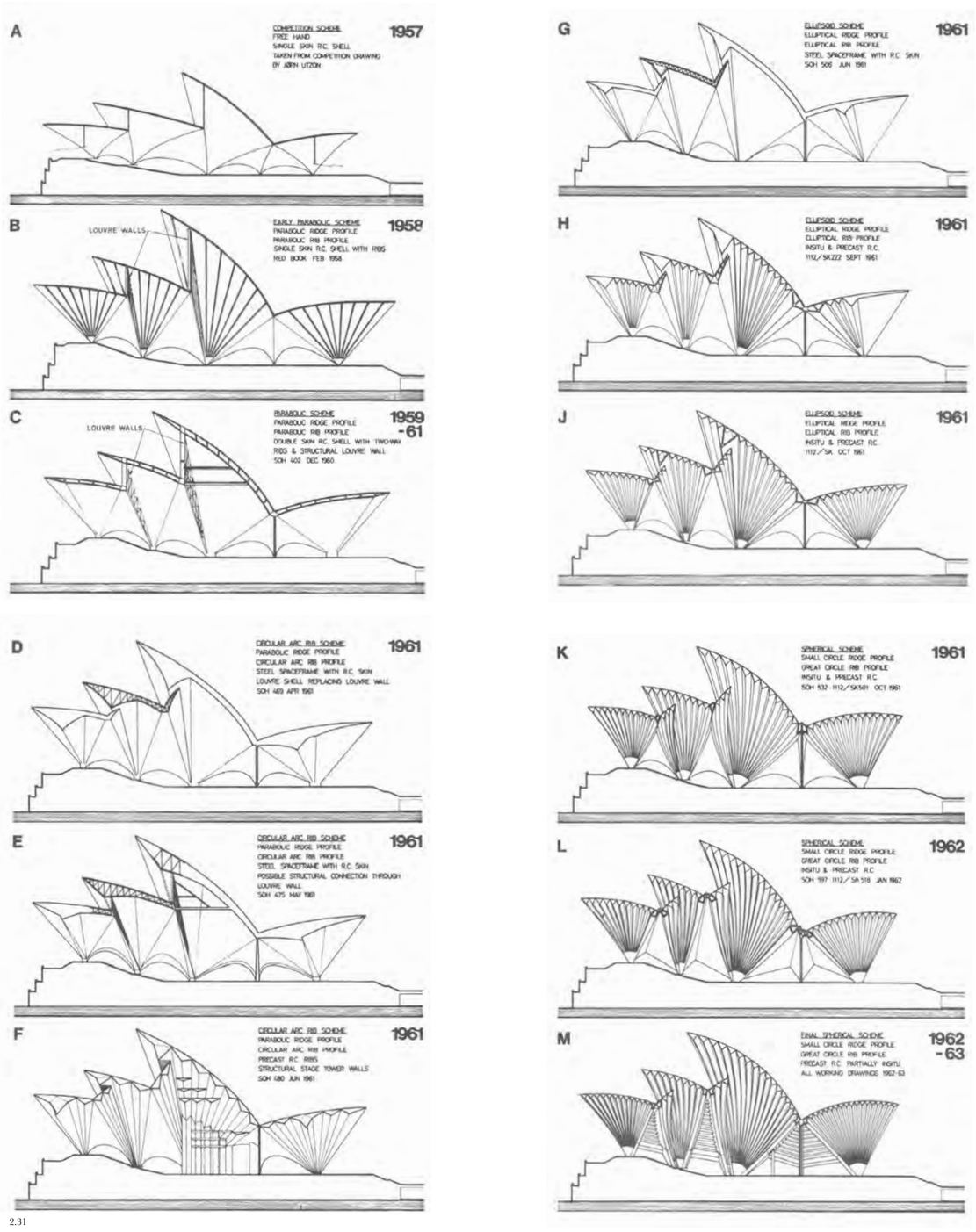

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2.32 *Utzon's spherical model, 1962*
2.33 *East elevation with spherical shell roofs, 1962*

In late 1961, Utzon was struck by the idea that all the roof shapes could be derived from a single sphere. Sharing a common radius, the segments could be broken into individual components, prefabricated and then assembled on site.[69] The order and geometry underpinning Utzon's design was considerably strengthened and unified by the spherical solution for the shells. Arup later confirmed that the 'spherical solution' was Utzon's idea, and recounted the turning point in the development of the roof shell design:

> ***But then Utzon 'phoned from Copenhagen that he had solved the whole problem of pre-casting. It transpired that he had changed the whole shape of the shells by cutting each of them out of the same sphere. So now they are all spherical, and the ribs follow meridian curves on spheres of the same radius, 246 feet. That means that all the ribs are identical, although of different length, and cut off at different angles at the spine end.[70]***

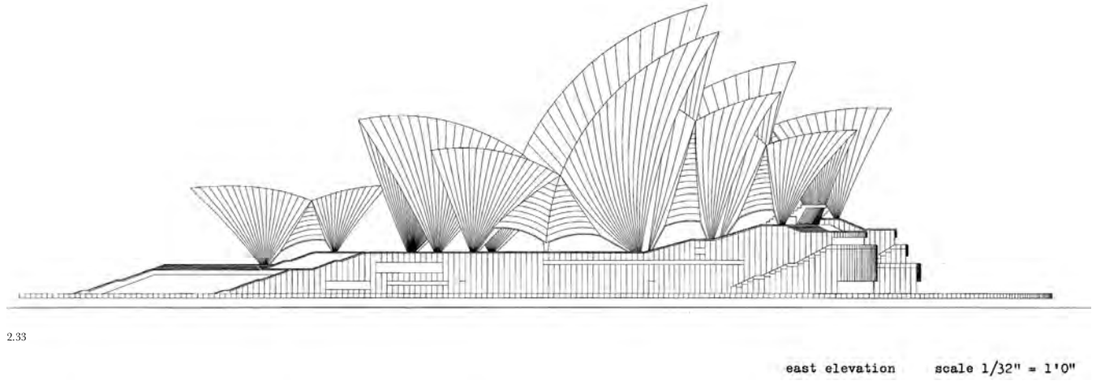
Utzon acknowledged that all the work of the previous years by his own and Arup's office had contributed to reaching the new 'magnificent solution'.[71]

Utzon tested his idea using a partially immersed rubber beach ball and then worked overnight at the Helsingør shipyards to make a beautiful timber model to explain the concept. (See Figure 2.32 adjacent.) He later used the analogy of segments of an orange to illustrate this.[72]

Building the shell structure was a significant engineering and construction achievement that overcame challenges and fostered innovations. The unprecedented structure required complex, repetitive research and exacting structural analysis. The interplay of the shape with the amount and method of stiffening required a complex and delicate balance that the structural engineers had to find.[73] It was not possible to calculate the correct geometry for shell architecture until the forces and bending moments were known; but these could not be calculated until the precise geometric form was established. Engineers using specialised computer equipment carried out tests lasting almost a year on a physical model located at Southampton University (England).[74]

The analysis demanded a precise, computer-generated mathematical description of the geometrical form of the shells in order to undertake more precise calculations of stresses, forces, bending moments and deflections. The Sydney Opera House was one of the first buildings in the world to make use of computers in its construction process. It can be seen as a precursor to the complexity of architectural constructions that have now become possible by means of computer-aided design.[75]

It was an emotional moment when the shells eventually took solid form. The realisation of the colossal human and technological achievement struck home for all who had been involved in its creation. Architect Peter Myers remembers 'being on site when the plywood forms were removed from the concrete beams that arc up either side of the northern foyers like the ribs of a fan. The concrete was perfect, the edges were pure, there wasn't a blemish,' Myers said. He turned to see tears running down Utzon's face. 'And then I saw that the tough Italian workers were crying too. Their pride in workmanship was being acknowledged, and we were all transported by what had been achieved'.[76]



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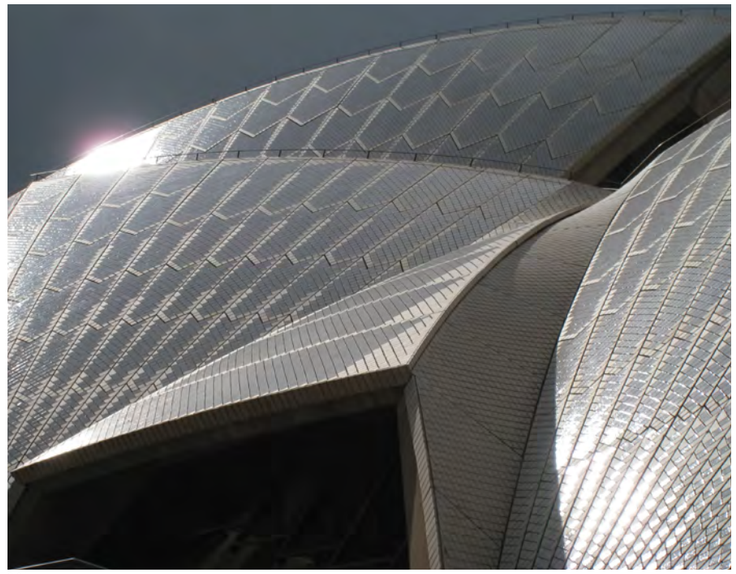

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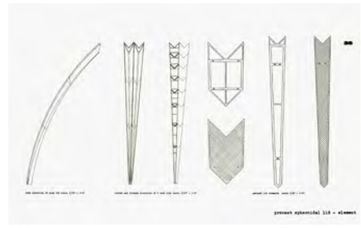
It was the detailed design and construction of these shells that pushed the boundaries of the possible. The distinctive form and qualities of these shells have provided much material for artists, photographers and even cartoonists. Their form is the 'signature' of the Sydney Opera House, as evidenced by the Opera House's own logo and that of events and organisations associated with the House and the city.

2.3.3 The external tile cladding of the shells

The spectacular tiled surface of the shells represents a great architectural triumph and exemplifies Utzon's marriage of craft and technology, tradition and the search for new forms of expression.[77] The ribs of the roof shells are covered by precast concrete lids that are, in turn, clad with tiles. The design, finish and arrangement of the tiles is one of the celebrated instances of Utzon drawing his inspiration from nature. He likened the structure of the shells and their covering to the structure of a leaf with the whole subdivided into parts and, at the micro level, each part a tiny membrane separated by veins. For the reflective qualities of the tiles, he was inspired (as noted earlier) by the glancing reflection of the sun on different types of snow and ice.[78] His original concept included a rolled edge detail but this was not executed.[79]

The Swedish tile manufacturer Höganäs was commissioned to produce the highly specialised tiles as no standard product was available. It took three years of experimentation to achieve the right quality and finish. A new design solution then had to be devised to bond the tiles to the curved shell structure. A solution was found using 'tile lids' which modified a Swedish glue process to create a recess between each two tiles in order to define the edges.[80] The lids and their tiles were fixed with precision and followed the curvature of the shell exactly, presenting a completely smooth exterior skin. When all the tiles had been placed in position, the joints between tiles were partially filled with heated animal glue, which set on cooling (melting point 90-95°F), to prevent grout penetration onto the surface of the tile lids. Steam curing was introduced by covering each tile lid with a tent-like PVC hessian hood to a maximum temperature of 170°F. Heat from the steam curing melted the animal glue and the tile lids were then cleaned with steam. All recessed joints were then sealed with an epoxy compound.[81]



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2.34 *Tile reflection, 2009*
2.35 *Tiled lid construction*
2.36 *Drawing of prefabricated ribs, tile lids, 1962*
2.37 *Tile lids waiting for installation*

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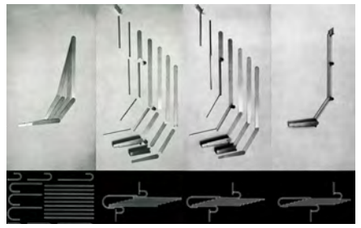

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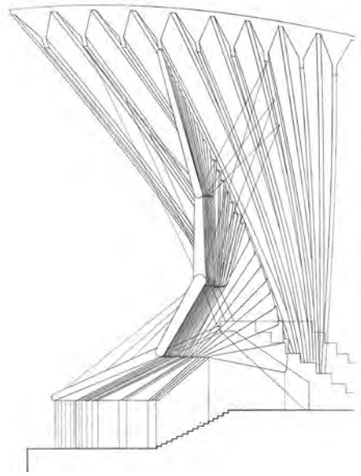
2.38 *Glass wall mullions*, Zodiac *No. 14*
2.39 *Glass wall (northern walls) scheme, 1962*
2.40 *Glass wall scheme, 1964*
2.41 *Glass wall (Major Hall) scheme, late 1965*

2.3.4 The glass walls

Originally conceived by Utzon as being made from prefabricated standard-sized components, the glass walls were to provide an aesthetically acceptable link between the curved geometry of the shells and the rectilinear geometry of the Podium paving. The structure, consisting of layered plywood components forming solid mullions clad externally in bronze (the depth of each responding to structural forces), was to be suspended from the shells in an arrangement that resembled a bird's wing.[82] These frames were then to be fitted with glazing panels, all manufactured to the same width, based on the paving modules. Both Utzon's and Ove Arup's office 'worked for a long time with a solution where the mullions were plywood laminated with bronze but it turned out to be somewhat complicated.'[83]



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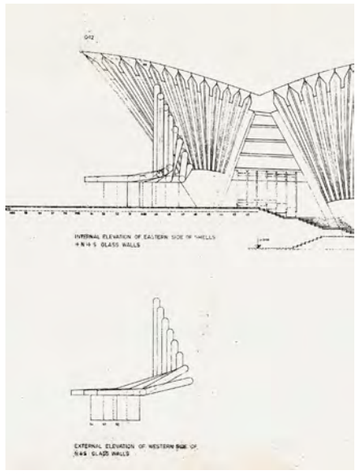

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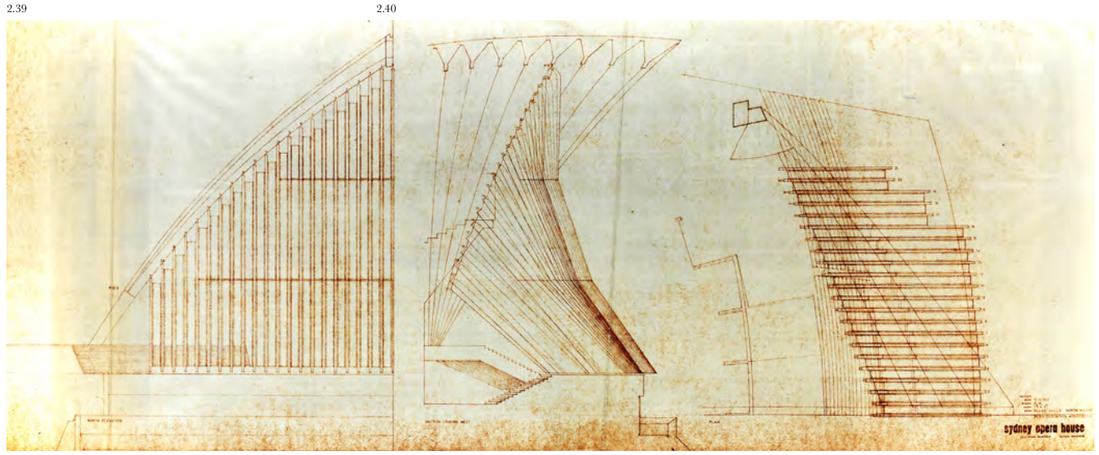
Until 1965, Utzon was pursuing a solution that provided a band of vertical glass immediately above the Podium. In late 1965, shortly before his departure, he arrived at a more dramatic solution where the glass wall met the Podium at an angle. This lesser known scheme was in response to structural concerns, but this was not Utzon's preferred. This scheme was considered by Arup's team to be buildable.[84]

> ***At the last meeting I had with the engineer from Ove Arup's firm, Mick Lewis, I handed over the drawings for mullions made of twin pipes with a distance between them, ... And upon seeing this Mick Lewis said, "Well now I can make the glass wall."*** [85]

The refusal by the then Minister for Public Works to approve funding to test the solution with a prototype was one of the issues in the breakdown of Utzon's relationship with the Minister and contributed to his resignation.

The present design solution for the glass walls, arrived at under the direction of Peter Hall but loosely based on the earlier scheme by Jørn Utzon's office, pushed the boundaries of contemporary technology to the limit and took eight years to complete.[86] They were the first large-scale example of the use of glass as a structural material as well as a window and became 'the precursor of a style of enclosure that has now become commonplace'.[87]

The glass walls of the Sydney Opera House were the forerunner of many dramatic glass walls that have been constructed since.[88]



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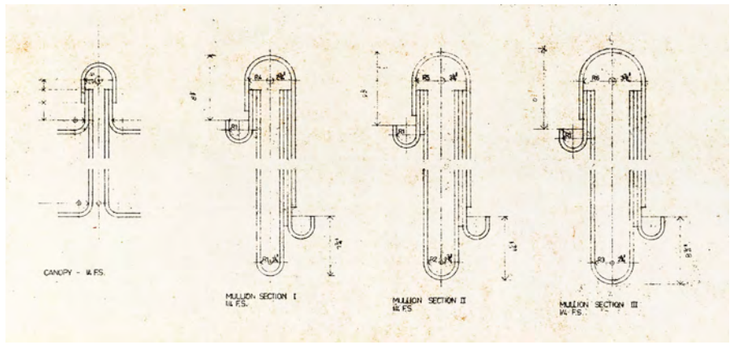

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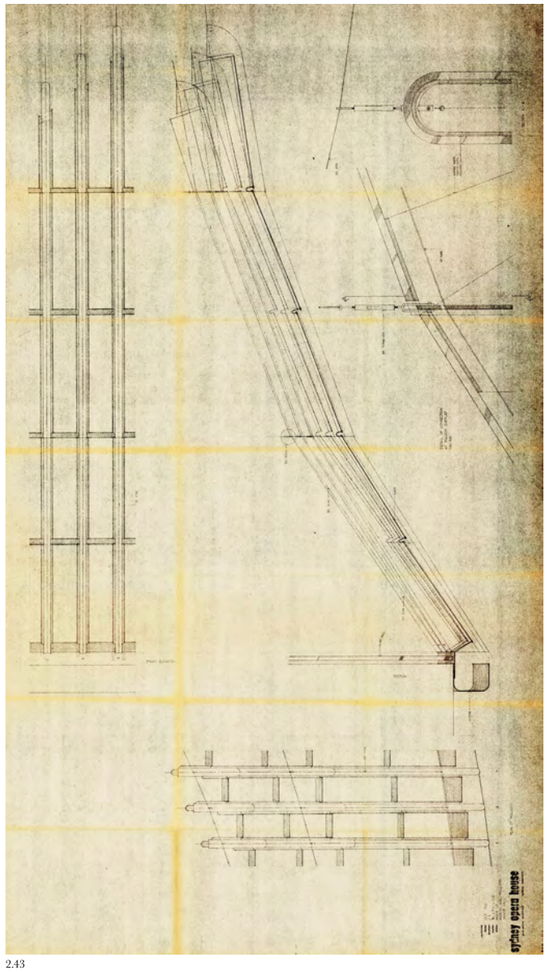

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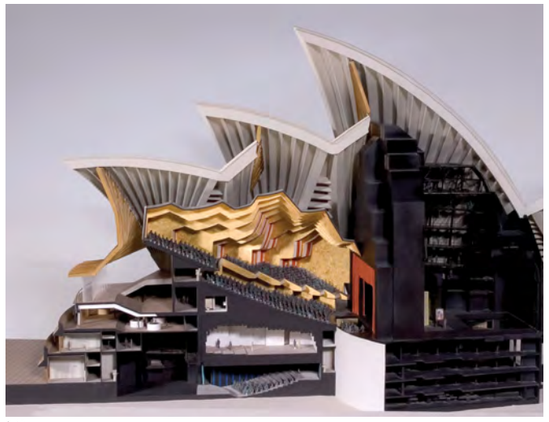

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2.42 *Hollow plywood mullions, 1965*
2.43 *Glass wall (Minor Hall) scheme, late 1965*
2.44 *Hall's glass walls, 2010*
Sectional model, 1964
2.45 *Sectional model, 1966*
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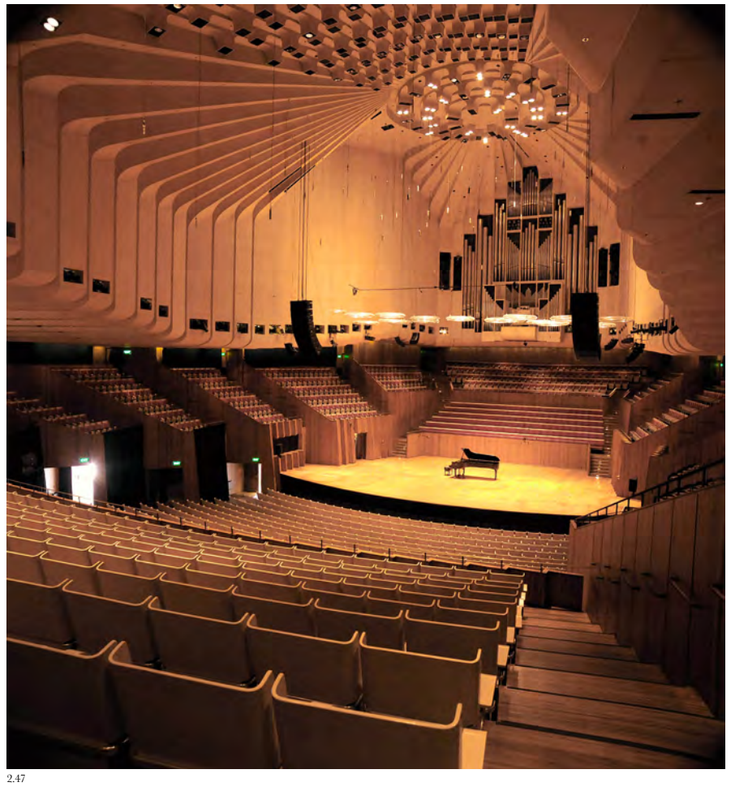

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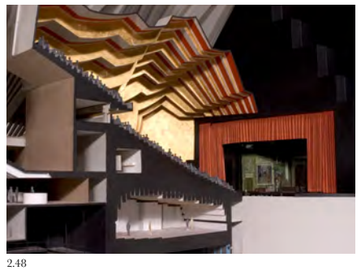

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2.3.5 Concert Hall and Joan Sutherland Theatre (Opera Theatre)

The Concert Hall was originally intended by Utzon as a major hall to house grand opera and ballet, as well as orchestral performances. The original design included a full stage with proscenium arch and an orchestra pit. When the brief was altered (following Utzon's departure) to make this space a dedicated concert hall, Peter Hall was required to revise the design completely. Hall's solution necessitated the removal of the proscenium and the associated stage machinery in the major hall, most of which was already installed. Traditional opera and ballet would now only be possible in the minor hall, originally intended for theatre or smaller operas.

This resulted in large unused spaces below the stage and the southern part of the auditorium. These spaces became the Rehearsal and Recording Hall (now The Studio), a small auditorium for chamber music, the Music Room (now the Playhouse), and an exhibition space (now occupied by facilities for the Western Foyers). These were the largest of many changes and upheavals in the design of the Sydney Opera House following Utzon's departure, resulting in long-term impacts across the site.

Peter Hall's re-design of the major hall was strongly influenced by Utzon's original concept, with the radiating ceiling ribs focused on the proscenium arch. With the proscenium removed from the brief, Hall modified the radiating plywood ribs and introduced a circular 'crown' element above the stage platform to resolve this missing focal point. The ribs fan out from this crown to include the organ as a fully integrated element above the orchestra platform and choir stalls. Aesthetically, the Concert Hall is Hall's finest and most successful space within the building.

The pipe organ, prominently positioned behind the orchestra platform, was designed and built by Ronald Sharp of Sydney and completed in 1979. It is believed to be the largest mechanical action organ in the world.[89]

In designing the Opera Theatre (now Joan Sutherland Theatre) in the late 1960s, Hall tried to find solutions to the limitations of space and structure (as well as budgets) forced on him. He considered various alternatives but was constrained largely by the configuration of the pit and stage revolve already partly built.[90] The Joan Sutherland Theatre (Opera Theatre) is a less successful space aesthetically, functionally and acoustically.

2.4 ICONIC BUILDING OF THE 20TH CENTURY

The Sydney Opera House is one of the most acclaimed buildings in the world, instantly recognised by people around the globe. The building signifies not only the city of Sydney but the whole nation. The Pritzker Prize, awarded to Jørn Utzon in 2003, formally recognised that the Opera House was 'one of the great iconic buildings of the twentieth century' and that it was 'an image of great beauty known throughout the world'. Architectural historians have noted that the building achieved iconic status even before its completion.[91]

The Opera House holds a special place in the history of modern architecture as both an architectural masterpiece and a cultural edifice, both iconic and 'canonic'.[92] It is one of very few twentieth-century buildings to be measured against the achievements of past civilizations.[93]

It is widely thought that the Sydney Opera House was the origin of the influential late 20th-century trend to erect a 'signature building' in order to create a focal point that could become an internationally recognised symbol of that city. Important architectural writers including Charles Jencks, Christian Norberg-Schulz, Philip Goad and Dennis Sharp have noted the era of the iconic building may have emerged with Utzon's design of the Sydney Opera House.[94]

2.5 PERFORMING ARTS CENTRE

The Sydney Opera House is not a museum-monument; it is a functioning performing arts centre – one of the busiest in the world, with around 2,500 events and performances each year. While certain functional shortcomings are acknowledged, the Opera House is highly esteemed by the performing arts community (locally and internationally) as a blue-ribbon venue for world-class performances and entertainment. Many visitors are inspired to attend their first opera, ballet, symphony, drama or other performance by a trip to the Opera House. This combination is a powerful one, making the Sydney Opera House a pinnacle destination for performers as well as patrons.

Its success can be partly attributed to its versatility – the ability of the Opera House to adapt to and accommodate the various types and changing forms of cultural performance. This multi-venue performing arts centre is able to incorporate a diverse programming mix including opera, ballet, drama, orchestral concerts, chamber music, recitals, choral, folkloric, film, contemporary circus, spoken word, puppetry, contemporary music, performance and dance, ceremonies, receptions, exhibitions, conferences, competitions and sporting events, and emerging artforms, and has done so continually for more than 40 years. The place has inspired, and is often the scene of, groundbreaking and awe-inspiring performances, including site-specific works such as 'The Eighth Wonder' (1995), an Australian Opera about the Opera House itself, and world-firsts such as 'House Dance' (1999), a group dance performance on the 'spherical stage' that is the Sydney Opera House sail, which was commissioned for the Millennium New Year's Eve celebrations and broadcast globally.

The Sydney Opera House is a cultural site in every sense of the word and a focal point for numerous community and cultural events, and has played host to an extensive range of events, activities and artists. It is cherished by a wide cross-section of the community for its accessibility to both free and paid outdoor and indoor entertainment, civic celebrations and cultural pursuits. The resident arts companies at the Sydney Opera House are Sydney Symphony Orchestra, Opera Australia, The Australian Ballet, Sydney Theatre Company, Bell Shakespeare, Bangarra Dance Theatre and Australian Chamber Orchestra.

The Podium steps and Forecourt form a spectacular outdoor auditorium – a seventh venue. Many sporting events have been started, completed or staged here, including the Sydney Olympics torch relay, Olympic triathlons and the annual Sydney marathon.

The Sydney Opera House is the preferred venue for many nationally and internationally significant hallmark events; it has hosted Bicentennial Day celebrations, Australian Idol singing competition finals, the Asia-Pacific Economic Cooperation (APEC) 2007 forum, World Youth Day 2008 events, and the Crowded House 'Farewell to the World' concert in 1996, among others. Each year the Sydney Opera House becomes a key feature of Sydney's much anticipated New Year's Eve celebrations. Around 1 million locals and visitors pack the shoreline of Sydney Harbour, with people travelling from all over the world to join the festivities. The Sydney Opera House is

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2.47 *Concert Hall, 2010*
2.48 *Utzon's major hall, 1964*
2.49 *Joan Sutherland (Opera Theatre) 2010*
2.50 *Australian Ballet's Sleeping Beauty*
2.51 *The Opera House, an aesthetic adventure, 1989*
2.52 *Sting concert on Forecourt, 2011*

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2.53 *Festival of the Dreaming, 1998*
2.54 *Korean War plaque on Tarpeian Wall*
2.55 *A retaining wall associated with the production of lime on the site in the early 19th century*

band Midnight Oil) underscored the key role the Sydney Opera House plays in Australia's performing arts:

> ***In addition to its physical beauty, the Sydney Opera House has also played a major role in the development of Australia's artistic and cultural identity. It is home to some of our premier performing arts groups including the Sydney Symphony Orchestra, The Australian Ballet and Opera Australia. Indeed I'm proud to say that I, too, have had the unforgettable opportunity to perform here some years ago – I cherish the thrill of walking out first time onto the Opera House stage.[97]***

Whether they be performers, those involved with the design and preparation of the performance, or those involved with the management and maintenance of the building, all are inspired to achieve an outcome 'worthy of the Sydney Opera House'.

As Jørn Utzon prophetically stated in 1965:

> ***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.[98]***

2.6 IMPORTANT PAST EVENTS, ACTIVITIES & USES AT BENNELONG POINT

Bennelong Point, the site of the Sydney Opera House, is associated with important past events, activities and uses, and is one of the places of early contact between local Aboriginal people and European settlers.

The Sydney Opera House is situated on Gadigal Land and associated with a major meeting area and place for celebration and ceremony (corroboree) at the adjacent Farm Cove. This peninsula, known as Tu-bow-gule when the colonists arrived, is now named after Bennelong, a Wangal man whose relationship with the Europeans demonstrated early attempts by the colonial government to reconcile both cultures, including the construction of the first European building for an Aboriginal person. It was in a sense the first Aboriginal Embassy in Australia.[99] History records the colonists being invited to Bennelong's hut to witness a corroboree in 1791. It can be said that Bennelong Point has been used in association with, and for cultural exchange and performance since at least the 1790s, and remains a place of continuing significance to Aboriginal people. Its values are associated with both tangible and intangible aspects of Aboriginal cultural heritage.[100]

The recorded use of the Bennelong Point site for Aboriginal performance and cultural exchange in the 1790s adds provenance to the unique role it has consistently played in Sydney and Australia's performing arts culture.[95]

Sydneysiders take pride in 'their' Opera House for putting Sydney and Australia on the world map. The city's self-image as a modern and progressive metropolis is due in no small part to the Sydney Opera House's reflected architectural and cultural glory. This one building defines for many the city's and the nation's coming of age.

The history of the creation of this masterpiece, coupled with its highly held universal esteem, continues to inspire and encourage the pursuit of excellence and innovation in those who use it and are associated with it. The venue has constantly adapted to progressive technical and technological improvements (in acoustics, for example) in harmony with Utzon's method of working, namely the dynamic reach for perfection through continuous experimentation and innovative problem-solving. Utzon commented in 1992 on the construction process:

> ***You could actually say, and this is very rare, that the building itself forced the people on it, everybody, to live up to an extraordinary standard.[96]***

The Sydney Opera House continues to inspire excellence. In delivering his speech at the State Memorial Service for Jørn Utzon on 25 March 2009, the then Federal Minister for Environment Protection, Heritage and the Arts, the Hon Peter Garrett (former lead singer of Australian rock

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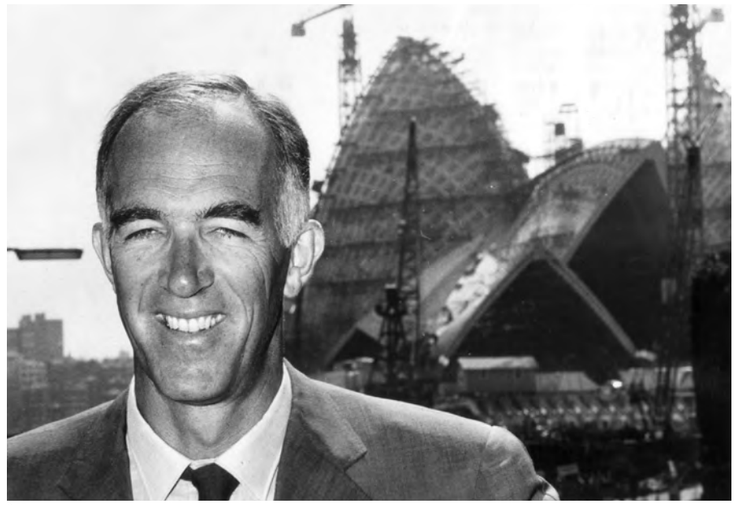
The site has been associated with significant scientific investigation. In 1802 Nicholas Baudin, in charge of a French scientific expedition, was given permission by Governor King to establish his tents on Bennelong Point 'to facilitate the work of the astronomers'. He shared the peninsula with Matthew Flinders, who had already established his own scientific camp nearby.[101]

Bennelong Point became the site of the colony's first defensive work when a small redoubt was built on the site in 1788. This was replaced in 1817 by the construction of Fort Macquarie. Its use for defence purposes continued until 1901, when the fort was demolished and the late 19th-century naval brigade structures were relocated. A number of bronze plaques on the Tarpeian Wall (on the edge of The Royal Botanic Garden to the south of Sydney Opera House) commemorate some of the significant events in Sydney's military history that took place on this site. Although limited, there are known remnants of the fort and early moorings beneath the Sydney Opera House structure, and evidence of lime-burning activities as early as the 1870s was found and recorded in 2012. This proves archaeological potential for understanding and interpretation of the site's past use.[102]

For about a century up until the 1950s, Bennelong Point was a node for marine and land transportation facilities. Ferry wharves, docks and jetties skirted this headland in the 19th century, including wharves of the well-known and long-established Orient Company and the Peninsular and Oriental Company (P&O). The Man o'War Steps and jetty at the south-east of the promontory survives in its 19th-century configuration with later added pontoons.

During the first half of the 20th century, Bennelong Point was a tram terminal – its castellated tram shed demolished in 1958 to make way for the construction of the Sydney Opera House.

Bennelong Point has been a picturesque focal point in Sydney Harbour, from the Macquarie-era fort and Gothic-styled tram shed to – most dramatically – the Sydney Opera House.



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2.7 SIGNIFICANT CONTRIBUTORS

Sydney Opera House is the result of the collaborative efforts of numerous individuals who contributed to the design, construction and completion of the place. Chief among these are Jørn Utzon, Ove Arup and Peter Hall.

2.7.1 Jørn Utzon (1918-2008)

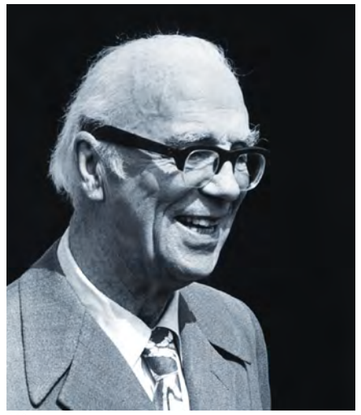
Utzon's influence on other architects of the late 20th century has been extraordinary and extensive. His studio in Sydney alone influenced a whole generation – some of its more notable members including Peter Myers, Richard Leplastrier, Clive Buhrich and Alex Popov.

Following his departure in 1966, Utzon never returned to Australia.

After the Sydney Opera House, he completed other architectural projects such as Can Lis in Majorca (1972), Bagsværd Church in Denmark (1976), the Kuwait National Assembly (1982), the Paustian Furniture Store in Copenhagen (1987) and Can Feliz in Majorca (1995).

In 1999, the NSW Government and Sydney Opera House Trust were delighted to be able to reunite the man and his masterpiece. The then Sydney Opera House Trust Chair, Joseph Skrzynski, played a key role in bringing this reunion to fruition and after a number of approaches, conversations and meetings, Utzon agreed to be re-engaged to develop a set of Design Principles to act as a guide for all future changes to the building. These were published as the *Sydney Opera House Utzon Design Principles* in 2002. Following his re-engagement, Utzon designed a number of important changes and refurbishments at the Opera House.

2.56 *Man o'War Steps and jetty*
2.57 *Jørn Utzon*



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2.58 *Ove Arup*
2.59 *Peter Hall (on left)*

His renewed involvement was made possible with the assistance of his architect son Jan (of Utzon Architects), the Sydney architect Richard Johnson (of Johnson Pilton Walker) and the then NSW Premier the Hon Bob Carr.

In 2003, Jørn Utzon was awarded the Pritzker Architecture Prize (often referred to as 'architecture's Nobel' and 'the profession's highest honour'). This international prize honours a living architect whose built work demonstrates a combination of those qualities of talent, vision and commitment, which has produced consistent and significant contributions to humanity and the built environment through the art of architecture.

2.7.2 Ove Arup (1895-1988)

In 1946 Ove Arup started Ove N. Arup, Consulting Engineers in London, with structural engineering as its focus.[103] It became Ove Arup & Partners in 1949 and first came to the world's attention with the structural design of Sydney Opera House.

Known for his 'ambitions to integrate architecture and engineering'[104], Ove Arup was Utzon's main collaborator on the Sydney Opera House. Arup's firm of engineers, including Jack Zunz (who took charge of the Opera House roof design team in London and supervised the tail end of Stage 1), played a pivotal role in the design and completion of Sydney Opera House.[105] Following Utzon's departure in 1966, Ove Arup & Partners continued their involvement, working with Hall, Todd & Littlemore.

Ove Arup was one of only a few engineers to be awarded the Royal Institute of British Architects' Gold Medal (1966). In 1973 he was awarded the Gold Medal of the UK Institution of Structural Engineers. In recognition of the firm's engineering achievements, five knighthoods and numerous CBEs (Commander of the Most Excellent Order of the British Empire) have been awarded to members of Arup's staff, which is unique for a single organisation of this kind and size. The first CBE and knighthood were awarded to Ove himself.[106]

The engineering consultancy started by Ove Arup is now a global multidisciplinary organisation known as Arup, with expertise in diverse areas including building modelling, façade engineering, theatre design, acoustics, infrastructure design, economics, planning and sustainability.

The Arup Organisation has continued its involvement with Sydney Opera House, including the refurbishment and upgrades in the 2000s.

2.7.3 Peter Hall (1931-1995)

When Peter Hall (then with NSW Department of Public Works) was appointed to the Sydney Opera House project in April 1966 following Utzon's departure, he was only 35 years old. Working with Lionel Todd and David Littlemore for the duration of the job, he was responsible for design and tried hard to implement what he understood of Utzon's intentions for the interiors. Notable Utzon-inspired solutions include the 'wobbly' system of plywood panels on walls and ceilings, plywood shells for the seating, and hierarchy of finishes and treatment of services within the Podium.

Research by Anne Watson into Peter Hall's archives has confirmed that during 1967 Hall and others were involved in negotiations with Jørn Utzon to find a way to re-engage him with his project, efforts that were ultimately unsuccessful. Documents suggest that the nature of these communications, some directly between Utzon and Hall, did not include discussion of Utzon's ideas or proposed details.[107] However it is known from this research that Hall's intent was to follow Utzon's designs as closely as he was able to, certainly much more than he has hitherto been credited for.[108]

At one time, Hall had worked with Marion Hall Best, one of Australia's most important and influential mid-20th century interior designers, whose hallmark was an adventurous and sophisticated use of colour. Hall's association with Best, coupled with his own love of strong colour accents, especially in contrast with concrete or plywood, very likely contributed to his choice of colours for the Opera House interiors.

When working in the NSW Government Architect's office, Hall was the project architect for Goldstein Hall at the University of NSW. In 1964 this project, a 450-seat dining hall together with the first stage of a projected 650-student residential college, won the Sulman Medal, the annual architectural award given by the NSW chapter of the Royal Australian Institute of Architects and its most prestigious.

Peter Hall was an important architect who made a significant contribution to the design and character of the Sydney Opera House interiors.

2.8 COMPARATIVE ANALYSIS

Since its opening four decades ago, the Sydney Opera House has attracted widespread and intense commentary, discussion and analysis across a number of professional disciplines and in popular culture. Architects, engineers, cultural theorists and architectural historians have dissected the building and assessed Jørn Utzon's contribution to the history and development of modern architecture. There is overall agreement that the Sydney Opera House is one of the great buildings of the 20th century.[109]

The Sydney Opera House is unique for its diverse and outstanding architectural and cultural heritage values as a masterpiece of modern architecture, as an internationally famous icon, and for its great engineering feats and technological achievements. It is outstanding for the unique combination of all these features.

The architectural historian Richard Weston has described the Opera House as 'the most recognisable contemporary man-made structure in the world' which is, quite simply, one of a kind.[110] The image and tectonic integrity of the Sydney Opera House are powerful, original and unrepeatable.[111]

The design and performance requirements for performing arts venues across the world are constantly evolving, demanding that each centre meet ever-changing requirements. To date, the Sydney Opera House has been able to meet these challenges to some degree. When compared with other performing arts centres of its period, Sydney Opera House is not remarkable for its function alone. It is the combination of its iconic status as a work of architecture and its function as a performing arts venue that makes it both unique and outstanding. In this respect it inspired other cities across the world to commission iconic buildings to house public facilities, including performing arts centres.

When the Opera House was completed, its facilities (including the Waagner-Biro stage machinery) were at the forefront of technology, but these are now approaching the time when they will require upgrading if they are to continue to fulfil expectations for excellence in the performing arts.

The World Heritage Nomination document discusses this issue of comparative analysis in some detail, and draws heavily on an essay by Christian Norberg-Schulz, a Norwegian architectural historian and critic. He was specially commissioned to prepare the comparative evaluation for the nomination in 1996.[112] The arguments are not repeated here.

2.9 HERITAGE LISTINGS

The following heritage listings of the Sydney Opera House indicate that the place is widely valued. The full listings are included in Appendix B.

A list of honours and awards given to the Sydney Opera House and its significant contributors can be found in Appendix C.

2.9.1 Heritage listings

The Sydney Opera House is provided statutory heritage protection under the following listings.

- World Heritage List (UNESCO) (28 June 2007, Listing No. 166rev)
- National Heritage List (Australian Government) (12 July 2005, Listing No. 105738)
- State Heritage Register (NSW Government) (3 December 2003, Listing No. 01685)
- State Environmental Planning Policy (State and Regional Development) 2011 (NSW Government)
  – identified as "State Significant Development" under Schedule 2
  – site-specific exemptions remain active in the replaced 2005 SEPP
- State Regional Environmental Plan (Sydney Harbour Catchment) 2005 (NSW Government)
  – Sydney Opera House buffer zone defined and protected
- Sydney Local Environmental Plan 2012 (City of Sydney Council)
  – listed as heritage item under Schedule 5

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

- Register of Modern Movement buildings, sites and landscapes (Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement - DOCOMOMO)
- 20th Century Architectural Heritage Repository
  International Union of Architects (UIA)
  A web index of architectural realisations around the world that mark 20th-century architectural history
- Register of Significant Twentieth Century Australian Architecture
  (Australian Institute of Architects)
  One of nine buildings nominated to the International Union of Architects (UIA) Register of Significant Twentieth Century Architecture
- Register of Significant Architecture in NSW (Australian Institute of Architects NSW)
  (31 August 1990, Listing No. 4702929)
- National Trust of Australia (NSW) Register (21 November 1983, Listing No. 6088)
- Register of the National Estate (Australian Government) (21 October 1980, Listing No. 2353)
  – the statutory status of the register was maintained until February 2012; it is now a non statutory register – a publicly available archive and educational resource

SECTION 03

SUMMARY OF SIGNIFICANCE

"The people of Sydney have made the Opera House a signature for Sydney, which you see everywhere in the world in different editions... ...but nobody is ever in any doubt that this means Sydney and this means Australia".

Utzon Design Principles, 2002

03

3.1 STATEMENT OF SIGNIFICANCE

The Sydney Opera House has been inscribed on the World Heritage List, the National Heritage List and the State Heritage Register. Each of these listings has its own Statement of Significance or Statement of Values. Refer to Section 3.2 and Appendix B for full listings.

The following Statement of Significance is based on that by J.S. Kerr in the 3rd edition of the Sydney Opera House Conservation Management Plan, and has been revised in response to the Sydney Opera House's inscription on the World Heritage List and on National and State Heritage registers.

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.

3.2 WORLD, NATIONAL & STATE HERITAGE VALUES

The World Heritage List, the National Heritage List, and the State Heritage Register each have their own particular level of focus for assessment and criteria for listing. Consequently each has its own Statement of Significance or Statement of Values. Having regard to these different emphases, there is still considerable overlap between them. For the full statement for each listing, refer to Appendix B.

3.2.1 World Heritage values

The Sydney Opera House was inscribed on the World Heritage List on 28 June 2007 under Criterion (i) for its Outstanding Universal Value as a masterpiece of human creative genius.

Summary Statement of 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): A masterpiece of human creative genius

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.

Refer to Appendix B for the full listing.

3.2.2 National Heritage values

The Sydney Opera House was included on the National Heritage List on 12 July 2005, Listing No. 105738.

Summary of National Heritage values

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 worldwide 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, (sic) 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.

The Sydney Opera House's National Heritage values that are protected under the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are encapsulated in the official values under the National Heritage List's criteria A, B, E, F, G and H. These are summarised below:

NHL criterion A: Events, Processes

The Sydney Opera House is significant in the course of Australia's cultural history, both for its place in the national history of building design and construction, as well as the history of the performing arts in Australia.

NHL criterion B: Rarity

The Sydney Opera House is a cultural icon that has no counterpart in Australia.

NHL criterion E: Aesthetic characteristics

The design, form, scale and location of the Opera House make it one of the most significant landmarks in Australia.

NHL criterion F: Creative or technical achievement

The Sydney Opera House represents a masterpiece of architectural creativity and technical accomplishment unparalleled in Australia's history. In every respect, it is a structure at the leading edge of endeavour.

NHL criterion G: Social value

The Sydney Opera House is an enduring symbol of modern Sydney and Australia, both nationally and internationally.

NHL criterion H: Significant people

The Sydney Opera House is directly associated with Jørn Utzon, whose design won an international competition in 1957 and was hailed by the architectural critic Sigfried Giedion as opening a new chapter in contemporary architecture.

Refer to Appendix B for the full listing, with details of its official National Heritage values.

3.2.3 State Heritage values

The Sydney Opera House was included on the State Heritage Register on 3 December 2003, Listing No. 01685.

Summary Statement of Significance

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 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.

Refer to Appendix B for the full listing, including details of its assessment against the State Heritage Register criteria.

SUMMARY OF SIGNIFICANCE

3.3 SUMMARY SCHEDULE OF LEVELS OF SIGNIFICANCE

The Sydney Opera House includes elements of varying cultural significance within its overall exceptional level of significance. Based on the methodology used by J.S. Kerr in the 3rd edition of the *Sydney Opera House Conservation Plan*, these elements have been graded according to their relative significance as defined below. This grading includes consideration of both tangible and intangible values, authenticity and integrity. These terms are explained in Section 1.6 *Terminology*.

These assessments are based on those in the 2003 Conservation Management Plan and have been amended by the author in consultation with a working group consisting of Evan Williams, Sheridan Burke, Rajeev Maini and Peter Mould representing the Sydney Opera House Conservation Council; Maria Sykes, Greg McTaggart PSM and Lisa Taylor representing Sydney Opera House management; as well as Jan Utzon and James Semple Kerr.

A final review was carried out in consultation with the Expert Peer Review Panel, comprising Sheridan Burke, Joan Domicelj AM, Louise Herron AM, Richard Johnson AO MBE, Ken Maher, Greg McTaggart PSM, Peter Mould, Joseph Skrzynski AO and Jan Utzon.

For each grading, general policy statements are given in Section 4.4.12 that are to be applied in association with other policies in Section 4.

Each element is made up of various component parts and each of these is addressed within Section 4, *Conservation Policy*, and in its associated *Tolerance for Change* and *Opportunities for Change* tables. Refer to further explanation in Section 4.4.12. The terms *element* and *component* are explained in the same section and also in Section 1.6 *Terminology*.

3.3.1 Definitions of levels of significance

Level of significance		Definition
A	**Exceptional significance**	These elements are essential to the significance of the place. They play a crucial role in supporting this significance.
B	**High significance**	These elements are of high significance. They play an important but not necessarily crucial role in supporting the significance of the place.
C	**Moderate significance**	These elements are of moderate significance and provide support to elements or functions of higher significance. They play a role in supporting the significance of the place, but may be inadequate in their current configuration or use.
D	**Low significance**	These elements are of low significance. They play a minor role in supporting the significance of the place, or may have been compromised by later changes.
int	**Intrusive**	This relates to an item or component that obscures, impedes, diminishes or otherwise damages the significance of an element or its component parts.

3.3.2 Schedule of levels of significance

Below is a summary of the levels of significance of the major elements of the place. For the location of elements and spaces, see the plans and sections in Section 1 *Introduction*.

Sydney Opera House generally **A**

- Its form and fabric as an iconic architectural sculpture in the round in its harbour and urban setting;
- Its context and setting
- Its function as a world-renowned centre for the performing arts;
- Original concept of sequential experiences on approach, arrival, entry and circulation;
- 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;
- Planning hierarchy – front-of-house / back-of-house / support services – which manifests itself externally, internally, horizontally and vertically.

Exterior

Roof shells **A**

Three groupings of soaring curved, concrete framed roof shells, clad with white ceramic tiled lid panels, surmounted by fine curved stainless steel lightning rails and infilled by glass walls.

Podium exterior **A**

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 and Western Colonnade protecting deeply shaded openings. Approach and ascent of Podium via uninterrupted sweep of full width Monumental Steps rising from Forecourt.

Broadwalk **A**

Flat, open and uncluttered platform paved with precast pink granite paving units, surrounding the massive Podium 'headland' of the main structure on the west, north and eastern sides.

Forecourt **A**

Broad, open and hard-paved level platform, serving as the principal land approach path to the building and as the immediate setting for the Monumental Steps and Podium.

Lower Concourse (1988) **B**

Sheltered access to Sydney Opera House below western edge of Forecourt, connecting East Circular Quay with Covered Concourse and parking station, incorporating food, beverage and retail outlets, lavatories.

Covered (Vehicle) Concourse **A**

Undercover pedestrian arrival 'foyer' space for those arriving by vehicle and Lower Concourse, or to enter Stage Door. Spatial character dominated by the form of the unpainted concrete folded beams overhead.

Tarpeian Wall (adjacent to SOH site) **A**

Quarried weathered sandstone cliff face, with stone steps and iron railing, defining the land entry and southern boundary to the site, and providing the enclosing 'backstage wall' to the open Forecourt space.

Man o'War Steps and jetty (adjacent to SOH site) **B**

Sandstone steps and jetty in substantially original nineteenth-century configuration.

SUMMARY OF SIGNIFICANCE

Double helix carpark (adjacent to SOH site) **B**

Ingenious double helix underground carpark providing a solution to carparking for Sydney Opera House, including entries and exits.

External Lighting **A**

Character and level of floodlighting on shells and rib structure, accentuating their sculptural form, just bright enough to be distinctive in the Sydney night sky; but as with most brightly lit elements on the site, counterpointed with relatively soft lighting on the Forecourt, Broadwalk, steps and Podium areas, sufficient for public safety.

Interior – 'Front-of-House' spaces *above* Podium levels

Bennelong Restaurant (interior of minor south-west shells) **A**

Publically accessible, undivided Utzon space used in association with, and supporting the primary function of the Sydney Opera House.

Foyers surrounding the major auditoria **A**

Primary circulation, bar and foyer spaces encircling major auditoria with expansive views to surrounding setting, defined and articulated by building structure and auditoria.

Concert Hall **A**

Major auditorium used as a state-of-the-art concert hall and performance venue.

Joan Sutherland Theatre (Opera Theatre) overall ranking **C**

Function as the second largest auditorium and stage used as a venue for live theatrical performance, including opera and dance is ranked A.

Present configuration, form and suitability for this function is ranked C.

Interior – 'Front-of-House' spaces *within* the Podium

Stairs and lift from Covered Concourse to Box Office **A**

Stairways and Bennelong Lift as primary undercover access connecting Covered Concourse to Box Office.

Box Office Foyer **A**

Principal foyer and point of arrival and orientation, housing box office, information, cloaking, lavatories and associated facilities.

Utzon Room **A**

Public space used as a reception room. The first authentic Jørn Utzon interior, designed by him following his re-engagement.

Western Foyers (2009) **A**

Continuous amalgamated foyer space servicing the Playhouse, Studio and Drama Theatre, accessed from the Western Broadwalk and Covered Concourse.
A space designed by Jørn Utzon following his re-engagement.

Drama Theatre **B**

Intimate performance, proscenium arch theatre accessible from Western Foyers.

The Studio (1999) **C**

Intimate, flexible performing arts venue accessible from Western Foyers.

Playhouse (formerly Music Room and Cinema) **C**

Intimate theatre and performance venue with modified white birch panel system, accessible from Western Foyers.

Northern Function Room facility (formerly Harbour Restaurant) **C**

Food and beverage facility associated with Northern Broadwalk and accessible to the public.

Interior – 'Back-of-House' spaces

'Back-of-House' – performers and staff areas with wobbly regime **B-C**

The following 'Back-of-House' spaces are individually assessed:

Green Room **B**

Undivided linear central space linking backstage areas, used as a 'safe' meeting place for performers, crew and all involved in production and management of SOH.

Management suites and offices (level +30) **B**

Management suites on level +30, including corridors, executive offices and boardroom.

Original administration reception area and offices (level +12) **C**

Offices and associated corridors on level +12, north of Drama Theatre.

Level +30 corridors fitted with white birch wobbly regime **B**

Loop corridors extending east and west from Green Room, accessing staff areas and performers' facilities in the northern half of the Podium.

Level +12 corridors with exposed services **C**

Loop corridors under Joan Sutherland Theatre (Opera Theatre).

Main rehearsal room under Concert Hall (level +30) **B**

Smaller rehearsal rooms under Joan Sutherland Theatre (Opera Theatre) (levels +30 and +12) **C**

Recording Studio (level+12) **C**

Recording Studio in former Rehearsal Rooms RR63 & RR64.

Performers' assembly area under Concert Hall (level +30) (1999) **D**

Dressing rooms under Joan Sutherland Theatre (Opera Theatre) **C**

Dressing rooms under Concert Hall (altered since 1973) **D**

Lavatories and locker rooms in backstage areas **C**

Service areas **C-D**

Central Passage and Stage Door (level +12) **B**

Maintenance and contractor facilities - basement 1 (1993) **D**

Offices and facilities above underground loading dock - basement 2 (2016) **D**

Underground loading dock, associated passages and service areas (2015) **B**

"So I suggest that modifications can be made as the questions and needs arise - whenever somebody wants to remodel something, refurnish areas you could look back at the ideas that were being developed, some of these might be viable today or at the time when the change is called for, and some of them have been outdated, because huge technological advances. So I really advise the future decision-makers to carefully contemplate all aspects of the intended modifications before changing the Opera House".

Utzon Design Principles, 2002

SECTION 04
CONSERVATION POLICY

04

POLICY - PURPOSE & FRAMEWORK

The Sydney Opera House is a work of human creative genius. It is a masterpiece of 20th-century architecture at the leading edge of human endeavour and is highly esteemed as a world-renowned performing arts centre.

Its values are discussed in detail in Section 2 *Assessment of Cultural Significance* and summarised in Section 3.1 *Statement of Significance*.

Acknowledging this significance, the Sydney Opera House Trust's Enterprise Strategy 2013 states:

> *As custodians we will do the building justice, honouring the Utzon design principles, its standing as one of the world's pre-eminent works of architecture and performing arts venues. To do this, we will work to conserve and renew the building, preparing it for future generations of artists, audiences and visitors.*[1]

The purpose of the policies in this section of the Conservation Management Plan (CMP) is to provide guidance for the ongoing care, conservation, use and management of the Sydney Opera House, including any changes or development.

The intention of the policies is to retain, conserve, and where possible strengthen, the significance of the place, including its use as a performing arts centre, and its State, National and World Heritage values.

The policies are framed to:

- respect and reinforce the primacy of Jørn Utzon's vision in understanding significance, determining policy, and guiding all management and change;
- retain and respect Sydney Opera House's exceptional setting;
- retain Utzon's intended sequence of experiences both by day and night for patrons and visitors;
- recognise and respect the contribution and value of Peter Hall's work, including his hierarchical treatment of finishes that distinguishes the suite of interior spaces within the building;
- ensure adaptations, new works and uses are compatible with the significant values of the place, and will make it more effective in its principal intended function as a performing arts centre;
- prevent / limit uses and functions that could result in its progressive degradation;
- provide guidance for the care and conservation of significant elements, components and fabric;
- identify elements or components which adversely affect the place and which should be modified or removed;
- retain the authenticity, integrity, character and quality of the building and its various elements;
- retain the integrity of the original structural systems, materials and finishes, while allowing for necessary upgrading;
- provide a framework within which temporary works can be managed;
- draw attention to the need for co-ordination of planning, continuity of conservation and other expert advice and appropriate housekeeping regimes, including implementation of cyclical maintenance;
- provide guidance for the care and management of associated records and information;
- outline procedures by which the objectives above can be achieved.

Each topic begins with general principles and broader issues, and progresses to the specific parts of the place, concluding with operation and management issues. Thus, relevant policies for specific elements and components may be found in more than one location. These are cross-referenced to ensure ease of use. Users of this document should refer to the index to ensure they gain a complete picture of the issue or element in question.

The policy sections are set out in the following order:

» **Policy – Purpose & Framework**

» **Overarching Policies (Section 4.1 – 4.4)**
- 4.1 - The primacy of Jørn Utzon's vision
- 4.2 - Importance of setting
- 4.3 - Protecting the values
- 4.4 - Utzon, Hall & the approach to change

» **The Site & its Fabric (Section 4.5 – 4.15)**
- 4.5 - Open & uncluttered setting
- 4.6 - Events & uses externally
- 4.7 - Conserving the exterior
- 4.8 - 4.10 - Conserving the interior
- 4.11 - 4.13 - Doors, furniture & fittings; carpets, artworks & curtains; services & machinery
- 4.14 - Lighting
- 4.15 - Signage

» **Operation & Management (Section 4.16 – 4.20)**
- 4.16 - Interpretation
- 4.17 - Accessibility
- 4.18 - Care of the fabric & housekeeping
- 4.19 - Managing records & information
- 4.20 - Managing the processes of change

4.1

4.1 *Late afternoon, 2010*
4.2 *Forecourt, 2016*
4.3 *Jørn Utzon, c.2005*
4.4 *Early morning, 2010*

Sections 4.1 to 4.4 provide an essential understanding of the main issues and apply to any change or consideration at the Opera House.

Section 4.1 sets out the primacy of Utzon's vision in understanding significance and determining policy, and its role in the World Heritage Listing.

Section 4.4 considers the contribution of the various architects and designers to the significance of the place, and sets out the overarching principles that should guide the direction of change. It is based on and largely developed from the principles and policies formulated by James Semple Kerr in his CMP 3rd edition. In that document, Kerr established for the first time a sound and clear rationale on which to make decisions about minor and major works which would affect elements and spaces designed by Jørn Utzon, as distinct from those designed by Peter Hall and others. This principle is fundamental to an understanding of this 4th edition.

The sections on setting and conserving the fabric commence with the 'big picture' (the setting) and progress through the exterior elements to 'front-of-house' then 'back-of-house' spaces, and finally to fittings, machinery, lighting, signage, etc.

Specific guidance about managing change with regard to specific components of each element is included through the 'Tolerance for Change' process, a new management tool introduced in this 4th edition.

The last sections focus on operational and management issues that affect the ongoing conservation and evolution of the Opera House.

The discussion on each aspect or element of the place commences, where appropriate, with Utzon's own words (***blue text***). These provide a glimpse of the ideas and principles in the *Utzon Design Principles* and other Utzon sources. Discussion of relevant issues follows, and then the policies themselves in italics, numbered and differentiated in blue shaded boxes. It is important that the policies not be considered in isolation from this discussion, or from each other. In Sections 4.6 to 4.10, these are accompanied by *Tolerance for Change* and *Opportunities for Change* tables for each component (refer to Section 4.4.12).

> ***Policy 1.0 – Policy context and interdependence***
> *Policies must only be considered with reference to the supporting discussion as it will make their context and meaning clear. They must not be considered in isolation from other policies related to them and are to be applied in an integrated manner.*

It is important to note that this policy section incorporates a considerable amount of material from the CMP 3rd edition, with many policies taken verbatim from it.

The terms used in this policy section such as *place, cultural significance, fabric, conservation, maintenance, preservation, restoration, reconstruction, adaptation, use, compatible use, setting, related place, related object, associations, meanings, interpretation, element, component, attribute, authenticity* and *integrity* are used as defined in Section 1.6 of this CMP.

OVERARCHING POLICIES (SECTION 4.1 – 4.4)

4.1 THE PRIMACY OF JØRN UTZON'S VISION

Utzon's vision and design concept for the Sydney Opera House is perhaps best summarised in his own words:

> ***With Kronborg in mind I was convinced that a new building in such a position as to be seen from all sides, had to be a large sculptural building.***
>
> ***Another inspiration I got from seeing the naval charts over Sydney, on which were shown the sandstone heads at the entrance to Sydney Harbour. These heads slope upwards to the Gap, where they drop abruptly to the sea.[1]***
>
> ***So going to the Opera House is a succession of visual and audio stimuli, which increase in intensity as you approach the building, as you enter and finally sit down in the halls, culminating with the performance.[2]***

It was Utzon's daring and visionary response to the competition brief and to the site that has given us what we have today, and while it may have been interpreted or developed by others in its completion or subsequent alterations to the place, his vision remains at the core of its concept, construction and use.

Published in May 2002, the *Utzon Design Principles* document in Jørn Utzon's own words his vision and the design ideas that underpin it. Compiled with the assistance of Richard Johnson, it provides a permanent reference for all involved with the care and development of the Sydney Opera House. It is meant to be understood holistically and provide an insight into his design methodology and the ideas he used to determine overall concepts as well as detail. It is the primary source of guidance and inspiration for any proposed changes to the place as well as its ongoing management, conservation and use.[3] It is one of a suite of three key documents produced with Utzon's involvement. The others, the *Strategic Building Plan 2001* and the CMP 3rd edition (2003), together with the *Utzon Design Principles*, provide the long-term vision and objectives for the Opera House.

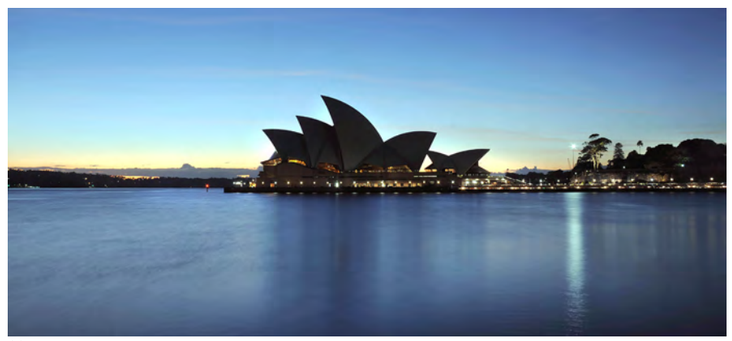
Sydney Opera House was the first building to be inscribed on the World Heritage List with a set of design principles by the original architect to guide its future. As the World Heritage inscription states, the Sydney Opera House, in its complete form, is the result of the creative and technical genius as well as the skills of many people, in particular, engineer Ove Arup. This was no doubt a collaborative effort, but until his departure in 1966, the inspiration, guidance and direction came from Utzon himself.

4.2

Utzon worked at the 'edge of the possible' and inspired others to do the same. He never accepted the mediocre solution, always pushing the boundaries of innovation to achieve excellence. The exceptional design and quality of the Opera House stand as testament to this and, as such, the place is considered an exemplar of excellence achieved through innovation. All work or changes should rise to this challenge.

> ***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.*

4.3



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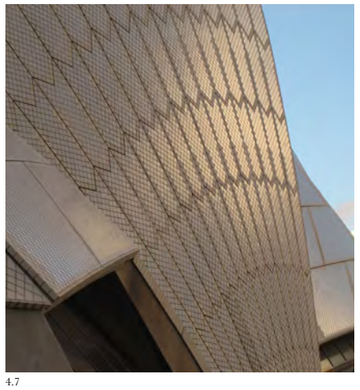

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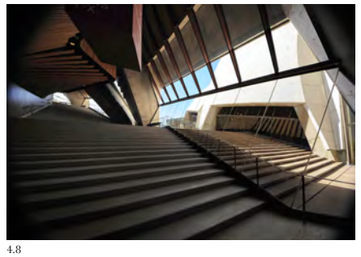


4.8

4.5 *Approaching Monumental Steps, 2010*
4.6 *Shell pedestal, Side Foyer, 2010*
4.7 *Shell tiles, 2006*
4.8 *East Side Foyer of Concert Hall, 2010*

These elements and qualities are explained in greater detail, as they apply to specific elements and components of the place, in relevant policy sections in this CMP.

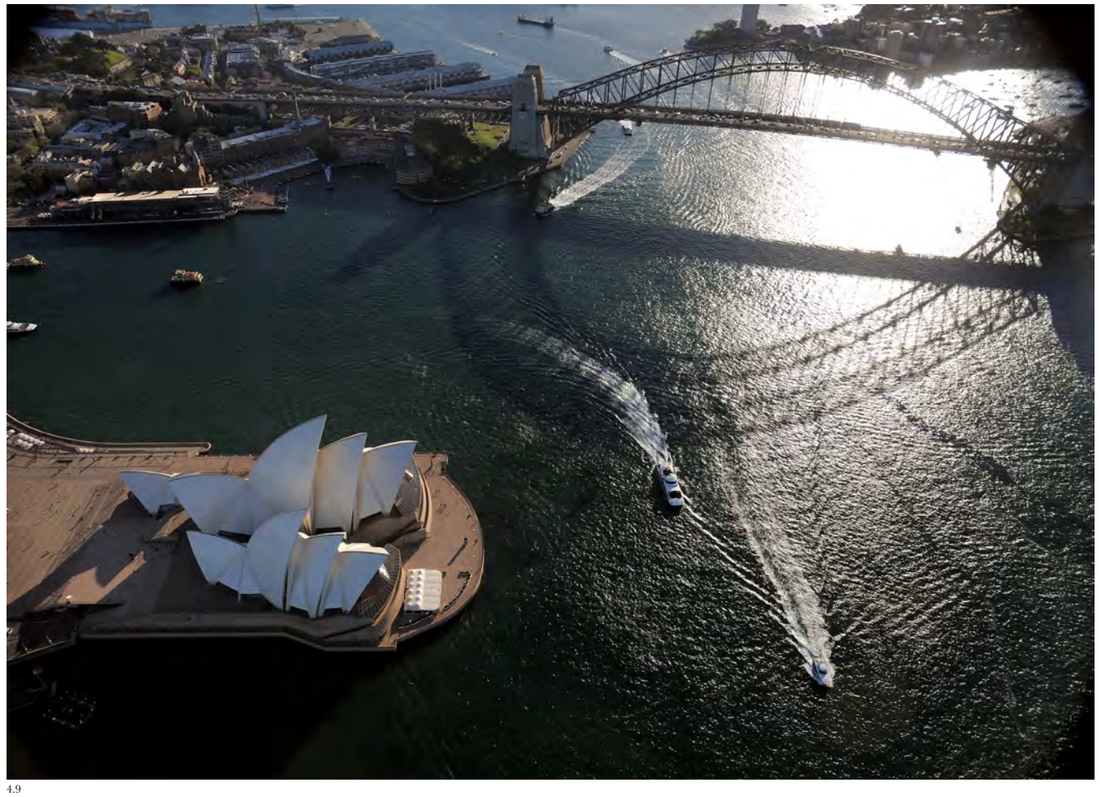
It is important to note that Peter Hall, in his work to complete the building and its interiors, tried to respect and follow Utzon's vision within a substantially altered brief.

Utzon's design ideas and concepts are discussed in greater detail in Section 2.2.

For guidance on how to work within the *Utzon Design Principles* and respect both Utzon and Hall, refer to Section 4.4 *Utzon, Hall and the approach to change.*

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.*



4.9

4.2 IMPORTANCE OF SETTING

The character which is most prominent about the Opera House is it's being free in the centre of the Sydney Harbour, free from all sides, visible from all sides.[1]

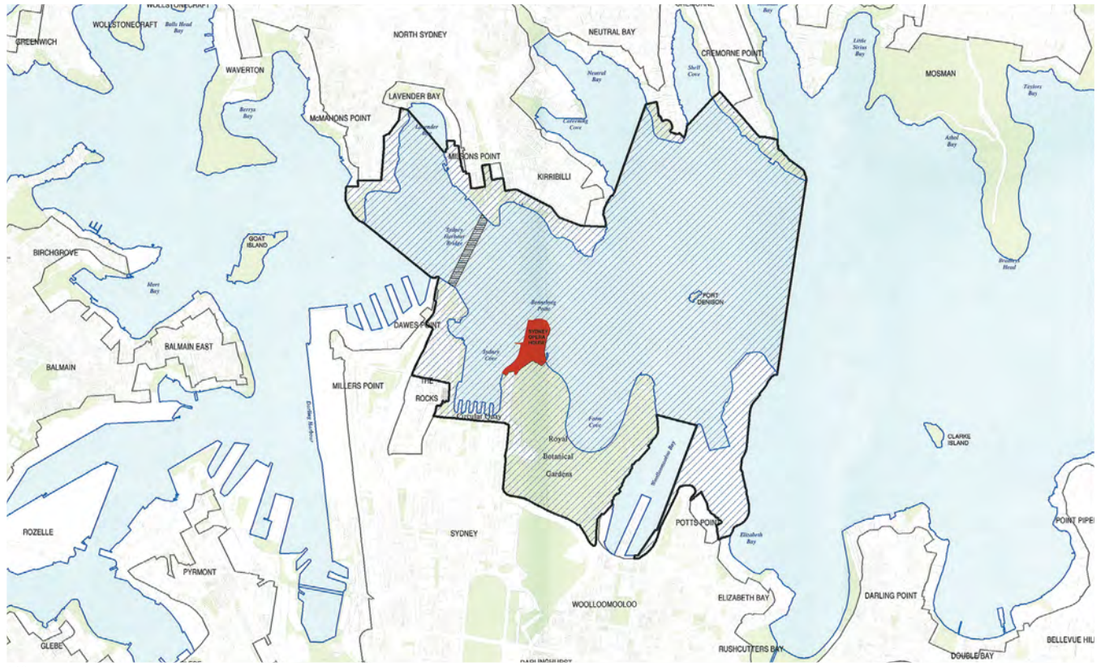
Sydney Opera House has become an internationally recognised symbol of Sydney and of Australia, and provides both a backdrop and a venue for meetings and events of national and international importance. Its unique form and setting play a crucial role in its identity.

Utzon's design for the Opera House is a direct response to its setting and the two are inseparable. The building is visually isolated from all other structures and landforms and viewed from all angles, including from above. As one moves around the harbour and the city, the changes in these views and its distinctive form and silhouette are an essential part of experiencing the place.

Policy 2.1 – Landmark qualities
The status of the Sydney Opera House as an internationally acclaimed landmark arises directly from its freestanding sculptural form and silhouette, its siting, and open relationship with its setting when viewed from all angles and approaches. These must be protected for present and future generations in accordance with the Utzon Design Principles *and this CMP.*

As part of the requirements of the World Heritage listing process, a World Heritage Area Buffer Zone around the Sydney Opera House was included in an amendment to the State Regional Environmental Plan (Sydney Harbour Catchment) 2005 (SREP 2005), gazetted on 27 July 2007 (refer to Figure 4.10 and Appendix B) and on the listing itself.[2] The setting of the Opera House is managed, in planning terms, by the delineation of this Buffer Zone, within which all development (including use of open space) must be considered for its impact on the significance of the Sydney Opera House.

4.9 *Opera House in Harbour setting, 2010*



4.10

Legend

- Sydney Opera House Site
- World Heritage Buffer Zone
- Foreshores and Waterways Area Boundary

4.10 *World Heritage Area Buffer Zone map*

Considerations in the SREP 2005 include the need *to preserve views and vistas between the Sydney Opera House and other public places within that zone; and the need for development to avoid any diminution of the visual prominence of the Sydney Opera House when viewed from other public places within that zone.*[3]

When considering the Buffer Zone and setting of Sydney Opera House, it is essential to understand its extent in three-dimensional space, like a bubble centred on the Opera House.

While these statutory documents may change over time, protection of this Buffer Zone must remain.

Policy 2.2 – Buffer Zone

All agencies of government involved in planning, assessing and overseeing the continued development of areas within the Sydney Opera House World Heritage Area Buffer Zone have a statutory obligation to protect the significant World, National and State Heritage Values of the Sydney Opera House.

No development either temporary or permanent within this Buffer Zone should adversely affect these values. This includes:

- *respect for the deliberate contrast of the white shells of the Opera House with the darker tones of its setting and the city;*
- *its distinctive form, silhouette and visual isolation on Bennelong Point from all other structures and landforms.*

If the opportunity arises, changes or development that produce positive impacts on the setting should be explored.

Sydney Opera House Trust to work with relevant local, state and national government agencies to develop a mechanism for referral of proposals within the Buffer Zone, as these may require approval under the EPBC Act.

Policy 2.3 – Protect setting

In addition to Policy 2.2, all agencies involved in assessing, planning or overseeing development proposals on or near Bennelong Point and nearby peninsulas and bays must give consideration to the creation, retention and recovery of the following views and vistas to and from the Sydney Opera House:

- *Unencumbered exposure to the harbour on three sides, permitting views to the Opera House from all approaches and angles in 3 dimensions, and from neighbouring ridges and headlands, including:*
  - *the waters of the harbour;*
  - *Dawes Point;*
  - *Millers Point;*
  - *Observatory Hill;*
  - *Mrs Macquarie's Point;*
  - *Garden Island;*
  - *Fort Denison;*
  - *Bradley's Head;*
  - *Cremorne Point;*
  - *Kurraba Point;*
  - *Kirribilli;*
  - *Milson's Point;*
  - *McMahon's Point;*
  - *city buildings; and*
  - *the Harbour Bridge*
- *open relationship with the Bennelong Precinct including the Botanic Gardens and the sandstone face of the Tarpeian Wall;*
- *vistas, progressively or suddenly enlarging to views, from The Rocks, the northern end of Circular Quay, East Circular Quay, Macquarie Street, the Botanic Gardens and the harbour.*

No development should compete with or diminish the prominence and distinctiveness of the form and silhouette of Sydney Opera House to these views and vistas. These objectives should be progressively incorporated into any relevant development strategies.

Most of the locations and areas noted in the policy above have been included in the World Heritage Buffer Zone. However, some locations such as Millers Point and Observatory Hill are beyond the Buffer Zone boundaries.

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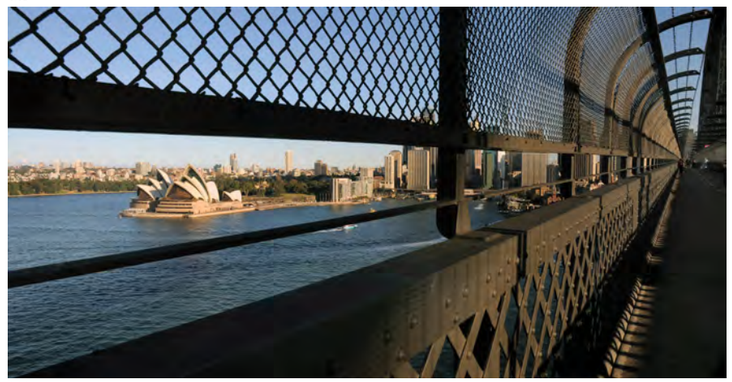

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4.11 *Opera House from Kirribilli Point, 2009*
4.12 *Opera House from Waruda Ave, Kirribilli, 2009*
4.13 *Opera House from Milsons Point, 2010*
4.14 *From Harbour Bridge footpath, 2010*

4.15

4.15 *Connection to city, 2010*
4.16 *From West Circular Quay, 2010*
4.17 *From Circular Quay ferry wharf, 2011*
4.18 *View down Macquarie Street, 2017*
4.19 *From Tarpeian Way, 2011*
4.20 *From Tarpeian Steps, 2011*
4.21 *From Manly ferry, 2010*
4.22 *From Mrs Macquarie's Point, 2010*

Development in areas beyond those noted above could potentially have an adverse impact on the setting of the Opera House. For example, a tower development at Barangaroo, Darling Harbour or Millers Point could compete with or intrude into the distinctive silhouette of the Opera House when viewed from the east. Agencies involved in assessing, planning or overseeing these developments should consider the matters contained in Policies 2.1, 2.2 and 2.3.

Elements adjacent to the site and within the Buffer Zone but not under the control of the Sydney Opera House play an important role in defining the setting and approaches to the site. These include:

- Sydney Harbour waters;
- Man o'War Steps;
- The Royal Botanic Garden;
- Government House;
- the Tarpeian Wall and associated steps and fences;
- Macquarie Street;
- East Circular Quay; and
- No. 1 Macquarie Street.

For specific guidance on the Man o'War Steps and jetty, refer to the *Tolerance for Change* table at the end of Section 4.7.11. For the Tarpeian Wall, refer to Section 4.5 *Open and uncluttered setting*.

Policy 2.4 – Development in immediate vicinity
The Sydney Opera House Trust must be notified and consulted at an early stage with regard to potential impacts of any proposed change (including use or development) in the immediate vicinity of the Sydney Opera House. They should liaise closely with owners and authorities responsible for these sites, structures and waterways in this regard. If no formal or statutory mechanism exists for such notification or consultation, appropriate protocols or Memoranda of Understanding should be set up and implemented as soon as practicable.

While the topographic setting of the Sydney Opera House is exceptional, it must also be considered in its broadest meaning. *The Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas*, adopted by ICOMOS in Xi'an, China in October 2005, [4] defines ***setting*** in Article 1 as:

> *the immediate and extended environment that is part of, or contributes to, its significance and distinctive character.*

This definition is almost identical to the Burra Charter (refer to Section 1.6 *Terminology*). It further notes that this includes not only the physical and visual aspects of the place, but also intangible aspects including

> *...the current and dynamic cultural, social and economic context... the character of the arrival experience...* [and] *...meaningful relationships with their physical, visual, spiritual and other cultural context and settings.*[5]

The setting and context of the Sydney Opera House impact all aspects of its significance.

The significant tangible and intangible aspects of the setting and context of the Sydney Opera House are described in the Statement of Significance in this CMP and include:

- physical and visual relationship with the city and Sydney Harbour;
- quality as a monumental sculpture in the round;
- approach and arrival sequence of spaces, both beyond and within the site, providing an exceptional experience for patrons, performers and visitors;
- international recognition as a masterpiece of 20th-century architecture and an architectural icon;
- function as Australia's pre-eminent performing arts venue; and
- place in the Australian psyche as a cultural icon and a focus for national celebrations and events.

These are addressed in Policies 1.2, 2.1, 2.2, 2.3, 3.1 and 3.2.

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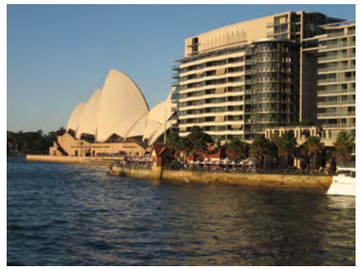

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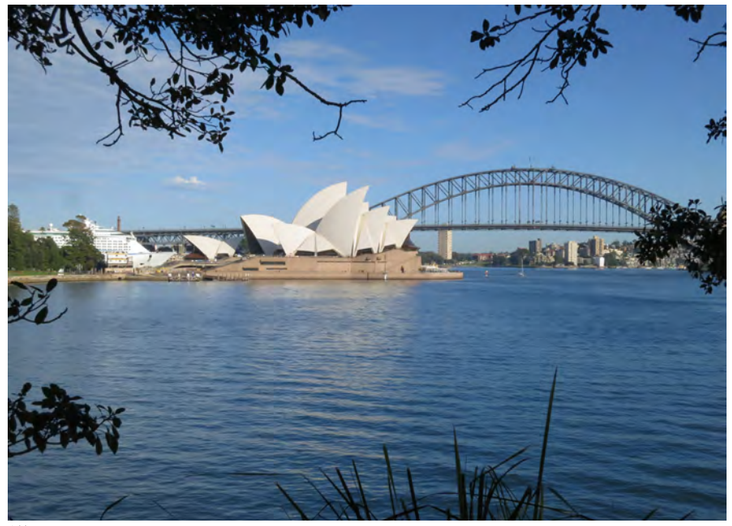

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4.23 *The 5th façade, 2010*

4.3 PROTECTING THE VALUES

The entries on the World Heritage List, National Heritage List and the State Heritage Register define the values of the Sydney Opera House according to their respective criteria and thresholds. There is considerable overlap between these listings but each plays an important role in the statutory framework for the management of the Opera House. In addition, this CMP identifies other values, all of which are set out and defined in Section 3.1. The conservation of all of these values is essential, and the integrated application of the policies in this CMP is intended to achieve this outcome.

The World Heritage Operational Guidelines define *Outstanding Universal Value* as:

> *cultural and / or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole.*[1]

The statutory framework for the implementation of both the *Utzon Design Principles* and this Conservation Management Plan must ensure that the Sydney Opera House is regulated and managed to protect these values and that Australia meets its obligations under the World Heritage Convention. This framework presently includes compliance with the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the *NSW Heritage Act 1977,* and the *NSW Environmental Planning and Assessment Act 1979,* including planning policies.

The environmental impact assessment and planning approval regime established under these Acts refers back to the *Utzon Design Principles* and this CMP to provide the basis for this assessment and approval process. The relationship between these documents and the statutory framework is illustrated diagrammatically in Section 1.4.

Policy 3.1 – World, National and State Heritage values
The Outstanding Universal Values 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.

The significance of the Sydney Opera House is dependent on its use as a performing arts centre. It is at the core of Utzon's vision and design for this site and must be balanced with retaining the authenticity and integrity of its *Outstanding Universal Value* as a masterpiece of human creative genius. The *Strategic Building Plan 2001* and *Venue Improvement Plan 2002*, both prepared with Utzon's involvement, provided a long-term framework to achieve this and many of these projects have been realised.

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.*

A pivotal factor in conserving the significance of the Sydney Opera House and implementing this CMP is the active commitment and support by all involved with its governance, management, use, operations and maintenance. Section 4.20.1 *Use and compatibility* provides specific guidance on these.

Policy 3.3 – Responsibility
Responsibility for heritage matters rests with all those involved with Sydney Opera House, from Trustees and senior management to tradesperson, technician, lessee or hirer. All must be guided by this CMP in all deliberations, decisions and actions. This responsibility must be included in job descriptions and evaluations of all positions and incorporated into all inductions, training and manuals.

4.4 UTZON, HALL & THE APPROACH TO CHANGE

As time passes and needs change, it is natural to modify the building to suit the needs and technique of the day. The changes, however, should be such that the original character of the building is maintained.[1]

The Opera House today is of course not my or our building, it is as much a building made by Hall, Todd & Littlemore and it is not something which we can add on or patch up by doing this and that.[2]

The key messages in Utzon's words above are that modifications or changes are possible to address functional demands, but only if done with caution and careful consideration as well as respect for the character created by the original designers. Hall similarly warned strongly against changes which could result in fragmentation of the original design concepts, as well as the cumulative effect of small incremental changes on the quality and integrity of the place.[3] This is articulated in the *Tolerance for Change* and *Opportunities for Change* tables. Refer to Section 4.4.12.

In the period between his re-engagement in 1999 and his death in November 2008, Jørn Utzon designed a number of changes to the Sydney Opera House. These were carried out in collaboration with his son Jan and Australian architects Johnson Pilton Walker, and include:

- complete refurbishment of the former Reception Room (completed and re-opened as the Utzon Room in September 2004);
- Western Colonnade (Western Loggia), opened March 2006;
- refurbishment of the Western Foyers, including the lift to the Box Office Foyer and escalators to the Southern Foyers (opened November 2009);
- concepts proposed for a new Opera Theatre and associated back stage facilities to replace the existing Joan Sutherland Theatre under the eastern shells (described and documented in the *Gold Book*, presented to Sydney Opera House Trust in 2005).

It is important to note that both Utzon and Hall, as well as other designers, have each contributed to the revision and upgrading of major elements and components of the place since it opened in 1973. However, apart from the work by Jørn Utzon and Utzon Architects in collaboration with Johnson Pilton Walker, and more recently Utzon Architects with Scott Carver, the architectural 'voices' that determine the character and quality of all the elements of the place are those of Utzon and Hall, in that order.

It is therefore essential that any designer working at the Opera House set aside their own design preconceptions and design language, place themselves 'underneath' Utzon and Hall and work within their design regimes, in accordance with Policy 4.2 *Respecting Utzon and Hall.*

4.4.1 Research

So I really advise the future decision makers to carefully contemplate all aspects of the intended modifications before changing the Opera House as such.[4]

It would not be correct to go back to the thoughts and ideas that were new in the early 1960's which were based on a different programme for the building.[5]

This is not an ordinary building, nor is it a simple one. The depth of thinking behind it requires enormous research and understanding before one can even consider changes.

Both Jørn Utzon and Peter Hall are now gone, but as a result of further investigation into their original work, and more recent projects completed or documented by Utzon's office, a greater insight is available into what each architect intended. This assists in defining an approach for change in the future.

The concepts and design regime of the original designer of a particular element or component must be fully understood when considering any change, as the original intent or design may have been confused on site by later work. Such knowledge may hold the key as to how change could occur or a particular issue be addressed, but this comes with a word of caution. It does not mean that an element originally designed and documented by Utzon (but not executed) is necessarily the most appropriate solution for a particular need or situation in the 21st century. Refer to Utzon quotations above.

Needs, expectations and regulations have changed since the 1960s and '70s. However, it will give an insight into how to approach the design problem so that it accords with Utzon's principles and design regime and, where appropriate, those of Hall.

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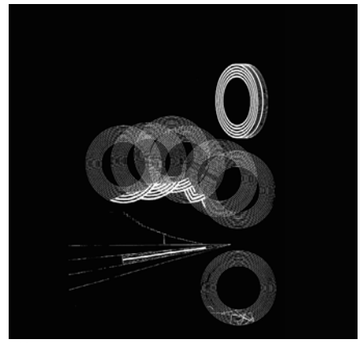

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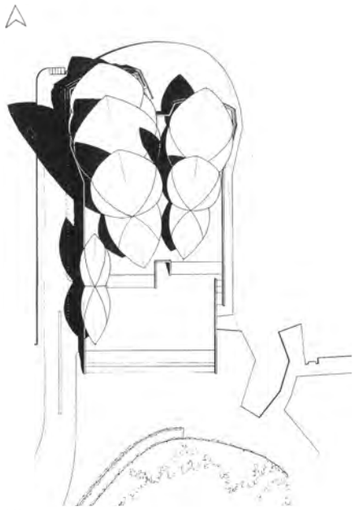
4.24 *Western Colonnade, 2008*
4.25 *Utzon's design for Opera Theatre Renewal from 2005* Gold Book, *originally published in* Zodiac *No.10, 1965*
4.26 *Utzon's concept for ceiling design, 2005*



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4.27 *Utzon drawing, Plan, 1956*
4.28 *Aerial view, 2010*

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.

For Utzon's work, the documentary sources of information are to be found in the following:

- *Utzon Design Principles*, SOHT, 2002
- *Descriptive Narrative*, Sydney Opera House, 1965
- archive of Utzon drawings, documents and recordings held by the Sydney Opera House, the NSW State Library, Danish and other archives
- video, sound recordings and transcripts of discussions with Jørn Utzon, Richard Johnson and Jan Utzon (1998-2008) held by Sydney Opera House
- *The Virtual Tour with comments by Jørn Utzon,* July 2001

For Hall's work, the main documentary sources of information are to be found in the following:

- *Sydney Opera House, The Design Approach to the Building with Recommendations on its Conservation*, Peter Hall, Sydney 1990
- *Sydney Opera House, Anatomy of Stage Three Construction and Completion: A General Index* (undated but circa 1975), David Littlemore, referred to as the *Green Book*
- archive of Hall and other drawings and documents held by the Sydney Opera House, the former Department of Public Works, the State Library of NSW and other archives.

It is essential when researching these documents that each must be considered and understood within its own sequence, context and authorship. Some drawings were prepared to explore ideas, others to demonstrate how a proposal may or may not work. An example of the latter is an unannotated sketch from Utzon's studio showing the scale of potentially inappropriate development nearby, later misinterpreted and used as justification for 'the Toaster'. A comprehensive list of documentary sources for both architects is included as Appendix A.

Jørn Utzon's architect son Jan was instrumental in facilitating his father's involvement since his re-engagement and worked with him all his professional life. He knows his father's philosophy and approach better than anyone. Refer to Section 4.20.2 and Policy 20.6 *Continued Utzon involvement.*

4.4.2 Authenticity and Integrity

Two fundamental considerations in the assessment and ongoing management of a place on the World Heritage List are its authenticity and integrity:

> *To be deemed of Outstanding Universal Value, a property must also meet the conditions of integrity and / or authenticity and must have an adequate protection and management system to ensure its safeguarding.*[6]

It is important, in the context of the Sydney Opera House, to understand what is meant by 'authenticity' and 'integrity' and how they are embodied. These terms are defined in Section 1.6.

Authenticity

An authentic place is the honest product of its history and historical processes, where there has been no adverse impact upon its fabric or the reasons for which it is considered significant. (These may include impacts from conservation processes undertaken to better reveal or emphasise its significance).

In the case of the Sydney Opera House, the authenticity of its cultural values are expressed through many of the attributes listed in the Operational Guidelines for the Implementation of the World Heritage Convention, including:

- form and design;
- materials and substance;
- use and function;
- traditions, techniques and management systems;
- location and setting;
- language and other forms of intangible heritage;
- spirit and feeling; and
- other internal and external factors.[7]

Refer to Section 4.4.12 *Significance, Tolerance and Opportunities for Change.*

To test the degree to which the Sydney Opera House retains its authenticity, there are many original documents, publications, press articles, records, film, recordings and images of the place covering its design, documentation, construction and opening, and the subsequent period up to the present. These are discussed in Section 4.4.1. Of particular relevance are those authored by Jørn Utzon and his office, Hall Todd & Littlemore, Ove Arup and other consultants. From these sources it can be concluded that the Sydney Opera House has a very high degree of authenticity which must be respected when managing change. The World Heritage Nomination document provides detailed discussion on this matter.[8] Refer to the list of sources for Utzon and Hall in Section 4.4.1, and for a more complete list covering all aspects of the place refer to Appendix A.

Integrity

The Sydney Opera House retains a very high degree of integrity. This is reflected in the extent to which it:

- includes all elements necessary to express its outstanding universal values;
- represents all aspects of its significance; and
- is maintained in good condition.

According to the 'Operational Guidelines for the Implementation of the World Heritage Convention' 2015:

> *…To retain integrity, the fabric and significant features of the place should be in good condition and the impact of deterioration processes controlled. Relationships and dynamic functions present in living properties essential to their distinctive character should also be maintained.*[9]

Some of the changes that have occurred since 1973 have impacted on the integrity of the place, both positively and negatively; the discussion and policies in Section 4.4.12 provide guidance on how to avoid negative impacts in the future. Generally, those components that have a negative impact have been identified as 'intrusive' in the *Tolerance for Change* tables, and should be either altered or removed in accordance with Policy 18.17.

Statutory obligations arising from the various heritage listings for Sydney Opera House require regular reporting on changes and issues which may impact on its significant values, including its authenticity and integrity. Refer to Section 4.20.10 *World Heritage Listing.*

A good example of authenticity and integrity at the Sydney Opera House is the sequence of approach and arrival spaces. Utzon's design intent for these spaces is found in the configurations and sequence of their spatial forms and their structure, materials, finishes, colours and lighting, all of which have been deliberately arranged to enhance the emotional and intellectual responses of those who visit or use the place.

A test of the authenticity of this sequence of spaces involves checking what is physically there with what Utzon and others have documented and written about it, both before construction and since. In this case, the test confirms that this sequence of spaces survives relatively unaltered from what Utzon originally proposed, but some parts of it have been compromised by subsequent changes. These include:

- main approach now focussed (operationally) on the Covered (Vehicle) Concourse rather than Monumental Steps;
- insertion of enclosures for separate functions in the Box Office Foyer, such as the Opera House shop; and
- addition of inappropriate fittings, furniture, signage or clutter, both permanent and temporary in any of these spaces.

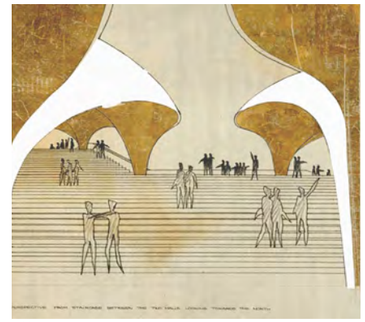
The first confuses and bypasses Utzon's primary approach sequence and the latter impedes appreciation and experience of this sequence. They cannot be excused by being temporary.

Alterations to the southern and side foyers after Utzon's departure (to accommodate a substantially revised program) have compromised the final stages of Utzon's approach and arrival sequence, but as these are authored by Hall they also have to be considered as part of his work.

An example of the authenticity and integrity of Peter Hall's work would be the hierarchy and design of materials, colours, finishes, fittings and furnishings in the Podium spaces. He achieved this using prefabricated white birch veneered moulded plywood elements and a palette of white walls with fittings, finishes and signature colours to differentiate the functions and importance of spaces, including the use of modern classic furniture. These are documented in Hall's writings. Although altered in some areas, Hall's decoration and finishes survive sufficiently intact to enable us to understand the original intent and provide guidance for future work. Furniture presents other problems due to the nature and intensity of its use, but the loss of original pieces has diminished the authenticity and integrity of Hall's work. Refer to Section 4.11.

It is essential to understand that the original design integrity and authenticity of the Sydney Opera House is dependent on retention of the original design regimes of elements and components of the place, including fitout and furnishings which are, by their nature, products of their time. They should therefore not be subject to changes in aesthetic taste and fashion.

With the above points in mind, the policies below provide the 'rules of engagement' or guidance on the philosophical approach to change, repair and maintenance.



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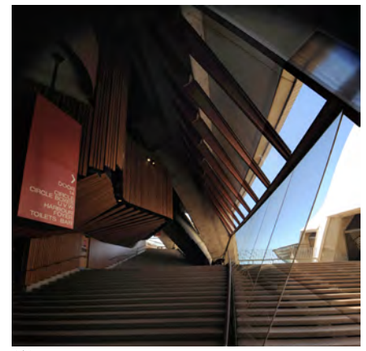

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4.29 *Utzon drawing, Perspective, 1956*
4.30 *Between the shells, 2010*
4.31 *Side Foyer, Concert Hall, 2010*
4.32 *Executive suite corridor, 2010*

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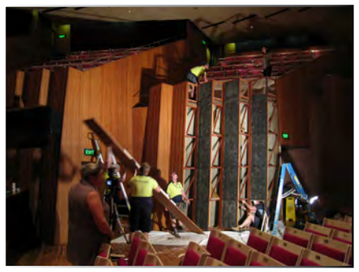

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4.33 *Concert Hall, 2010*
4.34 *Replacing 'saw-tooth' profiles with flat panels in Concert Hall, 2011 - 'minor change' for acoustic improvement*

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.

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).[10] *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.*

4.4.3 Acceptable degrees of change

There are a number of spaces, elements and components of the Sydney Opera House which, as integral parts of a performing arts centre, are at (or close to) the end of their operational life or no longer able to meet changing functional or performance requirements. By way of example, these would include the present stage machinery and orchestra pit in the Joan Sutherland Theatre, services and technical equipment generally, and some patron facilities. These must therefore undergo some level of adaptation or change if they are to remain. As Kerr explained, consideration of any proposed changes could be approached on two, occasionally interlocking, levels.

The minimum approach

The retention and, where necessary, alteration or adaptation of existing elements and components in accordance with the design regimes of the original designers – Utzon and Hall.

Successful adaptation at the first or minimum level will depend on the degree to which new designers have understood the approach of the relevant original designer as well as on the design quality and materials of the new work. Such adaptation would, for example, avoid the progressive and piecemeal degradation of the character of Hall interiors, particularly where it vitiated the homogeneous treatment of spaces or a related sequence of spaces. On the outside, the process would, for example, take extraordinary care to retain the magical atmospheric qualities of Utzon's ceramic clad shells.[11]

The more radical approach

Changes or developments not necessarily envisaged by the original designers but in keeping with the 'fundamental' principles and approaches that inspired Utzon.

Second level developments may be more dramatic but also more dependent on substantial funding. They may be aimed at resolving technical and functional issues such as the separation of heavy vehicles from pedestrians, the relocation of major delivery and support facilities and even the remodelling of auditoria.[12]

The challenge, and indeed the requirement, in both approaches is to find a solution that addresses the functional practicality of a performing arts centre as well as respecting its World, National and State Heritage values as outlined in Policies 3.1 and 3.2. Therefore, adopting a cautious approach to change is essential, as stated in Policy 4.3. However, it is acknowledged that in the fullness of time, with carefully considered changes and upgrades, the primacy of Utzon's design principles should be strengthened.

Any proposal must be founded on solid and reliable research and testing. For example, to address acoustic issues in the Concert Hall, solutions could range from minor adjustments to acoustic reflectors or seating, to major reconfiguration of the structure and linings of the auditorium itself. Determining an appropriate solution is made more difficult by the varied and changing opinions of musicians and acousticians. Only through proper research and testing of prototype solutions with reference to this CMP can an optimal solution be found which respects the significance of the place while facilitating its ongoing function as a performance space. This process of testing and modelling possible solutions is consistent with Utzon's modus operandi.

All works, particularly those in public spaces, therefore require reasonable certainty of objective, method and outcome if the criterion of excellence for both performer and audience expectation is to be met.

Minor change would include situations where individual spaces, or even a suite of spaces

(other than auditoria), formed part of a larger related sequence but still required substantial adaptation or reconfiguration to fulfil their intended function. In such cases and to avoid fragmentation, the predominant original Utzon or Hall design regimes of the related spaces (including signature components such as white birch fittings and carpet colours) should be continued into the new work, albeit in an appropriately modified form. This would avoid a situation where the new designer 'voice' was in conflict or competing for attention with the original.

Opportunities for upgrading, improvement or change have, where possible, been identified and are indicated below the *Tolerance for Change* and *Opportunities for Change* tables for each element. Refer to Section 4.4.12 Significance, *Tolerance* and *Opportunities for Change* for further explanation.

Policy 4.11 requires that the more significant the element, the more care should be exercised in preparing any proposals. In this respect the *Tolerance for Change* tables at the end of each policy section provide detailed guidance on the flexibility for change for each component part of the element. Regardless of the location or the degree of change proposed, all proposals should be developed in accordance with Sections 4.1 to 4.4 (Overarching Policies) and Section 4.20 *Managing the processes of change.*

Policies 4.4 and 4.5 below provide a general guide to these approaches.

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.

Some functional and technical aspects of parts of the Sydney Opera House require a substantial upgrade or major change in order to remain viable for their intended use. These include functional and technical aspects of the Joan Sutherland Theatre (Opera Theatre). It could also include replacement of obsolete plant, mechanical, hydraulic, electronic and other services. It would be acceptable to make major changes to these elements or components and completely remove a Peter Hall or other non-Utzon interior only when these changes would achieve such new levels of technical and functional excellence that they would support and strengthen the significance of the Sydney Opera House as a performing arts venue and, most importantly, Utzon's vision for the place. Such changes must also respect and support other aspects of its significance.

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 as a performing arts centre;*
- *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.

4.4.4 Utzon spaces and elements

All external elements, including the Covered (Vehicle) Concourse (but not the later Lower Concourse), were substantially constructed under Utzon's direction. Hall's completion of these elements differed from Utzon's ideas to a minor degree but, excluding the glass walls, the character and quality of these elements is determined by Utzon's concepts and design regime. (The glass walls are discussed in greater detail in Section 4.7.3.)

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.

The Utzon Room and other recent changes authored either in whole or in part by Utzon are covered by Policy 4.6 above and discussed separately later in this section and in Sections 4.8 and 4.9.

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4.35 *Covered Concourse, 2011*
4.36 *Utzon Room, 2008*

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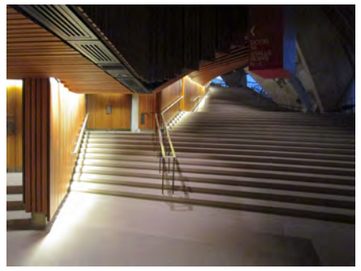

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4.37 *Southern Foyer, Joan Sutherland Theatre, 2010*
4.38 *Side Foyer, Concert Hall, 2015*
4.39 *Concert Hall, 2014 (after saw-tooth box fronts replaced)*

4.4.5 Hybrid Utzon / Hall spaces

The character and quality of many of the front-of-house spaces, particularly those above the Podium, are dominated by Utzon's concrete podium structure and the rib vaulting of the shells, which he intended to remain as visible as possible. Hall completed the enclosure of these areas with the glass walls, auditoria carcasses and fitout, making them hybrid spaces determined by both Utzon and Hall. However, it is Utzon's 'voice' which should predominate.

These hybrid Utzon / Hall spaces are:

- the grand stairs from the Covered (Vehicle) Concourse
- the Box Office Foyer
- the Southern and Side Foyers surrounding the two major auditoria
- the Northern Foyer spaces including the bar and lounge areas
- the space now occupied by the Bennelong Restaurant

These were envisaged by Utzon as essentially 'outside' spaces, utilising the exterior palette of 'natural' materials, including unpainted concrete. The Bennelong Restaurant and foyer spaces in particular were to have clear views through the glass walls to the harbour and setting.

Utzon's vision for these spaces is clear, but in many cases it has been compromised by later work and fitout. They are still exceptional spaces but could be modified to better reflect his original concept.

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In the case of the foyers, this could involve modification of Hall components, such as the envelope and materials of the auditoria carcasses as part of a major functional and acoustic upgrade of the auditoria. (Refer to Section 4.8). It could also involve modification of the glass walls. (Refer to Section 4.7.3).

> ***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.*

Each of these spaces is dealt with in greater detail elsewhere in this Policy section.

4.4.6 Hall's interiors

Peter Hall and the firm of Hall, Todd & Littlemore played a significant role in the completion of the Sydney Opera House (refer to Section 2.2.6); this is acknowledged in the assessment of its State, National and World Heritage values. While acknowledging the primacy of Utzon's vision for the Opera House, if their work was substantially removed from the whole site there would be a significant impact on the authenticity and integrity of the place.

> ***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 co-ordinated detailing.*

Hall's work includes the more recent Lower Concourse, completed in 1988.

Under this policy, any upgrading required to original Hall fitout components should occur within the context of retaining and adapting them as sensitively and minimally as possible.

For example, upgrading of lavatory and other service facilities designed by Hall should retain and respect his design regime and, where possible, his palette of materials. They should only be removed or completely replaced if they are no longer viable for their intended use, or if they jeopardise the efficiency and function of the place as a whole, at which point changes in accordance with Policy 4.5 could be considered.

The auditoria, front-of-house and back-of-house spaces and components are discussed in detail in Sections 4.8, 4.9, 4.10, 4.11 and 4.12.

4.4.7 Elements and interiors, 1973 to 1999

Significant changes during this period include:

- creation of the Lower Concourse and repaving of the Forecourt (1988), Peter Hall in association with Andrew Andersons and the Department of Public Works.

These elements have their own integrity and design regime, which have aimed to support and enhance the overall significance of the place.

Works by others during this period include:

- entry link between the Lower Concourse and the Double Helix Carpark (constructed at the same time, 1993).

This link continued the design regime established for the Lower Concourse.

- conversion of the Broadwalk Studio into The Studio with an associated foyer, linking the Drama Theatre and Playhouse foyers to form an amalgamated western foyer, and creation of backstage areas for Concert Hall performers above The Studio (1999).

Designed by Leif Kristensen & Partners Pty Ltd, the work associated with The Studio introduced a new design regime which has not been successful in its 'fit' with the Utzon or Hall work. This remains evident in The Studio itself and in the performers' area beneath the Concert Hall, where the Hall colour and finishes regime was continued into the new work in a very limited fashion (refer to Sections 4.10.8 and 4.10.6 for further discussion).

4.4.8 Utzon elements and interiors, 2000 to 2009

Since Jørn Utzon's re-engagement with the project in 1999 and Richard Johnson's prior appointment in 1998, a number of works have been designed and executed by these architects and their respective firms working in collaboration. They include:

- refurbishment of the Box Office lavatory facilities (2003) designed by Richard Johnson and peer reviewed by Jørn Utzon;
- refurbishment of the former Reception Hall as the Utzon Room, the first authentic interior space by Jørn Utzon (2004), designed by Jørn Utzon;
- addition of the Western Colonnade (2006), designed by Jørn Utzon;
- refurbishment of the Western Foyers (2009), by Jørn Utzon, and access upgrade between the Lower Concourse level and the Southern Foyers (2009).

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Another major project was a scheme for the complete renewal of the Opera Theatre (Joan Sutherland Theatre). Known as the Opera Theatre Renewal Project, it was designed by Jørn Utzon in collaboration with his son Jan and Richard Johnson. Developed concepts for it have been documented in the *Gold Book* (2005), but it awaits funding. The existing theatre is widely acknowledged as having serious functional and acoustic inadequacies in its present form. Jørn Utzon's design for its renewal addresses these issues, at the same time producing a space which (if built) will be completely aligned with his original vision and design concepts (refer to Section 4.8.4).

There is a danger in any re-engagement of an original designer later in their life that they may seek to re-design or 'improve' their earlier work. In the case of the Sydney Opera House, it is fortunate that Jørn Utzon did not wish to do this. He adhered to his original design concepts without wanting to reconstruct what might have been, and tried to improve only those things that were either not working properly or not working at all. He graciously accepted the contributions made by Peter Hall and others, and recommended their work be retained and respected.[13] His son Jan has continued his involvement with the same respect and sensitivity as his father, and remains an invaluable resource for the Sydney Opera House.

Each of these elements and components is discussed in greater detail in Sections 4.8, 4.9 and 4.10.

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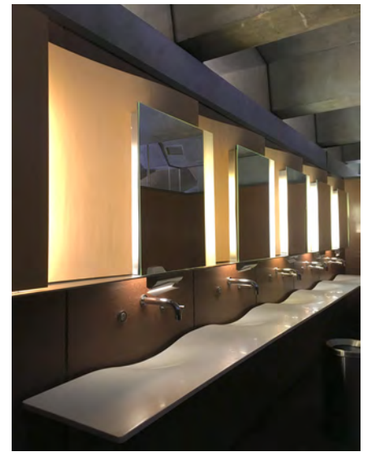
4.40 *Lower Concourse, 2010*
4.41 *The Studio, 2010*
4.42 *Box Office lavatories, 2017*
4.43 *Western Colonnade, 2006*



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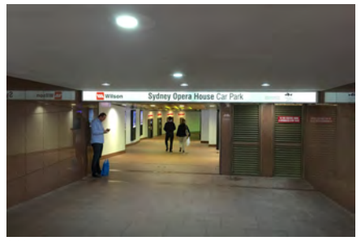

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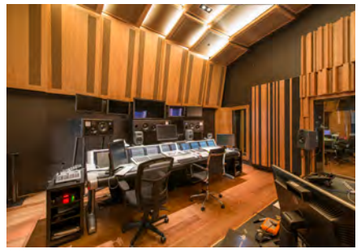

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4.44 *Entrance to Opera House Carpark, 2017*
4.45 *Recording Studio, 2014*
4.46 *Excavation to construct underground loading dock, 2012*
4.47 *Gatehouse and loading dock entry, 2017*
4.48 *Loading dock entry, Southern Forecourt, 2016*
4.49 *Loading dock entry ramp, 2015*
4.50 *Underground loading dock, 2015*

4.4.9 Elements and interiors, 2009 to present

The most recent project at the Sydney Opera House was the creation of a new underground service entry and loading dock facility with a ramped access along the southern edge of the Forecourt against the Tarpeian Wall. Referred to as the Vehicle Access and Pedestrian Safety Project (VAPS), it was the largest project to be undertaken since the building opened in 1973 and is part of an integrated plan to facilitate implementation of the Opera House Renewal Plan. Work commenced on site in February 2011 and the project reached completion in 2016.

The concept design and Development Application for this project were carried out by Johnson Pilton Walker in association with Utzon Architects. The design development and construction phases were undertaken by Scott Carver (architects) in association with Utzon Architects. The project provides improved heavy vehicle accessibility for services and production facilities via an underground loading dock, and removes the need for these vehicles to cross the Forecourt and Broadwalks, thus improving pedestrian safety and amenity. The dock area incorporates waste management service areas, removing these facilities from the Western Broadwalk. Repaving works raised the sunken roadway and removed other intrusive items. As part of these works, a new gatehouse, designed by Scott Carver in association with Utzon Architects, has replaced the earlier version. Early stages of the project included the diversion of the historic Bennelong Drain to a new outlet south of the Man o'War Steps.

The project involved removal of the Recording Studio (between The Studio and the Playhouse) to accommodate a new lift from the underground loading dock to the Concert Hall backstage. This facility has been relocated and is now on Level +12 in spaces formerly occupied by rehearsal rooms under the Joan Sutherland Theatre. This work was designed and documented by Scott Carver (architects).

Refer to Sections 4.7.6 *Forecourt and Broadwalk*, 4.7.7 *Lower Concourse* and 4.10.8 *Recording Studio*.

In 2015, a suite of major renewal projects were announced and these are now in various stages of design and documentation, with some presently being assessed by approval authorities.

These projects comprise:

- Functional and access upgrades, designed and documented by Tonkin Zulaikha Greer Architects, to front-of-house spaces:
  - Covered (Vehicle) Concourse;
  - Box Office Foyer;
  - Southern Foyers to Concert Hall and Joan Sutherland Theatre;
  - Function Centre off the Northern Broadwalk; and
  - new Creative Learning Centre, north of Western Foyers at Broadwalk level.
- Renewal of the above and below stage theatre machinery in the Joan Sutherland Theatre (documented by Sydney Opera House and Scott Carver).
- Functional and accessibility upgrade projects for Joan Sutherland Theatre and associated side and northern foyers, designed and documented by Scott Carver. These projects include:
  - improved access to wheelchair positions in the auditorium;
  - new passageways on western side of the auditorium connecting southern foyer to northern foyer;
  - new glazed lift connecting all levels at west end of northern foyer; and
  - acoustic and orchestra pit upgrades.

  The Joan Sutherland Theatre will close for 7 months from mid-2017 for these works.
- Functional, acoustic and accessibility upgrade to the Concert Hall and associated side and northern foyers, designed and documented by ARM Architects.

  Works include:
  - functional and acoustic upgrade to Concert Hall including stage, backstage and mechanical services;
  - improved access to a greater range of wheelchair positions in the hall;
  - new passageway on eastern side of hall, connecting southern foyer to northern foyer; and
  - new glazed lifts connecting all levels of northern foyer.

Another project (designed and documented by Grimshaw Architects) interfaces with the all of the above projects, and its purpose is to review and redesign bronze elements, particularly barriers and handrails across the site, to achieve site wide consistency and to meet current code compliance. A core objective of the project is to retain the scale and character of the original Peter Hall designed elements.

4.4.10 Additional space on site

We readily accept the limitations set by the borders of Bennelong Point, the Harbour. We must in the same spirit accept the limitations set by the building if we want the Opera House to retain its iconic status.

.... an approach from the underground parking in the Botanical Garden could emerge via an opening in or near the Tarpian wall. Facilities like dressing rooms or rooms for temporary catering for activities in the forecourt could be placed under the forecourt surface.[14]

When the Opera House was conceived and built, there was no anticipation that it would be as popular or as busy as it is. Accommodation within the building of administrative, support and maintenance staff, as well as performers' and production facilities, is always in demand and many spaces could be used more efficiently.

Some existing spaces have been revised and new spaces created below the building, but the demand is relentless. Expansion beyond the envelope of the Podium is not possible and appropriation of public or other significant back-of-house spaces within it will only lessen their significance and quality, and should not occur. Likewise, the Forecourt and Broadwalk areas should remain open and uncluttered.

There are only two options: either create new spaces below the building or underneath the Forecourt and Broadwalks; or relocate off site those functions which can operate remotely and re-allocate the space to more appropriate on-site functions.

Note that Jørn Utzon's design regime and aesthetic dominates the whole site except inside the auditoria (in their present form) and back-of-house areas and must be respected in any new work.

The Vehicle Access and Pedestrian Safety Project (VAPS) created additional spaces underneath the Forecourt and Covered Concourse, and supports and strengthens the core activities of the Opera House. It is therefore consistent with the above policies.

Any further excavations under the Forecourt should include support facilities for the Lower Concourse. The area available to accommodate storage, exhaust and other services within the existing Lower Concourse area is very limited and presently inadequate.

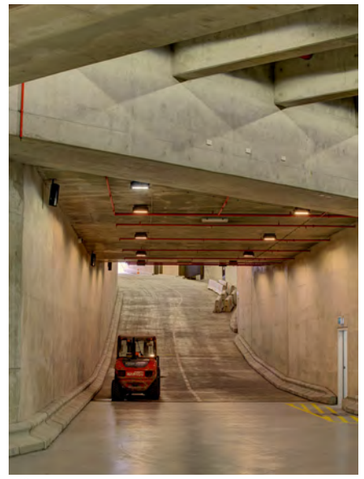
4.48

Policy 4.9 – New spaces and facilities
Entire new spaces, including access, delivery systems and services, could be created by excavating areas below existing facilities, the Forecourt, Covered Concourse and Broadwalks, provided that:

- *the supporting services and access systems are designed to have minimal impact on the building and its setting;*
- *existing levels, paving and finishes are retained on affected areas;*
- *archaeological remains are dealt with in accordance with Policy 20.10* Archaeology*; and*
- *all work is carried out in accordance with Policy 4.5* Major Change.
- *they support and strengthen significant activities and maintain the core focus of the operation and management of the Sydney Opera House as a performing arts centre.*

Another option for additional space to service the Forecourt is to excavate behind the Tarpeian Wall, as Utzon suggested, preferably with as little visual impact as possible on the raw quarried face.[15] Notwithstanding that the Tarpeian Wall is owned by the Royal Botanic Gardens & Domain Trust, such excavation would require considerable planning and investigation, particularly engineering, and may prove to be unviable. The carpark and its associated infrastructure behind the Tarpeian Wall also limit the space available and feasibility of this option. Regardless of these issues, further excavation below the Forecourt would be preferable to disturbing the quarried wall face.

Refer to Sections 4.1 *The primacy of Jørn Utzon's vision,* 4.4.9 *Elements and interiors, 2009 to present*, 4.7.6 *Forecourt and Broadwalk*, 4.7.7 *Lower Concourse* and 4.20.6 *Excavation and archaeology.*



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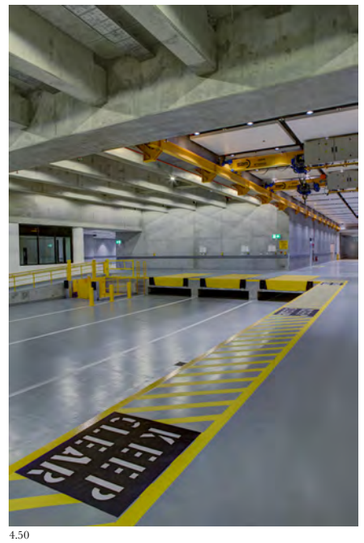

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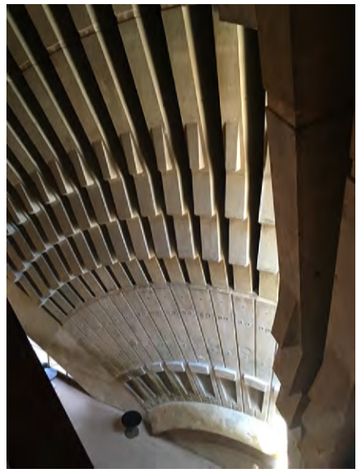

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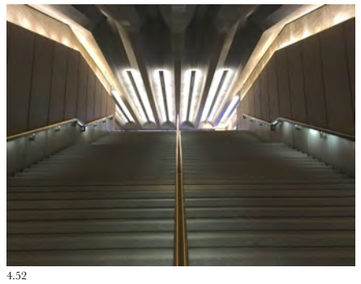

4.52

4.51 *Roof shell fan pedestal. west side of Concert Hall, 2016*
4.52 *Concert Hall stairs from Covered Concourse, 2017*

4.4.11 Structural systems

The whole Podium is constructed in reinforced concrete with load-bearing walls instead of columns, cellular rather than framed. Reinforced concrete columns are generally only used to support the concrete shells or understage structure, and are visually separated from the Podium structure. Likewise, the shell structures utilise precast reinforced concrete components, assembled into ribs and post-stressed. Steel structure is confined to supporting backstage equipment and auditorium ceilings. This is consistent with Utzon's concept of structural honesty and material expression.

> ***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.*

4.4.12 Significance, tolerance and opportunities for change

Each of the main elements (and spaces) of the Sydney Opera House has been assessed for its individual significance relative to the exceptional significance of the whole place, including each element's authenticity and integrity (refer to Sections 4.3 and 4.4.2). A general policy relating to each of these levels of significance is given below in Policy 4.13.

Following the discussion and associated policies for each element or space in Section 4.6 to 4.10, there are two tables – *Tolerance for Change* and *Opportunities for Change*.

Each element is made up of a number of component parts and these are articulated in the *Tolerance for Change* (TfC) tables. It is important to note that the terms 'element' and 'component' are assigned specific meanings in this report. They are explained in Section 1.6 but repeated here for clarity.

Element means a major part or space of the whole building or site, such as the Podium, Joan Sutherland Theatre (Opera Theatre), or group of spaces such as those within the western part of the Podium.

Component means a part of an element, such as the Monumental Steps (a component of the Podium), orchestra pit (a component of the Joan Sutherland Theatre), or individual spaces within an element group.

The TfC table lists the component parts of each element, and identifies the tolerance for change for each particular component under four key attributes, and the role each plays in supporting the significance of the larger element and the place as a whole:

Form includes design, configuration, details, scale and character.

Fabric includes physical material, contents, interiors and artefacts.

Function includes current uses; role in function of element, activities and practices (temporary or permanent).

Location includes relationships between elements, physical and functional context, and views.

Tolerance is determined by the degree of change acceptable to that particular attribute without adverse impact on the significance of the element. Tolerance is ranked from 1 to 3, 1 being lowest tolerance and consequently having least ability to change, and 3 being highest tolerance and thus having most ability to change. As a general rule, those attributes ranked 1 contribute most to the significance of the element. Figure 4.53 and the explanation below illustrate how the table works.

Having understood the relative significance of main elements and the degree of change of their component parts that would be acceptable in order to avoid adverse impacts, a number of potentially positive changes can be identified. Following each of the TfC tables is a second table with a list of *Opportunities for Change* (OfC). These have been identified from known issues, as well as comments and suggestions by Jørn Utzon in his Design Principles and recorded conversations. Each opportunity should also be considered as a potential means to explore or underpin the interpretation of the Opera House.

It is important to note that ANY change must comply with the *Utzon Design Principles* and this CMP, particularly Section 4.4 *Utzon, Hall and the approach to change*.

The TfC tables add guidance and detail for the implementation of the policies, but where there is a conflict, the individual policies take precedence over the TfC tables. The Policy is the 'yes' or 'no'; the TfC table gives the 'here's how' or 'how to manage or reduce impact'; and the OfC table identifies where further change could be explored.

Items assessed as 'Intrusive' are included in the *Tolerance for Change* table, with guidance on how each could be addressed. These intrusive items are also the most obvious opportunities for change.

The extract of the TfC and OfC tables shown adjacent are for the Stairs and Lift from Covered Concourse, which has a relative significance ranking of A – exceptional because of the role they play in the sequence of approach spaces to the building.

The concealed lighting of these stair spaces and the bronze handrail system with concealed strip lighting are both identified as component parts, and are linked by their function – to provide safe lighting and handrail support for patrons. This function is ranked as having low tolerance for change, whereas the form of this lighting and the form of the handrails themselves have a moderate tolerance for change.

The fabric (bronze) and location of the handrails are both important, with low tolerance for change. The fabric and location of the lighting have moderate tolerance for change, and under 'further considerations' it is noted that lighting should remain concealed.

The present lighting levels are considered less than ideal and the form (shape and size) of the bronze handrails, although original, no longer comply with the codes. Lighting technology has also made considerable advances since 1973.

Therefore, one can conclude that the handrail form could be changed as long as bronze is used, and location and concealed lighting are retained. Likewise, the lighting could be replaced with new LED technology to a different configuration as long as it is concealed, and its function retained and improved. Furthermore, the *Opportunities for Change* suggest the possibility of upgraded lighting in this area.

This provides direction for change while allowing for a range of possible design solutions. Many of the values embodied in the Sydney Opera House have intangible aspects, but these are inextricably linked to, and dependent on, the form, fabric, function and location of the place and its component parts. Its iconic architectural value as a symbol of a city and a nation, its revered place in the national psyche, and its status in the aspirations of performers and artists are all ultimately dependent on retaining its form, location, function and, to a marginally lesser extent, the fabric which makes up this form.

In the case of the Sydney Opera House, it is the fabric which has been designed, crafted and assembled to make up this iconic form, in this unique setting and location, and serve its function as a performing arts centre. However, if the fabric were replaced, the craftsmanship and quality, as well as the authenticity and integrity of the whole place, would be diminished.

Name of element
Significance ranking for element
Summary description and significant values of element
Attributes of each component

Tolerance for Change

element: **Stairs and lift from Covered Concourse** (significance ranking: A) — Stairways and Bennelong Lift as primary undercover access connecting Covered Concourse to Box Office — **selected components:**	Tolerance for Change 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance: Form	Fabric	Function	Location	Further Considerations (to be read in conjunction with the relevant policy section for each element)
Folded unpainted concrete beams dominating space	1	1	1	1	Defining character of the spaces and must remain exposed.
Uncluttered linear stair ascents flanked by precast granite walling, free of display material	1	1	1	1	Retain relationship to 'outside' palette of materials. Absence of display material is essential.
Concealed lighting of spaces intended to illuminate and emphasise beams	2	2	1	2	Lighting at lower entry and on stairs could be improved, but should remain concealed.
Bronze handrail system with concealed strip lighting	2	1	1	1	To be considered as part of overall approach to handrails across site – refer to Policy 7.19 *Bronze railing system*. Safe lighting of stairs is essential.
Exposed off-form concrete walls to Bennelong Lift shaft	2	2	2	2	Shaft is a combination of original and new fabric based on the original. Any alteration should adopt the same principle.
Bennelong Lift car with bronze trim	2	3	1	2	Lift car and doors could be made more transparent if opportunity arises and codes allow.

Component name
'Tolerance for Change' rankings across the 4 attributes
Further clarification of application of policy to component parts with policy reference, where applicable

Opportunities for Change

Explore opportunities – Stairs and Lift from Covered Concourse — Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Comment — Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Lighting upgrade	Improve lighting levels but retain indirect / concealed character.
Escalators in Utzon Room stair	Install pair of escalators in existing Utzon Room stair, retaining original character, materials and finishes. Escalators should closely match details, materials and finishes of those to Southern Foyers (2009).

Opportunity
Name of element
Explanation / clarification of opportunity with policy reference where applicable

4.53

Conversely, changes that are consistent with and inspired by the *Utzon Design Principles*, and comply with this CMP, could potentially strengthen its significance.

> ***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.*

The higher the significance or lower the tolerance for change, the greater the level of care and consideration required in determining any decision or action which may affect it. Therefore, the objective is to ensure that the work or proposal, whether temporary or permanent, will reinforce and not reduce the identified significance.

4.53 *Extract from* Tolerance for Change *and* Opportunities for Change *tables for Stairs and lift from Covered Concourse*

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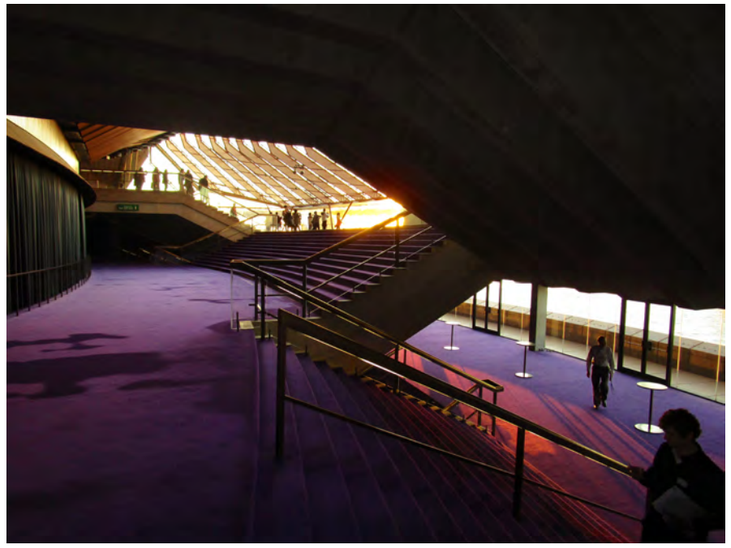

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4.54 *Southern Forecourt approach, 2016*
4.55 *Late afternoon, Concert Hall Northern Foyer, 2015*

In order to retain and protect the significance of each element, the policy below is to be applied in any action, change or development. The broad policy statements for each level of significance have been formulated to ensure that the authenticity, integrity and overall significance of the place and its elements are not compromised and any potentially negative impact is minimised.

Policy 4.12 – Levels of Significance – general policy
The following general policy statements have been formulated to guide changes and works at the place and may be supplemented by more detailed policies for each element, and guidance for change on each component in the Tolerance for Change *and* Opportunities for Change *tables in this CMP. The levels of significance refer to Section 3.3,* Summary Schedule of Levels of Significance, *and are to be considered as part of this policy.*

A Exceptional significance:

Alteration of grade A elements is not permitted unless otherwise mentioned in Section 4 of this CMP.

Maintenance, preservation and repair are permitted to ensure their ongoing function and to retain significance.

It is essential that the original design intent of the element is retained and respected.

B High significance:

Alteration of grade B elements is permissible only when this is necessary in order to retain or strengthen a grade A element or function, unless otherwise mentioned in Section 4 of this CMP.

It is essential that the original design intent of the element is retained or respected.

C Moderate significance:

Alteration of grade C elements is permissible where this will achieve retention or strengthening of those of higher significance, unless otherwise mentioned in Section 4 of this CMP.

It is essential that their role in supporting elements and functions of higher significance is retained.

D Low significance:

Grade D elements may be altered, unless otherwise mentioned in Section 4 of this CMP.

It is essential that their role in supporting elements and functions of higher significance is retained.

int Intrusive:

Intrusive elements or components should be altered or removed to reduce their impact in accordance with considerations in the Tolerance for Change *and* Opportunities for Change *tables at the end of each policy section.*

THE SITE & ITS FABRIC (SECTION 4.5 – 4.15)

4.5 OPEN & UNCLUTTERED SETTING

One of the most important points on any agenda concerning the Opera House, is to keep the whole area in pristine order, and as free of intrusive elements as possible.[1]

The drama and setting of the approach to the Opera House is a fundamental part of its exceptional significance. To see the massive free-standing Podium rising from the stark horizontal plane of the Forecourt and Broadwalk, supporting the soaring white shells above, is an experience no visitor will forget.

Notwithstanding its frequent use for events and performances, the open Forecourt is not a 'vacant' space created just for events, it is an event in itself and should be kept free and uncluttered to allow it to perform its part in the approach and arrival experience without distraction or hindrance.

Public access to the Forecourt and Podium means that this experience is available to all, at any time of the day or night. For many, this building is on their 'must see' list and a major factor in choosing Sydney, or Australia, as a destination. It is therefore essential that their experience of it, whether from a distance or closer up, is one that is unspoilt by distracting or intrusive structures, objects or installations on or around the site.

However, these spaces must remain safe and functional for all who visit and use the place. The recent removal of the sunken roadway and the majority of vehicular traffic have improved safety and encouraged public access to the Forecourt, Monumental Steps and Podium.

If for any reason a temporary installation or event is required, it should be dealt with in a manner that minimises its impact and duration, maximises engagement and communicates clearly its intent to visitors. Regardless of what is happening in these open external spaces, they should be a special and enjoyable experience for visitors. (Refer to Section 4.6 *Events and uses externally*).

There will always be pressure to place objects including signage, sculpture, memorial tablets, railings and bollards on the Forecourt, Broadwalks and Podium. These may also be associated with activities, events or visitor facilities, but as Kerr noted in 2003: "*In order to preserve the stark and dramatic presentation of the Opera House, the unnecessary should be resisted and the necessary kept to an absolute minimum.*" [2]

4.56

Policy 5.1 – Permanent or semi-permanent structures or objects
Permanent, semi-permanent or long-term structures must not be erected on the Forecourt, Broadwalks, Podium platform and steps. Permanent, semi-permanent or long-term objects (as opposed to structures), including furniture and signage, should only be permitted on the Forecourt, Broadwalks, Podium platform and steps if they:

- *do not interrupt or intrude upon the open and uncluttered presentation of the place;*
- *do not intrude upon key views and vistas to and from its setting; and*
- *are absolutely necessary for the safety and wayfinding of visitors.*

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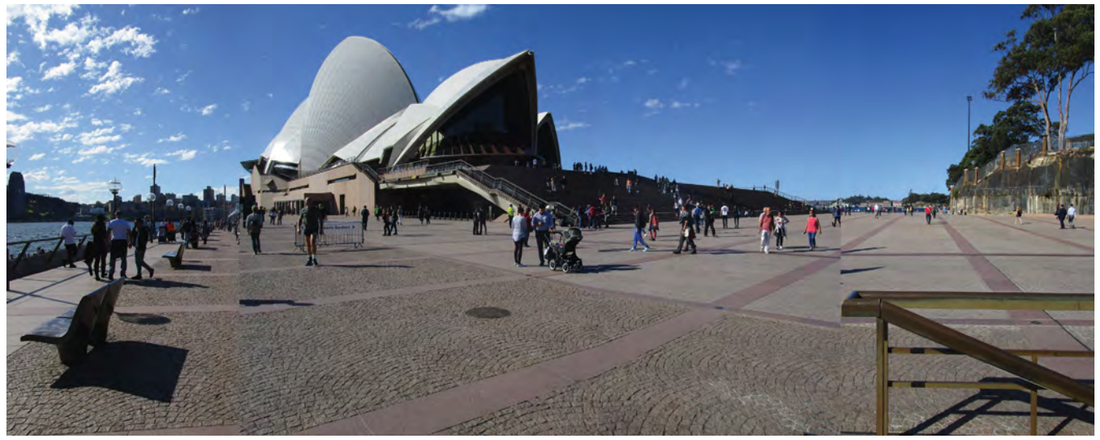
4.56 *Forecourt, 2016*
4.57 *Late afternoon, Forecourt and Monumental Steps, 2017*



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4.58 *Forecourt, 2016*
4.59 *Forecourt with sunken roadway, 2010*
4.60 *Late afternoon on the Podium, 2016*

4.59

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Policy 5.2 – Temporary or short-term installations and objects
Temporary installations or objects should only be permitted on the Forecourt, Broadwalks, Podium platforms and steps if they:

- *have no impact, either short or long term, on the fabric or significance of the place;*
- *have no long-term impact, and minimal short-term impact on public spaces;*
- *minimise their impact on views to and from, and across the site;*
- *maintain as much public access as possible to and across the site;*
- *communicate clearly their function and duration to the public in an appropriate manner;*
- *comply with policies in Sections 4.6* Events and uses externally, *4.7.4* Podium, *4.7.5* Monumental Steps *and 4.6.8* Exterior furniture.

The use of external areas and associated temporary structures within the Sydney Opera House site as performance venues or for events and community celebrations is discussed more fully under Section 4.6 *Events and uses externally.*

Refer to Section 4.6.8 *Exterior furniture.*

The Tarpeian Wall plays a particularly crucial role in the approach / entry experience and the setting and definition of the Sydney Opera House site. Also known as the Tarpeian Rock, it is administered by the Royal Botanic Gardens & Domain Trust and listed as a State heritage item as part of The Royal Botanic Garden. Its scale and configuration define the southern boundary of the site, and it retains the only visible evidence of activities that predate the Opera House itself. Its quarried sandstone face, with steps and fence, is an historic artefact in its own right. Refer also to Section 4.16 *Interpretation.*

Utzon's concept for the open Forecourt and the Monumental Steps ascending from it as an outdoor auditorium [3] relies on the plain stark vertical sandstone face to act as a neutral 'backdrop' to its forecourt 'stage', providing no distraction to the 'performance' on the Forecourt below.

4.61

Policy 5.3 – Tarpeian Wall
The drama, scale and simplicity of the quarried sandstone face of the Tarpeian Wall plays a crucial role in the Buffer Zone and setting for the site and should remain as an unadorned sandstone face with its surviving evidence and remnants of its history. It defines and contains the exceptionally significant Forecourt space and must not be regarded as a location for temporary signage, advertising, further memorials or other forms of fixed interpretation.

It must be managed by the Royal Botanic Gardens & Domain Trust in close association with the Sydney Opera House Trust.

Therefore, for the purposes of assessing any proposal involving or affecting it, it should be considered as if it were legally part of the Sydney Opera House site and comply with the Utzon Design Principles *and this CMP.*

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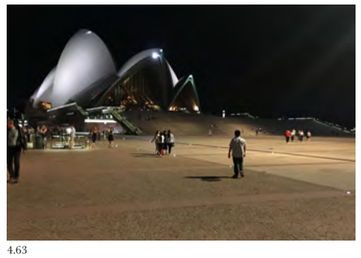

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4.61 *Monumental Steps and Podium, 2010*
4.62 *Forecourt, early morning, 2016*
4.63 *Forecourt, evening, 2016*
4.64 *Original Tarpeian Way sign on Tarpeian Wall, 2011*
4.65 *Tarpeian Wall, 2017*

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4.67

4.66 *Forecourt, the town square, 2010*
4.67 *Rogue's Gallery during Sydney Festival, 2010*

4.6 EVENTS & USES EXTERNALLY

This outdoor auditorium created by the grand staircase is of course part of the townscape and is also very dependent upon what goes on elsewhere in the city. Because as you sit on these stairs you look towards the city, and you have the city and its buildings as a background to whatever happens on the forecourt.[1]

4.6.1 Events and uses generally

The Forecourt and Podium steps are the perfect location to experience the setting of the Opera House, expanse of the harbour, Sydney's climate, as well as the arts; it has become a favoured public space for Sydneysiders to celebrate an event or achievement. At times it is loud and lively, and at other times silent and contemplative. Some of the more significant events and performances on the Forecourt are noted in Section 2.5 of this document.

In addition to the Forecourt, the Broadwalk areas and even the Covered Concourse are sometimes used for events involving the performing arts. Such events enliven these spaces, encourage increased visitation and engagement, and permit a diversity of functions across the site – a key component of the Opera House Enterprise Strategy 2013. They have the potential to generate much needed revenue, but without careful planning and management they have potentially adverse impacts.

Associated infrastructure, including stage and associated enclosures, lighting and speaker rigs, barrier fences, security, signage and visitor services (such as lavatories and refreshment bars) need to be carefully managed in terms of impact, duration and timing in order to minimise impacts and respect the overarching significance and role of these spaces in the setting of the Opera House.

The events may be temporary but while they are there, including during 'bump-in' and 'bump-out', they impede the experience and drama of the approach to the Opera House and potentially disfigure its setting. Compare Figures 4.68 and 4.69 with Figures 4.70 and 4.71. Their temporary nature is irrelevant while they are actually there, particularly for the person who may be visiting for the first and only time in their life. As many of these events may be over holiday periods or weekends when visitation levels are highest, their potential impact is an important consideration and must not be overlooked.

In 2016, a set of heritage guidelines for outdoor events and activities was compiled as part of a comprehensive *Outdoor Event Guide*.[2] Any review of this guide or guidelines should comply with the *Utzon Design Principles* and CMP.

Figure 4.79 below from these heritage guidelines shows the various areas of the Opera House site where outdoor events and activation may occur. However, to limit impacts on important views on the Forecourt and Western Broadwalk, any infrastructure associated with these activities must be located within the infrastructure zones identified. These zones are defined by maintaining a sequence of unobstructed primary views towards the Opera House on approach from East Circular Quay and Farm Cove. These views (numbered and shown on Figures 4.80 to 4.85) focus on the roof shells from a distance and expand to include the Podium and Monumental Steps as one gets closer.

Policy 6.1 – Events externally
Any outside event must entail the minimal infrastructure necessary to stage and support it, and when it is over, all traces must be removed as quickly as possible, leaving the place and its fabric without damage and as it was before.

Events that may be visually intrusive, or disruptive in terms of public access could be acceptable if they occur only infrequently and for the shortest practical duration.

Any proposal for the frequent or long-term erection of any venue or event infrastructure, facilities or barrier fencing on any external area at the Sydney Opera House (except on the Lower Concourse in accordance with Policies 6.6 and 7.17) would substantially impact on its setting, views and public access, and would be unacceptable.

To minimise visual impacts, external events and associated infrastructure anywhere on the site must be in accordance with the Sydney Opera House – Outdoor Events & Activities – Heritage Guidelines.

In addition, event infrastructure on the Forecourt and Western Broadwalk should be located within the Event and Infrastructure zones identified on Figure 4.79. Event infrastructure anywhere on the highly visible Northern Broadwalk must be located to minimise visual impacts on views to and from the Opera House.

Adherence to and appropriateness of these guidelines must be regularly reviewed and if necessary adjusted to ensure compliance with the Policies in Sections 4.5 and 4.6 of this CMP.

Current NSW Planning and Heritage instruments determine what activities are exempt (i.e. can occur on site without approval, or be considered a certain pre-approved activity) and what require separate approval.

These instruments have been and continue to be regularly reviewed. The intent of any planning instrument or other controls should be to achieve a sustainable balance between hosting celebratory and other community or performance events, exploring and encouraging artistic expression, and the temporary impact these may have on the open and unencumbered setting of the place. In this respect, the guidelines and policies in this CMP are paramount. One potential danger in this exemption regime is that if a series of short-term events or activities requiring stage and other infrastructure are programmed to closely follow each other, the perception will be of a long-term installation with a long-term visual impact. This scenario should be avoided. All activities, whether they be considered exempt or not, should still be assessed and guided by this CMP.

It is essential that visitors are kept informed of the reason for and duration of such events and associated facilities, but still made welcome in order to manage their expectations. This should be done via appropriate but non-intrusive means and, if possible, with the help of the media. Refer to Policy 5.2 above.

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4.68 *Set-up for Australian Idol, 2008 - high impact on views and setting*
4.69 *Set-up for Australian Idol, 2008*
4.70 *Impromptu event on Western Broadwalk, 'Circus 1903', 2016 - no impact on views and setting*
4.71 *'Circus 1903', 2016*

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4.72 *Lower Concourse, late afternoon, 2016*
4.73 *Opera Kitchen, Lower Concourse, 2015*
4.74 *Opera Kitchen, Lower Concourse, 2015, pedestrian conflict*
4.75 *Western Colonnade, 2017*

All furniture, fittings and any installation on or within external spaces at the Opera House should be consistent with the exceptional quality of the place and the *Utzon Design Principles*. This includes barrier fencing for works, maintenance or events. Signage and clutter must be kept to a bare minimum and the emphasis should be on openness, simplicity and deference to the power and significance of the place itself. Objects and installations that may be acceptable in a shopping mall or fairground, if placed at the Opera House, could detract from its unique setting, character and significance, and would be inappropriate. This is a place that strives for and celebrates excellence; all items and objects installed or used on the site must respect this.

Policy 6.2 – Design quality
The design and execution of any installation, infrastructure or object for any event, activity or use, must be of exceptionally high quality and respect the unique setting, character, quality and significance of Sydney Opera House, and not detract from or compete with it.

All lessees and those involved with setting up or managing events or uses on the site, whether they be short or long term, have a responsibility to Sydney Opera House management, the place itself, and the public. No use should damage or place at risk the fabric, use or significance of the place.

Policy 6.3 – Commercial leases and other uses
Commercial lessees and other operators across the site, including food and beverage, must be made aware of their responsibilities to retain, respect and protect the significant values of the place including its fabric.

No infrastructure, furniture or use should encroach onto or otherwise obstruct free use of public pedestrian routes. This includes the sheltered walkway and the waterside raised walkway on the Lower Concourse.

Refer also to Section 4.5 *Open and uncluttered setting*, Section 4.6.8 *Exterior furniture* and Section 4.20.1 *Use and compatibility.*

4.6.2 Food and beverage

Permanent food and beverage outlets are located in the Lower Concourse and Western Colonnade but there are other opportunities on the Northern and Western Broadwalks. Refer to Section 4.6.8 *Exterior Furniture.*

Care is needed with all food and beverage externally as staining or other damage to paving requires harsher cleaning, and consequently leads to the erosion of grout or disfigurement of paving panels. Some damage may be irreversible.

Policy 6.4 – Food and beverage externally
Crucial factors in determining the acceptability of food and beverage facilities externally will be their:

- *design and placement;*
- *impact on public access and views;*
- *appropriateness in the setting;*
- *requirements for associated services and infrastructure including facilities such as furniture, waiter stations, signage, heating, shelter and waste;*
- *accommodation of all associated services, storage and food preparation areas, and all enclosed spaces within the physical limitations of the Podium; and*
- *reversibility.*

Food and beverage options that are likely to stain, discolour or otherwise damage the precast or solid granite paving are not to be offered on the Forecourt, Broadwalks or Podium.

For food and beverage in the Lower Concourse, refer also to Sections 4.6.7, 4.6.8, 4.7.7 and Policy 7.17.

Refer to Sections 4.7.1 *External form*, 4.7.4 *Podium*, 4.7.6 *Forecourt and Broadwalk*, 4.7.7 *Lower Concourse*, 4.6.8 *Exterior furniture*, 4.14 *Lighting*, 4.18 *Care of the fabric and housekeeping* and 4.20 *Managing the processes of change.*

4.6.3 Shelter

The desire for shelter is an important and frequently raised issue, affecting all outdoor activities at the Opera House. It must be weighed against potential visual, physical and functional impacts with negative impacts avoided.

On the Western Broadwalk, any form of screen or partition around or within the Colonnade for weather protection would adversely impact on how the colonnade structure reads against the Podium and must therefore be avoided. Kerr noted in his assessment of the proposed colonnade in 2004 that "… *on a very few days of the year, the loggia* [as the Colonnade was referred to at the time] *may not be a habitable venue. This condition it will share with facilities at many other monuments of exceptional significance throughout the world.*" [3] These comments apply equally to the exposed raised walkway of the Lower Concourse and on the Podium itself. On these particular areas no umbrellas or other form of shelter should be used. Refer to Section 4.6.8.

Any proposals for permanent or temporary umbrellas anywhere on the site will require careful and detailed consideration and review by the Heritage Architect, Eminent Architects Panel and the Sydney Opera House Conservation Council. Permanent or long-stay umbrellas require statutory approval.

Policy 6.5 – Seating and umbrellas for outdoor events
Temporary seating and purpose-designed fixed umbrellas suitable for wind conditions on site may be used to support outdoor events. The period in which these temporary facilities are deployed must be counted as event days and should only be used sparingly. All furniture and umbrellas, temporary or permanent, must comply with the guidelines and policies for the affected space / element, Section 4.6.8 Exterior Furniture, *and with the* Sydney Opera House – Outdoor Events & Activities – Heritage Guidelines.

Policy 6.6 – Shelter on Podium and Lower Concourse
No umbrellas or other forms of shelter or tall objects, either temporary or permanent, should be placed on:

- *any external areas of the Podium platform itself;*
- *the roof of the Colonnade;*
- *any areas of the raised waterside walkway on the Lower Concourse.*

It is important that lessees are inducted about the significance of the site and held responsible for any adverse impacts. Refer to Policy 6.3 and Section 4.20.1.

4.6.4 Forecourt - events and uses

To facilitate events and uses on the Forecourt, servicing and infrastructure connection points were first installed in 2007 close to the Tarpeian Wall. This infrastructure has been renewed and improved as part of the Vehicle Access and Pedestrian Safety Project (VAPS), resulting in less clutter and less use of ad hoc cabling and associated infrastructure.

Diligence and robust enforcement will always be required to ensure that impacts from these events, both visual and physical, are properly managed and that there is no damage, even though the urgency sometimes associated with these activities often means that effective protective measures can be difficult to achieve.

Refer to Figure 4.79 for defined zones for event infrastructure on the Forecourt.[4]

Refer to Sections 4.7.6 *Forecourt and Broadwalk* and 4.6.8 *Exterior furniture.*

4.6.5 Northern Broadwalk – events and uses

The Northern Broadwalk is a very conspicuous area in terms of the setting and views towards the Opera House, and is occasionally used for events and community celebrations. Regardless of how long events are in place, none should detract from these views or compete with the dominance and scale of the Podium. Therefore, covered stages and similar tall structures and infrastructure should be avoided. Refer to Policies 6.1 and 6.2.

When the Sydney Opera House opened in 1973, there was a food and beverage outlet called Harbour Restaurant in the north-east corner of the Broadwalk with attendant outdoor tables, bench seating and planter boxes. The kitchen and servery areas, as well as some seating, were within the Podium. Soon after 2001, the outdoor tables, chairs and umbrellas were replaced by a large, extendable long-stay marquee structure for catered functions as part of the Northern Function Room facility, a venue for hire also known as the Opera Point Marquee. Refer to Section 4.9.8 *Northern Function Room facility.*

These elements, particularly the marquee, clutter the space and detract from the clarity and power of the Podium and views from and towards it, as well as across the Broadwalk. Works proposed in the suite of renewal projects will remove it. These same impacts arise from temporary event structures. However, because of its location and exceptional views, it is still an appropriate location for a destination food and beverage or function facility for Opera House related activities, but without the use of a marquee. The only detraction is its exposure to the often strong nor-easterly winds.

An equally spectacular location might be the north-western Broadwalk, but this would require space and facilities within the existing adjacent Level +12 administration areas. This area could possibly house a catered function or other publicly accessible facility without the need for an external marquee, but the space is restricted by the Drama Theatre Stage. If it were possible, such a facility could have internal access via the Western Foyer and potentially activate this area of the Northern Broadwalk.

The space between the northern Podium projections, beyond the Central Passage, provides a more protected area, however vehicular access to this area is still required (even with completion of the underground loading dock).

Refer also to Section 4.5 *Open and uncluttered setting*, Section 4.6.8 *Exterior furniture*, Section 4.7.6 *Forecourt and Broadwalk* and Section 4.20.1 *Use and compatibility.*

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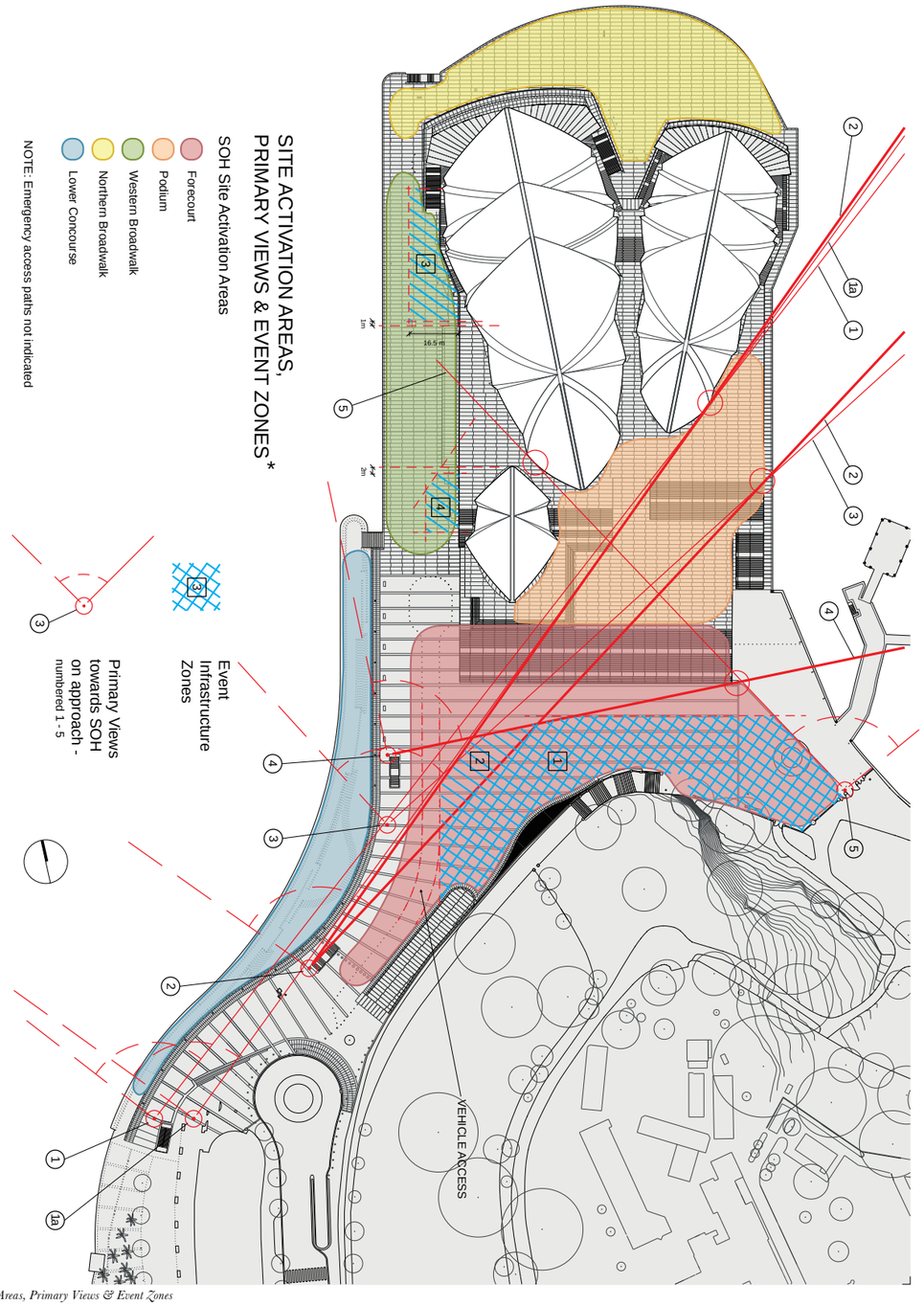
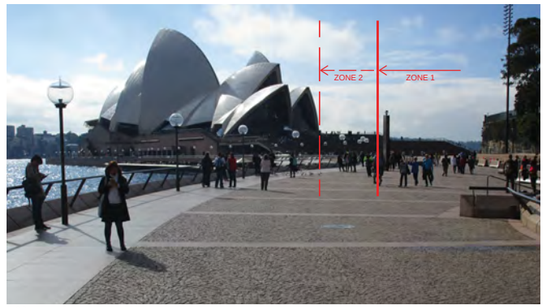
4.76 *Opera Bar, Lower Concourse, 2016*
4.77 *Northern Function Room Facility marquee, 2010*
4.78 *North-West Broadwalk, 2014*

CONSERVATION POLICY



4.79 *Site Activation Areas, Primary Views & Event Zones diagram, 2017*



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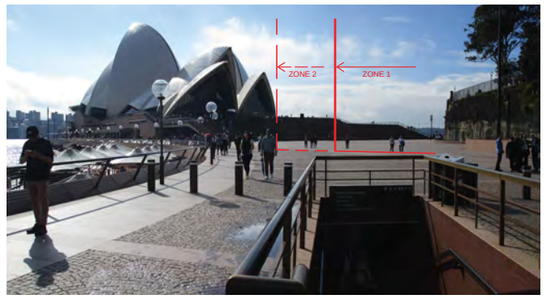

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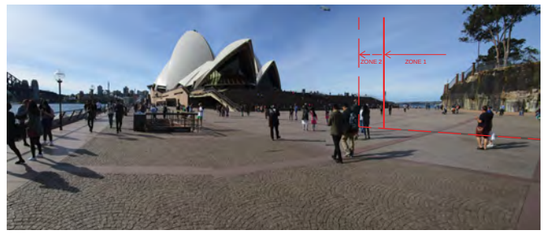

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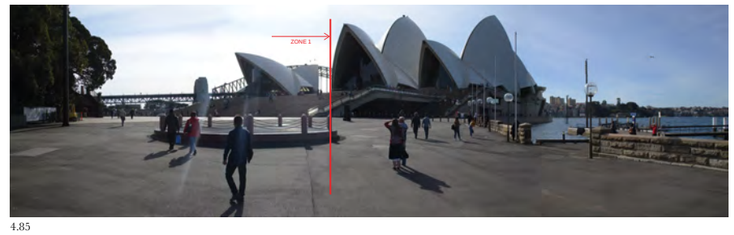
4.80 *Primary View from position 1, 2016*
4.81 *Primary View from position 1a, 2016*
4.82 *Primary View from position 2, 2016*
4.83 *Primary View from position 3, 2016*
4.84 *Primary View from position 4, 2016*
4.85 *Primary View from position 5, 2016*



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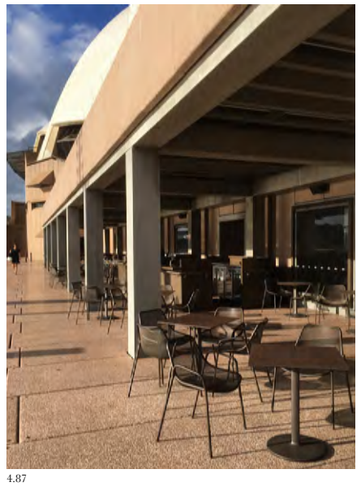

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4.86 *Western Colonnade, 2017*
4.87 *Western Colonnade, 2017*

4.6.6 Western Broadwalk – events and uses

The Western Broadwalk is occasionally used for events and activities; while they remain low-key with little or no infrastructure, they have minimal impact. Infrastructure increases dramatically with their increased scale, extent and duration. This is an ideal location for low-key activities and events but public access to the Colonnade and the Northern Broadwalk must be retained at all times.

The 2006 Western Colonnade is partly occupied by a café serviced by a food preparation kitchen within the Western Foyers. While arguably an ideal location with its exceptional harbour views, the furniture and related objects such as waiter stations, signage and heaters clutter and detract from the openness of the space and partially obscure views through the splayed windows from within the Foyer.

With careful consideration of the selection and placement of furniture, including waiter stations, this facility could remain in this general location, at the same time respecting the qualities and character of the Western Foyer, its Colonnade, and their relationship to the harbour. This could be achieved by leaving part of the Colonnade, and the bays which contain entry doors, unimpeded by furniture. Relocating some of the seating to the north-west of the Colonnade may help to further open up and enliven this area. This is a relatively sheltered but also sensitive part of the site and plays an important role in the setting and character of the place. Therefore, any furniture or use will require very careful consideration.

> ***Policy 6.7 – Western Colonnade open and unobstructed***
> *The Western Colonnade structure must remain open and publicly accessible at all times and not be glazed, divided or enclosed in any way, and views towards the surrounding Broadwalk and harbour must remain unobstructed. No umbrellas or other tall objects are to be placed to the west or south of the Colonnade or close to its north end except as permitted for temporary use in accordance with the* Sydney Opera House – Outdoor Events & Activities – Heritage Guidelines.

For possible locations for event infrastructure on the Western Broadwalk, refer to Figure 4.79.

Refer also to Section 4.5 *Open and uncluttered setting*, Section 4.6.8 *Exterior furniture* and Section 4.20.1 *Use and compatibility.*

4.6.7 Lower Concourse - use

The Lower Concourse (1988) was designed to address issues of undercover access as well as ancillary visitor services including food, beverage and retail in a manner that respected and enabled the uncluttered and open qualities of the Forecourt above. This is now one of Sydney's favourite after-work gathering places, but its popularity has had some unforeseen impacts. There is a high demand for sheltered seating and this is restricted by the narrow overhanging edge of the Forecourt above. It now houses Opera Bar, Opera Kitchen and the recently opened Welcome Centre. There is limited opportunity for additional umbrella structures without increasing the visual impact of these on the character of the Lower Concourse, or the views from or across it to the Opera House. It is worth noting that much of the seating is in the open and without shade or other protection – and it still remains popular.

The food and beverage outlets in the northern section of this area have, in the past, encroached on and restricted the use of pedestrian paths. This area was designed as public circulation space and must be retained as such. Careful management is needed to keep this in check and some lease boundaries may need future clarification. Refer to Policy 20.3.

Refer also to Section 4.5 *Open and uncluttered setting*, Section 4.6.8 *Exterior furniture* and Section 4.20.1 *Use and compatibility.*

4.6.8 Exterior furniture

> ***It is important that the colour of the shells are perceived as white.***
>
> ***It is important that no other object on the peninsular or near the shells should be as white as or whiter than the shells.***
>
> ***… Consider a smile, exposing a set of normal white teeth, where one tooth has been replaced with a very white one. The original teeth will seem dull by comparison.***
>
> ***The same normal teeth will seem very white when set in a nicely sun-tanned face.***
>
> ***Likewise, the shells lose some of their apparent whiteness, when surrounded with materials that are whiter than themselves.***[5]

Exterior furniture (including signage, lighting, event infrastructure, temporary railings etc.) has the potential for substantial impacts, both positive and negative, on the open and uncluttered setting of the Opera House. Most of this arises from day-to-day use with some resulting from events or temporary activities.

At the time of Utzon's departure in 1966, his office had not commenced work on exterior

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4.88 *Furniture in Opera Kitchen, Lower Concourse, 2011*
4.89 *Opera Kitchen furniture on raised seawall walkway, Lower Concourse, 2011*
4.90 *View of shells from lower Concourse, 2015*
4.91 *Opera Bar furniture, 2014*

furniture or lighting details. The design of these elements was left to Peter Hall and then later to Public Works and the Trust's own consultants.

In 1973 the external areas were peppered with an arrangement of white fibreglass furniture including seats, benches, waste bins, smoker's bins and large circular planter tubs (the latter on the Northern Broadwalk only). These were manufactured by Architectural Fibreglass Pty Ltd. External lighting comprised the simple polycarbonate balls on bronze standards, placed around the perimeter of the Broadwalk and in the Covered (Vehicle) Concourse, fondly referred to as 'Hall's Balls'. Three bronze drinking water fountains were placed on the Broadwalk (one has since been removed). The white elements in particular figured prominently in the setting, with the paired bins placed at the foot of each of the roof pedestals on the Podium. These bins were later painted black, moved and reduced in number to diminish their intrusiveness.

During Utzon's re-engagement, it became clear that he envisaged that nothing on the site would compete with the white tiled shells, and all other exterior elements, including furniture, would be darker in tone, sitting comfortably with the base of the building. In 2009, the remaining white fibreglass external elements were re-finished in deep bronze and the fibreglass bins replaced with proprietary bronze-coloured steel bins.

The umbrellas in the Lower Concourse area originally used a light coloured fabric that had faded to an off-white. In late 2013, a darker coloured fabric was tested on temporary umbrellas on the Western Broadwalk. The colour – close to Dulux Coconut Husk, is very similar to that of the granite clad Podium and was considered successful. It is important to note that there are very few places on the Broadwalks where umbrellas would be acceptable. No umbrellas should be used on the Podium itself. Refer to Section 4.6 *Events and uses externally.*

In 1973, external signage was achieved by strategically placed, impressively scaled black metal 'pylons', square in plan with white lettering. These solid black pylons have since been replaced with similar-scaled flatter boxes on somewhat incongruous short legs with 'vitrine' poster displays. Their design, construction details, materials and finishes are less exact and flimsier than the originals, and their visual quality is well below the standard expected on this site. The security cameras fitted on top of these signage pylons should be incorporated into the unit so they do not detract from its overall design. Utzon, commenting on a number of issues in a letter to the Trust in January 2006, noted that these "*box-like, rectangular signs, located on the Western Broadwalk, should be replaced with some that are more in harmony with the Design Principles.*" [6]

Similarly, the design of the present rubbish bins should be tailored to better accord with the *Utzon Design Principles*. The Opera House is more than worthy of its own design for such furniture.

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4.92 *Furniture in Western Colonnade, 2014*
4.93 *Bar stool furniture in Western Colonnade, 2014*
4.94 *Waste bins on west side of Forecourt, 2017*
4.95 *Hall's original 1973 white fibreglass furniture outside Harbourside Restaurant*
4.96 *Original bronze drinking fountain, Eastern Broadwalk, 2009*
4.97 *Bronze coloured furniture and original Hall's Balls lights, Western Broadwalk, 2009*
4.98 *Signage pylons, Western Broadwalk, 2014*
4.99 *Black signage pylon, Podium, Box Office level, 2009*
4.100 *Wayfinding sign, Covered Concourse, west end, 2017*
4.101 *Signage post, Covered Concourse, west end, 2017*

In early 2016, the small grouping of bronze-coloured information pylons at the southern end of the Forecourt was replaced with a single taller pylon. While elegantly designed, it has been crowned by a security camera, visually diminishing its quality and simplicity. The comment above on cameras on other signage pylons is also relevant here.

There have been other changes in exterior furniture, but further design improvements could be made.

The present bronze-coloured steel furniture in the Colonnade was introduced in 2014 and selected with advice from the Eminent Architects Panel. Selected from the Round Collection, manufactured by EMU and designed by Christophe Pillet, it is suitably minimal and recessive.

Food and beverage facilities now include not only tables and chairs, but umbrellas, waiter stations, mobile heaters, menu stands, barriers and signage, with some poorly coordinated. These have a cumulative impact which, if not carefully considered or managed, may become intrusive and create clutter. In some parts of the Lower Concourse, this has already happened.

There has been a tendency for these furniture collections to evolve from simple and acceptable solutions to more complex and sometimes intrusive ones. For example, the facility on the Northern Broadwalk began life in 1973 as a popular café / restaurant with simple tables, bench seats and potted olive trees (Figure 4.95). Soon after, modest-sized red umbrellas were added, later enlarged and then replaced with even larger off-white ones. It was only a short time before the umbrella structures became a fully connected extendable marquee roof with roll-down walls. Such evolutions must be strongly discouraged.

External furniture, signage or other objects should not obscure or detract from key visual features of the building. This is made increasingly difficult by the proliferation of promotional and advertising signage across the site. Policies and practices for this should be reviewed and then strictly adhered to by all parties.

The material selection, placement and fixing of exterior furniture and objects require careful consideration. Past selections have resulted in stains on the granite paving, such as those resulting from the use of steel railing or mobile signage units, aptly referred to as 'rust buckets'.

Purpose-made painted steel exhibition stands on the Western Broadwalk utilized the bronze screw fixing points for the paving. While in place, they obscured views across the Broadwalk, and when they were removed, the original screws were replaced with different, ill-fitting copies. Such situations and their unforeseen impacts incrementally degrade the place and must be avoided.

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Policy 6.8 – Exterior furniture and objects
Design, selection and quality of exterior furniture, signage and other objects, including temporary installations and events, on any external area including the Covered (Vehicle) Concourse must:

- *be appropriate for the Sydney Opera House standard of excellence;*
- *not use white or off-white, except for lettering on signage;*
- *avoid high reflectivity and harsh tonal contrasts with the natural palette of external materials;*
- *not use materials or fixings that will stain, degrade or otherwise impact on significant fabric;*

External furniture and objects must be kept to a minimum and none should obscure the base of the roof shells, glass walls, structure of the Western Colonnade, or the base of the Podium.

4.6.9 Soft landscaping

The entire peninsular of Bennelong Point is today a man-made landscape, and should be free of trees and flowerbeds / planters. The moveable planters with olive trees, located at the Northern Broadwalk, should be removed, as shall the circular planters near the 'toaster'.[7]

In 1973 Hall used olive trees in large circular white tubs for his furnishing of the Northern Broadwalk for the Harbour Restaurant; however, Utzon's ideas and philosophy for these external areas were not understood at the time. These spaces are Utzon spaces and therefore Policy 4.6 applies.

Many of the planters referred to in Utzon's letter to the Sydney Opera House Trust (quoted above) have since been removed, but others remain or have since appeared – particularly around food and beverage areas and for temporary events. The use of planters or greenery is contrary to Utzon's vision and is to be avoided.

Policy 6.9 – Soft landscaping inappropriate
The whole of the Opera House site is a 'rock-like' man-made landscape and must be free of trees, flowerbeds and planters.

Refer to Section 4.5 *Open and uncluttered setting*, Section 4.6 *Events and uses externally*, Section 4.14.2 *Lighting of Forecourt, Broadwalk and Podium (monumental) steps*, and Section 4.15 *Signage*.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Exterior Furniture below.

Tolerance for Change

element: **Exterior furniture**  significance ranking **refer to particular element** Furniture and fittings on Forecourt, Broadwalk and concourses dating from 1973 to 2010 **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
3 bronze drinking fountains on Broadwalk (1973) – one on SW corner missing	**2**	**2**	**2**	**2**	Part of the original Hall-designed outdoor furniture and preferably should remain in situ. Could be moved or redesigned in same material to retain function.
Bronze painted (originally white) fibreglass seating on Broadwalk (1973)	**2**	**2**	**2**	**2**	Elegant and discreet 1973 furniture worthy of retention now colour has been resolved. Location towards perimeter of Broadwalk is important.
Bronze painted (originally white) fibreglass benches (1973 originals)	**3**	**3**	**2**	**3**	Simple inoffensive form, and part of original suite of furniture. Preferable to keep at least one on site.
Polycarbonate ball light fittings on numbered bronze posts around Broadwalk (Hall's Balls) (1973)	**2**	**2**	**1**	**2**	Important Hall design component. Could be modified in accordance with Policy 14.5. Refer also to TfC for Covered Concourse.
Polycarbonate ball light fittings on bronze-painted steel standards around perimeter of Forecourt (Hall's Balls)	**2**	**3**	**1**	**2**	Installed 1988 to copy originals, and used throughout adjacent foreshore. Could be modified in accordance with Policy 14.5.
Plaque for Matthew Flinders, north-west skirting panels (1974)	**2**	**3**	**2**	**1**	Marks the point from which Flinders measured the Australian coastline. Fits comfortably with seawall parapet and should be retained.
Bronze painted steel crash bollards, protecting projecting hoods over openings in Podium (c.1990s)	**3**	**3**	**2**	**2**	Generally used to keep vehicles away from projecting hoods. If possible, the bollards should be redesigned, removed or a less intrusive barrier introduced.
Granite bollards (c.1980s-1990s)	**2**	**3**	**2**	**2**	Material and colour sit well in space. Important function but those close to Podium stairs are intrusive and should be removed.
Dark steel, stainless steel and timber furniture within Western Colonnade area	**3**	**3**	**2**	**3**	Colour and materials compatible but clutter space. Refer to Section 4.6 *Events and uses externally.*
Tall black poster and sign pylons on Broadwalks and Podium (1973 concept but executed to a substantially modified design in 1993)	**3**	**3**	**2**	**3**	Redesign to be more elegant, less heavy and with finer manufacture and finish, retaining scale. Bronze colour preferred. Security cameras to be incorporated within unit.
Single information pylon (2015) at south end of Forecourt	**2**	**2**	**1**	**2**	Important function. Pylon to be kept simple, elegant and without clutter. Incorporate camera within structure if possible.
Non-white outdoor furniture on Lower Concourse level, where not obstructing pedestrian paths	**3**	**3**	**2**	**3**	Stainless steel frames and timber surfaces are supported. Design should be elegant, simple and non-intrusive, with a consistent 'family' of designs applied across the site.
Portable external coffee and food bars around Forecourt	**3**	**3**	**2**	**3**	These are now largely removed. If used they should be kept to a minimum and as unintrusive as possible. Siting, size of footprint, design quality, colour, materials and food offering are most important considerations – refer to Policy 6.8, and discussion and policies in Section 4.6 *Events and uses externally.*
Bronze painted steel bollards at western and eastern ends of Covered (Vehicle) Concourse	**Intrusive**				Visually intrusive – if retetion is required, they should be improved with finer design to extent possible given security requirements.
Portable galvanised or painted steel signage, display panels, and pylons, with weighted bases (sometimes referred to as rust buckets)	**Intrusive**				These have proliferated in recent years and constitute unnecessary and intrusive clutter. They intrude on views and frequently stain the paving.
Painted steel display panels used for occasional outside exhibitions – usually bolted to the paving	**Intrusive**				Fixing methods have resulted in loss of original bronze paving screws and damaged paving. Panels block views across the Broadwalk.
Off-white umbrellas and shade structures on all Broadwalks, Forecourt and Lower Concourse	**Intrusive**				Where these are located in accordance with other policies, they should be re-covered in darker fabric in accordance with Policy 6.8. Where not in accordance with other policies, they should be removed.
Any furniture, shade structure, display / signage stand or heater unit that intrudes onto pedestrian or other access paths, or otherwise intrudes into important views	**Intrusive**				Modify, re-arrange or remove offending components to achieve compliance with this CMP.
Potted plants, including those used as screens or dividers	**Intrusive**				Plants are inappropriate anywhere on the site as per Policy 6.9. Screens or dividers should be discouraged to retain openness of site and avoid clutter.
Square, bronze painted waste bin enclosures, including those with coloured signage	**Intrusive**				Design, size and placement to comply with Policy 6.8 and Section 4.6.8. Design quality could be improved and made SOH specific.

Opportunities for Change

Explore Opportunities – Exterior furniture Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Exterior furniture generally	All exterior furniture and related signage, etc. should be redesigned as a site-specific, related 'kit of parts'.
Signage pylons on Broadwalks and Podium – revised design	Potential to break up large signage elements into smaller, more elegant units and reduce visual heaviness. Refer to 'kit of parts' above.
Waste bin enclosures – revised design	Potential to design more elegant and site-specific bin enclosures. Refer to 'kit of parts' above.
Outdoor furniture – revised design	Potential to design and develop an elegant suite of furniture elements specific to the site. Refer to 'kit of parts' above.
Improved barrier / control fencing	Design and develop finer and more appropriate barrier control fencing than the present 'bike-rack' design for use across the site as and when required. Storage / stacking when not in use should be out of public view.
New shade devices	Design new shade / umbrella devices for use where required, of subdued and darker colour – not light or white. This could be a specific SOH design and included in the 'kit of parts'.

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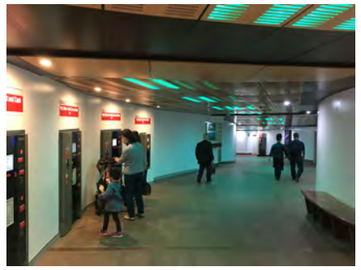
4.102 *Original 1973 fibreglass seating now finished in bronze colour, 2017*
4.103 *Lower Concourse after rain, 2016*



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4.104 *Entry to the Opera House Carpark, 2017*
4.105 *Opera House Carpark, 2017*
4.106 *Fifth façade, 2010*
4.107 *West façade at dawn, 2010*
4.108 *North façade, 2010*

4.6.10 Site facilities for construction and maintenance

As there will probably always be some sort of construction going on, around or within the Opera House, it is important to have a set policy for allowance of temporary facilities, to make sure that they are indeed temporary. I would prefer for such structures and / or facilities, to be kept off the site, so to speak.[8]

It is inevitable that minor and sometimes major works will be required from time to time within and around the complex; as Utzon himself noted, these demands are almost continuous. The long-term objective should be to provide for site sheds and associated facilities to support these works within or beneath the Podium or, as Utzon preferred, off site. However, where they are absolutely necessary on site and outdoors, their design and placement will require careful consideration if they are to avoid negative impacts on the setting. Refer to Section 4.5 *Open and uncluttered setting.*

> ***Policy 6.10 – Site facilities for works***
> *Site facilities, whether temporary or long-term, for essential on-site building and maintenance work should be located within or beneath the Podium, out of the view of the public.*
>
> *Where these facilities cannot be concealed, they must be designed and located as unobtrusively as possible, only be erected for a stated limited period of time, and not impact on significant fabric. A notice of their function and duration should be incorporated and displayed to the public in an appropriate manner.*

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Podium externally Forecourt and Broadwalk.

4.6.11 Parking

Parking on the Sydney Opera House site has been an issue since before the opening in 1973. Parking occupied the whole of the Forecourt until 1988, when it was restricted to the Covered (Vehicle) Concourse. With the completion of the Vehicle Access and Pedestrian Safety Project and increased security across the site, most service and delivery vehicles have been removed from the Forecourt and parking in the Covered (Vehicle) Concourse is no longer allowed, except for bicycles. The ultimate objective is to entirely remove parking from these areas.

In his *Blue Book* (1962), Utzon proposed multilevel parking for 900 cars along the western edge of the site (in the location of the present Lower Concourse), extending to East Circular Quay with vehicular access (including buses) beneath the Forecourt.[9] Other schemes for car parking were proposed but none executed. The construction of the double helix carpark under the headland south of the Tarpeian Wall in 1993 provided an ingenious solution to the problem. Its covered pedestrian link via the Lower Concourse is of considerable convenience for patrons, performers and staff. Commonly referred to as the Sydney Opera House Carpark, though not owned or operated by the Opera House, it has a logical and important functional relationship with the Opera House. If this relationship is uncoupled, there are potentially serious implications for parking availability, in particular accessible parking, with all surface parking removed from the site. The carpark has been leased to a private operator for 50 years. This relationship could be strengthened with potential benefits if management of the lease were to be transferred to the Opera House when it comes up for renewal.

Utzon has suggested the possibility of a more direct pedestrian access from the carpark directly to the Forecourt. This would greatly strengthen the focus on Utzon's approach sequence. Refer to Section 4.7.6 *Forecourt and Broadwalk*.

> ***Policy 6.11 – Double helix carpark***
> *The double helix carpark provides an essential support facility to the Opera House, and its functional and physical relationship with it must be retained and if possible strengthened. It should be managed in close consultation with the Sydney Opera House Trust and, if the opportunity arises, direct pedestrian access to the Forecourt should be explored.*

4.7 CONSERVING THE EXTERIOR

4.7.1 External form

This feeling of moving upwards, was a determining factor in the shaping of the large platform or plateau, which, within its mass, could house all the facilities for preparing the performances with stage sets etc. On top of this plateau the audience should meet the performers. In this way, the appreciation of the man-made performance landscape would be very strong. The audience and the performance itself, all taking place on top of the plateau, should be covered with a "light" sculptural roof, emphasising the heavy mass of the plateau below.[1]

I had what you would call nature's colours on the exterior. That was the general idea - concrete, granite and ceramics.[2]

The design and form of the Sydney Opera House as a monumental urban sculpture is of exceptional significance. This form is unique and so distinctive that even parts of it photographed in isolation, particularly the roof shells, are still recognisable as belonging to this place. It is one of the most important visual aspects of its significance and must not be diminished in any way.

The open paved platform of the Forecourt and Broadwalk and the granite clad Podium supporting the shells are fundamental elements in this sculpture. This inevitably places some limitation on the extent and capacity of venues and facilities within the complex, but it is essential that these constraints be accepted.

> ***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.*

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Refer to Section 4.1 *The Primacy of Utzon's vision* and Policy 1.2 *Utzon Concepts*.

4.7.2 Roof shells and tiles

A Exceptional significance

It is important that such a large, white sculpture in the harbour setting catches and mirrors the sky with all its varied lights dawn to dusk, day to day, throughout the year.

The citation from the American architect Louis Kahn: "The sun did not know how beautiful its light was, until it was reflected off this building", describes the importance of this surface and of the decision to make the surface white.[3]

Of all the elements in the external form of the Sydney Opera House, it is the white tiled roof shells that give it its iconic identity and unique presence within its setting. Retention of their original curved form, structure and character is essential to the significance of the Sydney Opera House.

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4.109 *Forecourt, early morning, 2010*
4.110 *View from top, 2010*
4.111 *Aerial view of Concert Hall shells, 2010*
4.112 *Early morning reflection, 2010*

It was their detailed design and construction that pushed the boundaries of the possible. Often referred to as 'sails' because of their distinctive form and qualities, the shells have provided much material for artists, photographers, cartoonists and even fashion designers (refer to Figure 5.37). Their form is the 'signature' of the Sydney Opera House, as evidenced by Opera House's own logo and those of events associated with the House as well as Sydney.

At the time of Utzon's departure in 1966, the tiled roof was incomplete. For the perimeter of each roof plane, he originally intended to use a rolled edge tile that would catch the light regardless of its angle.[4] The present squared matte tile misses this opportunity, but it could be considered in the future, based on detailed research of Utzon archives.

Policy 7.2 – Form and character of roof shells
The original form, fabric, structure and finish of the curved roof shells, including their radial concrete ribs and cladding of close-fitting ceramic tiled lids, must be retained unaltered and not obscured externally in any way. The only possible refinement could be a modified edge tile in accordance with Utzon's original intent.

The tile body is a pale cream and the glaze translucent to allow the clay body to remain visible – honestly expressing its material. Thus, the colour of the tiles is not pure white. This is important and the reason why Utzon has stipulated there be no white objects externally on the site to compete with it. It is essential that the qualities of the tiles and grouting not be interrupted or distorted in any way by maintenance, repair or replacement works. For the same reason, no access hatches or other insertions should be made in the tiled surfaces. This presents technical challenges in monitoring the inaccessible reinforced concrete structure below the tiled lids, but whatever the solution, the same principles apply.

It is therefore important that sufficient supplies for replacement tiles, originally manufactured by Höganäs in Sweden, are organised well in advance and that stocks are planned for future replacements. Refer to Section 4.18.10 *Lifecycle planning.*

Policy 7.3 – Repair of roof shell tiles
Any repair, adaptation or replacement of tiles or tile lids must retain their original qualities, in particular:

- *colour, texture, reflectivity, geometry and pattern;*
- *dimensional accuracy and precision of jointing;*
- *unbroken spherical alignment of surface;*
- *resistance of tile to corrosion and weathering;*
- *security of fixing;*
- *capacity to retain the above characteristics in situ for a prolonged period of time.*

The original grouting between the tiled lid panels was an elastomeric material, grey in colour. The original grouting between the tiles within each lid panel was epoxy-based and cream in colour. It utilised a specific application method described by Hall in 1990.[5] Kerr noted that in 1993 the joints between the tiled lid panels were re-grouted, but with the effects of heat and exposure, their colour had darkened with time.[6] Thus to avoid a piebald effect with any repairs or re-grouting, it is essential that certain principles be followed.

Policy 7.4 – Re-grouting of tiles
Any program to replace grouting over whole faces of shells, either between individual tiles or between tiled lid panels, must be consistent with the original application and be carried out in the original colour. Temporary local repairs to grouting must be carried out in a colour that matches as closely as possible the adjacent grouting.

Policy 7.5 – Avoiding patchwork effect in repairs
Any works, particularly re-grouting and tile repair (other than temporary local repair), which (until they age to match the existing) may result in any form of patchwork effect in the visual texture, colour, reflectivity or pattern of the tiled lids, must cover either the whole face of an individual shell or, preferably, a complete side of the whole shell group.

The original lightning rod system consists of a pair of continuous stainless steel rails following the curvature of the ridge of each shell, designed not to distract from their form and silhouette. They are crucially important elements in the protection of the shells and building, and their continuous curved line is visually important.

Policy 7.6 – Lightning rails
The original material and configuration of the continuous stainless steel rail lightning rod system must be retained and kept functional.

Issues of security and access should be addressed without having to remove sections of the rail.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Roof Shells Externally.

4.7.3 Glass walls and bronze louvres

Approaching one will notice the bronze covered vertical plywood mullions hanging as the folds of a birds wing. Between each mullion, we can see through the glass to the underside of the concrete ribs of the first shell.[7]

The glazed infill walls between the shells and the Podium, and the bronze louvered panels between the shells, are possibly the most geometrically complex elements on the site. Utzon's concept was to make a structure of prefabricated components, assembled to hang from the shells as a series of deep vertical blades with uniformly-sized glass panels between. His final scheme was developed not long before his departure in response to structural concerns, but the details of this scheme were not as well known as his preferred earlier schemes. Peter Hall and Ove Arup & Partners explored this later scheme but eventually chose to use steel in a revised configuration with the glass fixed flush with the outer face.

Unlike Utzon's revised design, it finishes at the bottom with an outwardly canted glass wall to avoid internal reflections, particularly at night. While successfully addressing the reflection issue, this outward tilt results in an awkward projection at the corners at the northern end of the shells. Commenting on the glass walls in 1990, Peter Hall noted these limitations of the design.[8] In 2001, Utzon himself commented on the visually solid appearance of the glass and some of the awkward junctions.[9] The fixing points for Hall's design over the Northern Foyers did not correspond with those already installed for Utzon's structure, and the location of cables in the pre-stressed ribs did not permit new ones. An additional corbelled concrete strip was therefore installed, using the original fixing points with a new steel structure attached.[10]

Much debate still surrounds the buildability of Utzon's designs and the success of Peter Hall's solution. Refer to discussion and illustrations in Section 2.3.4. Notwithstanding these issues, the design of the glass walls was highly regarded at the time, and in 1972 the Association of Consulting Engineers gave it its award for engineering excellence.[11]

The laminated glass, tinted 'demi-topaze' was supplied by the French manufacturers, Boussois-Souchon-Neuvesel, who have since closed down. At present the solar heat load on the Northern Foyers in particular is high. Since the time of construction, glass technology has advanced considerably. If and when the glass is replaced, a solution with less reflectivity and thermal transmission may be possible.

Piecemeal replacement of glass will need to be carefully matched to the existing, including colour and reflectivity. This will be difficult and may require replacement of a whole wall of glass, at which time (resources permitting) the design of the glass wall system should be revisited. Until that time the existing system, including the glass, should be retained and conserved.

As wholesale replacement of the glass will at some time be necessary, it would be prudent to develop an alternative and improved design solution for the glass walls that is more closely aligned with Utzon's design concepts and principles so that it is ready when the time comes.

Hall's designs for the bronze louvre panels between the shells were more successful and sit comfortably within their space, but the concrete shelf and glass infill panels below them are not well resolved. Utzon's original intention for glazed infills to these areas could be reconsidered as part of a redesign of the glass wall system.

Policy 7.7 – Replacement glass
Replacement or alteration of individual glass panels should match the colour, reflectivity and translucence of the existing glass.

Consider replacing a whole wall of glass if panels cannot be matched.

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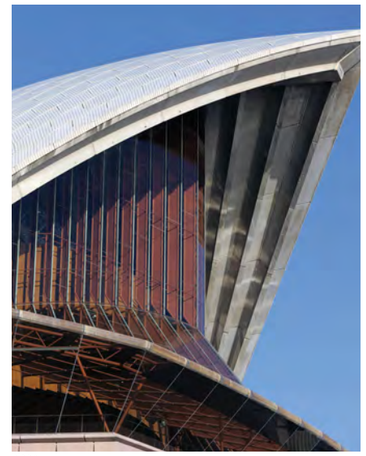

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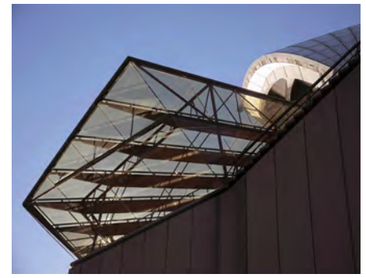

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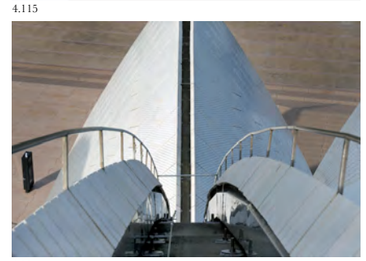

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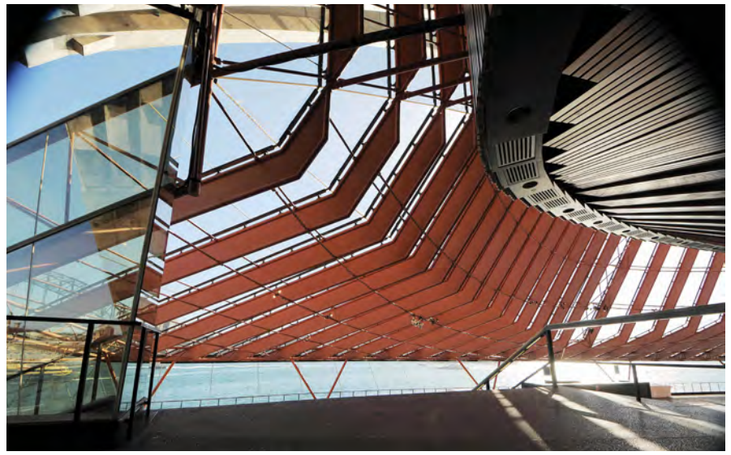
4.113 *Southern glass walls, 2010*
4.114 *Glass walls over Northern Foyer, 2010*
4.115 *Glass wall projection at side of Northern Foyer, 2010*
4.116 *Shell ridge, 2010*



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4.117 *Concert Hall Northern Foyer glass wall, 2010*
4.118 *Concert Hall Northern Foyer glass wall, 2010*
4.119 *Bennelong Restaurant, 2010*
4.120 *Bronze louvre walls between shells, 2010*

Changes to the existing glass walls, for example to accommodate additional door openings, may be possible but these should only occur in areas below the strong horizontal bronze transom at head height. The location of any new or altered openings will require careful consideration to avoid a 'missing tooth' effect.

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 minimise visual impacts on the continuous sweep of the existing glass walls.

The exterior metalwork of the existing glass wall structural system is of bronze, an appropriate and relatively stable metal, consistent with Utzon's design concepts and palette of materials. It is essential for the longevity and visual integrity of the bronze that only compatible metals are used in association with it, and that any potentially damaging or disfiguring oxidation or encrustations are carefully removed.

Policy 7.10 – Bronze in glass walls and louvres
The existing bronze metalwork on the glass wall and louvre systems must be retained and conserved. All fixings and adjacent metals must be compatible with the bronze, both chemically and visually. Any potentially damaging or disfiguring oxidation or encrustations must be removed in accordance with Policy 18.11. If the system is redesigned, bronze of an appropriate alloy must be retained as the externally exposed material.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Roof Shells Externally opposite.

Refer to Sections 4.18.5 *Care of bronze*, 4.18.10 *Lifecycle planning*, and 4.20 *Managing the processes of change.*

Policy 7.8 – Major works to glass walls
Should it become necessary or feasible to replace all of the glass in the glass walls, in order to achieve better environmental or aesthetic outcomes, it would be legitimate to consider a revised design in accordance with Policy 4.5 (Major change).

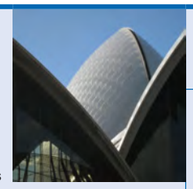
Any revised design must align with Utzon's original concept and aesthetic of suspended lightweight and clear glass 'curtains' and be undertaken only if it will achieve a better resolution of:

- *thermal properties;*
- *transparency of vision in as well as out, both day and night;*
- *sense of suspension and curvature; and*
- *the link between the glass walls and the northern part of the Podium.*

Tolerance for Change

element:
Roof shells externally

significance ranking **A**



Three groupings of soaring, curved, concrete framed roof shells, clad with white ceramic tiled lid panels, surmounted by fine curved bronze lightning rails and infilled by glass walls

selected components:	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Glazed tiles	**1**	**1**	**1**	**1**	Maintenance with replacement only where necessary. Refer to discussion and policies in Sections 4.7.2, 4.18.1, 4.18.2 and 4.18.10.
Tile lids	**1**	**1**	**1**	**1**	Maintenance with replacement only where necessary. Refer to discussion and policies in Sections 4.7.2, 4.18.1, 4.18.2 and 4.18.10.
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 with Policies 4.6, 7.2, 18.6, 18.7 and 18.8. Refer to intrusive items below.
Lightning rails – stainless steel	**1**	**1**	**1**	**1**	Materials and configuration are most important. Refer to discussion and policies in Section 4.7.2.
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.
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.
Shell uplighting at base of end pedestals (north and south)	**3**	**3**	**2**	**1**	Refer to discussion and policies in Section 4.14 *Lighting.*
Recent surface treatment of concrete pedestals externally	**Intrusive**				Explore less intrusive means of managing concrete deterioration, and protecting and exposing original surface – refer to Section 4.18.3 *Treatment of unpainted and precast off-form concrete*, and Policy 18.6.
Nose lights on shells	**Intrusive**				Both the fixtures and the glare are intrusive. Explore less intrusive means of lighting public space – refer to Section 4.14.2 *Lighting of Forecourt, Broadwalk and Podium (monumental) steps.*

Opportunities for Change

Explore Opportunities – Roof shells externally Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Revised profile to perimeter edge tile	Refer to Section 4.7.2. This should only be considered where Utzon's original detail and intent is understood and followed, and where all shells can be treated together under a single contract.
Protection of shell pedestals	Explore and trial discreet methods to divert rainwater run-off and reduce deterioration of pedestal surfaces.
Concrete rib monitoring	Explore and test non-invasive methodologies to examine and monitor concealed concrete surfaces in voids behind tile lids.
Minor modification to glass walls	Refer to Section 4.7.3. Glass infills below the bronze louvres and the indented ends of the northern foyer could be modified but this must be part of an integrated design strategy for all similar situations on the site.
Major replacement of glass in glass walls	Potential to replace existing 'demi-topaze' tinted glass with high performance clearer glass, as per Section 4.7.3 of this CMP.
Major change to glass wall structure and geometry	Potential to replace / revise existing structure with new design to better comply with Utzon's original concepts and design principles, and this CMP.
Revised lighting	Remove / modify intrusive lights to reduce glare and improve quality of light to structure and public spaces. Upgrade and improve lighting and related enclosures / snoots in accordance with *Utzon Design Principles* and this CMP.

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4.121 *Podium at completion of Stage 1, 1963*
4.122 *North end of Podium between the main halls, 2011*
4.123 *Glass walls over Northern Foyers, 2010*
4.124 *Life on the Podium, 2007*
4.125 *West side of Podium with Colonnade, 2006*

4.7.4 Podium

A Exceptional significance

This feeling of moving upwards, was a determining factor in the shaping of the large platform or plateau, which, within its mass, could house all the facilities for preparing the performances with stage sets etc. On top of this plateau the audience should meet the performers. In this way, the appreciation of the man-made performance landscape would be very strong. The audience and the performance itself, all taking place on top of the plateau, should be covered with a "light" sculptural roof, emphasising the heavy mass of the plateau below.[12]

To emphasise the mass of the plateau in relation to the sea (harbour) and to the white roof-shells, it is very important that the exterior of the plateau remains with as few and as small openings in its sides, as possible. If the plateau is perforated by many windows it will change character and will soon have the appearance of an office building with an unbalanced white structure on top.[13]

The Podium, conceived as a man-made masonry headland or plateau, rising abruptly from the horizontal plane of the site and ascended from the land end via full width ceremonial steps, is a fundamental part of Utzon's concept.

A remarkable attribute of this plateau is that it continues under the shells, beyond the glass walls, to become public foyers and the stepped base for the two major halls and the restaurant - a sense of continuity not unlike some of the classic Greek amphitheatres set in hillsides such as those at Delphi and Epidaurus. The unified sculptural quality of this platform was most evident at the end of Stage 1 construction, before the commencement of the shell structures. See Figure 4.121.

To maintain the visual solidity of the Podium, openings were limited in number and all shaded with projecting masonry hoods with entry points deeply recessed.

The original design for the Opera House included only one public performance venue not accessed via the Monumental Steps and Box Office Foyer. This was the Drama Theatre (shown in drawings in the 1959 *Gold Book* as an 'Experimental Theatre'), accessed from the Western Broadwalk via a single opening. As a result of changes that followed Utzon's departure, an additional two venues and foyers were located within the relatively closed western side of the Podium. More recently there has been demand for better access to these venues for patrons, including adequate shelter. To address this Jørn Utzon, in collaboration with Richard Johnson, designed a new colonnade to shade and protect a series of new entries and large splayed windows as part of a combined Western Foyer.

Utzon's idea of creating public spaces that enhance the visitor experience and orientate them to the harbour underpins these additional penetrations in the Podium. The form of the Colonnade was inspired by the Mayan temples which he also referred to for the Podium and ceremonial (monumental) steps.

This colonnade structure and the associated windows were the first major changes to the Podium exterior and have served as a test of how alterations and additions may be made to it. Public opinion was initially divided as to the merits of this new work, but it has considerably improved the visual and functional relationship between the foyer spaces and the harbour on this previously almost solid western side, and cleverly concealed the new openings within an open, deeply shadowed concrete and granite colonnade. The Colonnade is a modest, simple structure, maintaining the materials, strong horizontality, simplicity and directness of the Podium itself, and extends for only part of its length. These points are important. They show that it is possible to achieve a balance between the added element and the original, in which the original concept and design of the Podium is not obscured or confused. For the same reason, no glazing or any form of enclosure should be placed within this Colonnade. Refer to Section 4.6 *Events and uses externally.*

Changes that increase the 'solidity' of the Podium could also be considered (e.g. blocking up the old loading dock off the Western Broadwalk, south of the Colonnade), as long as these did not visually upset the 'balance' in the façade.

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.

All window and door openings in the Podium are furnished with bronze frames. The east window to the Utzon Room was later double-glazed externally with a frameless glass sheet and silicon sealant around the perimeter. This double-glazing, while necessary for acoustic reasons, would be better if it had been integrated properly into the original window system consisting of large bronze-framed (originally horizontally sliding) panels.

The pedestrian doors are of unpainted bronze and glass and the vehicular entries are of unpainted bronze slats. Pedestrian doors on the east and west walls of the Podium are deeply recessed and heavily shaded. The original function of the loading dock located beneath the Bennelong Restaurant was intrusive until completion of the underground loading dock in 2016. Its bronze door could remain in position or the opening blocked or adapted for another more compatible use.

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.

Policy 7.13 – Vehicle access doors
The vehicle access doors to the Podium must retain their unpainted bronze finish, although the way in which the doors are operated may be adapted should this become necessary.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Exterior Furniture, Podium and Broadwalk.

Refer to Section 4.6 *Events and uses externally,* and 4.6.8 *Exterior furniture.*

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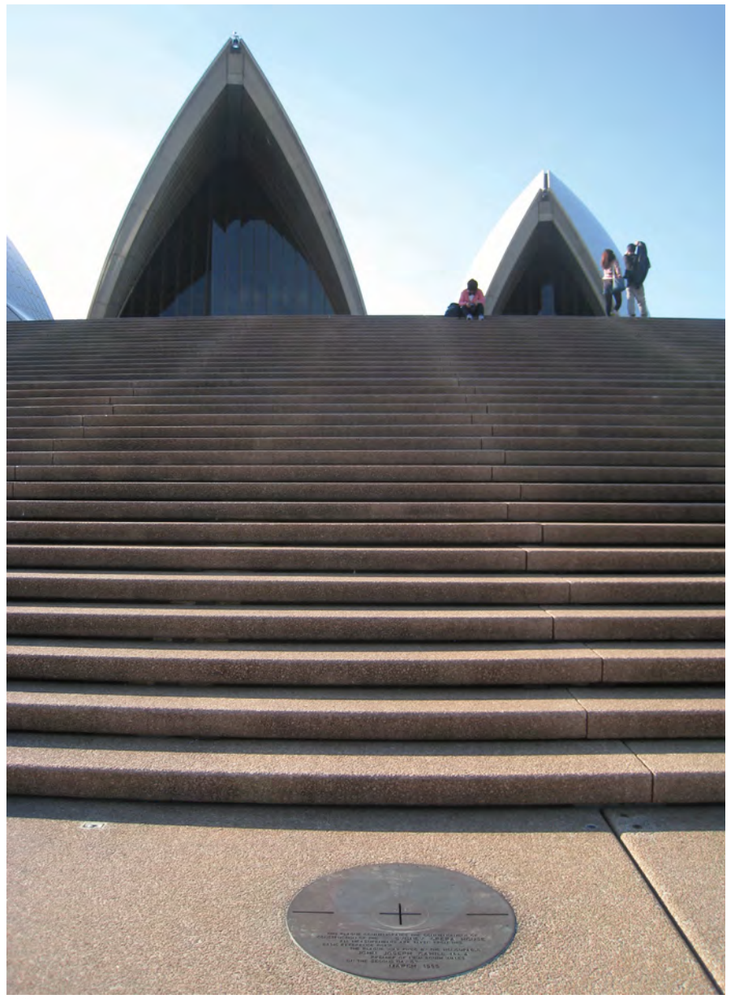

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4.126 *Monumental Steps, a place to stop and celebrate, 2008*
4.127 *Monumental Steps rising from the Forecourt, 2010*
4.128 *Set-out plaque near base of stairs, 2011*

4.7.5 Monumental Steps

Another source of inspiration I got from an early visit to the Yucatan Peninsula in Mexico. The Yucatan Peninsula is flat with a jungle vegetation of approximately 8 metres in height. In this jungle lived the Mayan People. When they build their temples, these are often placed on a large platform with wide stairs leading to the top of the jungle canopy. From here you have a limitless view of the expanse of jungle, like a large plain. On this platform the temples were built.[14]

The uninterrupted 86-metre-wide ceremonial steps ascending the Podium from the south side are a central part of the approach and arrival experience and invite ascent towards the open end of the shells and the performances and experiences they house. (If the easternmost flight of steps is included, the total width is 96 metres).

With the adjacent Forecourt, they have become a much-celebrated venue in themselves. Generally referred to as the Monumental Steps, their comfortable proportions make them a delight to climb or descend, either straight on or obliquely, and they should not be obstructed in any way, particularly the widest 86m section. It is acknowledged, however, that the demands of an ageing population may require the question of accessibility to be revisited in future years. Refer to Section 4.6 *Events and uses externally.* See also Policy 17.1 on accessibility.

Soon after the Sydney Opera House was opened in 1973, three additional handrails were erected across the width of the stairs. These fragmented their sense of generous and easy procession and were visually highly intrusive. They were removed after only a few years. A lift and escalators have recently been installed from the Lower Concourse level to the Southern Foyers to provide easier access for those who do not feel comfortable with, or are unable to use the stairs. As part of the Renewal Projects, a pair of escalators is proposed in the narrow 'Utzon Stair' connecting the Covered Concourse with the Box Office Foyer. This is discussed in Section 4.9.1 *Stairs and lift from Covered Concourse.*

Other issues with the Monumental Steps appear to be lighting levels at night and a lack of visual contrast, both by day and night. Refer to Section 4.17 *Accessibility.* The lighting in the handrails illuminates a section of the stairs on either side, but the remainder of the stair width is lit from the nose lights on the southern shells and the recently enhanced tall pylon lighting next to the Tarpeian Wall. The nose light fixtures are intrusive and could either be improved or preferably removed. Refer to Section 4.14.2 *Lighting of Forecourt, Broadwalk and Podium (monumental) steps.*

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Policy 7.14 – Monumental Steps
The Monumental Steps on the Podium must remain open and free of any obstruction for their full width, except for the bronze rails on their east and west edges, especially on the widest (86m) section.

If, for public safety or accessibility reasons, the Monumental Steps are to be modified, any changes must:

- *retain their existing materials, profile and configuration;*
- *not disfigure the unified open character of their broad uninterrupted sweep;*
- *not detract from their simplicity and utility; or*
- *not otherwise diminish their significance, including their role in Utzon's approach and arrival sequence.*

If potentially intrusive changes are unavoidable, they should be confined to the end of each flight, or to the narrower flight at the eastern end of the Podium.

Refer to Sections 4.5 *Open & uncluttered setting*, 4.14.2 *Lighting of Forecourt, Broadwalk and Podium (monumental) steps*, and 4.17 *Accessibility.*

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Podium, Forecourt and Broadwalk.

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4.129 *Evening on the steps, 2010*
4.130 *West end of Monumental Steps, 2010*

Tolerance for Change

element: **Podium externally**  significance ranking **A** 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 **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance Form	Fabric	Function	Location	**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
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.
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.
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.
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.
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.
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.
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.
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.
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.
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.
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.
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.
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 *Opportunities for Change* table.
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 *Opportunities for Change* table.
Radial palisade fencing introduced where the northern ends of the Podium decks meet the external steps	**Intrusive**				Explore less intrusive design of safety railing with minimal impact on views. Refer to Policies 7.19 and 7.20.
Additional picket security fence midway along Podium on eastern and western sides, and in 'cleavage' space between major halls	**Intrusive**				Remove entirely if at all possible, and solve security issue by other less obtrusive means. Refer to Policies 7.19 and 7.20.
Added acrylic panels to lower part of guardrails	**Intrusive**				Explore alternatives to address safety issues as part of review of all handrails and guardrails. Refer to Section 4.7.9. Refer to *Opportunities for Change* table below.

Bronze-coloured pole with security camera towards eastern side of Podium	**Intrusive**	Remove entirely if at all possible, and solve security issue by other less obtrusive means.
Large black sign pylon with associated security camera at Box Office landing of Monumental Steps	**Intrusive**	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 *Opportunities for Change* table – Exterior Furniture.

Opportunities for Change

Explore Opportunities – Podium externally Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Adapt former loading dock entry	Consider adapting use of space and opening for facility to support SOH function, such as tour office and / or SOH shop.
Safety and viewing at north end of cleavage	Modify hood over Green Room window to provide stepped platform and lowered safety fence to improve safety and views towards north, as suggested by Jørn Utzon.[15]
Seating on Podium	Consider seating or a bench along north side of parapet wall over Box Office entry. This should read as part of Podium.[16]

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4.131 *Eastern elevation, floating pontoon at end of Man o'War Steps in foreground, 2010*

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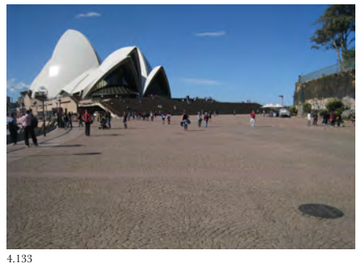

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4.7.6 Forecourt and Broadwalk

A Exceptional significance

One of the great features of the Opera House is the approach, the openness, the fluidity of people's movements through the house, and once you clutter this you have a problem.[17]

These open pedestrian spaces are an essential part of the architectural form and setting of the Sydney Opera House. They are also highly valued pedestrian promenade spaces, providing many vantage points from which to enjoy both the Opera House and its harbour setting.

The broad open Forecourt is a fundamental element of Utzon's approach sequence. The drama of this space relies on its openness, simplicity and freedom from clutter and distraction. With its backdrop of the Monumental Steps and shells, as well as the harbour, the Tarpeian Wall and the city, it is also an important public space in its own right, often used for events and community celebrations. This is discussed in Sections 4.5 *Open and uncluttered setting* and 4.6 *Events and uses externally.*

In 1990, Peter Hall proposed the following conservation recommendation: "*The broadwalks, because of their visual importance as part of the building's base and their value as pedestrian promenades, should be preserved as they are. No permanent structures should be placed on them and they should not be crowded with street furniture.*" [18] His words echo Utzon's views on openness and clutter in these areas.

The original Utzon design envisaged the Forecourt as part of the continuous open horizontal masonry platform surrounding the building. However, completion of the building by others, and cost constraints meant that in 1973 this area was paved in bitumen and used as a carpark.

In 1987-88, Hall did not favour extending the use of the precast granite paving panels across the Forecourt, as favoured by Utzon, even if the budget had allowed it.[19] He selected widely spaced bands of sawn finished pink (Calca) granite, parallel to the Podium stairs (continuing the alignment of the building's base), with the spaces between paved with split-faced pink (Sienna) granite setts, laid out in a traditional fan pattern. Both granites are South Australian and a good match for the rest of the Podium. Most of the granite setts were replaced in 2013-14 with similar material from the same area. (Refer to Section 4.18.10 *Lifecycle planning*.)

Although considered appropriate for heavy traffic at the time, the granite setts worked loose in many areas and became a constant maintenance issue with any failure admitting water into the structure below. The uneven split surface of the granite setts was also considered a potential trip hazard. This has been addressed in the replacement of most of the Forecourt paving with smoother sawn setts and removal of the sunken roadway as part of the Vehicle Access and Pedestrian Safety Project. An unexpected consequence has been the higher reflection from the sawn surfaces, unfortunately resulting in a lighter appearance of the granite setts. This detracts from the dark 'rock-like quality' intended by Utzon.

This project has removed a number of other intrusive items and introduced a finely designed gatehouse by Scott Carver and Utzon Architects. Utzon's principal approach via the Monumental Steps has now been strengthened.

> ***Policy 7.15 – Forecourt paving***
> *If reconfiguration of the paving to the Forecourt is considered, it must:*
> - *utilise pink granite material to match or be slightly darker than the existing colour with reflectivity as low as possible;*
> - *respect the monumental scale of the Podium and Broadwalk paving;*
> - *respect the geometric relationships of the Podium, Monumental Steps and the edge of the Lower Concourse; and*
> - *retain the uninterrupted open character of the Forecourt space.*

Some delivery and emergency vehicles may still occasionally cross the Forecourt, but it is envisaged that a future vehicle drop-off area beneath the Covered (Vehicle) Concourse, if

constructed, will leave the whole Forecourt and Broadwalk free of vehicles as proposed in the *Strategic Building Plan 2001*.

Service and heavy vehicles access the new underground loading dock via an opening in the Forecourt adjacent to the Tarpeian Wall. This opening is protected by precast pink granite parapet panels.

> ***Policy 7.16 – Reducing vehicular and pedestrian conflict***
> *Proposals to further reduce the conflict between pedestrian and vehicle movements should be explored, and if possible implemented, with the long-term objective of removing all vehicles from the pedestrian approach to the Sydney Opera House via the Forecourt and Monumental Steps, as well as via the Covered Concourse.*

The Vehicle Access and Pedestrian Safety Project involved substantial excavations in the Forecourt area, and future works could provide an opportunity to accommodate underground facilities and services relating to the use of back-of-house areas and the Forecourt.

Jørn Utzon has suggested an additional exit from the double helix carpark leading directly to the southern edge of the Forecourt. This would direct patrons towards the primary approach route via the Monumental Steps, in preference to the Lower Concourse and Covered Concourse. This should be considered further. Refer to Policy 6.11 *Double helix carpark*.

Utzon also intended an indented wharf for arrival by boat on the east side of the Forecourt, south of the narrow section of Monumental Steps. If explored, it would need to be considered in relation to the Man o'War Steps. Refer to Section 4.7.11.

For discussion on the seawall and precast skirting panels around the perimeter of the Broadwalks, refer to Section 4.7.10 *Seawalling, Broadwalk skirting and supports*.

Refer to Sections 4.5 *Open and uncluttered setting*, and 4.6 *Events and uses externally.*

For Furniture, refer to Section 4.6.8 *Exterior furniture*.

For lighting, including 'Hall's Balls', refer to *Lighting of Forecourt, Broadwalk and Podium (monumental) steps* in Section 4.14.2.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Exterior Furniture, Podium, Forecourt and Broadwalk.

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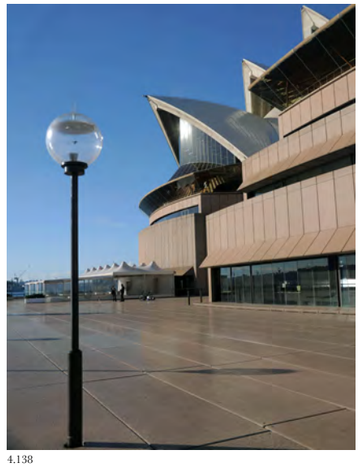

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4.132 *Forecourt, 2010*
4.133 *Forecourt southern approach, 2010*
4.134 *Forecourt from the Podium looking towards the city, 2016*
4.135 *Forecourt paving - 1988 paving on right, 2015 paving on left*
4.136 *Evening approach to Monumental Steps, 2010*
4.137 *Western Broadwalk looking north, 2011*
4.138 *Northern Broadwalk looking east, 2010*

Tolerance for Change

element:
Forecourt

significance ranking **A**

Broad, open and hard-paved level platform, serving as the principal land approach path to the building and as the immediate setting for the Monumental Steps and Podium

selected components:	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance Form	Fabric	Function	Location	**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
Tarpeian Wall – dramatic vertical sandstone face with evidence of its early 20th-century hand-tooled surface, tram use, commemorative plaques, stone steps and iron railings on the edge of The Royal Botanic Garden (not part of SOH property but important to setting)	**1**	**1**	**1**	**1**	Raw sandstone face of wall, with no decoration or additional finish, apart from its name carved above the steps, as a backdrop to the Forecourt space is important. Listed on the State Heritage Register as part of The Royal Botanic Garden and within the Opera House World Heritage buffer zone. Refer to Sections 5.2 and 5.5.
Open character of bronze handrail system and low reconstituted pink granite parapet over Lower Concourse, allowing views through and beyond	**2**	**1**	**1**	**1**	Retain the use of bronze for handrail system and ensure minimum visual impact. Retain profile and material of precast perimeter panels. Refer to discussion and policies in Section 4.7.9.
Sandstone seawall defining eastern edge of space	**2**	**2**	**1**	**2**	Material and configuration are important and reflect the long history of the seawall in this location, noting that much of it has been replaced over time.
Polycarbonate ball light fittings on bronze-painted steel standards around perimeter of Forecourt (Hall's Balls)	**2**	**3**	**1**	**2**	Refer to TfC for Exterior Furniture.
Remains of 1857 oviform masonry stormwater drain under the Forecourt	**1**	**1**	**2**	**1**	Large section already removed, retention of remainder is important. Refer to Section 4.20.6 *Excavation and archaeology*.
Archaeological remains of structures predating SOH	**1**	**1**	**2**	**1**	Refer to Section 4.20.6 *Excavation and archaeology*.
Large-scale format pink granite paving across full extent of Forecourt (1988 and 2013-14)	**2**	**2**	**1**	**1**	Material and scale are the key elements here. Existing elements can be replaced but present configuration of straight granite bands is preferred. Level changes at east end require resolution. Refer to discussion and policies in Sections 4.7.6 and 4.7.8.
Paving of fan pattern pink granite setts, including on roadway (1988 and 2013-14)	**3**	**2**	**1**	**1**	Pink granite is the preferred material for this area. Form and scale (setts versus slabs), and configuration of the paving could be changed but retention of existing is preferred. Matt finish with very low reflectivity is important. Refer to *Opportunities for Change* table. Refer to discussion and policies in Section 4.7.6.
Bronze-coloured boxes housing service connections for events, adjacent to Tarpeian Wall. Reconfigured as part of the Vehicle Access and Pedestrian Safety Project	**3**	**3**	**1**	**2**	Location and design may be revised but function and minimal visual impact are essential. Refer to discussion in Section 4.6.4.
Tall black lighting poles adjacent to Tarpeian Wall to light Forecourt	**2**	**3**	**1**	**2**	Essential function but glare and views are key issues. Refer to discussion and policies in Section 4.14 *Lighting*.
Air intake grille for carpark at base of Tarpeian Wall with dwarf pink granite wall	**3**	**3**	**1**	**2**	Function is important and minimal intrusion into views and setting. The wall element provides some seating opportunities in this broad open space, and also conceals the air intake grilles.
Circular exhaust vent structure for carpark near east end of Forecourt	**3**	**3**	**1**	**2**	Function is important and minimal intrusion into views and setting.
Roundabout and Lewis fountain (1988) designed by P Taranto at entry to site as part of Forecourt upgrade (not on SOH property)	**3**	**3**	**2**	**2**	This was a gift to the project (refer to Hall 1990 p66). Check conditions of gift if considering alterations. Refer to Sections 4.2, 4.5 and 4.12.2. Any alterations should not increase intrusion into views.
Bronze plaques for Writers Walk and Lewis Fountain on western side of Forecourt	**2**	**2**	**2**	**3**	Plaques could be moved or removed but use of bronze is important. Relationship of these with Writers Walk plaques beyond the site is an important consideration in the Circular Quay precinct. Refer to discussion and policies in Section 4.16.3.
Gatehouse (2014-15)	**2**	**2**	**1**	**1**	Function and location are essential. New form minimises intrusion and materials palette is appropriate. Furniture, services and signage, originally intended to be within structure, have spread outside and are untidy clutter. Better management and integrated signage required.
Granite stairs and flanking parapets at south entry to Forecourt	**3**	**2**	**1**	**2**	These clutter approach and impede smooth flow of pedestrians and wheelchairs from city to Forecourt.
Glazed shelter over escalators at south entry to Forecourt	**3**	**3**	**2**	**3**	Important function but impedes first views towards Sydney Opera House from this approach.

Bitumen paving at east end of Forecourt	**Intrusive**	The bitumen sits uncomfortably with the adjacent granite paving. If replaced, a means of negotiating the level differences and their relationship with the sandstone seawall will be required.
Flag / banner poles at east edge of Forecourt	**Intrusive**	Detract from open edge of Forecourt. Could be made removable for temporary use but removal preferred.
Temporary barriers and fencing	**Intrusive**	Security and traffic management of southern entry points should be addressed in least intrusive manner in accordance with Sections 4.5, 4.6 and 4.7.6.

Opportunities for Change

Explore Opportunities – Forecourt Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
New facilities under Forecourt	Further excavation could be undertaken to provide additional or expanded facilities in accordance with Section 4.4.10. This could include access to a new vehicle arrivals concourse via the existing underground loading dock ramp. Refer to *Strategic Building Plan 2001*.
Entry from Opera House Carpark	Utzon encouraged direct access from the carpark onto the Forecourt to allow / encourage patrons to approach via the Forecourt and Monumental Steps.
Revised lighting (Hall's Balls)	Consider alteration or replacement of Hall's Balls light fittings to be less intrusive at night. Refer to Section 4.14.2.
Reduce reflectivity of sawn finish granite setts	Consider revised finish, to better align with needle-hammered finish originally chosen by Utzon, with reduced reflectivity but equivalent safety for pedestrians.
Revised pedestrian entry from East Circular Quay and Macquarie Street	Consider removing steps and other obstructions.
Revised passenger set-down and pick-up at entry to site	In consultation and collaboration with relevant authorities, landholders and stakeholders, consider and resolve safe and appropriate passenger set-down and pick-up arrangements that are not visually or functionally intrusive. Consider a new vehicle arrivals concourse beneath existing Covered Concourse (proposed in *Strategic Building Plan 2001*).

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4.139 *Forecourt - impromptu activities, 2016*

Tolerance for Change

element: **Broadwalk** significance ranking **A** Flat, open and uncluttered platform, paved with precast pink granite paving units, surrounding the massive Podium 'headland' of the main structure on the west, north and eastern sides **selected components:**	Tolerance for Change 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				Further Considerations (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Large-scale precast granite paving panels with bronze fixings and concealed drainage	**1**	**1**	**1**	**1**	Care required to maintain paving and finishes in good order. Maintenance regime should not degrade panels. All repairs should match original material and finish. Refer to discussion and policies in Section 4.7.8.
Large-scale precast granite seawall skirting panels	**2**	**1**	**1**	**1**	Individual precast units may be changed but form and configuration of the bottom of panels must be retained unless the whole of one side of Podium is replaced; in which case the bottom edge is to be raised as described in Policy 7.22. Form and configuration of the top of panels must be retained in any replacement. Refer to Section 4.7.10 and *Opportunities for Change* table below.
Bronze handrail system around perimeter of Broadwalk	**2**	**1**	**1**	**1**	Handrail profile and configuration may be altered as part of handrail upgrade across the site, but angled configuration must be retained. Refer to discussion and policies in Section 4.7.9.
Polycarbonate ball light fittings on numbered bronze posts around Broadwalk (Hall's Balls) (1973)	**2**	**2**	**1**	**2**	Refer to TfC for Exterior Furniture.
Outdoor area in north-east corner of Broadwalk presently demarcated by wind screens and planter boxes	**2**	**3**	**1**	**2**	Refer to discussion and policies in Sections 4.6 *Events and uses externally* and 4.6.8 *Exterior furniture.* Obstruction of views and public access to be minimised.
Remains of 1862 and 1900 masonry seawalls under Broadwalk	**1**	**1**	**2**	**1**	Retain remaining elements wherever possible in situ. Refer to Section 4.20.6 *Excavation and archaeology.*
Supporting pile structure	**3**	**3**	**1**	**2**	Function in supporting Broadwalk structure is essential. Monitoring and maintenance in accordance with Sections 4.18.1 and 4.18.2 are essential.
Floodlight pylons for the west surface of the Concert Hall and restaurant shells	**2**	**3**	**1**	**2**	Coloured dark bronze to be as discreet as possible. Location determined by light beam spread.
Marquee function space (long-stay venue) on Northern Broadwalk	**Intrusive**				Unsympathetic structure in prominent location, obscuring base of north-east Podium. Remove entirely. Refer to discussion and policies in Sections 4.6.5 and 4.6.8.
Maritime regulatory signs affixed to seawall skirting panels	**Intrusive**				Required under relevant legislation, however more visually sympathetic solutions required, preferably not attached to SOH.

Opportunities for Change

Explore Opportunities – Broadwalk Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Use of broadwalks	Potential to activate the Western and Northern Broadwalks in association with adjacent, more public uses in Podium – refer to Section 4.6. Refer to Figure 4.79 Site Activation Areas, Primary Views & Event Zones diagram.
Revised lighting	Consider alteration or replacement of Hall's Balls light fittings to be less intrusive at night. Refer to Section 4.14 *Lighting.*
Prefabricated seawall / skirting panel with revised shadow line above water level	When replacing whole elevations of prefabricated seawall skirting panels, introduce a shadow line above high water mark as per Section 4.7.10 of this CMP.

4.7.7 Lower Concourse

B High significance

The Lower Concourse, completed in 1988, has become a favourite meeting place and a destination in itself, but its original intent was to provide covered access and facilities supporting the Opera House.

Wet weather shelter for patrons approaching the House was first in the form of a simple flat roofed covered walkway along the western side of the site. Conceived in the Government Architect's Office, the Andrew Andersons / Peter Hall design for the Lower Concourse (also known as the 'Lower Forecourt') allowed this covered way to be removed entirely. It provided discrete locations for food and beverage outlets, public lavatories, as well as retail uses. This was a major bicentennial enhancement to the setting and approach of the Opera House. The bitumen-paved carpark occupying the Forecourt was replaced with a continuous expanse of granite paving. Vehicle access across the Forecourt was restricted to a narrow path along the western side and, for the first time, the Forecourt was a truly pedestrian space. When the double helix underground carpark was completed in 1993, the Lower Concourse was modified to provide direct pedestrian access into it.

More recently, the Opera Kitchen has been introduced and the Opera Bar refitted. In 2015, a new Welcome Centre was opened at the northern end, providing tour and ticketing facilities as well as interpretation and Opera House related retail.

The configuration and seawall treatment of the Lower Concourse is highly successful, particularly from the public's point of view. It was the last of Peter Hall's contributions to the Opera House and should be retained.

Pink granite has been used to pave the Lower Concourse, with split setts used only on the seawall promenade area. On the rest of the Lower Concourse, the paving comprises solid sawn granite slabs with square edges, fixed with the same bronze screws as the precast panels of the Broadwalks and Podium, and spaced joints with drainage below.[20]

The Lower Concourse area can be considered a Hall space, being a new creation under his and Andrew Anderson's direction, but it clearly defers to *Utzon's Design Principles* and ideas for the setting and Forecourt, and retains his external palette of materials (unpainted concrete, granite, bronze and glass). As it respects Utzon's principles and also has its own design integrity, it should be treated in accordance with Policy 4.8 *Approach to change – Hall elements.*

The unpainted concrete mushroom columns and the louvered disc light fittings are a well-considered part of the total design and set a distinctive but sympathetic identity for this space. They should be retained. It is important to note that for structural reasons, no fitting or service can be recessed into the slab above.

All fitout and furniture in the Lower Concourse have a potential impact on the setting for the Sydney Opera House itself and must be carefully considered.

The recessed vitrine panels on the eastern wall, and the carpark lift area and connecting tunnel offer interpretation opportunities.

Utzon has commented that the polished granite on the walls has given the Lower Concourse a more refined finish than the Opera House itself, disturbing the natural order and hierarchy of spaces.[21] This should be addressed in any future works.

> ***Policy 7.17 – Fitouts in Lower Concourse***
> *Individual tenancy fitouts and associated furniture and other objects in this area must:*
>
> – *accord with the* Utzon Design Principles *and sit comfortably with the hierarchy and palette of natural exterior materials used in the public spaces adjacent;*
> – *retain and respect the Hall regime in accordance with Policy 4.8;*
> – *retain the open outdoor character of the space and not intrude into or distract from views to and from the Sydney Opera House;*
> – *not enclose in any way the open space and colonnaded area outside the line of existing enclosure defined by the continuous fronts;*
> – *not attach to or obscure the unpainted mushroom columns;*
> – *not attach to, obscure or visually interrupt the continuous sweep of the parapet spandrel to the Forecourt above;*
> – *not compete with or visually fragment the consistent and unified regime of finishes and lighting;*
> – *avoid white, off-white or black, or highly reflective surfaces; and*
> – *not encroach on or otherwise restrict the pedestrian walkway area between the mushroom columns and the east wall, or along the seawall.*

Refer to Section 4.4.10 *Additional space on site*, Section 4.6.8 *Exterior furniture*, Section 4.6 *Events and uses externally*, and Section 4.20.1 *Use and compatibility.*

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Exterior Furniture, Forecourt and Lower Concourse.

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4.140 *Lower Concourse, late afternoon, 2017*
4.141 *Lower Concourse, south end of covered walkway, 2010*
4.142 *Lower Concourse walkway, adjacent to Opera Bar, 2016*
4.143 *Opera Bar internally, 2017*
4.144 *Lower Concourse walkway through Opera Kitchen, 2015*

Tolerance for Change

element: **Lower Concourse**  significance ranking **B** Sheltered access to Sydney Opera House below western edge of Forecourt, connecting East Circular Quay with Covered Concourse and parking station, incorporating food and beverage outlets and lavatories **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Seawall incorporating wave guard, and continuous precast granite seating and footpath clear of all obstructions	**1**	**1**	**1**	**1**	Form and configuration of seawall wave guard is important. Unobstructed pathway is important for visitor amenity and safety. Refer to discussion in Sections 4.7.7 and 4.7.10.
Paving, steps and walls of solid granite	**2**	**2**	**1**	**2**	Materials and their surface finish are successful and worth retaining. Refer to discussion in Section 4.7.7.
Seawall parapet of reconstituted pink granite incorporating seating bench	**2**	**1**	**1**	**2**	Materials and finish are consistent with Broadwalks and worth retaining. Refer to discussion and policies in Section 4.7.7.
Seawall footpath of granite setts	**3**	**2**	**1**	**2**	Material may require reappraisal to match repaved Forecourt, as same issues apply here. Refer to discussion and policies in Section 4.7.6. Refer to *Opportunities for Change* table.
Open bronze rail system to parapet edge of Forecourt revised to Jan Utzon design (completed 2010)	**2**	**1**	**1**	**1**	Bronze rail system to be considered for application in a modified form across other parts of the site. Refer to discussion and policies in Section 4.7.9.
Unpainted and unobscured concrete 'mushroom' columns	**1**	**1**	**1**	**2**	Unpainted finish and clarity of columns are important as structural expression is consistent with *Utzon Design Principles*. Care required to ensure that portable signage, furniture and other elements do not obscure or clutter these columns. Refer to discussion and policies in Sections 4.6.7, 4.6.8 and 4.7.7.
Louvered circular ceiling lights	**1**	**2**	**1**	**1**	Retain as part of the original design regime by Hall (1988). Specially designed to provide spread of light with limited ceiling height. Refurbished 2005 with improved deflectors and stronger bulbs. Recessed fittings are not possible due to structure of slab. Refer to Policy 4.8 in Section 4.4.6.
Bronze-framed poster vitrines and doors	**3**	**2**	**2**	**2**	Use of bronze is important to maintain consistent use of metals externally across the site. Configuration can change.
Concept of commercial outlets (such as food and retail), lavatories, connecting passage to parking station, and escalators to Covered Concourse and East Circular Quay	**2**	**2**	**1**	**2**	Covered access passage for public is important. Ideal location for food and beverage, but must not obstruct undercover pedestrian passage or pathway at seawall. Vertical transport to Forecourt level at north and south ends essential. Refer to discussion in Section 4.6.7.
Visitor / welcome centre	**3**	**3**	**2**	**2**	Function is important but preferred in a location that does not encourage visitors to avoid principal approach via Forecourt and Monumental Steps.
Lavatories	**3**	**3**	**1**	**3**	Materials, particularly at entries, to be consistent with external materials palette.
Entry to Opera House carpark	**3**	**2**	**1**	**3**	Materials palette, colours and finishes should be consistent with Lower Concourse.
Floodlight pylon for the west surface of the Concert Hall and restaurant shells	**2**	**3**	**1**	**2**	One of a set of 3 pylons on this side. Coloured dark bronze to be as discreet as possible. Location determined by form of seawall.
Group of umbrellas, tables and chairs, and stainless steel bollards including on upper level adjacent to seawall – only where not obstructing pedestrian paths	**3**	**3**	**2**	**2**	Essential that these elements do not intrude into, or detract from key view lines across and from Forecourt. Colour, form, location and storage are important considerations. These elements must not protrude above parapet line or impede views to the roof shells from seawall walkway. Unobstructed public access and egress must be maintained. Refer to discussion and policies in Sections 4.5, 4.6 and 4.7.7.
Any furniture, shade structure, display / signage stand or barrier that intrudes onto undercover or other pedestrian paths, including along seawall walkway, or otherwise intrudes into or impedes important views	**Intrusive**				Modify, rearrange or remove offending components to achieve compliance with this CMP.

Opportunities for Change

Explore Opportunities – Lower Concourse Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Revise lease boundaries and furniture layouts	Any changes or adjustments should improve free flow of pedestrians on main route and along seawall and reduce intrusive clutter. Refer to Section 4.6.7.
Extend service and support functions under Forecourt	Refer to Sections 4.4.10, 4.7.6 and 4.7.7.
Revised entry from East Circular Quay	Consider extending covered access to sheltered / colonnaded path on East Circular Quay.
Smoother paving to ramp and raised seawall walk for improved accessibility and safety	Consider replacing rough granite setts with sawn finish to match Forecourt but with lower reflectivity.
Revised wall finishes	Reduce polish / reflectivity on granite wall panels to better align with Utzon's intended hierarchy of approach spaces and associated finishes.

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4.145 *Lower Concourse, south of carpark entry, 2017*
4.146 *Lower Concourse, at Opera Bar looking south, 2015*
4.147 *Lower Concourse, at Opera Bar looking south, 2015*
4.148 *Lower Concourse, at Opera Kitchen, looking south,2015*
4.149 *Welcome Centre, shop, 2017*
4.150 *Welcome Centre, ticket counter, 2015*

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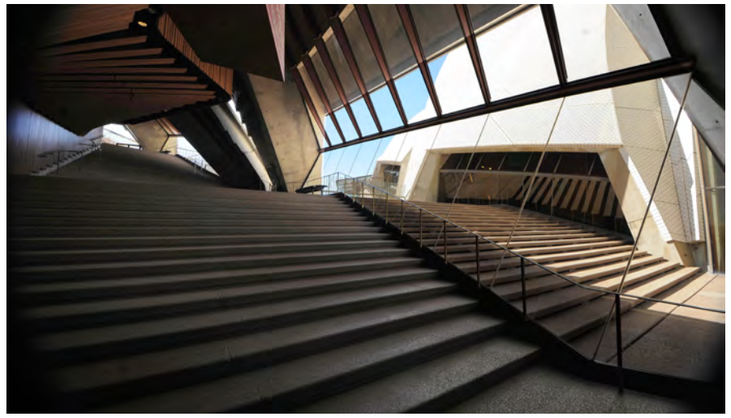

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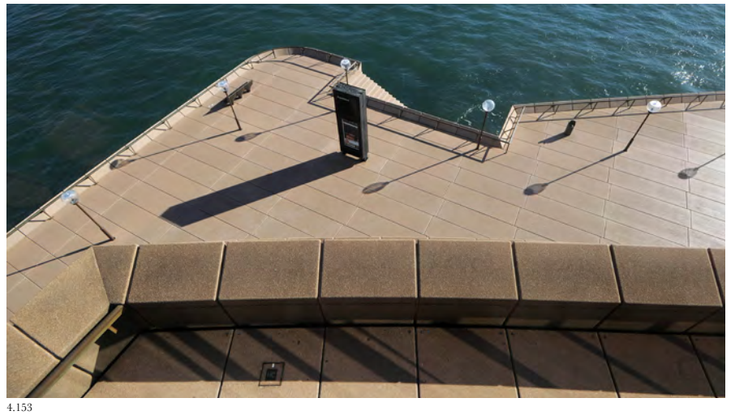

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4.7.8 Precast paving and cladding

The finish on paving steps and skirting is identical with the finish on the cladding. It is a fine non-slip and durable finish entirely suitable for pedestrians and traffic and its uniformity with the cladding will help to give the rock-like character desired for the base, as a contrast and anchor to the soaring roofs.[22]

Utzon's choice of monumental scaled precast granite panels reinforced his concept of the Podium as a form of 'headland' or masonry platform supporting the shells above. They were used as paving on the Broadwalk and Podium, as skirting panels around the Broadwalk, and as cladding for the Podium itself, including the projecting hoods. They were also used as paving and wall panels in those areas which have a strong relationship to the exterior, such as the Box Office, public stairways and foyer spaces enclosed by the glass walls surrounding the two main auditoria.

For the same reason, the precast slab theme with this same pink granite finish has been extended into appropriate features in the design of the Bennelong Lift and its connecting passage to the Covered (Vehicle) Concourse, and also the Southern Foyer escalators (2009).

Often referred to as 'reconstituted granite', the finish of satin polished exposed pink granite aggregate was the same for all panels and components, whether horizontal or vertical, internal or external, but is not quite what Utzon intended.

From 1963, Concrete Industries, a subsidiary of Monier, worked on producing samples of a suitable finish for Utzon before prototypes of the various applications were developed.[23] Utzon wanted a surface which was non-reflective and contrasted with the highly reflective surfaces of the roof tiles. His chosen finish had a needle-hammered, slightly matt surface which would weather evenly.[24] Hall, apparently uncertain as to Utzon's intentions for colour and finish, chose a slightly pinker tone of the same granite with an acid-etched, satin polished finish which "showed up the character of the stone." [25] Exposure has moderated this satin polished finish to a softer and less reflective one, more in line with Utzon's intent. Any consideration of refinishing all the panels is therefore unnecessary. The new panels associated with the passage between the Western Foyer and the Covered Concourse have introduced a higher sheen level between floor and wall, however the less reflective finish should apply to all future work.

Recent works in the Forecourt have highlighted the very limited availability of matching pink granite. Therefore the cleaning regimes and methods should minimise degradation and erosion of the panels. The condition of panels and finishes must be carefully monitored. Refer to Section 4.18 *Care of the fabric and housekeeping.*

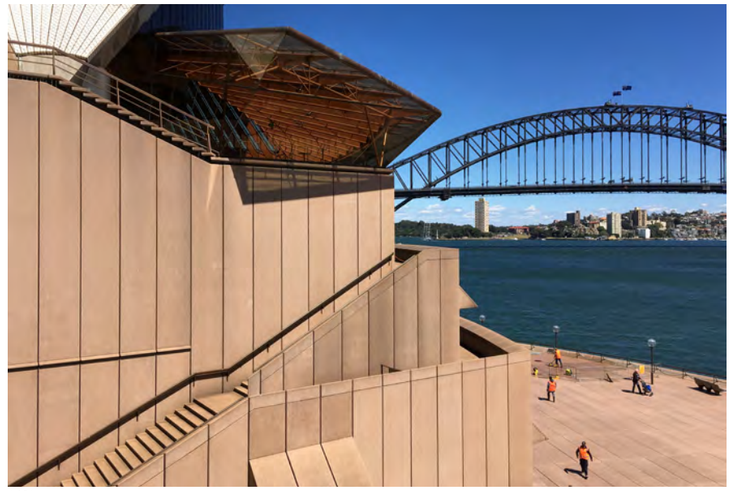
Externally, the slabs have rounded arrises and open joints, allowing stormwater to be collected and drained away below. This allowed all paving to be laid level, without falls. Internally, the paving slabs have squarer arrises and the joints are filled. In all cases the paving slabs are fixed in place using countersunk bronze levelling screws, accurately placed and neatly visible on each slab, with their distinctive cruciform '+' slots originally aligned with the joints.

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.

Refer to Section 4.18.1 *Monitoring*, 4.18.4 *Cleaning of reconstituted granite paving* and cladding, and Section 4.18.10 *Lifecycle planning.*

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Podium, Broadwalk and Covered Concourse.



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4.151 *Podium platform and steps, 2011*
4.152 *Continuity of granite paving and steps, between foyers and Podium, 2010*
4.153 *Northern Broadwalk from Northern Foyer of Concert Hall, 2010*
4.154 *North Podium projection of Concert Hall, 2017*
4.155 *Podium paving, 2014*
4.156 *Original paving fixings not in correct alignment*
4.157 *Paving in Southern Foyer with original fixings in correct alignment*

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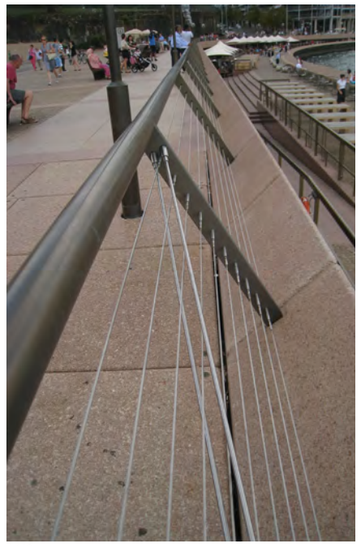

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4.158 *Podium railing, 2017*
4.159 *Circular section railing (2010) at western edge of Forecourt*
4.160 *Original inverted 'U' profile on stairs to Southern Foyers, 2010*
4.161 *Flat bronze railing in Side Foyer of Concert Hall, 2008*
4.162 *Security railing in 'cleavage' space, 2016*

4.7.9 Bronze railings

Referring to the Podium above the Covered (Vehicle) Concourse:

> ***The top edge of the slab is covered with precast paving slabs as the broadwalk and has railings along the edges of heavy bronze sections.***[26]

The railings around the perimeter of the Forecourt, Broadwalk, Monumental Steps and Podium are all bronze but the configuration of each differs according to its situation. The handrails on the Podium and stairs have a deep inverted 'U' profile with concealed lighting on the flat underside and a simple balustrade, while those on the perimeter of the Broadwalk have a large circular profile, mounted on angled stays, with no lighting. Despite these differences, they are still perceived as a 'family' of railings, and because of the consistency of scale and material, the variations go relatively unnoticed. The inverted 'U' profile is also used internally on the main stairs to and from the Box Office and in the Northern Foyers.

All the original railings are simple, elegant and open enough not to impact adversely on key view-lines across these broad open platforms. When the Lower Concourse area was added in 1988, the handrail and parapet configuration used on the seawall was used at the perimeter of the Forecourt above the new level.

The lead-free manganese bronze alloy material used originally (referred to as 'Austral 412', supplied by Austral Crane) has proven to be most suitable and stable for external use, but its ongoing availability is not assured.[27] Refer to Section 4.18.10 *Lifecycle planning* for further discussion.

Since installation, building codes have changed and some of the existing railings no longer meet the revised requirements. In recent years, the Podium railing has been augmented with polycarbonate panels on the lower part to prevent accidental falls, including objects. These have become warped and scratched and should be replaced with a more elegantly designed and executed solution. A similar situation exists in the Northern Foyers of the main auditoria where perspex panels have been fitted to the balustrades with minimal visual or physical impacts, in order to address compliance issues. Intended as a temporary measure, these are far less intrusive than their earlier external counterparts and could be further refined if required.

Since 1973 a range of bronze handrails have been introduced in the main side foyers to deal with the angled bases of the shell structures and low timber panelling of the auditoria carcasses. Some are intrusive.

While compliance with the building codes is most desirable, these codes are regularly reviewed and changed, sometimes making a previously complying solution non-compliant. This presents a challenge to Sydney Opera House if a previously complying solution is part of a significant design. The safety concerns are real and should be addressed, but no solution should diminish the simple, open character and quality of the handrail system or the areas they protect.

In 2008, approval was given to replace the railing around the western perimeter of the Forecourt over the Lower Concourse with a revised design developed by Jan Utzon and Hyder Consulting engineers. This was precipitated by a failure of a section of this handrail in 2006, and required maintenance on the associated precast parapet panels. The work was completed in 2010.

This revised design incorporates a circular bronze handrail profile with concealed indirect LED lighting, mounted on angled bronze stays fixed into the sloping parapet. The balustrade incorporates tensioned horizontal stainless steel cables which achieve compliance in this situation because of the angled configuration (making them harder to climb). While this particular solution cannot be applied across the site, it may form the basis for a revised railing design around the Broadwalks, and from it a new design may be developed for the Podium and stair railings.

As part of the suite of Renewal Projects commenced in 2015 / 2016, a comprehensive study is being carried out for all railings across the site, and a 'kit of parts' developed for progressive implementation as opportunities arise and funds become available. It is essential that in any revised design, all possible variations be considered so that inconsistencies which have arisen in the past can be addressed, and the original site-wide consistency of approach re-established.

> ***Policy 7.19 – Bronze railing system***
> *The material and open design of the original bronze railings and balustrades across the site are a unifying element and must be retained. If any railings are required to be reconfigured to address accessibility, safety or security issues, the revised design must retain the following:*
>
> – *bronze material of the same or similar alloy as the original, with the same performance, durability, strength, colour and finish;*
> – *limited related range of simple geometric handrail and balustrade sections and configurations appropriate to the application, consistently applied across the site;*
> – *open design with minimal obstruction of views;*
> – *concealed indirect lighting where appropriate, and particularly on stairs.*

At the northern end of the Central Passage between the shells (often referred to as 'the cleavage'), and on the east and west sides of the Podium at the bottom of the external steps to the side foyers, additional 2-metre high bronze-coloured palisade elements have been added to the original rail to discourage climbing. These elements were later bolstered by an additional line of higher temporary security barriers of powder-coated aluminium (placed further south), blocking off previously accessible areas of the Podium and severely impacting on views across them.

The need for a proper safety and security barrier is acknowledged, but these elements, both the bronze palisades and the added temporary barriers, are highly intrusive and should be replaced with a more appropriate and sympathetic design. This is an issue in a number of places on the Podium perimeter. The 'cleavage' space, in particular, is a unique and wonderful place to experience the sheer scale, strength and beauty of the Podium and the soaring shells on either side. It should, if at all possible, be again made accessible to the public.

In commenting on these particular barriers in 2001, Jørn Utzon suggested modifying the projecting hood over the window to the Green Room below, to provide "*stairs that lead about 120cm down to a narrow platform with a 120cm high railing*". This would remove the fence from direct view and provide a sheltered place to sit.[28]

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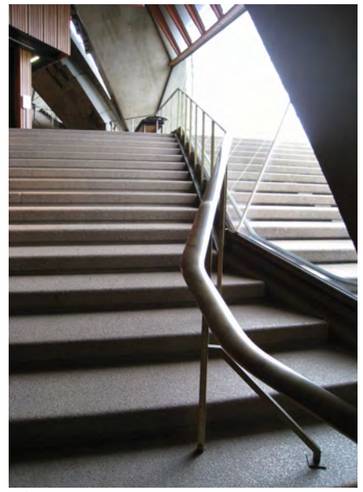
> ***Policy 7.20 – 'Cleavage' space and public access***
> *The 'cleavage' space, between the shells of the main halls, should be made accessible to the public. Any necessary safety or security measures must allow unobstructed northern views and must not disfigure, obscure or otherwise diminish the significance of the base of the roof shells.*

Refer to Section 4.18.5 *Care of bronze*, Section 4.18.7 *Removal or alteration of fabric*, Section 4.18.10 *Lifecycle planning*, and Section 4.20.11 *Code compliance*.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Podium, Forecourt, Broadwalk and Lower Concourse.



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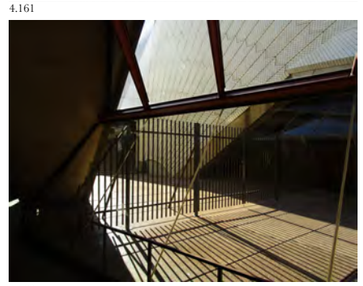

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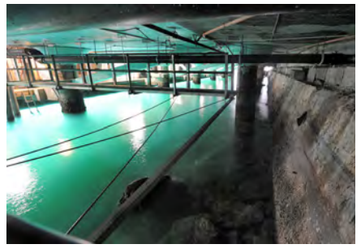

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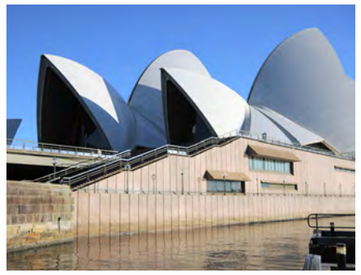

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4.163 *Sandstone and concrete seawall under Broadwalk, 2011*
4.164 *Sandstone seawall adjacent to Man o'War Steps, 2010*
4.165 *East side of Podium and Broadwalk, 2010*
4.166 *Northern Broadwalk skirting panels, 2010*
4.167 *Covered Concourse, west end, 2017*
4.168 *Entry to main stairs to Box Office Foyer, 2010*
4.169 *Escalators to Lower Concourse, 2011*
4.170 *Covered Concourse, entries to Central Passage and Stage Door, 2015*

4.7.10 Seawalling, Broadwalk skirting and supports

As the concrete elements of the Sea-wall or skirt around the perimeter of the Broadwalk are replaced, these should be replaced with a new and slightly different type of element, where the granite-surfacing of the vertical surface stops above the normal high-water mark, and a plain concrete surface extends into the water. This does not prevent barnacles and seaweed from growing on the surface, but the smooth concrete surface of the lower part of the element is easier to clean, and the colour and textual difference, between the upper and lower part of the element, disguises the present unsightly line of water-stain on the elements.[29]

The area of the Macquarie Fort was enlarged with added seawalls in the early 1860s. These were further altered in the late nineteenth and early twentieth centuries with the changes in use of Bennelong Point and the addition of wharves and jetties. Parts of these sandstone seawalls, drains, building foundations and archaeological remains survive beneath the Broadwalks, concealed by the existing Broadwalk skirting and more recent concrete infilling in some areas behind it. Refer to Section 4.20.6 *Excavation and archaeology.*

> ***Policy 7.21 – Remains of seawall***
> *The remains of the early seawalling must be retained in situ and only removed where it becomes necessary for the stability of the Broadwalk or associated structures above, or for major works in accordance with Policy 4.5. Any disturbance or removal of these structures must be carried out under the guidance of an archaeologist, in accordance with Policy 20.10.*

Utzon's concept for the skirting panels to finish above the water and leave a shadow line has been confirmed in his 2006 letter quoted above. When Peter Hall commenced work on the project, some of these panels had already been set below the water line, while those on the western side were set above. Hall's decision to place all the skirting panels below the water line appears to have been based partly on an aesthetic preference as well as safety concerns resulting from the gap with the shorter panels.[30]

The seawall to the Lower Concourse area, completed in 1988, incorporated a wave deflector profile at its top edge, thus effectively creating a deep shadow line at water level. This has demonstrated the visual appropriateness of Utzon's concept. Incorporating a shadow line as part of a future replacement program of deteriorated skirting panels has already been considered. If and when such a program is implemented, it is important that the details include a new screen wall behind the panels to address water safety issues. A potentially complicating factor is the issue of rising sea levels resulting from climate change. This will require consideration of the most accurate data available to avoid the benefits of raised panels being nullified.

> ***Policy 7.22 – Skirting panel replacement***
> *Where Broadwalk skirting panels are required to be replaced, they should retain their existing form, materials and details in accordance with Policy 7.18 but finish above the high water mark as Utzon intended. Replacements incorporating the shortened length must only occur when it is possible to replace the whole of one or more sides of the Broadwalk, and should incorporate a screen wall behind them to prevent access and deflect wave action. Up-to-date data on sea level rise predictions need to be considered when determining the appropriate height of panels.*

Some areas of the Western, Northern and Eastern Broadwalks as well as the Lower Concourse are built over water, the deepest areas being on the western side. Hidden from public view, the concrete piled structure supporting these elements is exposed to a very hostile and corrosive environment, and requires a strict monitoring and maintenance regime to protect its structural integrity.

Kerr noted that following deterioration of the original supporting structure in the 1970s and '80s, major repair and remediation was carried out which incorporated installation of a cathodic protection system on parts of the Western Broadwalk, as well as solid concrete fill below the Eastern and Northern Broadwalks.[31] The condition of these supporting structures, skirting panels, and associated protection systems should continue to be monitored and maintained in accordance with Sections 4.18.1 *Monitoring* and 4.18.2 *Maintenance and repair.*

Refer also to Section 4.20.6 *Excavation and archaeology,* 4.7.8 *Precast paving and cladding,* 4.6 *Events and uses externally,* 4.18.1 *Monitoring,* 4.18.4 *Cleaning of reconstituted granite paving and cladding,* Section 4.18.10 *Lifecycle planning* and Section 4.20.12 *Climate change.*

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Broadwalk and Lower Concourse.

4.7.11 Covered Concourse

A Exceptional significance

This large area is naturally ventilated by means of the large openings to the east and west and at the northern end of the building. Here, the soffit of the podium will form the first impression of the building from this approach. This surface, emphasised by lighting, shows the marked sculptural effect of the concrete folded beams spanning 165 ft.[32]

Previously known as the Vehicle Concourse, this space was intended by Utzon as the principal undercover arrival space for patrons arriving by vehicle, but it would appear that he did not realize how much it would be used and appreciated by those arriving by foot.

For those not approaching via the Monumental Steps, this is their first glimpse of the extraordinary beauty and elegance of the concrete structure of the building. Rising from the ground, spanning the concourse, and then rising up the stairs to the Box Office, the beams powerfully emphasise the journey towards the performance. The space, therefore, should remain visually open-ended with visual links to the harbour, with the beams unobscured and lit to emphasise their dramatic form. The whole space should be as uncluttered as possible. As part of the construction of the underground loading dock (Vehicle Access and Pedestrian Safety Project), discrete fresh air intake grilles were fitted between the base of the beams on the south side of the space. These would impact on any proposal to enclose this space, should this be considered in the future.

> ***Policy 7.23 – Covered (Vehicle) Concourse***
> *The Covered Concourse space must retain its use as the principal undercover arrivals concourse for pedestrians and, potentially, those arriving by boat. It must remain uncluttered, offer generous pedestrian space, and with its east and west ends visually open. No permanent or long-stay structure or installation should be permitted to encumber or diminish the space, or to obscure any part of the folded beams.*

When the Opera House first opened, buses ferried patrons from the Domain carpark and delivered them to a bus stop within the Concourse, opposite the stairs to the Box Office. Not only did this deny these patrons the opportunity to approach on foot and ascend via the Monumental Steps, it introduced a noisy and polluted atmosphere into what is a truly exceptional arrival space. With the construction of the nearby underground parking station and other changes to access, buses were removed from the site, but the space was still used and occupied by service vehicles and accessible parking, as well as occasional construction site sheds. The former shop / office next to the Stage Door (identified in the CMP 3rd edition as intrusive) was removed in 2011.

Vehicles were almost completely excluded from the Concourse with the completion of the underground loading dock and re-opening of the Forecourt in 2015. Potential projects beyond that may provide undercover drop-off facilities elsewhere at a lower level with escalator access directly up to the Covered Concourse.[33] In late 2015, a range of transport options for those with impaired mobility were being trialled between the southern entry to the site and the Covered Concourse.

With revised access to the Western Foyer, and the introduction of a lift from the Lower Concourse to the Box Office, the function of this space is being re-focused as a more integrated element in the sequence of covered entry spaces. It could potentially host occasional events or performances. Refer to Section 4.6 *Events and uses externally.*

The feasibility of introducing a ferry / water taxi wharf at the east end, in accordance with Utzon's original idea, could also be explored.[34] Another opportunity is to consider Utzon's original concept of the adjacent Central Passage as a public thoroughfare. This would provide public access to lifts accessing the foyers above, Utzon's original intent.

These may be very long-range considerations, but they should be kept 'on the table'. Possibly, a more acheivable goal would be the introduction of Utzon's original 'butterfly doors' for the public entry along the northern edge of the Concourse and escalators to the Box Office Foyer in the present Utzon Room stairs. These could considerably enhance the quality and visitor experience of this space. Refer to *Opportunities for Change* table below.

Refer to Section 4.7.6 *Forecourt and Broadwalk* and Section 4.9 1 *Stairs and lift from Covered Concourse.*

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Exterior Furniture, Covered Concourse, and Stairs and lift from Covered Concourse.

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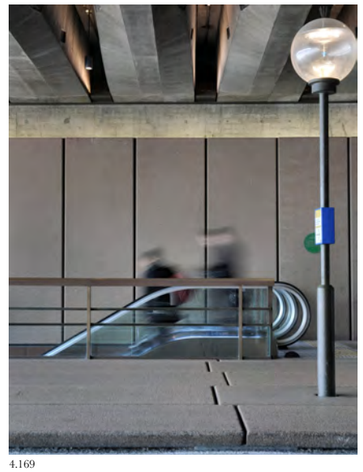

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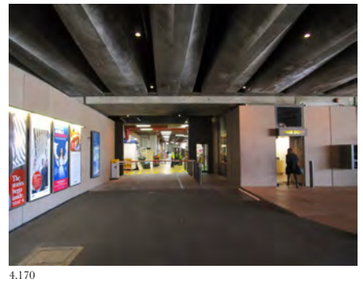

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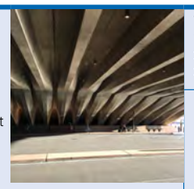
Tolerance for Change

element: **Covered Concourse** significance ranking **A** First undercover pedestrian arrival 'foyer' space for those not arriving via Monumental Steps. Spatial character dominated by unpainted concrete folded beams overhead **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Unpainted folded concrete beams	**1**	**1**	**1**	**1**	A key Utzon / Arup component. Maintain protection from water entry above. Retain unpainted finish. Retain evidence of formwork markings. Remove efflorescence and staining. Refer to discussion and policies in Sections 4.7.11 and 4.14.
Precast granite wall cladding	**2**	**1**	**1**	**1**	Continuity of wall cladding with Podium is important. Limited number of panels well inside space could be modified, covered or removed to accommodate elegant display panels for art or promotion, but must respect character of Podium.
Precast granite paving including tilted panels along northern edge	**1**	**1**	**1**	**2**	Precast granite paving should ideally extend the full width of the space to provide a Broadwalk character. Refer to *Opportunities for Change* table.
Four bronze entrance doors to stairways and lift including back-lit cut-out signs	**2**	**1**	**1**	**2**	Form of doors could change, but must maintain consistency with others on the site. Consistent use of bronze is important. Typeface of signs should retain existing font in 'UPPERCASE', but could be altered to consistent 'Title Case', only if this is required to address legibility standards. Refer to Policy 7.12 and discussion and policies in Section 4.15. Refer also to *Opportunities for Change* table below.
Bronze framed stage door with back-lit cut-out sign	**2**	**1**	**1**	**2**	Understated but significant entry. Consistency of design, form and material with other doors is important. Refer to Policy 7.12 and discussion and policies in Section 4.15. Refer also to *Opportunities for Change* table below.
Bronze vehicle door to the Central Passage	**3**	**1**	**2**	**2**	Form and configuration of door may alter, but use of bronze is important. Refer to Policy 7.13.
1972 dedication applied to cladding commemorating completion of the Concert Hall (presently removed)	**3**	**3**	**1**	**1**	Originally located on granite cladding next to Stage Door (west side) and removed c.2005. Consider reinstatement, if necessary in more durable form. Refer to discussion and policies in Section 4.16.3.
Poster, digital and video display panels on wall cladding, and lighted pole next to the Concert Hall stair	**3**	**3**	**2**	**2**	Appropriate location. Material, detail and fixing of panel frames should be of high quality design, consistent with SOH standard. Lighted pole should be removed. Refer to Section 4.15.
Bitumen roadway	**3**	**3**	**2**	**2**	Now vehicles have been removed, preferable if paving material was consistent with Broadwalk or Forecourt and surface was level.
Evidence of glazed former shop added beside Utzon Room entry (1973) (removed 2011)	**2**	**1**	**2**	**1**	Damage should be repaired but subtle evidence of shop should be retained to assist interpretation; e.g. original door threshold position, bronze plates for hold-open devices, subtle shadow of perimeter walls on beams and possibly paving.
Wayfinding signage on bronze-coloured freestanding panels	**3**	**3**	**2**	**3**	Consistency of design, form and materials with other signage is important. Refer to Section 4.6.8 *Exterior furniture*.
Vehicle parking (almost entirely removed)	**Intrusive**				Alternative parking and pedestrian drop-off to be further resolved.
Post with warning light and security camera towards west end, south side	**Intrusive**				Consider relocation in less obtrusive position or, if possible, remove entirely.
Polycarbonate ball light fittings on unnumbered bronze posts within Concourse (Hall's Balls) (1973?)	**Intrusive**				Revise lighting of this area and remove these fittings – incongruous use of exterior lighting fixtures in a covered space.
RAHS green history plaque applied to granite cladding at top of escalators	**Intrusive**				Should be either changed to a more sympathetic material and colour, or moved to a less intrusive location.
Lights mounted over face of westernmost beam	**Intrusive**				Remove or relocate to position in groove between first and second beams.

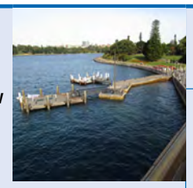


Opportunities for Change

Explore Opportunities – Covered Concourse Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Utzon's 'butterfly' doors	Replace existing 'standard' doors with Utzon's original design for 'butterfly' doors for all public entries (and possibly Central Passage and Stage Door) off the concourse.
Lighting upgrade	Explore options to revise / upgrade lighting to this space with emphasis on enhancing the presence of the folded beam structure and providing adequate lighting for use of the space.
Pavement upgrade	Replace bitumen with granite paving for full extent of space to match Broadwalk or Forecourt.
Ferry / water taxi entry	Introduce undercover ferry / water taxi drop-off at eastern end as per Utzon's original concept.
New vehicle arrivals concourse beneath Covered Concourse	*Strategic Building Plan 2001* outlines potential for a new arrivals concourse beneath the existing, connected by escalators. Provision for vehicle access from the loading dock ramp has been incorporated into the recently completed Underground Loading Dock project.
Display material	Potential to revise infrastructure for display material on northern granite clad walls, but well away from east and west ends of space. This would require co-ordination with screens and panels used for promotion, and should not cause or encourage detached or freestanding signage within space or elsewhere. Consider position of this space in Utzon's sequence of arrival spaces and associated gradual build-up to performance.

Tolerance for Change

element: **Man o'War Steps and jetty** **(jetty and seawall to south owned and managed by NSW Maritime, adjacent to SOH site)** significance ranking **B** Sandstone steps and jetty with attached pontoons – main arrival point by water for SOH **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Sandstone jetty with steps in substantially original nineteenth-century configuration	**1**	**2**	**1**	**1**	Retention of location and configuration are most important. Conservation and management should be in consultation with SOHT.
Two attached, unroofed pontoons (c.1973)	**3**	**3**	**1**	**3**	Configuration could be changed but should remain small, unobtrusive and unroofed.
Floodlight pylon for eastern side of SOH – matching those on west side	**2**	**3**	**1**	**2**	One of 2 pylons on this side. Coloured dark bronze to be as discreet as possible. Location determined by configuration of steps and jetty.
Sandstone seawall adjacent to and south of jetty (including outlet for diverted Bennelong Drain)	**1**	**1**	**1**	**1**	Sections to south of jetty steps may be early. Scale and form of wall are important and demonstrate historic evolution. To be considered in conjunction with any revision to levels on eastern side of Forecourt. Potential for altered configuration to north – refer to *Opportunities for Change* table for Forecourt.
Entry piers and sandstone seawall adjacent to and north of jetty (within SOH boundaries)	**1**	**1**	**1**	**2**	Potential to interpret form of early beach / slipway immediately north-west of jetty. Scale and form of piers and wall are important. To be considered in conjunction with any revision to levels on eastern side of Forecourt.
Archaeology	**1**	**1**	**1**	**1**	All archaeology, both above and below water level, should be managed in accordance with Section 4.20.6.
Floodlight pylon, isolated in harbour directly east of SOH – matching those on Man o'War Steps and west side (located off-shore)	**2**	**3**	**1**	**2**	Coloured dark bronze to be as discreet as possible. Location determined to optimize light coverage on eastern shells.



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4.8 CONSERVING THE INTERIOR: 'FRONT-OF-HOUSE' SPACES *ABOVE* PODIUM

4.8.1 Bennelong Restaurant

A Exceptional significance

Designed for approximately 250 guests, the restaurant is housed in a smaller complex of shells on the western side of the concourse, and is in two levels - one with direct access to the concourse, the other with access from the raised podium at the foyer level of the two halls. It has direct access from the cloak room area and its own kitchen.
.... Finishes will be of carpeted floors on precast concrete slabs; the shells of exposed concrete forming the upper part of walls, and the ceiling - whilst glass walls to the lower part of walls will be similar to the other shells.[1]

Enclosed by the 'minor shells', the space occupied by the Bennelong Restaurant is the only one where it is possible to see the entire concrete ribbed structure of the roof shells unobstructed. The majesty and clarity of this space is unique on the site and provides a tantalising glimpse of what lies within the shells of the two major auditoria.

Defined primarily by the Utzon podium and concrete shells, its enclosure by the Hall-designed glass walls makes this a hybrid Utzon / Hall space. It should therefore be treated in accordance with Policy 4.7. The carpeted floor finish on the main levels appears to be in contrast with the 'outside' materials regime but this was Utzon's choice for this space. The original carpet colour chosen by Hall was ochre.[2]

Although occasionally used to house specific events and promotions, it has had a number of different fitouts and operators since opening, and continues to function as a restaurant in an extraordinary setting. Its significance and visibility, internally and externally, make it an ideal location for any use which celebrates the space and allows public access. Both use and fitout could change if required but openness and public access are essential. Refer to Section 4.11.2 *Furniture and fittings*.

The Aboriginal poles ('Larrakitj') from the Northern Territory were purchased by Sydney Opera House and ceremonially installed in the space in 2002 as part of a fitout designed by Dale Jones-Evans. The poles are a dramatic and significant Indigenous presence in this space and should preferably remain in their present location. Their presence and meaning is further strengthened by the Aboriginal name of the space. Refer to Section 4.12.2 *Artworks and curtains*.

Accessibility between the three levels requires consideration and sensitivity and this is discussed in Section 4.17 *Accessibility*. Any changes to address this should be in accordance with Policy 17.1, and should avoid alteration of the podium beams. The timber-framed levels and platforms were added by Peter Hall and could be altered. The reconstituted granite clad parapets between levels should preferably remain unaltered and read as an integral part of the stepped Podium structure.

Policy 8.1 – Bennelong Restaurant
Whatever the use for the Bennelong Restaurant space under the minor shells, it must:

- *remain accessible to the public;*
- *retain open interior space with views and appreciation of the concrete roof structure unobstructed;*
- *retain unobstructed views from the inside out to the surroundings, and from the outside into the space.*

Any fitting out and decoration should:

- *complement the character of the original space using 'natural' materials, textures and colours, in accordance with the* Utzon Design Principles*;*
- *preferably retain carpet or similar floor finish;*
- *retain the Aboriginal poles ('Larrakitj') in their present location (if possible).*

Additional access through the glass walls to the Podium may be considered in accordance with Policy 7.9.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Bennelong Restaurant below.

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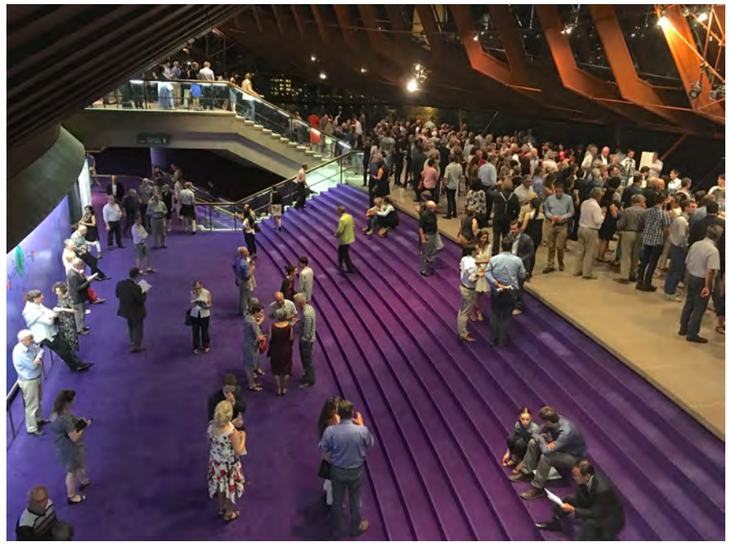
4.171 *Bennelong Restaurant mid level, 2010*
4.172 *Bennelong Restaurant lower level, 2010*
4.173 *Bennelong Restaurant, 'Larrakitj' works, 2010*
4.174 *Bennelong Restaurant, lower level, 2016*
4.175 *Bennelong Restaurant, upper level 2016*

Tolerance for Change

element: **Bennelong Restaurant space** significance ranking **A** Publicly accessible, undivided Utzon space used in association with, and supporting the primary function of the Sydney Opera House **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance Form	Fabric	Function	Location	**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
Undivided 3 level space enclosed by exposed shell rib vaults and glass walls together with broad reconstituted granite paved steps	**1**	**1**	**2**	**1**	Function of space could change (refer to Policy 8.1). For glass walls and potential for changed or additional openings, refer to Section 4.7.3 *Glass walls and bronze louvres.* Opening through Podium to Box Office Foyer and back-of-house spaces may be reconfigured but otherwise all masonry structure and steps should be unaltered, unless required for improved access between levels as per discussion in Section 4.8.1. Timber platforms could be altered if required.
Broad reconstituted granite clad parapet walls between levels, defining openings in Podium	**2**	**1**	**1**	**1**	Parapets should preferably remain unaltered but, should alterations be required, they should still read as an integral part of the stepped Podium structure.
Current fitout and décor of Bennelong Restaurant including lighting	**3**	**3**	**3**	**2**	Current fitout, furniture and décor not original and could be replaced as per policies. Carpet colour should complement exterior materials palette. Alternatively, the floor finish could be altered to match adjacent Box Office Foyer in accordance with Section 4.4.5 *Hybrid Utzon / Hall Spaces*, if this suited a changed use in the Bennelong space.
Aboriginal poles installation ('Larrakitj'), 2002	**1**	**1**	**1**	**2**	Retention in present location preferred to relocation or removal from this space. If relocated, they should be in a public space where their significance and meaning is clear and they are protected from the sun. Refer to Section 4.12.2 *Artworks and curtains.*
Kitchen to Bennelong Restaurant (within Podium)	**2**	**3**	**1**	**2**	Essential function if the Bennelong space continues to be a restaurant, but could be modified or the kitchen function relocated.

Opportunities for Change

Explore Opportunities – Bennelong Restaurant Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Revised fitout	Potential for revised fitout and furnishings, if and when required.
Improved indoor / outdoor connectivity with additional / revised openings in glass walls	These could be considered in accordance with Policy 7.9 *Alterations to glass walls*. Placement would be critical. Refer to Utzon drawings.
Floor levels and configuration	Opportunity to alter timber platforms added by Hall and reinstate original configuration.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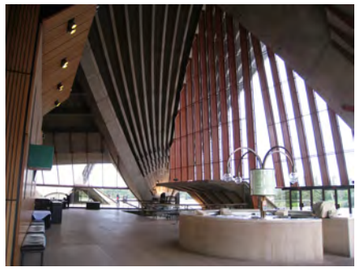
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4.176 *Northern Foyer of Concert Hall, during interval, 2017*
4.177 *Glimpse of Concert Hall Southern Foyer from stairs, 2010*
4.178 *Southern Foyer of Concert Hall, 2010*
4.179 *Southern Foyer of Joan Sutherland Theatre, 2010*
4.180 *Southern Foyer of Concert Hall, 'Dolphin' beams over stairs and escalator from Box Office Foyer, 2010*

4.8.2 Foyers surrounding major auditoria

A Exceptional significance

As we move through the glass doors and arrive at the foyer, we are introduced to the back wall of the stage, reminding us of the purpose of our visit.

…. The wall in front of us will be made up of plywood panels, which surround the whole of the stage tower. This emphasises the stage tower as being part of the machinery, a piece of furniture, placed under the shell.

For the Minor Hall, the ornamental curtain for the stage is rolled vertically in a large glass cylinder, which can be seen from the foyer. This way the patrons will be able to actually see the separation between the stage and the auditorium and already during the approach they will get the feeling of what they will find inside.

We now pass beyond the back stage wall around the stage proper and up flights of stairs to the Major Hall and to filter back into the hall itself.[3]

…. 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.[4]

These outwardly focused foyer spaces are the penultimate experience in Utzon's arrival sequence and contrast dramatically with the enclosed Box Office space which precedes them. Their visually open and continuous relationship with the external podium and setting of the building is an essential part of their character. Their scale and configuration varies enormously from the soaring spaces of the Southern Foyers to the narrow spaces flanking the auditoria and climbing towards the north, culminating in the broad open Northern Foyers overlooking the harbour. All are defined by Utzon's unpainted ribbed concrete structure, enclosed by Hall's glass walls and timber-clad auditoria. They are thus hybrid Utzon / Hall spaces. However, they are essentially Utzon spaces, and therefore Policy 4.7 applies.

It is important to note that the concept of foyers completely surrounding an auditorium is very unusual in theatre design, possibly unique. Foyers normally stop at or around the proscenium wall line, with spaces behind the stage traditionally part of the back-of-house. The arrangement at the Sydney Opera House results from Utzon's idea of placing the halls side by side and containing all performance preparation and back-of-house areas within the Podium, with the patron approach and

performance taking place above, on its 'plateau'. This has contributed to problems with the available space in the backstage areas, but Utzon's concept is fundamental to his vision and thus of exceptional significance. Should any changes be considered, it is essential that the principles and ideas which underpin Utzon's design are understood and respected.

With the change in program following Utzon's departure, Hall was forced to increase the seating capacities in both the major and minor halls, resulting in them heavily oversailing these spaces and reducing views of the shell structures rising above.[5]

Although enclosed by the glass walls, Utzon intended that these spaces read as a continuation of the broad-stepped Podium up to the external walls of each auditorium. Hence the materials were to be of the same natural palette as the external areas.

The circular granite clad bars in the Southern Foyers are by Hall, based on indications on Utzon's original competition drawings. The bronze lighting 'tree' over these bars are also by Hall.

There are numerous works of art in these foyer spaces, including some that are sensitive to light, such as the large murals in the Northern Foyers and paintings in the side foyers. Their vulnerability and significance require them to be shielded from bright daylight by specially made curtains. The 'outside' character and consequent light levels of these foyers make them somewhat inappropriate places to hang or display such works. Ideally they should be removed or replaced with less vulnerable works in accordance with Policy 12.3 (refer to Section 4.12.2 *Artworks and curtains*). To darken the spaces to protect the artworks would be inappropriate and contrary to Utzon's concepts.

Notwithstanding these considerations, the large painted murals in the Northern Foyers are spectacular and significant pieces specially commissioned for these locations. They are exposed for evening performances and functions.

Utzon's plans, as well as photos taken during construction, show a passage on either side of each of the two main auditoria, passing beneath the side stairs rising to the Northern Foyers and providing level access from the stair mid-landing to the 'mural' level (level +51) of these important public spaces. The structure defining these passages survives beneath the stepped paving and the opportunity exists to utilise these passages in any access upgrade in these areas.

The bar and lounge areas to the north of the two major halls are an integral part of the Northern Foyers, even though they are on lower levels and technically within the Podium. Access is via a grand symmetrical staircase arrangement,


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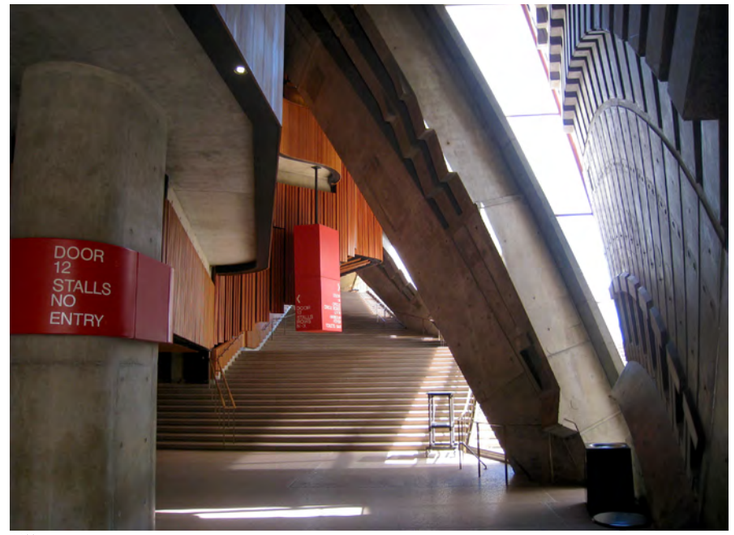

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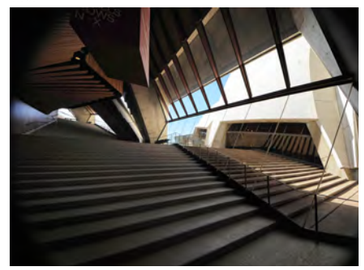
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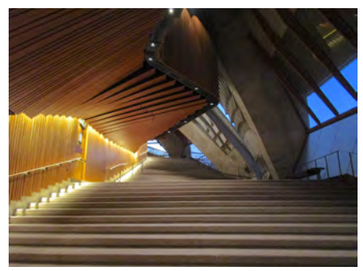
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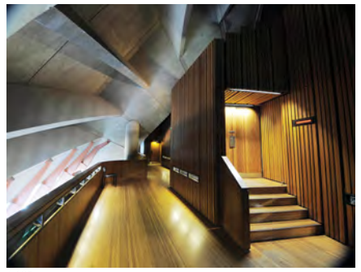
4.181 *Southern Foyer looking towards Side Foyer, Concert Hall, 2010*
4.182 *Eastern Side Foyer of Concert Hall, looking south, 2010*
4.183 *Eastern Side Foyer of Concert Hall, 2010*
4.184 *Eastern Side Foyer of Concert Hall, looking north, 2010*
4.185 *Eastern Side Foyer of Concert Hall, 2010*
4.186 *Eastern Side Foyer of Concert Hall in the evening, 2015*



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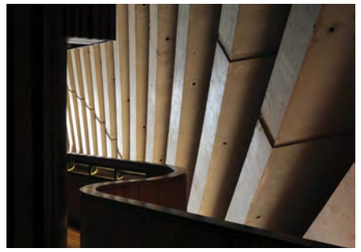

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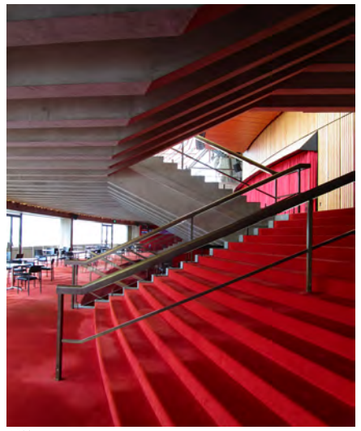

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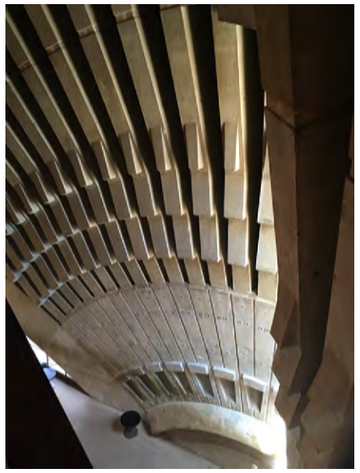
4.187 *Concert Hall, upper level access to boxes within the shells, 2010*
4.188 *Concert Hall, upper level access to boxes within the shells, 2010*
4.189 *Northern Foyer of Joan Suterland Theatre, 2016*
4.190 *View from upper level access to boxes, Conert Hall, 2016*
4.191 *Northern Foyer of Concert Hall from upper granite level, 2010*
4.192 *Northern Foyer of Concert Hall, 2010*
4.193 *Northern Foyer of Concert Hall, section*
4.194 *Northern Foyer, lounge level, Concert Hall, 2010*
4.195 *Northern Foyer of Concert Hall, bar level, 2014*
4.196 *Northern Foyer of Concert Hall, granite level, 2014*
4.197 *Northern Foyer of Concert Hall, harbour views from granite level, 2010*
4.198 *Northern Foyer of Concert Hall, mural level, 2010*



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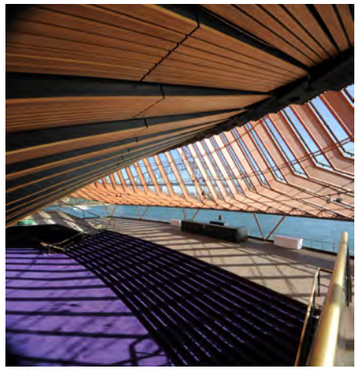

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The broad central stair from the main Northern Foyer 'granite' level under the glass walls, and all lounge and bar levels below it, are presently fitted with wall-to-wall signature coloured carpet. These areas are now popular venues in their own right, and the broad carpeted stairs are inviting and comfortable places to sit and enjoy a pre-performance talk or other presentation. However, their exposure to high levels of sunlight means the carpets deteriorate and fade rapidly. If removal of carpet and a return to Utzon's preferred exterior floor finish is to be considered, the use and comfort of these spaces is also important. This issue is discussed in greater detail in the *Sydney Opera House Carpet Strategy*, 2006.[7]

Directional signage is an important element in these foyer spaces. The 1970s green and red signage, purportedly based on navigation signals, originally matched patrons' tickets, providing an easy navigation tool, but with modern ticketing practice, these colours lost their relevance. Notwithstanding the impacts of some of them on views, they are considered significant. Refer to Section 4.15 *Signage*.

The foyers (Southern and Northern in particular) are considered ideal locations for the promotion of sponsors and sale of performance-related material. These cannot be ignored, but any installation required to serve these functions must be very carefully considered and managed if enjoyment of the greater significance and character of these spaces is not to be compromised.

The lack of storage and 'parking space' for merchandising tables, programme sales stands, barrier posts and other equipment has resulted in increasingly untidy collections of furniture in the corners of these spaces. These highly significant public foyers should receive at least the same level of attention to housekeeping and tidiness as the entry foyer of a five-star hotel.

Digital projections onto the fabric of the building as part of a tour (for example on the concrete fan pedestals in side foyers) may not be intrusive if they are of short duration, but use of this same infrastructure to project promotions and advertising at any other time is most definitely intrusive.

Substantial works proposed for both the Joan Sutherland Theatre and Concert Hall foyers should address many of these issues and will greatly improve accessibility between levels. This is crucial to the continued use of these venues for their original function, and fundamental to Utzon's vision and the Outstanding Universal Values enshrined in the World Heritage Listing.

Changes affecting the Joan Sutherland Theatre foyers are scheduled for late 2017, while those affecting the Concert Hall are scheduled for future implementation.

with the spaces themselves defined by the strong and precise rhythm of the unpainted radial concrete beamed ceiling and off-form concrete walls, some of which at the mid-level are now partly covered with carpet. Utzon had proposed to line these walls with modular-sized moulded plywood panels.[6]

Policy 8.2 – Foyers surrounding major auditoria
The concept of continuous foyers surrounding the auditoria is significant and must be retained.

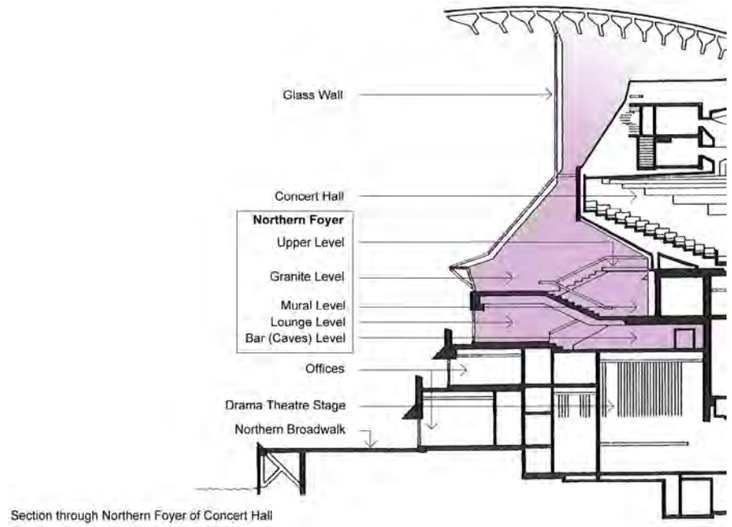
Views within and beyond the foyer spaces must remain open and uninterrupted by added installations or facilities. Views up between the auditoria and the concrete ribs should be improved, and where possible, increased.

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.

Refer also to Section 4.11.2 *Furniture and fittings*, Section 4.15 *Signage*, Section 4.16 *Interpretation* and Section 4.18.9 *Housekeeping*.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Foyers surrounding major auditoria below.



Section through Northern Foyer of Concert Hall

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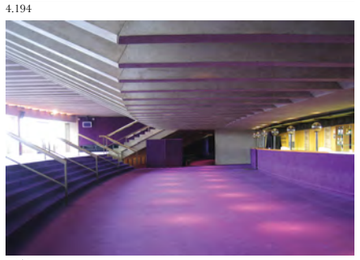

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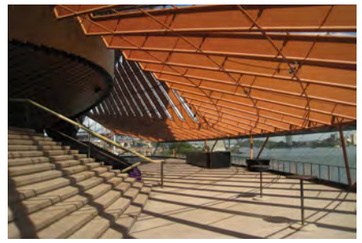

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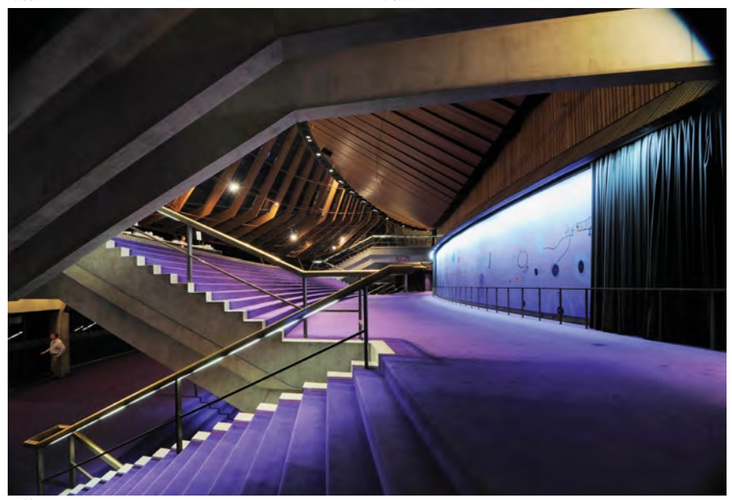

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Tolerance for Change

element: **Foyers surrounding major auditoria** significance ranking **A** Primary circulation, bar and foyer spaces encircling major auditoria with expansive views to surrounding setting, defined and articulated by building structure and auditoria **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	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 *Integrity of structure*.
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 *Glass walls and bronze louvres*.
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 *Opportunities for Change* table.
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.
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.
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.
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 *Opportunities for Change* table for options. Refer to relationship with shells (intrusive)
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.
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 *Artworks and curtains* and *Opportunities for Change* table.
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 *Artworks and curtains* and *Opportunities for Change* table.
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.
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.
Brush box bar and fitout in northern foyers – Hall design	**2**	**2**	**2**	**2**	Function and location more important than fitout.
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.
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 *Lighting Masterplan*. Consider as part of total lighting strategy for foyer.
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.
Black leather lounges in northern foyers (possibly 1973)	**2**	**2**	**2**	**2**	Appropriate location and use of original furniture.
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.
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.
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.
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.
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.
Relationship of carpets to northern foyers, at Mural Level and above	**Intrusive**				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.
Carpet-clad wall additions in northern foyers to provide storage, and carpet cladding to columns	**Intrusive**				Remove carpet and solve acoustic and aesthetic issues by other means. Utzon's original designs used moulded plywood panels.
Relationship of major auditoria carcasses above brush box timber walls to the interior of the roof shells	**Intrusive**				To be improved wherever and whenever the opportunity arises. Visible services should be relocated out of sight in accordance with Policy 8.2.
Bronze guardrails in side foyers in areas of restricted head height (added after 1973)	**Intrusive**				Solve safety issues by other means where possible. If retained, minimal bronze sections are preferred.
Protective curtains over artworks	**Intrusive**				Vulnerable artworks could be relocated to a more appropriate place in accordance with Section 4.12.2. Refer to *Opportunities for Change*.
Technical overlay where not concealed or integrated with structure / fitout, including installations and loose items over 'dolphin' canopies	**Intrusive**				To be integrated with structure / fitout, concealed or removed.
Projection or display of any promotional or other material onto concrete structure anywhere in foyers, or walls of side foyers, other than for interpretation during tours	**Intrusive**				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 *Signage* and 4.16 *Interpretation*.
Debris and fixings remaining from past activities	**Intrusive**				Ongoing housekeeping issue requiring attention to detail.
Chrome and black bar stools throughout foyers	**Intrusive**				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 *Protecting Utzon's masterpiece*.
Collections of merchandising units, program seller stands, tables, etc. parked in corners of foyer spaces	**Intrusive**				Find solution for discreet storage out of sight and rationalise / redesign furniture / fittings. Refer to discussion in Section 4.8.2.

Opportunities for Change

Explore Opportunities – Foyers surrounding major auditoria Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
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.
Redesign of bars and fitout	Redesign possible if it achieves improved functionality and better alignment with *Utzon Design Principles* and CMP. Potential to utilise space between stage back wall and foyer panelling.
Revised furniture	Potential to introduce furniture designed by Utzon for Sydney Opera House.
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.
Level access to Northern Foyer	Potential to utilise or modify original access tunnels buried beneath stairs in side foyers.
Protection for artworks	Explore options for alternatives to curtains - including sliding or folding panels.

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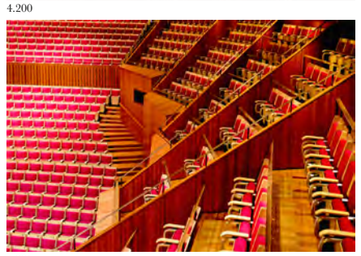

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4.199 *Sydney Symphony Orchestra*
4.200 *Concert Hall ceiling, 2017*
4.201 *Revised flat panels to Concert Hall box fronts, 2014*
4.202 *Concert Hall, 2014*
4.203 *Concert Hall Grand Organ, 2010*
4.204 *Concert Hall, Dead Can Dance, 2013*

4.8.3 Concert Hall

A Exceptional significance

Like the other components - the shells, the glass walls etc. - the layout of the halls is based on a strict geometrical system. The layout consists of a series of radial sections all fanning out from a focal point in the stage area.[8]

The Major hall was to be used for Grand Opera and concerts with an optimistic, light colour scheme.[9]

The dramatic changes that followed Utzon's departure resulted in the major hall becoming a dedicated concert hall, necessitating a complete redesign by Peter Hall. The flooring, stage surround, lower walls and seating boxes are finished in brush box. The facetted ceiling of white birch-veneered plywood with radiating ribs (partly based on Utzon's concepts) is focused on a 'crown' over the orchestra platform, with the grand organ centred below it. This is Hall's most successful interior and it should therefore be treated in accordance with Policy 4.8, with impacts on its significant values avoided. However, this must be balanced against the changing functional and acoustic ideals and requirements for a concert hall of international standing, commensurate with the significance of the building itself.

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. Many concert halls elsewhere have undergone acoustic upgrades in recent years for similar reasons (for example, the David Geffen Hall at the Lincoln Centre in New York, Royal Festival Hall in London, and the Roy Thomson Hall in Toronto). While the function of the Sydney Opera House as a performing arts centre is its raison d'être, its World Heritage Listing provides an extra layer of consideration.

Peter Hall noted that in order to redesign the space, he had first to define and prioritise the uses required of it, the most important being concerts, particularly symphony concerts and organ recitals.[10]

The Concert Hall has 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.

It is the form and material of the moulded plywood ceiling which makes the greatest contribution to the aesthetic significance of Hall's design, and this should not be altered. This is closely followed by the form and material of the brush box elements below it, with continuous rows of upholstered moulded plywood seating, together forming the base of the space.

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

He noted that acoustics required a saw-tooth (or zig-zag) configuration on the seating box fronts, and that these were "of major visual concern".[11] It can be argued, therefore, that this is where some degree of modification could be considered, rather than alteration of the white birch ceiling. Acoustic tests of the Concert Hall were commenced in 2007 by Kirkegaard Associates and following these, recommendations were made to test flat panels instead of saw-tooth on the fronts of the side boxes. The tests were positive and substantially improved the acoustics. As a result, the saw-tooth panels were replaced with flat brush box panels in 2011 and 2012 and the originals documented and put in secure storage.

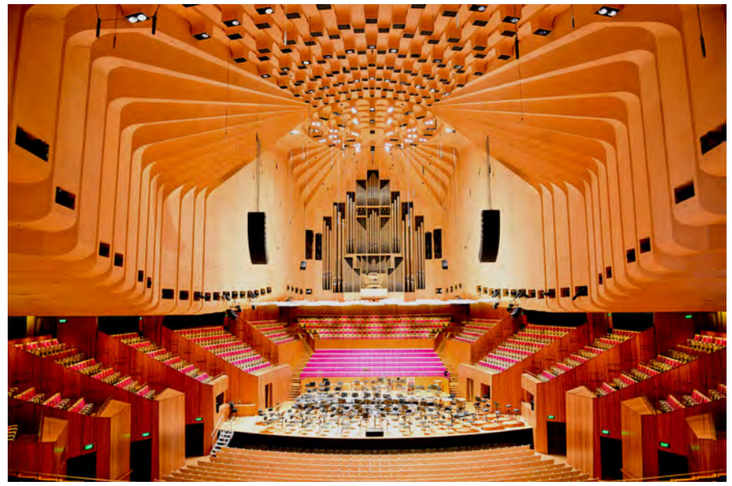
Further acoustic tests carried in 2016 by Muller-BBM suggest these flat panels could be further refined and adjusted.

The original acrylic acoustic 'clouds', installed to provide reflected sound back to the orchestral platform, were considered as part of the 2007 acoustic study and a range of options (including replacement with a different form of reflector) were tested. The 'clouds' have since been infilled with clear polycarbonate dishes to improve their performance. A simple solution with minimal impact, the result has been a slight improvement; however the 2016 Muller-BBM study recommends they be replaced with a different array and form of reflector if substantial improvement is to be achieved.

The concerns expressed by Peter Hall when acoustic reflectors were first proposed apply equally today when considering any changes. That is, they should not visually divide the volume above the orchestra platform (even though the height of this volume is a major factor in the problem), nor should they detract from the visibility of the grand organ as a focal element in the space.[12]

Full size prototypes of a new reflector array were tested in November 2016 and the response from both performers and audience was very positive. The tests included mock-ups of stepped concentric stage risers to improve visibility and acoustics for performers. Further prototypes and testing will be carried out before any new design is implemented.

Testing of minimum options first before considering those with greater impacts is, as stated in Policy 4.3 *Cautious approach to change*, essential in this process.



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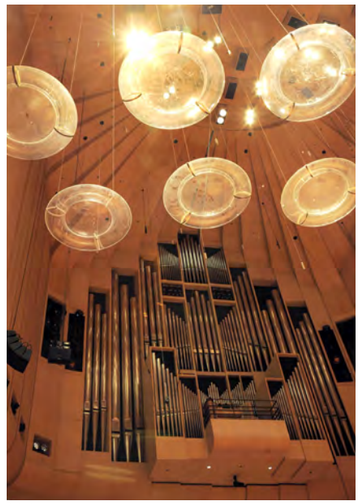
Policy 8.3 – Concert Hall
The character, form and quality of the Peter Hall designed Concert Hall must be retained and its primary use remain as a state-of-the-art orchestral concert and performance venue.

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.*



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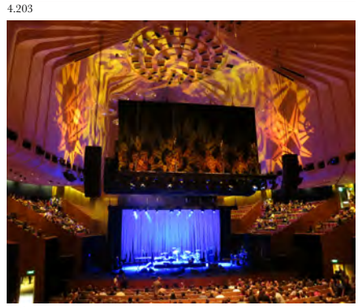

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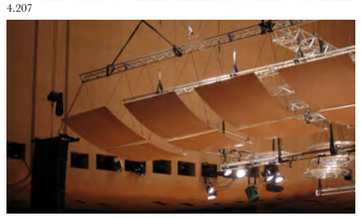

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4.205 *Concert Hall trial of mock up reflector panels, November 2016*
4.206 *Concert Hall, saw-tooth walls fronting platform, 2010*
4.207 *Acoustic trials in Concert Hall, mock-up of flat panels on front of boxes, September 2009*
4.208 *Acoustic trials in Concert Hall, mock-up of acoustic reflector panels at front of stage, September 2009*

When considering any changes to the white birch or brush box components, it must be noted that these timbers are increasingly difficult to source. This is discussed in greater detail in Section 4.18.10 *Lifecycle Planning*.

Each panel in the plywood ceiling was book- and end-matched, requiring veneers to be taken from a single log. The matched veneers commence in the centre crown and extend the full width and depth of the ceiling. A remarkable achievement with implications when considering any works or changes to this ceiling.[13]

Should it be found that the objectives in Policy 8.3 are not attainable, then Policy 4.5 (*Major change*) may be invoked. This would involve a complete architectural as well as acoustic redesign of the hall and loss of Peter Hall's interior with potentially substantial consequences for associated spaces, facilities, services and access systems. Such major change would require comprehensive planning as well as adequate funds and resources to ensure the project is carried through to a successful aesthetic, functional and acoustic conclusion and to 'reinforce or enhance the significance of the place', as stated in Policy 4.5.

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.*

It is interesting to note that in 1990 Hall lamented (in hindsight) the complete removal of the original stage platform elevator mechanisms for this space, arguing that they may have provided an efficient means of introducing large sets.[14] The stage elevator area is now occupied by The Studio, but opportunities to explore this may arise in the future.

The current practice of allowing patrons to take drinks into the auditorium has resulted in additional cleaning and maintenance from accidental spills. While this is essentially a management and housekeeping issue, it increases the potential for damage and premature deterioration of significant components, particularly seating and upholstery. It is recommended this practice be reconsidered and preferably ceased.

Refer also to Section 4.11.2 *Furniture and fittings*, Section 4.18.2 *Maintenance and repair*, Section 4.18.6 *Care of timber floors and wall cladding* and Section 4.18.9 *Housekeeping*.

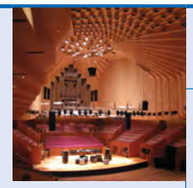
Refer to *Tolerance for Change* and *Opportunities for Change* tables for Concert Hall opposite.

Tolerance for Change

element:
Concert Hall

significance ranking **A**

Major auditorium used as a state-of-the-art concert hall and performance venue



selected components:	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	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.
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.
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.
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.
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.
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.
Technical overlay where concealed or fully integrated with structure / fitout	**2**	**3**	**1**	**3**	Distracting and discordant elements should be avoided.
Existing backstage space	**3**	**3**	**1**	**2**	Efficient function of this space is essential.
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.
Technical overlay including lighting battens, lights, screens and speakers, microphones and counterweights, where **not** integrated with structure / fitout or concealed	**Intrusive**				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.

Opportunities for Change

Explore Opportunities – Concert Hall Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
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.
Functional upgrade	Potential to improve stage functionality and backstage access with additional automation, minor changes to brush box linings and minor level changes.
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.

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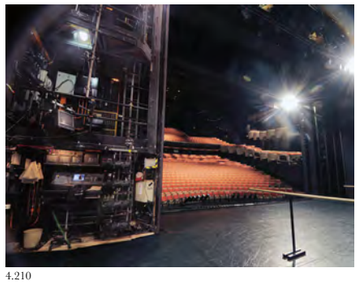
4.209 *The Australian Ballet's* The Nutcracker, *2009*
4.210 *Looking from Joan Sutherland Theatre stage, 2010*
4.211 *Joan Sutherland Theatre (Opera Theatre), 2010*
4.212 *Joan Sutherland Theatre* Curtain of the Sun, *after restoration, 2006*
4.213 *Joan Sutherland Theatre ceiling, 2008*
4.21 *Conductor's view, Joan Sutherland Theatre, 2010*
4.215 *Joan Sutherland Theatre orchestra pit, 2010*



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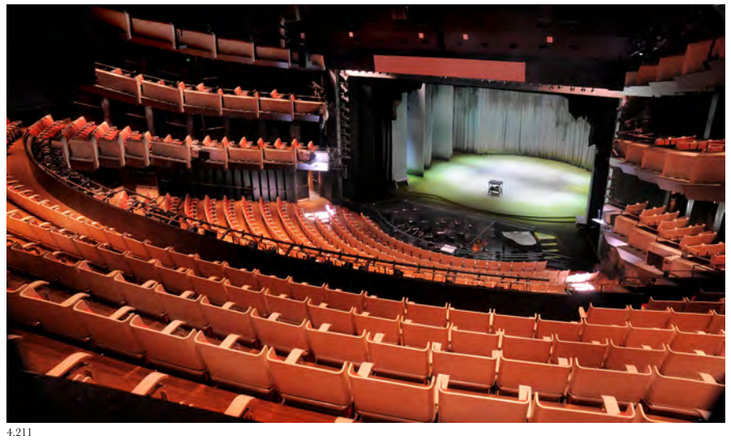

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4.8.4 Joan Sutherland Theatre (Opera Theatre)

C **Moderate significance** (overall)

Function as the second largest auditorium and stage used as a venue for live theatrical performance, including opera and dance is ranked A. Present configuration, form and suitability for this function is ranked C.

The halls will form another world - a make believe atmosphere, which will exclude all outside impressions and allow the patrons to be absorbed into the theatre mood, which the actors and the producers wish to create.[15]

As you enter the Minor or Major hall this explodes into a very rich expression of colours, which uplift you in that festive mood, away from daily life, that you expect when you go to the theatre, a play, an opera or a concert.[16]

Utzon's concept for a rich and festive interior was not realised. With opera removed from the major hall in 1967, this function was relocated to the minor hall, intended by Utzon for dramatic performances only.[17] This resulted in substantial functional and acoustic compromises, leaving management and performers to struggle with the consequences.

Peter Hall tried to find solutions to the problems within the budgets forced upon him. He considered various alternatives but was constrained largely by the inadequate volume in the auditorium for an appropriate acoustic as well as inadequate space for the orchestra pit, which also affected the acoustic. Other problems included the small proscenium, lack of wing space and inadequate sightlines. The configuration of the pit was determined by the stage revolve, already partly built, and the presence of the main tie beam between the bases of the shells.[18] Hall noted, "*Another suggestion, from a highly respected source, was that the whole stage should be lowered to the +30' level* (Green Room level, the same level proposed in the present Renewal Project described in the 2005 *Gold Book*), *overcoming the problems of wing space and access to dressing rooms! Of course, it would have meant rebuilding the whole east side, and the effect on the concept was mind boggling.*" [19]

Hall's white birch veneered plywood seating in this auditorium was based on that in the Concert Hall where, unlike the Opera Theatre, it related closely to the timber finish on the ceiling. The original upholstery was red leather, chosen for acoustic reasons, since replaced with red wool upholstery. As in the Concert Hall, the current practice of allowing patrons to take drinks into the auditorium has resulted in additional cleaning and maintenance, and increases the potential for damage and premature deterioration of significant components, particularly seating and upholstery. It is recommended this practice be reconsidered and preferably ceased. Refer to Section 4.18.9 *Housekeeping*.

The facetted plywood ceiling, finished with yellow carabeen veneer, was originally intended to be dark stained and then clear finished, but it is understood that failure to achieve an acceptable finish forced Hall to order the whole lot to be painted matt black.[20] Hall's "idea was that during the performance the room should disappear." [21] Colour and focus were provided by John Coburn's *Curtain of the Sun* and the red upholstery. With the removal of the Coburn curtain, a major component in Hall's design intent has been lost and, until his interior is removed, the curtain should be re-hung or reinstated in some form, in accordance with Policy 12.2 in Section 4.12.2 *Artworks and curtains*.

Three long clear perspex lighting tubes were originally suspended from the ceiling but these have been removed. Many technical changes have taken place and a surtitle screen added.

This is a Hall space and, in spite of shortcomings, it should be treated in accordance with Policy 4.8, unless and until it is affected by major works, as defined in Policy 4.5.

The issues which Hall tried to address have become increasingly problematic, presenting artistic and work health and safety concerns. Considerable investigation has been carried out to find solutions to these problems, which now threaten the international standing of the Sydney Opera House as a performance venue.

There have been a number of changes made to the Waagner-Biro stage machinery and some of it has been rendered inoperable by the extension of the orchestra pit into the revolve area in the late 1980s. The pit has since been extended further into the stage machinery area but remains inadequate with little possibility of further major change. A major refurbishment and upgrade of above and below stage theatre machinery, as well as access and functional upgrades in the auditorium are planned for 2017 to address these issues.

An often suggested solution is to relocate the Opera Theatre to the major hall, where it was originally planned to co-exist with symphony performances. This would substantially reduce and possibly eliminate the functionality of this major hall as a state-of-the-art concert hall, a facility now much patronised and appreciated by the community. Required changes would include the introduction of a proscenium, dividing the space and thus compromising the acoustic for concert use and substantially reducing audience capacity. It would also involve removing Peter Hall's finest interior

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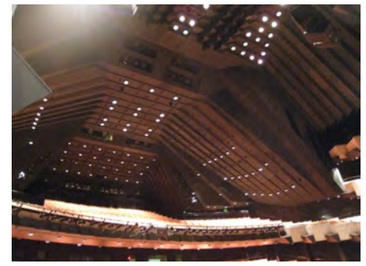
in the building, including the grand organ, as well as The Studio, Playhouse and associated Western Foyer below. Such losses are considered unacceptable.

The continued use of the Joan Sutherland Theatre as the second largest auditorium on the site for performance of live theatre, including opera and dance, is essential to the significance of the Sydney Opera House. If the Opera Theatre function were to be relocated off site, the iconic value of the building as a performance venue (which included opera) would be diminished and its very name would become an anachronism.

A strategic asset management workshop in 2004 to examine the Joan Sutherland Theatre (Opera Theatre) concluded that only a major refurbishment would be able to address the theatre's shortcomings and problems. A concept design for the complete renewal of the auditorium and stage has since been developed by Jørn Utzon and Utzon Architects in collaboration with Johnson Pilton Walker, with details published in a new *Gold Book* in 2005. This project still awaits authority approval and funding. However, the machinery above and below stage level will be addressed in the proposed 2017 works.

The Utzon scheme proposes complete replacement of the auditorium and stage, with the stage lowered to the +30' level. The auditorium, not dissimilar to Utzon's original design, would include two tiers of seating above the stalls with the ceiling comprising an arrangement of stepped radiating bands, each made of a series of convex curves from the centre of a larger proscenium. A hallmark of the interior would be Utzon's 'festive colours', presently proposed as orange, red and gold



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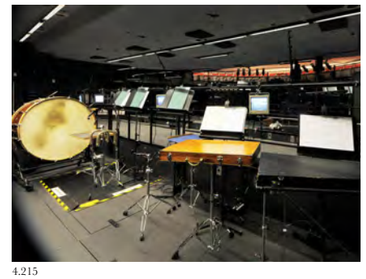

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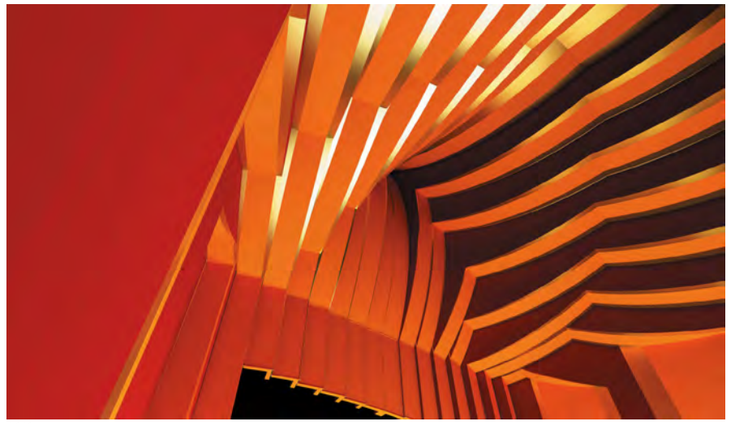

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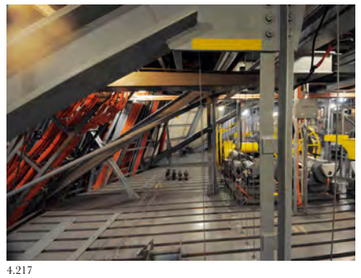
4.216 *Utzon's design for Opera Theatre Renewal from* Gold Book, *2005*
4.217 *Joan Sutherland Theatre, fly grid winches*
4.218 *Joan Sutherland Theatre scene dock looking towards rear stage lifts*
4.219 *Sectional model of major hall, 1964*



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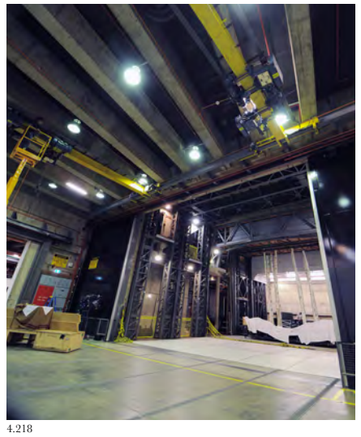

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with green seating. The volume of the hall and area of the stage are both increased, and the orchestra pit wider and shallower, making substantial acoustic improvements possible. Foyers, back-of-house and related facilities are either renewed or refurbished. A major component is the lowered back stage and scenery handling area which would link with the underground delivery dock, recently completed as part of the Vehicle Access and Pedestrian Safety Project.

The design involves major changes to existing spaces (above and below the Podium), but these are mainly confined to areas east of the Central Passage. The Concert Hall and venues below it are retained. The proposal is consistent with Utzon's original design concepts and principles as well as Policy 4.5 of this CMP. It addresses acoustic, sightline, accessibility and functional issues, providing a considerably enhanced visual and aural experience. If implemented, these changes would substantially strengthen the significance of the Sydney Opera House, and retain and improve the ability to perform opera on site.

Therefore in the long term, implementing Utzon's Opera Theatre renewal proposal is preferred to retaining the status quo, and ways to fund it should be explored.

> ***Policy 8.5 – Joan Sutherland Theatre (Opera Theatre)***
> *Until such time as the new Utzon design described in the 2005* Gold Book *can be implemented in accordance with Policy 4.5, any changes to the Joan Sutherland Theatre (Opera Theatre) must be treated in accordance with Policies 4.4 and 4.8.*

Refer also to Section 4.11.2 *Furniture and fittings*, Section 4.12.2 *Artworks and curtains*, Section 4.18.2 *Maintenance and repair*, Section 4.18.6 *Care of timber floors and wall cladding* and Section 4.18.9 *Housekeeping*.

Refer to *Tolerance for Change* and *Opportunities for Change* tables opposite.

Tolerance for Change

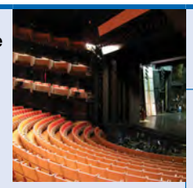
element:
Joan Sutherland Theatre (Opera Theatre)

significance ranking **C**

Second largest auditorium used as a venue for live theatrical performance, including opera and dance

NOTE

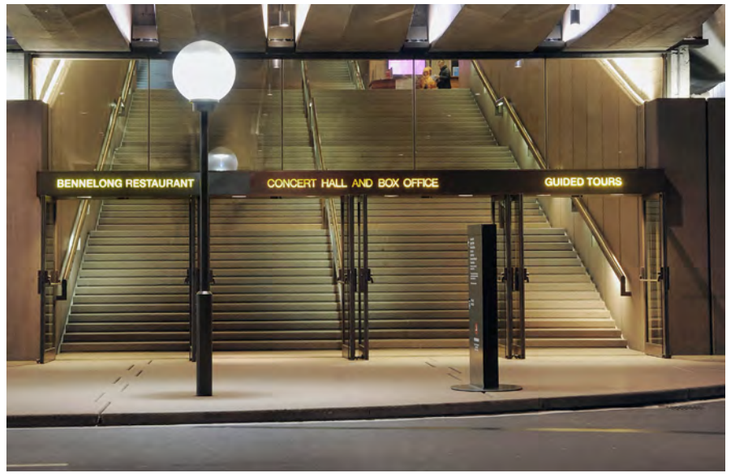
This assessment applies to the existing interior and facilities and acknowledges there is a project for its renewal (*Gold Book 2005*) that remains unfunded.



selected components:	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Form of black painted timber ceiling and walls, and original housings for services	**2**	**2**	**1**	**2**	New elements should respect and not distract from ceiling geometry unless change required for acoustics.
Unpainted precast concrete surfaces of circle balustrade and box fronts	**2**	**2**	**2**	**3**	Unpainted concrete should remain exposed and visible, and as free as possible from technical overlay.
Floors of laminated brush box	**2**	**2**	**1**	**1**	Brush box is important but configuration may be modified.
Seating of white birch moulded plywood and red upholstery	**1**	**2**	**1**	**2**	Important part of identity of Peter Hall space and should be retained.
Bronze fittings, including tapered guardrails, 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 guardrails = 1.
Proscenium configuration (modified since 1973)	**3**	**3**	**1**	**1**	Further modifications to improve function are acceptable.
Coburn's *Curtain of the Sun* (removed and in storage)	**1**	**1**	**1**	**2**	Important original focal 'identity' element and its absence diminishes the space. Ability to hang this curtain in its proper location in this space should be retained. To be rehung, if and when the opportunity arises. Refer to Section 4.12.2 discussion and Policy 12.2.
AV and lighting control room	**2**	**2**	**1**	**1**	Retain original Siemens bulkhead consoles over lighting desk if possible with any upgrade.
Surtitle screen	**3**	**3**	**2**	**3**	Less distracting and intrusive options should be explored.
Technical overlay in auditorium including follow spots, conductor's monitors, sound systems etc.	**2**	**3**	**1**	**3**	Distractions and discordant elements should be avoided.
Waagner-Biro designed and installed stage machinery including revolve and elevator platforms (revolve and 2 elevators decommissioned)	**2**	**2**	**1**	**2**	Historically and technically important but function is more important. Major replacement may be required to address safety and functional issues. Refer to Section 4.13.2.
Non-original stage machinery and technical overlay	**3**	**3**	**2**	**3**	May be altered / changed as required.
Stage, backstage and storage space	**3**	**3**	**1**	**2**	Efficient function is critical.
Orchestra pit	**3**	**3**	**1**	**3**	Efficient function is critical.

Opportunities for Change

Explore Opportunities – Joan Sutherland Theatre (Opera Theatre) Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Modest acoustic and functional upgrade of existing Hall interior, including orchestra pit	Consider options to address issues while retaining Hall interior in accordance with this CMP.
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.
Major stage machinery upgrade	This is planned for late 2017. Essential that these works do not complicate or prevent major change (2005 *Gold Book*) in the future.
Major change	To implement and execute Utzon design for this theatre, as described in 2005 *Gold Book*.



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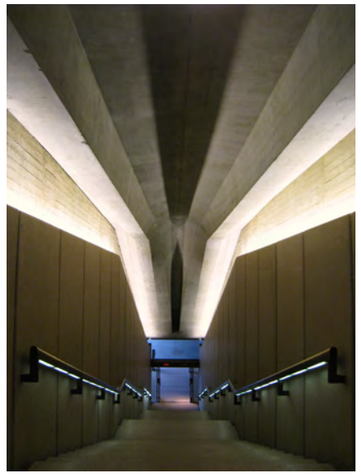

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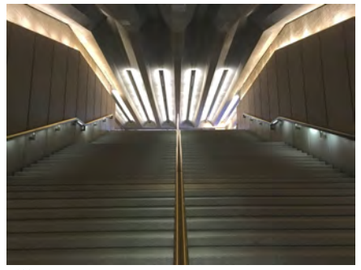

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4.220 *Central stair entry from Covered Concourse, 2010*
4.221 *Eastern stairs, looking down to Covered Concourse, 2011*
4.222 *Concert Hall stairs, looking up towards Box Office Foyer, 2017*
4.223 *Concert Hall stairs, looking down towards Covered Concourse, 2014*
4.224 *Joan Sutherland Theatre stair, looking down towards Covered Concourse, 2017*
4.225 *Passage from Covered Concourse to Western Foyers and Bennelong lift, 2009*
4.226 *Bennelong lift, 2009*

4.9 CONSERVING THE INTERIOR: 'FRONT-OF-HOUSE' SPACES *WITHIN* PODIUM

4.9.1 Stairs and lift from Covered Concourse

A Exceptional significance

***The stair cases lead to the cloak room level which is paved also in precast concrete elements, white textured plaster and the ceiling a continuation of the same folded beams.*[1]**

These internal stairs and the recently completed Bennelong Lift provide a direct connection between the Covered (Vehicle) Concourse and the Box Office Foyer, and rise beneath the powerful forms of the unpainted cranked and folded concrete beams mentioned by Utzon in 1965 in the quote above. The lift has been designed without a ceiling to enhance visibility of these beams. The spaces retain the strength and grand simplicity intended by Utzon for this important component in the arrival experience, and continue the language and materials of the outside spaces. The visual power of each space is enhanced by the indirect uplighting of the beams and the absence of superfluous signage – no more than what is required for directions and public safety.

Recent changes to lighting in the Box Office have considerably improved the visual quality of that space, but the stairs are now darker by comparison. The lighting around the lower entry points and on the stairs themselves requires improvement if these spaces are to retain their important role in the arrival sequence. They should not be so bright as to be out of balance with their adjoining spaces, but they should invite entry and be safe to use.

The stairs are presently lit by reflected light from the ceiling beams and the strip lighting in the bronze handrails. The latter is now considered inadequate and could be upgraded as part of a reappraisal and redesign of the lighting and the handrails themselves. Refer to Section 4.14.3 *Lighting of interior spaces* and Section 4.7.9 *Bronze Railings*.

There were originally four flights of stairs, all leading to the Box Office Foyer level, close to the entry to each of the main auditoria or function spaces. With completion of the Bennelong Lift and a level entry passage from the Covered Concourse to the Western Foyers (in the space previously occupied by the Bennelong Restaurant stair), there are now only three. The narrowest of these (for the Utzon Room) could, if required, be modified to accommodate escalators (possibly a pair of them), providing a powerful 'ascent' experience and retaining the simplicity of the original space. This is now proposed as part of an accessibility upgrade across front-of-house spaces. This is discussed in more detail in Section 4.17 *Accessibility*.

The two main stairs should remain as powerfully simple and grand spaces with stairs only. Utzon, then Hall, as well as Arup, strongly resisted suggestions during construction to place escalators in the main central stair. Arup commented that such a proposal "*would in our opinion be an act of vandalism.*"[2]

As hybrid Utzon / Hall spaces, they should be treated in accordance with Policy 4.7.

Refer to *Tolerance for Change* and *Opportunities for Change* tables opposite.

Tolerance for Change

element: **Stairs and lift from Covered Concourse** significance ranking **A** Stairways and Bennelong Lift as primary undercover access connecting Covered Concourse to Box Office **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Folded unpainted concrete beams dominating space	**1**	**1**	**1**	**1**	Defining character of the spaces and must remain exposed.
Uncluttered linear stair ascents flanked by precast granite walling, free of display material	**1**	**1**	**1**	**1**	Retain relationship to 'outside' palette of materials. Absence of display material is essential.
Concealed lighting of spaces intended to illuminate and emphasise beams	**2**	**2**	**1**	**2**	Lighting at lower entry and on stairs could be improved, but should remain concealed.
Bronze handrail system with concealed strip lighting	**2**	**1**	**1**	**1**	To be considered as part of overall approach to handrails across site – refer to Policy 7.19 *Bronze railing system*. Safe lighting of stairs is essential.
Exposed off-form concrete walls to Bennelong Lift shaft	**2**	**2**	**2**	**2**	Shaft is a combination of original and new fabric based on the original. Any alteration should adopt the same principle.
Bennelong Lift car with bronze trim	**2**	**3**	**1**	**2**	Lift car and doors could be made more transparent if opportunity arises and codes allow.

Opportunities for Change

Explore opportunities – Stairs and Lift from Covered Concourse Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Lighting upgrade	Improve lighting levels but retain indirect / concealed character.
Escalators in Utzon Room stair	Install pair of escalators in existing Utzon Room stair, retaining original character, materials and finishes. Escalators should closely match details, materials and finishes of those to Southern Foyers (2009).

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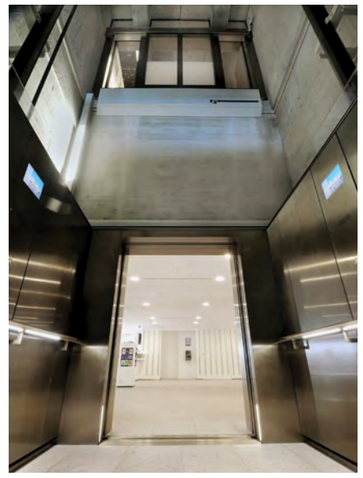

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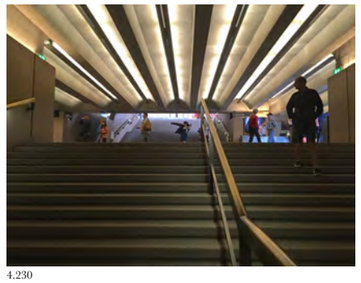

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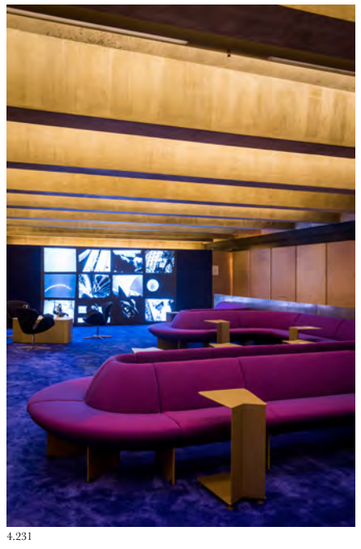

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4.9.2 Box Office Foyer

A Exceptional significance

From the cloak room level, further stairs lead up to the Major and Minor Halls; to a western direction access to the Restaurant for 250 people; to the east the Chamber Music Hall for 310 people. Also from this level there is access for the performers. Unlike the normal theatre, where one literally goes to the back door for social intercourse, the patrons and performers can mingle together in the cloak room area.[3]

The Box Office Foyer, described by Utzon in 1965 in the above quote, is the first major internal arrival space experienced by visitors. It houses the main box office, cloaking areas and public lavatories, a café and a shop for Opera House related merchandise. It is the main information and orientation point for the building and provides the principal access to the southern foyers of the main auditoria, the Utzon Room and Bennelong Restaurant. As such, it is a hub of traffic to and from various venues, facilities and performances and should allow adequate space for patrons and visitors to enjoy the sense of arrival and excited anticipation of what is to follow. It should be lively, comfortable and engaging. Utzon intended this space to be a compressed 'cave-like' space, dominated by the unpainted folded concrete beams, raw structure and finishes of the Podium, where patrons and performers could mingle. It should be noted that it is close to, and on the same level as, the Green Room.

Views out of the Box Office Foyer are only via paths of arrival or departure, dramatically emphasised to the north by framed glimpses of the soaring, more brightly lit Southern Foyer spaces beyond the stairs. The recent alterations to incorporate a lift from the concourse levels and escalators to the southern foyers have been designed to retain and respect these qualities.

Utzon's 1956 competition drawings show a 'snack bar' at the east end overlooking the harbour with kitchen and services at the west end. His 1959 drawings indicate a more enclosed foyer and show both the restaurant kitchen and the Chamber Music Hall (now Utzon Room) in their present locations. His more recent proposal in the 2001 *Strategic Building Plan* indicates the possible opening up of the west end to these views, but this would involve removal of the Bennelong kitchen.[4]

The finish on the unpainted concrete beams had, until recently, lost its original sheen, due in large part to the effect of cigarette smoking, now banned in all public buildings. The beams have now been cleaned, making the concrete more reflective and assisting lighting levels. Utzon intended this lighting to be more subdued than that in the adjacent southern foyer spaces, in order to dramatise the approach sequence. Refer to Section 4.14.3 *Lighting of interior spaces*. They should be maintained in accordance with Section 4.18.3 *Treatment of unpainted and precast off-form concrete*.

An essentially Utzon space fitted out by Hall, the Box Office Foyer is a hybrid space, and should be treated in accordance with Policy 4.7 *Approach to change – hybrid Utzon / Hall spaces*. Therefore, the cloaking and box

office fitouts, especially the Hall work, could (if required) be replaced with new work in accordance with this policy.

Utzon had clear ideas, including details, on how the cloaking and lavatory facilities should sit within the space. These have been interpreted by Peter Hall in his fitout, and more recently by Richard Johnson in his work on the front-of-house lavatories. Refer to Section 4.9.9 *Front-of-house lavatories*.

The Box Office Foyer is presently fragmented by additional facilities and inappropriately placed furniture and signage. Until recently, these included Bistro Mozart and the tourism office opposite. The shop at the east end of the foyer remains. These restrict free circulation in the space and obscure its architectural unity and clarity, reducing much of it to a network of sometimes conflicting traffic corridors.

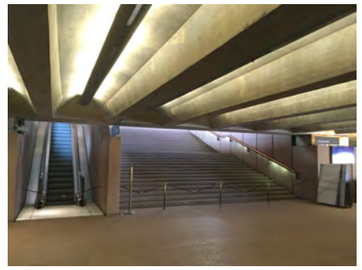
Lighting levels within this space have been greatly improved with the recent installation of services / lighting 'beams' between the concrete beams. Completed in 2015, these units contain adjustable up and down lighting, sprinklers and other services, and could be used as a model for other areas with similar structure. The original blue and white box signs on the ceiling were removed in 2015 for this upgrade.

As part of a suite of renewal projects, the Box Office Foyer is to be extended north and substantially refitted. The work is likely to be staged to coincide with theatre closures and maintain operational ability.

> ***Policy 9.1 – Box Office Foyer***
> *All activities in the Box Office Foyer must be focused on the core functions and significance of the space, and distractions and obstructions minimised. Any changes to configuration, fitout, signage or lighting must support these principles and qualities.*
>
> *The original spatial quality of this foyer must be retained or recovered in any improvement of facilities or access, and its Utzon identity strengthened.*
>
> *The Box Office Foyer must retain its characteristics and finishes that relate to 'outside' spaces, e.g. granite, concrete and bronze, and be predominantly fitted out with a 'natural' range of materials consistent with Utzon's Design Principles.*

Refer also to Section 4.11.2 *Furniture and Fittings*, Section 4.14.3 *Lighting of interior spaces*, and Section 4.15 *Signage*.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Box Office Foyer below.



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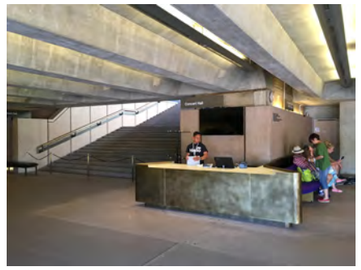

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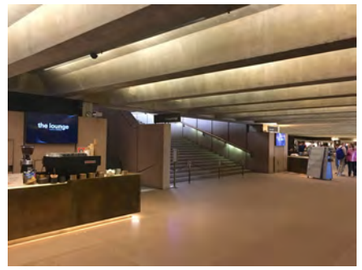

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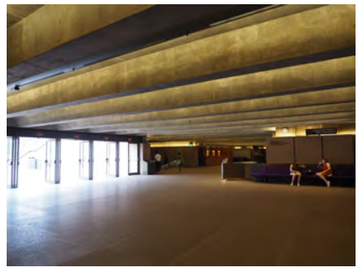

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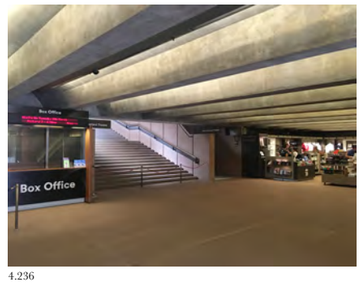

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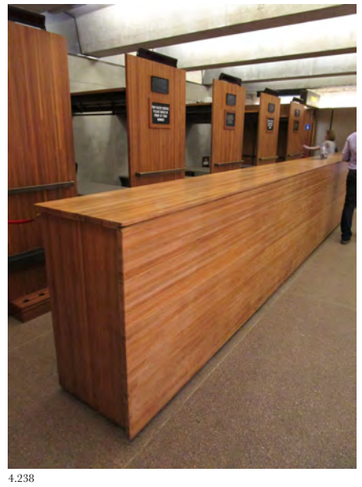

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4.227 *Box Office, 2017*
4.228 *Glimpse of Concert Hall Southern Foyer from stairs, 2010*
4.229 *Box Office Foyer entry from Podium, 2017*
4.230 *Concert Hall stairs from Covered Concourse, 2017*
4.231 *'The Lounge', temporary installation, 2016*
4.232 *Looking north towards Concert Hall stairs and escalator, 2017*
4.233 *Box Office Foyer information desk, 2017*
4.234 *Looking from lounge towards Concert Hall stairs, 2017*
4.235 *Looking west, with doors to Podium at left, 2017*
4.236 *Looking north-east towards Joan Sutherland Theatre stair and shop, 2017*
4.237 *Looking towards Joan Sutherland Theatre cloaking, 2017*
4.238 *Joan Sutherland Theatre cloaking counter, 2016*
4.239 *Bistro Mozart, 2014*

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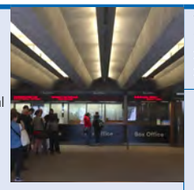
Tolerance for Change

element: **Box Office Foyer**  significance ranking **A** Principal foyer and point of arrival and orientation, housing box office, information, cloaking and associated facilities **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Unpainted concrete beams dominating space	1	1	1	1	No facility or fitout should obscure these beams. Lighting configuration and levels should enhance their form and presence.
Low east-west rectilinear space with precast granite paving and wall cladding	1	1	1	1	Spatial qualities should be enhanced and materials retained. The dominance of these materials should be respected in any changes.
Lower general light levels in relation to Southern Foyers to emphasise containment of space	3	3	1	3	Existing lighting system and character to be retained but could be upgraded if required. Lighting levels may be adjusted but should retain differentiation with adjacent spaces, in accordance with *Lighting Masterplan.*
2015 lighting between ceiling beams	2	2	1	1	Neat, elegant and adjustable solution, but could be modified or replaced with improved technology if the need arises.
Box office sales counter	2	2	1	2	Important to retain function in this space. If reconfigured or relocated within space, careful consideration required of access and technology, visibility, travel paths, materials and design.
Lettering commemorating opening by Her Majesty Queen Elizabeth II (1973)	1	1	1	1	Should be retained and appropriately lit in present form and location, and not obscured.
Electronic and poster display panels	3	3	1	3	Display function in this space is important but location and design details need careful consideration.
Cloak area fitout	2	2	1	2	Important function. Removed west-end fitout could be reinstated if required. Alternatively, whole cloaking fitout could be redesigned in accordance with Policy 4.7.
Public lavatories – fitout 2003	2	2	1	2	Fitout enhances visibility and continuity of concrete beams. Minor refinement or upgrade possible – refer to Policy 9.10.
Information desk – 2016	3	3	1	2	Important function and location is appropriate, but could be relocated elsewhere if required – should be elegant and non-intrusive design with integrated minimum signage.
Program seller's booth (mobile)	3	3	2	3	Simple, removable, elegant and non-intrusive design that does not clutter space is required.
Accessible lift with bronze trim to Utzon Room level (Lift 17)	2	2	1	2	Function essential but requires generous access and foyer space for efficient circulation.
Platform lift to Utzon Room level	2	3	1	2	Function is essential. Minimal visual presence, bronze material and elegant design most important.
Temporary lounge (2016) at west end of foyer	3	3	1	2	Lounge prototype being tested prior to major refit of space.
Partitioned-off section for Opera House shop	**Intrusive**				Function should be relocated, possibly within this foyer area and fitout redesigned to minimise visual and functional impact.
Large graphic signage applied to Box Office and other fitout	**Intrusive**				Applied graphics and signage are 'loud' and inappropriate. Address signage / wayfinding in a better designed and more appropriately scaled manner.
Queue bollards, barrier tapes, display stands, etc.	**Intrusive**				These potentially clutter and obstruct the space. Remove completely and address by better designed, less intrusive means.

Opportunities for Change

Explore opportunities – Box Office Foyer Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Revised fitout within foyer	Potential to redesign fitout and furniture to improve functionality and patron comfort, and better align with *Utzon Design Principles* and CMP. Redesign should include front-of-house access to lifts for patrons. Consider opportunity to introduce Utzon-designed furniture.
Revised configuration	Should foyer be extended into other areas (an extension to the north for a lounge area is presently proposed), finishes and fitout in these areas should, where possible, be consistent with existing foyer and not detract from or weaken its character.

4.9.3 Utzon Room

A Exceptional significance

It is possible to reinforce the experience of a building on the basis of sculptural or visual decoration making clear and describing the function of the building. I have thus attempted to express the function of the edifice as a building for the world of music by translating a piece of music into a visual experience expressed in a tapestry.[5]

Formerly the Reception Hall, this room, was completely refurbished and re-opened in 2004 to the design, and under the guidance of Jørn Utzon (following his re-engagement), and is the first authentic Utzon interior to be completed in the building. It should be treated in accordance with Policy 4.6, and Policy 9.2 below. Designated in Utzon's 1959 documents as a Chamber Music Hall, this public space accommodates a wide variety of functions including receptions, catered functions, recitals, lectures and special uses. It had previously been fitted out by Peter Hall with the 'wobbly' panel system on the walls and emerald green carpet on the floor.

The space is dominated by the unpainted, folded and cranked concrete beams, now cleaned and treated, rising from the floor at the south end and spanning the length of the space, as described by Utzon in 1965.[6] These beams identify this space as being within the Podium and orientate the visitor as to its location. This is strengthened by the deliberate expression in the timber floor pattern of the beam alignments above.

The other major element in the space is the large tapestry, entitled *Homage to C.P.E. Bach*, on the west wall. This tapestry, designed by Utzon for this space as part of its refurbishment, was woven in 2004. His words above describe its conceptual framework and his original maquette for the work remains with the family in Denmark. The original installation was accompanied by a recording of the *Hamburg Symphony* that could be activated by a bronze button to the south of the tapestry near the entry. This aided interpretation but is now inactive.

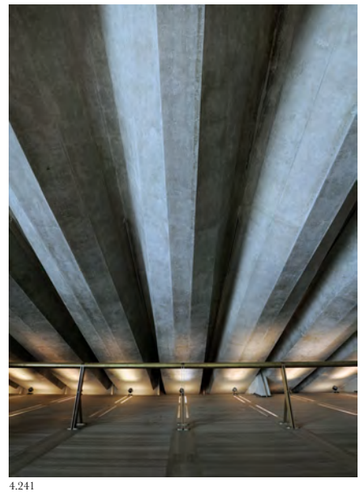
In a letter to the Sydney Opera House Trust in January 2006, Jørn Utzon remarked on the inappropriateness of a plastic screen which had been placed in front of the tapestry to protect it during a 'Babies Proms' event. He made the following suggestions:

4.240

The Tapestry is meant to be seen and experienced as part of the room.
For the people who cannot keep their fingers from the fabric, I propose that a small section, say one square metre, of the tapestry (woven by the same people) could be hung on the wall, to the right of the entrance. In this way people can feel the texture of the material, without compromising the large tapestry.

The multifunctional use of this room, especially the baby-prom events, can cause concern regarding the proximity of the tapestry.
When an event that requires a protective curtain in front of the tapestry, must take place in the Utzon Room, please be sure that the curtain is removed as soon as this event has ended.
I'd prefer that such events were held elsewhere.

I should also like to suggest that a person is, or persons are, charged with the maintenance of this particular space, ie, taking care of the space as if it were their own living room. Such a personal responsibility often results in a very meticulous and conscientious maintenance of the entire space.[7]



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4.240 *Utzon Room, 2006*
4.241 *Podium beams at south end of Utzon Room, 2010*

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4.242 *Utzon Room, set-up for lecture, 2012*
4.243 *Utzon Room, detail, 2011*
4.244 *Utzon Room, during a lecture, 2017*
4.245 *Utzon Room, floor detail, 2011*

While different layouts are possible, dependent on function and time of day, Figure 4.240 shows an arrangement of furniture in which the audience is facing the window. This places the audience close to the tapestry but it was Utzon's intent that it also play an acoustic role in any performance and should thus be behind the audience. This acoustic role is further enhanced by a deep cavity behind the tapestry to form an acoustic absorption chamber.

All fittings, finishes and furnishings, including the lighting but excluding the entry door and window joinery (part of Hall's completion), and the added guard rail to the tapestry, were either designed or chosen by Utzon.

The joinery unit forming the north wall has been cleverly designed to house a projection screen and support facilities for functions, and aligns with the configuration of the timber floor layout. Recently added but poorly executed shorter side panels to screen additional facilities have substantially detracted from the elegance and simplicity of this joinery unit. These added panels are removable but are in place when required by caterers for functions. They should be either removed or rebuilt in a more appropriate manner. All food preparation should take place elsewhere.

All timber elements are made from Tasmanian blue gum, and finished with a traditional Scandinavian soap and kaolin wash finish. This material and any new timber elements in the space should be finished and maintained in the same manner in accordance with Policy 18.14 *Soapy wash finish in Utzon Room.*

The large window facing east retains its original (Hall) full-height sliding bronze framed sashes, but these have been supplemented at a later stage with an additional frameless glass sheet, providing a now fixed double glazing.

This additional glass is held in place by silicon and, while largely invisible, its fixing methods detract from the original work. If these doors were made operable, a balustrade would be required. Interestingly, Utzon described this window in 1965 as requiring triple glazing for acoustics.[8] Refer to Section 4.7.4 *Podium* and Policy 7.12. Shading is achieved by retractable roller blinds concealed in the window head assembly.

As part of the 2004 refurbishment, a wheelchair platform lift was installed outside the entry, between the Box Office Foyer and Utzon Room levels, as well as a service lift to access catering facilities on the level below.

Policy 9.2 – Utzon Room
The Utzon Room is the first authentic Jørn Utzon interior in the Sydney Opera House. All elements designed by him must remain in situ and unaltered unless repair is required for their continued survival and / or use.

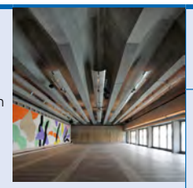
All repairs must retain and respect the original material, design and finishes.

Any elements which require servicing, upgrading or replacement in the future must retain and respect the design intent, configuration and finishes established by Utzon.

Refer also to Section 4.7.4 *Podium*, Section 4.11 *Doors, furniture & fittings*, Section 4.12.2 *Artworks and curtains*, Section 4.18.6 *Care of timber floors and wall cladding*, and Section 4.20 *Managing the processes of change.*

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Utzon Room opposite.

Tolerance for Change

element: **Utzon Room** significance ranking **A** Public space used as a reception room. The first authentic Jørn Utzon interior, designed by him following his re-engagement **selected components:** 	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Uncluttered, undivided public space with expansive eastern view, used as a reception room (such as for catered functions, recitals, lectures and special uses)	**1**	**1**	**2**	**1**	Use as a public space is essential. Function is flexible as long as it does not require reconfiguration or alteration to the space, its finishes or fittings.
Simplicity and honesty of materials, finishes and fittings	**1**	**1**	**1**	**1**	This is an important part of Utzon's rationale for their selection.
Unpainted concrete beams dominating the space	**1**	**1**	**1**	**1**	Beams should remain exposed for full extent.
Tasmanian Blue Gum parquetry floor, finished with natural products	**1**	**1**	**1**	**1**	Floor should be maintained and managed to retain existing natural finish in accordance with Policy 18.14.
Articulated joinery wall unit housing services, designed to match and align with floor, with same finish as floor	**1**	**1**	**2**	**1**	Use and configuration of service components could be altered but front face of wall unit to be retained in existing configuration.
Utzon designed tapestry, *Homage to C.P.E. Bach*, 2004	**1**	**1**	**1**	**1**	Signature feature of this space. Requires careful maintenance and cleaning regime, and a small interpretation panel. Consider reinstating the audio recording of *Hamburg Symphony* to assist interpretation. Bronze activation button still in place.
Indirect lighting units between beams	**2**	**2**	**1**	**2**	Fittings providing the illumination may be altered or replaced in accordance with Policy 14.6.
Incandescent lighting above windows	**1**	**2**	**1**	**1**	Retention of design and configuration of lighting is essential. Change of globe type may be required in the future, but spherical globe shape, light quality and colour temperature should be retained.
Bronze rail at south end of space	**1**	**1**	**2**	**2**	Purpose of rail is to restrict access due to head height. Form, material, scale and simplicity are most important. Bronze rail profile should not be changed.
Bronze framed doors and windows, including threshold plates	**2**	**1**	**2**	**2**	Any changes should be consistent with others across the site. Transparency, elegance, simplicity and use of bronze are essential.
'Trinidad' stackable chairs designed by Nanna Ditzel	**2**	**2**	**1**	**2**	Utzon selected this design and it is therefore important, but if it becomes unavailable, Utzon principles should be applied to the selection of an alternative in accordance with Policy 11.6.
Guard rail to protect tapestry	**Intrusive**				More elegant and minimal solution required. Should be removable. Consider Utzon's suggestion of additional tapestry panel for visitors to touch. Refer to discussion.
Technical overlay, including speakers and projector, where not integrated with structure / fitout or concealed	**Intrusive**				All conduits, cables, equipment, etc. to be concealed or aligned so as to not disfigure or detract from the space or significant elements. Speakers and projector should be elegant, minimal and removed when not in use. Management and housekeeping are important to make sure it is tidy.
Secondary glazing externally with silicon joints	**Intrusive**				Glazing should be integrated with original bronze-framed elements.
Added shorter timber side screens to articulated wall unit	**Intrusive**				Review functional needs and layout of support area to minimise space required and avoid screens.
Untidy and inappropriate use of space behind timber screen, especially during functions.	**Intrusive**				Added screens have provided 'cover' for inefficient and untidy use of service / support space. No food preparation should take place in this area. Better management of space by catering and other staff required.

Opportunities for Change

Explore opportunities – Utzon Room	**Comment**
Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Minor adjustments only	Intrusive items listed in TfC table should be addressed, and venue maintained and managed in accordance with Utzon's suggestion and Section 4.18 *Care of the fabric and housekeeping.*

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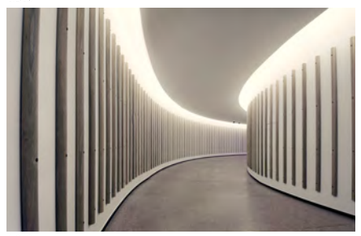

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4.9.4 Western Foyers

A Exceptional significance

In 1973, both the Drama Theatre and the Playhouse had separate foyers. Between them was a Rehearsal and Recording Studio with no foyer. The long-term plan to create a unified foyer space and undercover access from the Covered Concourse began with the creation of The Studio in 1999, in the former Recording Studio space, with its own foyer linked to that of the Playhouse. This had been made possible with the relocation of a plant room to the level below. Prior to this work, the foyers to the Playhouse and Drama Theatre were finished with Hall's 'wobbly' regime of moulded plywood ceiling panels, white painted off-form concrete walls and carpeted floors. The creation of The Studio introduced new, temporary and deliberately discordant elements to its foyer with a black 'egg-crate' ceiling, and a new rust coloured carpet, extended to all of the Western Foyers. All these elements were removed in the recent refurbishment.

A major renovation of the Western Foyer area was completed in late 2009 to Jørn Utzon's design, in collaboration with his son Jan and Johnson Pilton Walker. This work commenced with the insertion of large splayed openings in the Podium wall, sheltered externally by an open colonnade; providing better links between the foyer and the harbour setting, and allowing late afternoon sun to create its own performance in the space.

The geometry of the combined irregular foyer space has been formalised with the introduction of a row of precast concrete columns defining a linear foyer with a high ceiling connecting all three venues, and via a dramatic passage to the Covered Concourse at its southern end. East of these columns are the bars, ticketing and cloaking facilities, concealing the irregularity of the walls to the auditoria. This space has a lowered plasterboard ceiling / bulkhead to conceal services, but also emphasise the more regular formal space with its higher ceiling adjacent. Utzon's intent was that no bar or other facility should intrude into this higher foyer space.[9]

The large concrete piers which support the roof shell structure have been stripped of paint and remain freestanding in the space. This assists in interpreting their structural role and provides a spatial orientation with the levels above.

With such major changes to the space, the architects opted for a revised design palette, one which is consistent with the *Utzon Design Principles* and accords with Policy 4.5 regarding major change, rather than choosing to reinforce the Hall regime which existed in the individual foyers. The new work can be linked back to Utzon's original ideas but also responds to Hall, and should therefore sit comfortably with both.

Utzon's idea of creating larger, beautifully designed units out of prefabricated components is evident in the repeated ceiling panel units, the timber battening on the walls and the articulation and rhythm of the space itself within the confines of the original structure The ceiling panel system, designed by Utzon, refers in an abstract manner to the 'wobbly' regime established by Hall.[10] The floor finish of prefabricated glass reinforced concrete, pink granite paving units with a honed finish reinforces the connection with the broadwalk outside and allows each of the auditoria to retain its signature coloured carpets. These signature colours are an important part of the Hall regime for the whole building and should be retained.

The bulkhead and ceiling of set plasterboard in the lowered section over the cloaking and service areas of the Western Foyer are the only such ceilings in public areas of the Opera House and a rare departure from both Utzon's original ideas and Hall's work. In all other public areas, and almost all of the back-of-house, concealment of services in ceilings is achieved by the use of easily removed prefabricated panels, mostly of moulded plywood. Such departures should not be extended into other front-of-house or significant back-of-house spaces.

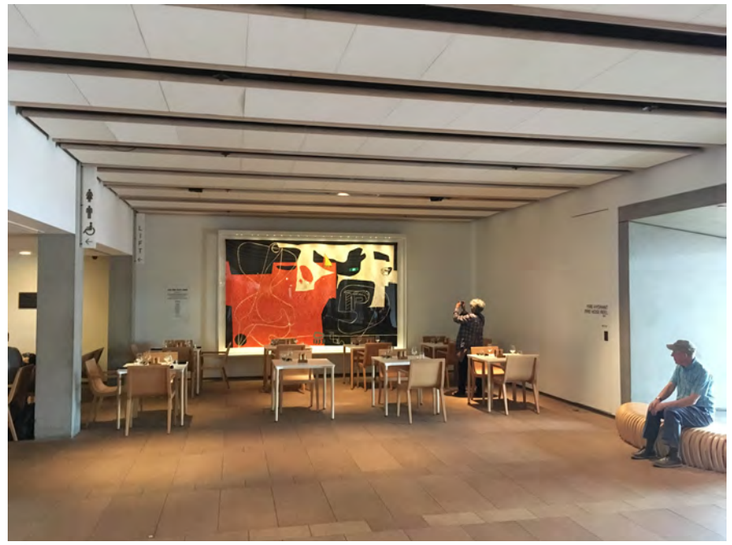
The only signage on the western face of the bulkhead is the name of each venue at its entry point. On signage, Utzon was very clear:

> ***… no signage or displays should be placed on the western face of the bulkhead.***
>
> ***All necessary signs, including electronic displays, should be placed, up high, on the eastern wall of the Western Foyer, behind the row of concrete columns.***
>
> ***The beauty of the main space of the new Western Foyer rests on the fact that it is kept clear of permanent obtrusive elements.***[11]

Contemporary timber furniture is now placed in the foyer space, but there is an increasing array of temporary event and sponsorship signage which clutters the space. These should be avoided.

Level access is gained via the Bennelong Lift to the Box Office Foyer and Lower Concourse, the latter connected by a dramatically curved underground passage finished in a similar manner to the Western Foyers. New lavatory facilities have been constructed in the former exhibition space, south of the Playhouse.

The architectural and material language of the Western Foyers is internally consistent, simple and natural. Aspects of the work which may require further consideration or refinement in the future include signage (to ensure it is consistent with other elements across the site as well as Utzon's intent), and the doors to each auditorium (to ensure their language relates to others within the Podium).



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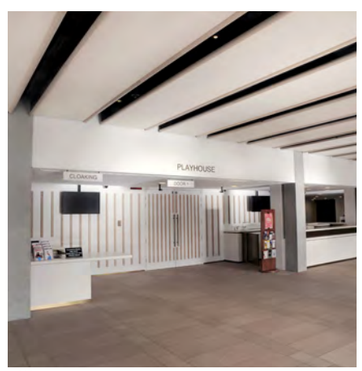
> ***Policy 9.3 – Western Foyers***
> *All activities in the Western Foyers must be focused on the core functions of the space and its visually open relationship to the Western Broadwalk. Distractions and obstructions in the area defined by the raised ceiling, particularly in front of the deeply recessed windows, must be minimised.*
>
> *Objects associated with activation of the foyers must be carefully designed and placed, and in place for a minimum duration in accordance with Policy 15.3* Promotion and merchandising.



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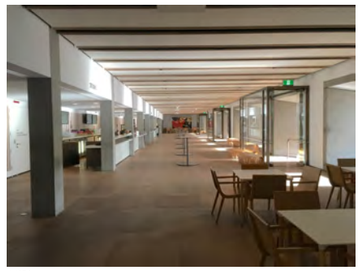

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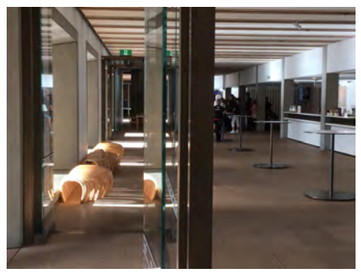

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4.246 *Western Foyers, looking north, 2009*
4.247 *Western Foyers externally, 2009*
4.248 *Visual connection with setting, 2009*
4.249 *Curved passage to Bennelong Lift at Lower Concourse level, 2009*
4.250 *Western Foyer south end, with Le Corbusier tapestry, 2017*
4.251 *Western Foyers, looking south, 2017*
4.252 *Western Foyers, entry doors from Western Broadwalk, 2017*
4.253 *Western Foyer, Playhouse entry, 2009*

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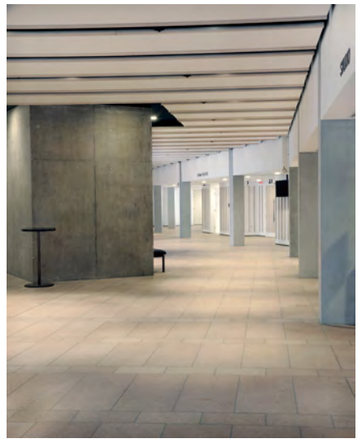

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4.254 *Western Foyers, openings in western wall, 2009*
4.255 *Western Foyers, openings in western wall, 2017*
4.256 *Western Foyers towards north end, 2009*
4.257 *Western Foyer outside Drama Theatre, showing stepped arrangement of prefabricated ceiling panels, 2009*
Western Foyer, north end with interpretation of Coburn's Curtain of the Moon, *2017*

Policy 9.4 – Western Foyers design regime
The Western Foyers must retain the configuration, design regime and palette of materials introduced by Utzon Architects and Johnson Pilton Walker in the 2008-2009 refurbishment. Any changes or fine-tuning of the space or its fittings must retain and respect that regime, as well as the design regime of adjacent spaces.

All work must also be carried out in accordance with Policies 4.4 Minor change *and 4.6* Approach to change - Utzon elements.

In 2016 the newly purchased Corbusier tapestry *Les Dés Sont Jetés*, previously owned by the Utzon family, was mounted on the south wall of the foyer and provided an appropriate focus for this Utzon designed space. Refer to Section 4.12.2 *Artworks and curtains.*

Coburn's *Curtain of the Moon* has been represented on a set of temporary screens installed at the north end of the Western Foyer. The original curtain hung in the Drama Theatre adjacent, and is now in storage. Refer to Section 4.12.2 *Artworks and curtains.*

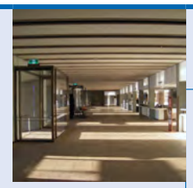
Refer also to Sections 4.15 *Signage* and 4.20 *Managing the processes of change.* Refer to *Tolerance for Change* and *Opportunities for Change* tables for Western Foyers opposite.

Tolerance for Change

element:
Western Foyers

significance ranking **A**

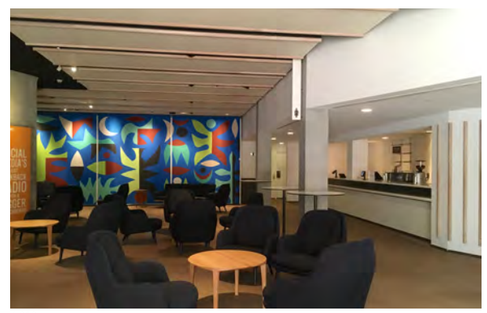
Continuous amalgamated foyer space (completed 2009), servicing the Playhouse, Studio and Drama Theatre, accessed from the Western Broadwalk and Covered Concourse



selected components:	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance Form	Fabric	Function	Location	**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
Freestanding, unpainted original concrete roof piers	**1**	**1**	**1**	**1**	Piers should remain free of any decoration or display elements.
Deeply recessed unpainted off-form concrete framed windows overlooking Western Broadwalk	**1**	**1**	**1**	**1**	Windows should remain free of any display material, unobstructed and with the sense of wall depth retained.
Palette and configuration of materials - GRC paved floor using pink granite with honed finish, white painted walls with spaced clear-finished vertical battens, row of unpainted concrete columns defining extent of high ceiling area and spaced prefabricated white acoustic ceiling panels with clear-finished timber edging	**1**	**1**	**1**	**1**	If replacement or repair is required, materials should match existing, including configuration, colour and finish.
Bronze-framed glazed entry lobbies from Broadwalk	**1**	**1**	**1**	**1**	Bronze material and views through from foyer are both important.
White 'corian' and timber fitout and benches	**1**	**1**	**1**	**1**	Reconfiguration may be possible but must remain clear of main space and within area defined by bulkhead and columns. Material may be changed but must respect design regime.
Le Corbusier tapestry	**1**	**1**	**1**	**2**	Present location appropriate but could, if required, be relocated to another Utzon foyer space such as the Box Office.[12] Present frame and mounting could be reviewed – less heavy and reduced reflectivity. Proximity to eating area currently obstructs views to tapestry.
Furniture	**2**	**2**	**1**	**2**	Present furniture not selected by Utzon. Modern, simple, fine design and comfort are important. Could be reviewed / replaced if required.
Public lavatory fitout (completed 2009)	**2**	**2**	**1**	**2**	Re-configuration and / or change of materials are possible in accordance with Policy 9.11, but should be considered in relation to Western Foyers and similar facilities elsewhere in building.
Temporary promotional signage within main foyer space	**Intrusive**				Minimal temporary signage may be acceptable, but the emphasis should be on fine design quality and consistency, and should be 'minimal' in terms of quantity and clutter. Should not obstruct windows or 'openness' of space.

Opportunities for Change

Explore opportunities – Western Foyers	**Comment**
Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Connections to adjacent spaces	Potential to connect the possible public uses to north and south, but south wall should have uncluttered focus on the artwork.



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4.259 *Drama Theatre, looking towards stage, 2010*
4.260 *Drama Theatre,* Curtain of the Moon, *1973*
4.261 *Drama Theatre, from rear eastern exit, 2010*
4.262 *Drama Theatre auditorium, 2010*
4.263 *Drama Theatre signature colours, 2008*

4.9.5 Drama Theatre

B High significance

The seating capacity of the Experimental Theatre is 450 and the seats form a continuation of the foyer which has direct access from the western broadwalk.[13]

Drama was originally intended to be staged in the minor hall above the Podium, now the Joan Sutherland Theatre (Opera Theatre). However, following the dedication of the major hall as a Concert Hall and the removal of opera to the minor hall, drama was in turn relocated to what was originally designated as an experimental theatre.

The form and general configuration of this theatre was determined by the walls and levels of Utzon's Podium, and the Main Rehearsal Room and Concert Hall Northern Foyer above. The limited height of the auditorium resulted in a cooled ceiling of aluminium tubes that could assist the air-conditioning. This technology was relatively new at the time, and remains as an early example of a system now favoured for its energy efficiency and minimal space requirements.

Hall deliberately played down the presence of the low ceiling by painting the space black. This was relieved by the signature deep blue carpet and red upholstered white birch seating, with the focus on the proscenium and the striking blue-toned tapestry, *Curtain of the Moon*. Designed by John Coburn, the curtain was commissioned to occupy this proscenium before and after the dramatic presentations on the stage.[14]

However, like the *Curtain of the Sun* in the Opera Theatre, it was not always used and was eventually removed to storage. The facility to re-fly the Drama Theatre curtain is still in situ and should be retained. Refer to Section 4.12.2 *Artworks and curtains* and Policy 12.2.

In 2008 the original safety curtain was also removed and replaced with a lightweight smoke control curtain and exhaust system located over the front rows of the auditorium.

The Drama Theatre has a generous proscenium and stage with its original machinery, double revolve, elevators and fly tower; however, the latter has only half the drift required and some machinery is now at risk of being decommissioned due to age and safety concerns. Refer to Section 4.13 *Services and machinery*.

This theatre has good acoustics and sightlines and is well suited for its function, but access for large stage sets and props is awkward and constrained. At present all scenery is carried in through a narrow corridor and open hoist from Central Passage. It would not be possible to create an additional access opening from the Broadwalk, given the significance of the Podium externally, and the location of front-of-house areas. Thus any upgrade would require modification of the less significant and more utilitarian spaces between the stage and Central Passage. It must be noted that thus far this constraint has not prevented the venue from being used for high-quality innovative theatre, however there remains much scope for improvement.

As part of the access upgrade associated with the work on the Western Foyers, dedicated wheelchair and companion positions have been located at foyer level for patrons in the auditorium.

> ***Policy 9.5 – Drama Theatre***
> *The Drama Theatre is an important original venue and must be retained as a Hall space in accordance with Policy 4.8. A major redesign to meet the requirements outlined in Policy 4.5 is also possible but must only be considered within a comprehensive and co-ordinated plan for all venues at the Sydney Opera House.*

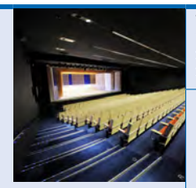
Refer to *Tolerance for Change* and *Opportunities for Change* tables for Drama Theatre opposite.

Tolerance for Change

element:
Drama Theatre

significance ranking **B**

Intimate performance, proscenium arch theatre accessible from Western Foyers



selected components:	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Space and form of auditorium, including black painted off-form concrete and plywood walling	**2**	**2**	**2**	**2**	Elements defining space can be changed or improved if required but overall configuration should be respected. Use as performance space is essential.
White birch and red upholstery seating	**1**	**2**	**1**	**2**	Retain colours, materials and form as important components in Hall's design intent for space.
Signature deep blue carpet	**2**	**2**	**1**	**1**	Retain as important component of Hall's design of this space.
Coburn's *Curtain of the Moon* (removed)	**1**	**1**	**2**	**3**	Ability to hang this curtain in this space should be retained and the curtain rehung, if possible. Refer to Section 4.12.2 discussion and Policy 12.2.
Proscenium configuration, stage, original stage machinery and revolve	**2**	**2**	**1**	**2**	Upgrading or replacement should be avoided unless necessary to retain functionality of stage or for safety reasons. Any changes should not diminish flexibility and use of stage.
Control Room	**3**	**3**	**1**	**2**	Can be upgraded for functional improvement if required.
Black painted chilled metal ceiling	**2**	**2**	**1**	**1**	Important original installation and technically of some significance, but could be upgraded if required to maintain function.
Wobblies in entry areas	**2**	**2**	**2**	**2**	An important component in Hall's design of these spaces and should be retained.
Painted steel handrails	**3**	**3**	**2**	**2**	Should be changed to be consistent with other handrails on site.
Non-original stage machinery	**3**	**3**	**2**	**3**	Can be modified or changed as required.
Technical overlay	**3**	**3**	**2**	**3**	This should not detract from patrons' appreciation of venue and enjoyment of performance.

Opportunities for Change

Explore opportunities – Drama Theatre	**Comment**
Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Backstage access	Potential to improve access for props and equipment via Central Passage and improve access between backstage levels.

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4.264 *The Studio, looking north-east, 2010*
4.265 *The Studio, Western Foyer level, 2010*
4.266 *The Studio, looking south-east, 2016*
4.267 *The Studio, looking north-west, 2016*

4.9.6 The Studio

C Moderate significance

The Studio occupies the space that originally accommodated the platform lifts and stage machinery for the major hall. Following the decision in 1967 to dedicate the major hall for concert performance, these were entirely removed. As part of the revised program, the Sydney Symphony Orchestra was to make the Sydney Opera House its permanent home, thus requiring a rehearsal space.[15]

Surrounded by columns (from its origins as part of the below-stage area), this large box-like space was fitted out by Peter Hall as the Rehearsal and Recording Hall, a non-public area with no foyer. The space was four levels high, and particular attention was paid to acoustic requirements. The floor was finished with brush box, and the walls behind the columns with white birch plywood wall panels. A control room overlooked the space from the south with galleries on the east and west. Large inverted white birch plywood pyramids were fitted on the ceiling, again for acoustic purposes.[16]

The space was not entirely successful and the ABC decided to relocate its orchestra rehearsals elsewhere. It was modified with improved access and seating and hosted recitals, radio broadcasts and other performances, and became known as the Broadwalk Studio. In the early 1990s, the Dennis Wolanski Library was moved into the space from another part of the Podium. By 1993 it was, as Kerr described it, "a space in distress." [17] Various schemes were proposed but a 1997 scheme by Danish architect Leif Kristensen was eventually implemented.

Kristensen had worked with Peter Hall in the Government Architect's Branch. His scheme involved separating the upper level of the space for use as an assembly area for the Concert Hall, and transforming the space below into The Studio, with direct access at mid-level to the western broadwalk level via a new western foyer.

This space was neither an Utzon or Hall creation and Kristensen's design provided it with a distinctive character.

It utilises a very limited palette of Hall elements, notably white birch plywood finish to the doors and the seat armrests, this time with orange ('rust') upholstery, matching the carpet. The tiered seating can be rolled back in a concertina stacking arrangement on the main floor, thus preventing the 'U' shaped plywood seat forms in other venues from being used here. The floating floor is of brush box. The louvered acoustic panels to the perimeter walls are of clear finished pine and were intended to be adjustable, but have never worked. The walls are painted to match the 'rust' carpet with charcoal highlights. This is most unlike all other venues on the site, which have generally more contrasting colour schemes. The ceiling (the underside of the orchestra assembly room floor structure) and all the technical overlay are painted black.

Level differences and its intended use for contemporary classical music resulted in significant limitations in the design for scenery access. This could be addressed if the opportunity arises, but not via the western side.

The Studio now provides a reasonably successful venue for performances that cannot be accommodated elsewhere on the site, including cabaret, burlesque, children's shows and exhibitions which attract a different audience from those in the major venues.

> ***Policy 9.6 – The Studio***
> *The character and signature colours of The Studio introduced by Leif Kristensen must be retained and respected unless the space is affected by major change in accordance with Policy 4.5*
>
> *Any upgrading or changes should seek to strengthen its connection in aesthetic terms with the adjacent Western Foyer and the* Utzon Design Principles.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for The Studio opposite.

Tolerance for Change

element: **The Studio**  significance ranking **C** Intimate, flexible performing arts venue accessible from Western Foyers (fitout 1999) **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Large volume space with columns supporting galleries and concrete beamed ceiling	**2**	**2**	**2**	**2**	Configuration should be retained in any re-working of space. Maintaining flexibility for performance is most important.
White birch timber finishes to doors and armrests	**2**	**2**	**2**	**2**	Retain material and finish in any changes – relationship to other Hall interiors is important.
Bronze material used for handrails and hardware	**2**	**1**	**2**	**2**	Use of bronze is important. Configuration should relate to others on the site in similar situations. Refer to Policy 7.19.
Wool upholstered seating in 'rust' and signature rust-coloured carpet	**2**	**2**	**2**	**2**	Retain signature 'rust' colour for this venue but chair form could change – retain reference to SOH white birch regime if possible.
Rust and charcoal painted interior	**3**	**3**	**2**	**3**	Could be modified but should respect original colour and design intent.
Floating brush box timber flooring (1999)	**3**	**2**	**2**	**2**	Use of brush box is preferred.
Clear-finished pine louvered acoustic panels	**3**	**3**	**2**	**3**	Can be upgraded or replaced if required to improve acoustic. Intended to be operational, but never worked.
Control Room	**3**	**3**	**1**	**2**	Can be upgraded for functional improvement if required.
Technical overlay	**3**	**3**	**2**	**3**	Can be modified or changed as required but should be tidy and unobtrusive.

Opportunities for Change

Explore opportunities – The Studio Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Upgrade	Character and performance flexibility important but potential for upgrade or major change, if required, in accordance with CMP.

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4.268 *Playhouse auditorium, 2016*
4.269 *Playhouse, 2014*
4.270 *Playhouse, 2016*

4.9.7 Playhouse

C Moderate significance

The Playhouse occupies the space originally intended for the changing of sets in the major hall, immediately behind the stage platform lift area now occupied by The Studio. Originally called the Music Room, it was finished as a venue "principally for chamber music, solo recitals, film screenings, and small conventions".[18] It was completed with white birch 'wobbly' panels on the ceiling and walls to provide a reflective acoustic, but its use as a music venue was limited. It became known as the Cinema, the function Peter Hall had predicted it was most suited for, and a popular venue showing surfing, art and classic films, and documentaries on Australia.[19] In the late 1980s, its use as a live theatre increased and it became the Playhouse. It is now used for a variety of live theatre performances.

The stage area has been extended (both forward and backwards) and one row of seats removed, with the closest white birch wall panels covered in black cloth to complete the effect. In 1993 a small suite of dressing rooms, scenery dock and production office / laundry was added in a much underutilised space behind the stage, part of the original exhibition hall. Another two dressing rooms were added to the rear of the stage during the Western Foyer project in 2008-09.

Hall's original scheme utilised a neutral grey carpet with deep blue upholstery on the white birch seating. The grey carpet was replaced for some time with the same 'rust' coloured carpet as The Studio, resulting in the loss of a major element of its 'signature' Hall colour scheme. In early 2013, the grey carpet was reinstated.

As part of the access upgrade associated with the work on the Western Foyers, a wheelchair lift has been incorporated on each of the side entries, with dedicated wheelchair and companion seating in the auditorium.

> ***Policy 9.7 – Playhouse***
> *The Playhouse is of moderate significance, and retention and possible strengthening of the Hall design regime in accordance with Policy 4.8 is preferred to its complete redesign and refurbishment.*
>
> *A complete redesign could become an acceptable option only if the requirements of Policy 4.5* Major change *are met.*

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Playhouse opposite.

Tolerance for Change

element: **Playhouse** significance ranking **C** Intimate theatre and performance venue accessible from Western Foyers **selected components:** 	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Modified white birch panel system to walls and ceilings	**2**	**2**	**1**	**2**	White birch panel system should be retained, including cloth-covered panels near stage.
White birch and dark blue upholstery seating	**1**	**2**	**1**	**2**	Important components in Hall's design and colour regime.
Light grey carpet	**2**	**2**	**1**	**1**	Retain as important component in Peter Hall's design of this space.
Extended stage	**3**	**3**	**1**	**2**	Can be modified but should not remove white birch wobbly panel system to walls near front of stage.
Control Room	**3**	**3**	**1**	**2**	Can be upgraded for functional improvement if required.
Backstage and associated facilities	**3**	**3**	**1**	**2**	Can be modified but should retain design regime of other Hall back-of-house areas.
Painted steel handrails	**3**	**3**	**2**	**2**	Material inconsistent with others on site. Should be bronze.
Technical overlay	**3**	**3**	**2**	**2**	Main consideration is that this should function and not be intrusive.

Opportunities for Change

Explore opportunities – Playhouse	**Comment**
Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Adjustments	Function important but upgrade or major change possible, if required, in accordance with CMP.

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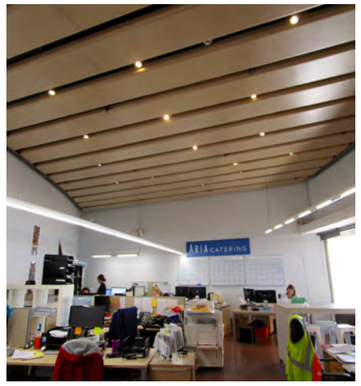

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4.271 *Northern Function Room facility, middle space, 2014*
4.272 *Northern Function Room facility, west space, 2017*
4.273 *Marquee and associated planter boxes, 2010*
4.274 *Northern Function Room facility, east space, 2014*

4.9.8 Northern Function Room facility (formerly Harbour Restaurant)

C Moderate significance

Located at the north-eastern corner of the building, and opening onto the Northern Broadwalk under the Joan Sutherland Theatre Northern Foyer, this space was originally known as the Harbour Restaurant. According to an official souvenir booklet published to commemorate the opening in 1973, it could accommodate "*about 350 at indoor and outdoor tables.*" All kitchen and servery facilities were within the Podium and it was self-service. When it opened there were few comparable restaurant locations around the harbour and it was a favourite venue for a pre-performance meal or drink for many patrons. By 1983, red rectangular umbrellas shaded the original white external seating and although it did not open until 11am, the Harbour Restaurant served champagne breakfasts on special occasions including Anzac Day.[20] By the late 1980s or early '90s, it was a fish and seafood restaurant and white umbrellas replaced the red. Later in the '90s it became an a la carte restaurant – still known as the Harbour Restaurant. When the Truffle Group took over catering at the Opera House, they renamed the restaurant '180 Degrees'.

For a number of reasons, including wind exposure and the increased number of more convenient options in the vicinity (such as the highly popular venues on the Lower Concourse), this northern venue has not prospered and the restaurant was shut down in 2001. Most recently an adjacent extendable marquee structure has been used as a space for catered functions, with kitchen, offices and other facilities remaining within the Podium.

The impressive internal spaces are defined by load-bearing, painted off-form concrete walls on three sides, with a full-width glazed front opening out to the Northern Broadwalk. The public area within the space is finished as an 'outside' space with a terrazzo variation of the Podium granite paving, but with its ceiling fitted with Hall's white birch 'wobbly' regime, thus connecting it with other 1970s venues and spaces within the Podium. It is shown on Utzon's 1959 plans as a 'library', but due to its finishes, it could be considered a Hall space.

It has expansive views towards the harbour but this area of the Broadwalk is also very exposed to the wind. For many years, successive food and beverage operators have erected some form of wind protection for patrons wishing to use the outside seating. This then introduces unwanted clutter and obstructions which are visually inappropriate in this setting.

As a venue for catered functions, this facility provides sought after revenue and is available for corporate sponsors or private hire. While it has the location and views, the marquee itself is rather less spectacular and in fact intrusive.

The facility would be too small without the use of the marquee, and should either be modified or enlarged within the confines of the Podium or moved to a more suitable location where a marquee is not required. In order to do this, major changes would need to be made within the Podium areas (where space for existing functions is already at a premium). This would require an integrated long-term strategy or masterplan addressing all uses and functions across the site. Refer to Section 4.3, particularly Policy 3.2 and Section 4.20.1 *Use and compatibility.*

Such a facility should be located on the site in a space befitting an important occasion. Sponsorship, tourism, hospitality and related functions are an important part of the Opera House's business and many such functions are held in the Northern Foyers, but often at the inconvenience of other patrons, particularly when associated with a performance. Performance schedules limit opportunities for catered functions in these foyers, but it is important to note that their primary role is associated with their theatre use.

If the 2005 *Gold Book* Opera Theatre Renewal Project proceeds, there may be an opportunity for this space to be expanded internally, or to play a different role as part of a reorganised back-of-house. Whatever the outcome, options should be considered only in the context of the whole site, and with public benefit in mind (refer to Section 4.6 *Events and uses externally*).

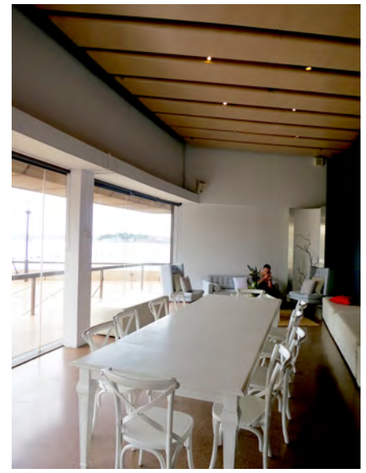
Notwithstanding the problem of available space, this Function Room facility has the potential to play an active role in the public profile and use of the site, and in contributing to the operating budget of the Sydney Opera House; this should be explored without requiring a marquee.

The language of exposed off-form concrete walls should be retained but not necessarily painted or fully exposed. The 'wobbly' ceiling treatment should preferably be retained in the public areas. Alternatively, and if it is to remain a public venue, the panelled ceiling treatment used in the recently completed Western Foyers could be considered. Whatever the internal treatment, it should respect the significance of its location and context, have some consistency with other significant spaces within the Podium, and comply with the *Utzon Design Principles* and this CMP.

As part of a suite of renewal projects, a proposal for major change has been designed and documented for this facility. It will involve removal of the marquee, changes to internal walls within the Podium and relocation of the kitchen to the space presently occupied by the Ballet Rehearsal Room.

> ***Policy 9.8 – Northern Function Room facility***
> *The Northern Function Room facility could be either retained as a Hall space in accordance with Policy 4.8 or redesigned in accordance with Policy 4.5* Major change. *Any associated external use or activity must not require or utilise enclosed or substantially covered spaces.*

Refer to Section 4.6 *Events and uses externally*, and Section 4.6.8 *Exterior furniture*. Refer to *Tolerance for Change* and *Opportunities for Change* tables for Northern Function Room facility below.



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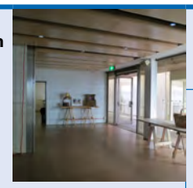
Tolerance for Change



element: **Northern Function Room facility** significance ranking **C** Function Room facility associated with Northern Broadwalk and accessible to the public **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance Form	Fabric	Function	Location	**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
Northern Function Room facility - finished as 'outside' space by Hall	**2**	**2**	**2**	**2**	Location and public use important, but should retain connection with 'outside' regime in terms of design and finishes.
Use of spaces for catered functions on SOH site	**3**	**3**	**1**	**3**	Important function in terms of Opera House suite of facilities, but could be in a different location – refer to discussion.
Fully glazed and unobstructed northern perimeter, opening onto Broadwalk	**1**	**1**	**1**	**1**	Design, form and materials must be consistent with Podium.
Pink granite terrazzo paving to floor	**2**	**2**	**2**	**2**	Should be retained to relate to and respect 'outside' regime.
Painted off-form concrete walls	**1**	**1**	**1**	**1**	Off-form finish to be retained and structural role of walls to be considered as defining features of spaces. Openings could be modified.
Ceiling of white birch 'wobbly' panels	**2**	**2**	**2**	**2**	Should be retained if Hall regime retained. Refer to discussion.
Kitchen and support facilities	**3**	**3**	**1**	**3**	All support facilities must remain within Podium – refer to Policy 6.4.
Marquee and outdoor furniture associated with facility	**Intrusive**				The location of outdoor seating associated with a food and beverage facility in this location is supported, but present marquee structure and associated furniture are inappropriate and intrusive. They should be removed, as proposed in the renewal projects. Refer to Section 4.6 *Events and uses externally*, and Section 4.6.8 *Exterior furniture*.

Opportunities for Change

Explore opportunities – Northern Function Room facility	**Comment**
Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Major refurbishment	Opportunity to refurbish space to strengthen Utzon character and improve functionality of the facility. Clarity, form and character of original structure should define space.

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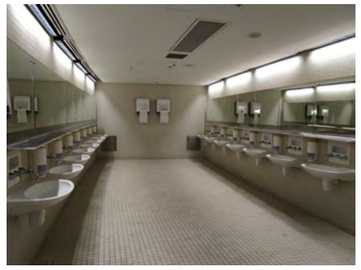

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4.9.9 Front-of-house lavatories

Significance associated with the element / area with which the lavatories are connected.

The cubicles themselves for coats and toilets are made of moulded plywood panels in contrast to the impression of severity left by the structure.

.... The cloakroom cubicles stand free of floor and ceiling and are hung from the back wall enclosing the toilets.

.... The toilets and their ante-rooms are enclosed by a brick wall and a concrete ceiling slab. The paving consists of precast concrete but a smoother reconstructed granite facing than the external material. The ante-room wall cladding is of moulded plywood, mainly formed in "L" shape bent over a quarter circle, and designed in accordance with the maximum limitation from production.

The suspended ceiling panels are of straight plywood based on a 3'0" module with 3" gap between. The same 3'0" module dominates the toilet cubicles where the interior is built up by adding elements which, each within the 3'0", again are assembled from a system of moulded plywood segments. The toilet compartments thus consist of four elements, one long "L" shaped element, one short "L" shaped element, a transition element with section of a quarter circle, and an S-shaped door element.[21]

Utzon's 1965 description and other documentation indicate a high degree of resolution before his departure in 1966, and appear to have been the inspiration for the designs executed by Peter Hall. The description applies equally well to those facilities constructed in 2003 in the Box Office area, designed by Johnson Pilton Walker.

Hall designed the front-of-house lavatories with a palette of fittings and finishes which continued into back-of-house areas. Two-inch square unglazed light grey tiles were used on the floors and walls; lavatory cubicles were of white birch veneered moulded plywood, and ceilings were of painted plasterboard. Hall's original front-of-house fitouts survive in the Northern Foyers at Mural Level, and either end of the Northern Function Room facility on Level +12. Recent repair and upgrading works to Hall's back-of-house lavatories have proved that retention and refurbishment of his finishes and design regime are possible with minimal impact. While many may consider these spaces of low significance, they contribute to the completeness and integrity of Peter Hall's original work at the Opera House and followed Utzon's ideas and principles. Their original design and fabric should be retained. Refer to Section 5.8.11 *Lavatories and locker rooms* (back-of-house).

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.

The 2003 refurbishment of the Box Office lavatories re-exposed the folded and cranked beams over the space and re-established their visual continuity with those over the foyer. The works replaced Hall's fitout with one more closely in accord with Utzon's design ideas and were peer-reviewed by Utzon himself. It incorporated indirect lighting of the beams and utilised floor finishes and white birch veneered moulded plywood elements with 'S' shaped doors, similar to those described and documented by Utzon in 1965.

Policy 9.10 – Box Office lavatories
The 2003 Box Office lavatory fitout and finishes must be retained and conserved. Any alterations or upgrading must be in accordance with Policy 4.6.

The 2009 refurbishment of the Western Foyer lavatories by Utzon Architects incorporated a completely new set of lavatory facilities (in the space previously occupied by the Exhibition Hall) at the southern end and the reconfiguration of the Drama Theatre facilities at the northern end. These new facilities use a design language which, except for the use of white birch veneered plywood cubicles, departs from the original Utzon and Hall design regimes. They are new facilities in a new space, and comply with Policy 1.5 for major works in the 2003 CMP, which is also consistent with Policy 4.5 in this 4th edition.

Policy 9.11 – Western Foyer lavatories
The 2009 Western Foyer lavatory fitout and finishes should be retained, conserved or moderately upgraded within their existing design regime. If substantial change is considered, this must be in accordance with Policy 4.5.

Refer to Section 4.8.2 *Foyers surrounding major auditoria*, Section 4.9.2 *Box Office Foyer*, and Section 4.9.4 *Western Foyers*.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for relevant foyers and front-of-house spaces.

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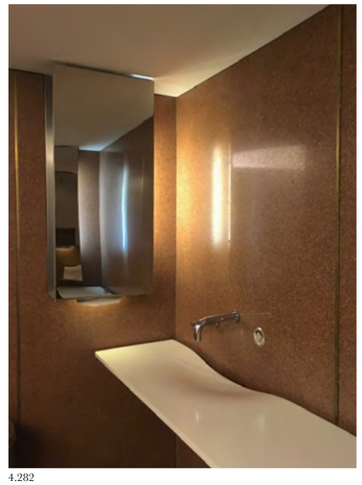

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4.275 *Women's 1973 lavatories, Northern Foyer of Joan Sutherland Theatre, 2016*
4.276 *Men's 1973 lavatories, Northern Foyer of Concert Hall, 2016*
4.277 *Men's 1973 lavatories, Northern Foyer of Concert Hall, 2016*
4.278 *Men's 2009 lavatories, south end of Western Foyers, 2009*
4.279 *Frosted glass door to lavatories, south end of Western Foyers, 2017*
4.280 *Women's 2003 Box Office Foyer lavatories, 2004*
4.281 *Accessible lavatory near Box Office Foyer, 2017*
4.282 *Accessible lavatory near Box Office Foyer, 2017*
4.283 *Women's 2003 Box Office Foyer lavatories, 2004*

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4.284 *Ballet shoes taking rest, 2010*
4.285 *Original 'wobbly' treatment to management suite corridor, level +30, 2016*
4.286 *Original fitout to orchestra locker room beneath Concert Hall, 2017*
4.287 *Original 'wobbly' treatment to corridor, level +30 beneath Joan Sutherland Theatre, 2010*
4.288 *Original fitout to chorus dressing room beneath Joan Sutherland Theatre, 2010*
4.289 *Service corridor, level +12, 2010*
4.290 *Service corridor, level B2, 2017*

4.10 CONSERVING THE INTERIOR: 'BACK-OF-HOUSE' PERFORMERS' & STAFF AREAS

4.10.1 Back-of-house spaces generally

B-C High-Moderate significance

Here again, we see the architect's philosophy: if humans circulate around a building through corridors, so also your services do the same thing, and instead of making a door access from a corridor to a room for humans only and a separate hole pierced in a wall for access of services, the door is extended above the functional height for humans to accommodate the services. Other services dropped down from the corridor wall. To hide all this from view a modular system of self supporting plywood panels has been devised. These panels are approximately 16" wide returning around a 2" radius approximately 5". These dimensions are important as they are the limit of the manufacturing process which is kept the same throughout all plywood elements used in the building, giving the necessary uniformity and harmony.
.... Aesthetically we get the flow of the corridors reflected in the rhythm of the movement of the elements.
.... Thus mass manufacturing production of simple elements gives an economical solution providing the required aesthetics and with ease of access for maintenance.

.... Corridor walls, which are not covered by plywood panels, will be left in off-form concrete, showing the boards of the form, and with a thick coat of paint.[1]

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. However, what is immediately apparent from reading Utzon's quotes above (but not generally acknowledged) is that some key elements of Hall's work, such as the use of moulded white birch veneered plywood panels (wobblies), particularly in the corridors, administration areas, rehearsal and dressing rooms, and the treatment of walls and services, were modifications or developments of Utzon's own ideas. This is supported by comparing Utzon's drawings with Hall's fitout.

Hall noted that an important and positive outcome of containing costs was that so much of what was built under Utzon's direction had been left exposed, resulting in the strong character of the building, particularly in the Podium.[2]

Hall strengthened this character with his own detailing and introduction of a suite of signature colours and other finishing elements to unify the building and provide a 'sense of commonality'. These measures are important in the character and identity of the back-of-house spaces and should be retained and extended into any new work.

Hall applied a hierarchy of finishes, appropriate to the function of each suite of spaces. Administration and artists' or performers' areas were fitted with the moulded white birch plywood 'wobbly' regime and concealed services. Service areas were fitted with exposed colour-coded services, with no wobblies. Unifying these is the consistent use of white painted off-form concrete, door hardware, door numbering with separate metal numbers and letters, and signage (particularly those of moulded perspex).

Detailed finishes schedules can be found in Hall 1990 (pages 25-34), but generally they are as follows:

Administration and Artists' areas, levels +12 (north of Drama Theatre) and +30:

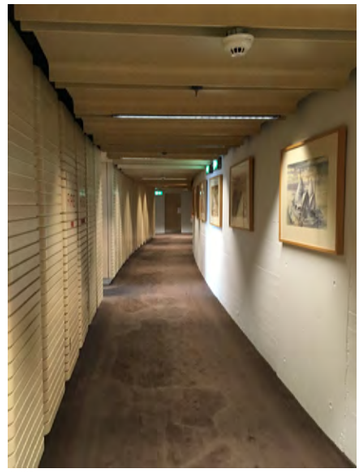
Floor	dark brown carpet
Walls	white painted off-form concrete / masonry or plasterboard
Ceilings	moulded white birch veneered wobbly panel system with integrated lighting to conceal services (ceilings above unpainted)
Doors	white birch veneer with clear finish

Corridors to levels +12 (north of Drama Theatre) and +30:

As for Administration areas plus moulded white birch wobbly panel system on selected walls to conceal and also allow access to services.

Service areas, including corridors:

Floor	concrete or linoleum
Walls	white painted off-form concrete or masonry
Ceilings	white painted off-form concrete
Joinery	painted doors, colour-coded as to area and level
Services	neatly arranged steel conduits exposed and colour-coded



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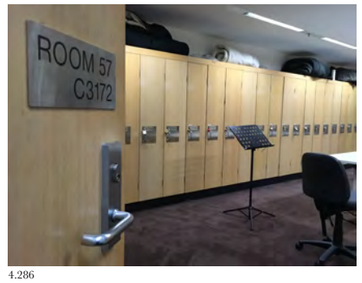

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Adherence to these Hall design regimes in back-of-house areas is just as important as front-of-house areas and essential if the Opera House is to retain the integrity of its original design. This includes maintaining all finishes and fittings in good condition and sound working order. Refer to Sections 5.4.2 *Authenticity and integrity* and 4.18 *Care of the fabric and housekeeping*.

As part of the 2008 refurbishment of the Western Foyers and the 2009 work in the Green Room (see Section 4.10.2), the massive concrete piers supporting the roof shells, which sit askew to the normal grid, were stripped of all paint and the bare off-form concrete exposed. This has brought clarity and focus to the spaces and provided an awareness and orientation with the structure above.

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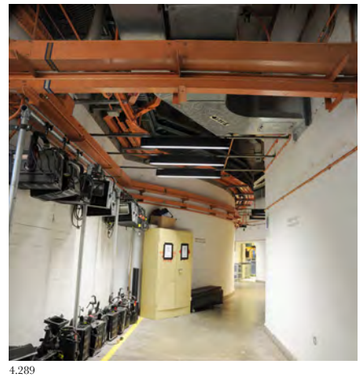

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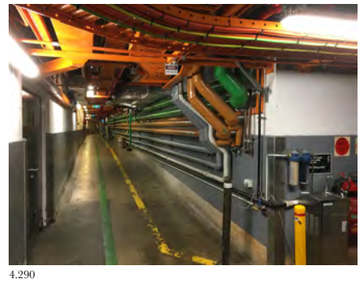

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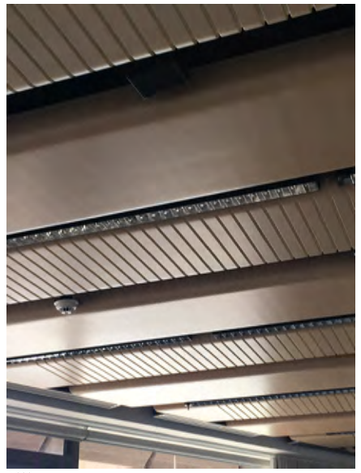

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4.291 *Original 'wobbly' treatment to corridor level +30 beneath Joan Sutherland Theatre, 2010*
4.292 *'Wobbly' panel ceiling in Board Room, 2016*
4.293 *'Wobbly' treatment to ceiling and walls in administration area, level +12, 2016*

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 utilised to strengthen previously damaged or diminished Hall spaces elsewhere in the Podium, in accordance with Policies 4.8, 18.15 and 18.16.

Policy 10.3 – Concrete roof piers within Podium
The massive off-form concrete roof piers supporting the bases of the roof shell structure and penetrating through the Podium should be stripped of all paint wherever they occur, to isolate them visually and enhance their presence. They should be left free of adjacent partitions, structures and fitout, or any form of decoration.

Refer to Section 4.20.1 *Use and compatibility.*

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Back-of-house spaces generally opposite.

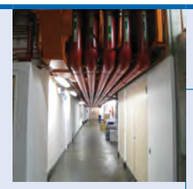
Within this Hall regime, there are some spaces which require further explanation – see below.

Tolerance for Change

element:
Back-of-house spaces generally

significance ranking **B-C**

Signature components of back-of-house spaces, applied as per Hall's finishes schedules throughout the Podium



selected components:

	Tolerance for Change (1 = Low tolerance, 2 = Moderate tolerance, 3 = High tolerance)				Further Considerations (to be read in conjunction with the relevant policy section for each element)
	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.
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).
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.
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.
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.
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 *Doors and door furniture.* Refer to Section 4.15 *Signage.* Painted door colours signify location and level.
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.
Partitions masking roof piers in dressing room corridors under Concert Hall and Joan Sutherland Theatre (Opera Theatre)	**Intrusive**				Partitions should be removed, columns exposed and stripped of paint. Refer to Policy 10.3.

Opportunities for Change

Explore opportunities – Back-of-house spaces generally	Comment
Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Design consistency	Retain and where possible strengthen consistency of Hall's design regime in existing and new work in back-of-house areas.
Functional and accessibility upgrades	Upgrades possible – must support primary use of the place as a performing arts centre.

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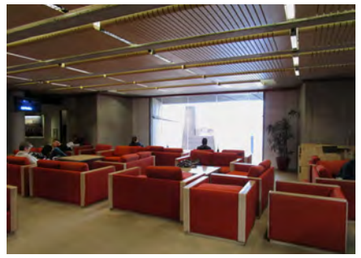

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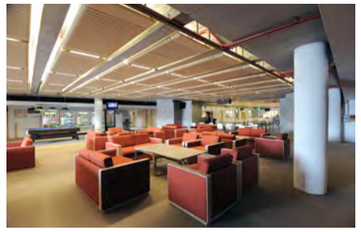

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4.294 *Green Room, looking south from north end, 2010*
4.295 *Green Room, looking towards bar from dining area, 2010*
4.296 *Green Room, looking towards north window, 2017*
4.297 *Green Room, looking south-east from bar area, 2010*
4.298 *Magenta and red cushions from original 1973 Green Room sofas, found on site, 2017*

4.298

4.10.2 Green Room

B High significance

Over the central passage in the area common to both Major and Minor Halls, there will be a performers' lounge at the northern end, and between the lounge and cloak room area is their canteen.

.... The walls will be covered with moulded plywood elements as the corridor panels.

.... The floors will be carpeted and the ceiling off-form concrete, painted. Some repair will have to be carried out on the ceilings as the increased column sizes required demolition in certain areas.[3]

This space on the centre north-south axis between the back-of-house areas of the two major auditoria is the central meeting place for all performers, stage crew and management. It bridges over the Central Passage and sits immediately below the 'cleavage' between the roof shells of the major halls. Its function as a 'safe' meeting place behind the Stage Door is an essential part of Sydney Opera House as a performing arts centre. The space is roughly linear, with the only natural light coming from a large window at the northern end. It houses a lounge, bar area and cafeteria with attached kitchen.

Hall intended that furnishings in this important backstage space reflect the mingling of the Concert Hall and Opera Theatre. The original sofas were upholstered in wool of magenta and red - the signature colours of these two major venues. The carpet was chocolate brown.

Utzon's intention for this space was to line the walls with moulded white birch plywood panels, but Hall kept the walls clear and simply painted white. The unpainted off-form concrete ceiling has been fitted with wobbly panels and uplighting between the beams, and the lower sections kept free of panels to retain a reasonable height. This dramatises the structure and the articulation of space.

The 2009 refurbishment by Utzon Architects and Johnson Pilton Walker involved cleaning the off-form concrete ceiling, upgrading the lighting, removing paint and partitions from the large concrete roof piers, changing the carpet, and refinishing and re-upholstering the furniture in one colour. The effect has been to 'lighten up' and unify the space and greatly enhance the presence of the roof piers (and thus assisting one's sense of orientation in the building). The lighter tone of Hall's chocolate brown carpet is appropriate in this space, but should not be extended to corridors or other areas.

The bar at the north end of the space was altered in 2014, adapting Hall's brush box details and exposing the original concrete structure. The refurbished bar, designed by Rob Harper (architect) of RDO, now has a less 'heavy' presence in the space and sits comfortably within its context. The set plastered bulkhead over the bar and the space opposite conceal mechanical ducts but are not consistent with Hall's treatment of ceilings elsewhere in the Podium.

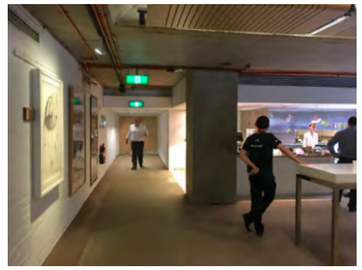
The canteen at the south end of the space was completely refurbished in 2014 with a change in operator, again to a design by Rob Harper, but was extended further into the Green Room during construction.

This space has the capacity to celebrate both Utzon and Hall in equal measure. Due to its location and direct connection to corridors for both administration and performers' areas, the Hall regime must be respected; however, the wobbly ceiling system may be adjusted or modified to improve qualities of light and space, provided the unpainted concrete structure remains dominant.

Policy 10.4 – Green Room
The Green Room must retain its existing location, intended use and simple space defined and articulated by the original concrete structure. The space, particularly around structural elements and walls, must remain as uncluttered as possible, within the functional and social requirements of its use.

The up-lit unpainted concrete ceiling should retain some form of moulded plywood 'wobbly' system to unify it with surrounding back-of-house spaces. It may be modified within the Green Room to improve qualities of light and space. The set plastered bulkheads may be altered to strengthen their connection to Hall's design regime.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Green Room below.



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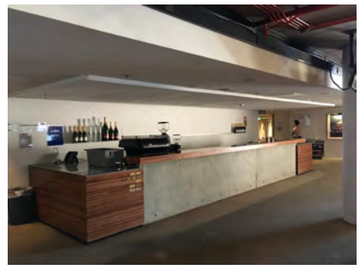
4.299 *Green Room looking toward main south entry, with canteen servery on right, 2017*
4.300 *Green Room ceiling after 2009 cleaning and refurbishment of lighting, 2010*
4.301 *Green Room bar following 2014 refurbishment, 2017*
4.302 *Green Room bar following 2014 refurbishment, 2017*
4.303 *Green Room bar, detail, 2017*



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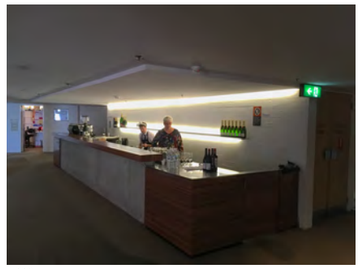

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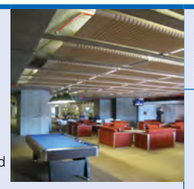
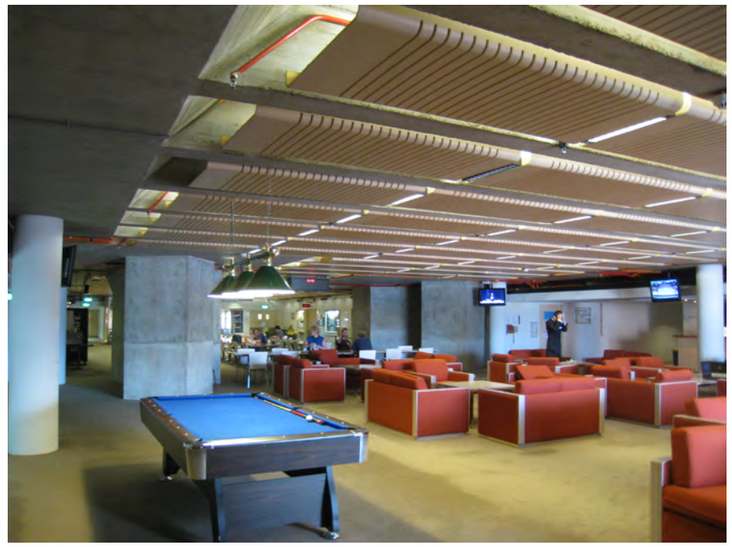
Tolerance for Change

element: **Green Room** significance ranking **B**  Undivided linear central space linking backstage areas, used as a 'safe' meeting place for performers, crew and all involved in production and management of SOH **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Undivided linear space on central north-south axis of building extending from cafeteria kitchen to north window, pierced by roof piers	**2**	**2**	**1**	**1**	Use and location are essential and must remain as undivided space.
Concrete piers supporting roof shells and concrete beamed ceiling structure spanning between major halls and shells, and linking their backstage areas	**1**	**1**	**1**	**1**	Concrete beamed ceiling and roof piers are essential Utzon elements. They should be left unpainted and their visual presence and clarity not compromised.
Off-form concrete walls	**2**	**2**	**1**	**2**	Retain white painted finish and keep free of unnecessary clutter.
Wobbly ceiling system between beams with concealed uplighting	**2**	**2**	**2**	**2**	Important Hall element but could be adjusted to improve lighting.
Set plaster ceilings over bar and vending machine areas at north end of Green Room	**3**	**3**	**3**	**3**	Set plaster ceilings (not original) are inconsistent with Hall regime and could be replaced – refer to *Opportunities for Change* table.
North window under cleavage	**2**	**2**	**1**	**2**	Daylight access into space should not be diminished. Window alignment could be altered – refer to *Opportunities for Change* table. Refer also to Section 4.7.4 *Podium* and 4.7.9 *Bronze railings*.
Brown carpet in Green Room	**2**	**3**	**2**	**1**	Lighter variation of back-of-house chocolate brown carpet, chosen in 2009 to 'lighten' space, is supported, but should not be extended into corridors or other areas. Relationship with original chocolate brown-coloured carpet is important to retain unity of back-of-house areas and carpets should be separated with timber or bronze thresholds.
Bar fitout (refurbished 2014)	**2**	**2**	**2**	**2**	Important part of 'social' function of Green Room but could be altered or relocated. Minimalism and clean lines of refurbished bar are supported.
Kitchen area and fitout (refurbished 2014)	**3**	**3**	**1**	**2**	Can be refitted but location dependent on services. Should not extend further north into space than the line of the main column. Materials palette of present fitout supported but detail could be further refined.
Furniture (refurbished 2009)	**2**	**3**	**1**	**2**	Lounges and chairs are not original, but are appropriate - 2009 refurbishment supported. Refinishing and re-upholstering of existing is preferred to replacement. Tables in dining area are mostly original.
Ad hoc clutter on and around walls	**Intrusive**				Ad hoc clutter is intrusive. Selection, arrangement and management of what is displayed or used is important to avoid this.
Phone booths adjacent to northern pier	**Intrusive**				Confuse clarity and presence of roof pier and should be removed.

Opportunities for Change

Explore opportunities – Green Room Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
North window	Window alignment could be moved further inside (south) to create a deeply shaded balcony if this achieves improved visibility and functional relationship between Green Room and exterior. Note that underside of external hood over opening is a major air intake for air-conditioning. Refer to *Virtual Tour of the Sydney Opera House with comments by Jørn Utzon*, p56.
Ceiling	Wobblies could be extended to original locations indicated by Utzon over bar and vending machine areas at northern end to replace plaster ceilings. Revision of mechanical ducts above would be required to achieve reasonable head height. Wobbly system between beams could be adjusted or revised to improve lighting and visibility of concrete structure.
Carpet	Revise junction location between carpets so that Green Room carpet does not extend into corridors. Introduce timber thresholds between lighter brown and chocolate brown carpets to define transition and make it look less like an accident.
Furniture	Existing sofas could be reupholstered using Hall's original colour regime of magenta and red. Alternatively, sofas could be replaced with new, using Hall's original colour regime.
Revise kitchen / servery	Revise kitchen / servery area so that none of its functions or display cabinets extend into main Green Room space.



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4.304 *Green Room looking south-west after refurbishment and removal of paint from main columns, 2010*

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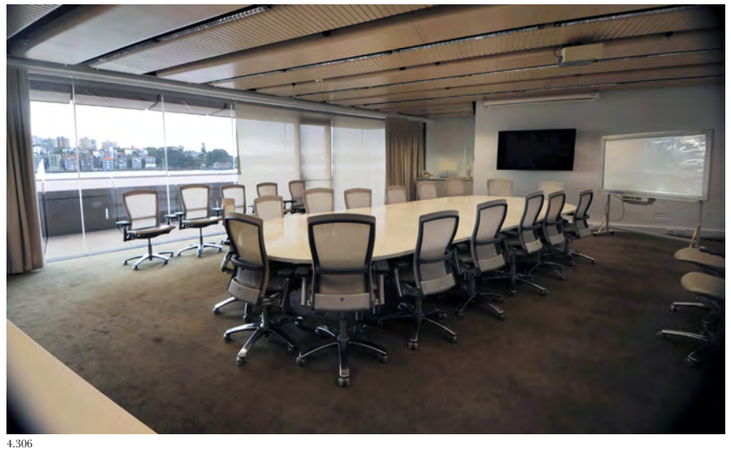

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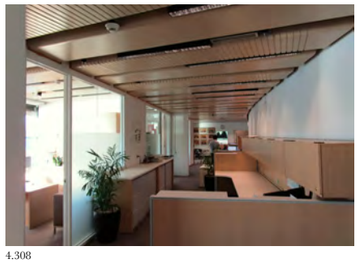


4.308

4.305 *Management suite corridor, level +30, 2010*
4.306 *Board Room, 2010*
4.307 *Sunset in the Board Room, 2007*
4.308 *Management offices adjacent to CEO's office, with original 'wobbly' ceiling, 2017*
4.309 *'Wobbly' linings to intended entry for administration areas Level +12, 2008*

4.10.3 Management suites and Board Room (level +30)

B High significance

As in the exteriors, the materials internally will serve to underline the ideas in the planning. 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, and these surroundings will give a neutral and restful atmosphere for the patrons as well as for the people working in the building.[4]

This area, on the same level as the Green Room and dressing rooms of the major halls, includes the Executive Offices and the Board Room, the latter originally decorated on the southern wall with a specially commissioned fabric wall hanging by Jutta Fedderson. (Refer to Section 4.12.2 *Artworks and curtains*.) This wall hanging has since been removed and is now in storage, but it indicates the level of importance given to the space.

Hall chose Eero Saarinen's classic white tulip chairs for many of these areas and in the Board Room they had green wool upholstery. The original oval Board Room table was finished in white birch. The chairs and the table have been replaced more than once. Refer to Section 4.11.2 *Furniture and fittings*.

Finishes in these areas are consistent with the highest quality within the Podium. They include the wobbly treatment on ceilings and corridor walls, and simple white painted off-form concrete walls.

Glazed lightweight partitions have been inserted in the management suite area and these have generally respected but not copied the Hall regime.

The complete removal from this area of furniture and fittings chosen by Hall has impacted on the significance of these spaces, particularly the Board Room. Any new elements must support and, if possible, strengthen the Hall design regime in accordance with Policy 4.8 *Approach to change – Hall elements*, Policy 11.4 *Furniture and fittings – audit and monitoring* and Policy 11.5 *Furniture and fittings – replacement strategy*.

Refer to Sections 4.11.1 *Doors and door furniture*, and 4.11.2 *Furniture and fittings*.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Management suites and offices levels +30 & +12 opposite.

4.10.4 Offices level +12

C Moderate significance

Generally, these offices will have plywood panels on the walls and carpeted floors.[5]

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.

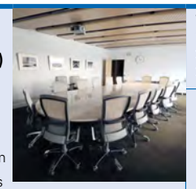
While the quality of the finish and detail in this area is high, it could be modified to suit a changed configuration in accordance with Policy 4.4 or substantially altered with a change in function in accordance with Policy 4.5, but only where the latter would result in enhancing the function of both 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. Some of these ideas are explored in the 2001 *Strategic Building Plan*.

As part of a suite of renewal projects currently being documented, a Creative Learning Centre is proposed in these spaces. It will connect with the Western Foyer and the Broadwalk and utilise Peter Hall's 'wobblies' in its fitout.

Refer to Section 4.9.4 *Western Foyers*.
Refer to Sections 4.11.1 *Doors and door furniture*, and 4.11.2 *Furniture and fittings*.
Refer to Section 4.18.7 *Removal or alteration of fabric*, and Section 4.20.1 *Use and compatibility*.
Refer to *Tolerance for Change* and *Opportunities for Change* tables for Management suites and offices levels +30 & +12 below.

4.309

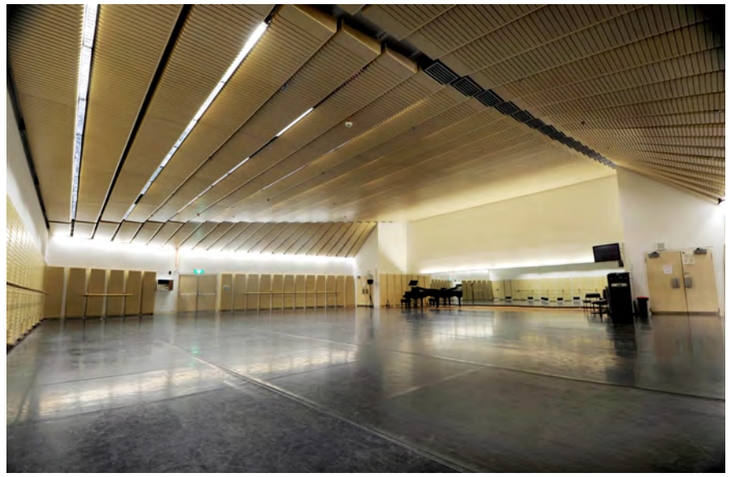
Tolerance for Change



element: **Management suites and offices (Levels +30 & +12)** significance ranking **B-C** Management suites on Level +30, including corridors, executive offices and boardroom Offices and associated corridors on Level +12, north of Drama Theatre **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance Form	Fabric	Function	Location	**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
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**	**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.
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.
Painted off-form concrete walls	**2**	**2**	**1**	**1**	New or altered openings should be avoided wherever possible.
Signature dark brown carpet	**2**	**2**	**1**	**1**	Aberrant carpet colours and types should be replaced with correct carpet in accordance with *Carpet Strategy*.
Glazed partitions in original admininstration entry space on Level +12 (west end)	**Intrusive**				If partitions are required, replace with more sensitive alternative.

Opportunities for Change

Explore opportunities – Management suites and offices (Levels +30 & +12) Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	**Comment** Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
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 Fedderson. Consider furnishing this space with significant mid-late 20th century classic furniture designs more consistent with Utzon and Hall concepts.
Level +12 offices on North Broadwalk	Potential to relocate offices and provide uses / activities of a more public nature behind glass on Northern Broadwalk below Concert Hall. Refer to *Virtual Tour of the Sydney Opera House with comments by Jørn Utzon*, p19.



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4.310 *Main Rehearsal Room with original fitout, 2010*
4.311 *Main Rehearsal Room, 2010*
4.312 *Main Rehearsal Room, 2010*
4.313 *Ballet Rehearsal Room (RR69) with original fitout, 2010*
4.314 *Central production store (former chorus rehearsal room RR67), 2014*
4.315 *Ballet Rehearsal Room (RR69), 2014*

4.10.5 Rehearsal rooms

B-C High-Moderate significance

Each rehearsal room is treated in the same way as the hall, that is, we have the structure withholding the outside elements and inside we have a complete box to retain the sounds produced internally.[6]

Utzon's description from 1965 is still largely applicable to Hall's finishing of the main rehearsal room under the Concert Hall, and close to what survives in the smaller rehearsal rooms under the Joan Sutherland Theatre (Opera Theatre). Thus, any alteration or minor adjustment should retain and reinforce the Hall regime in accordance with Policies 4.4 and 4.8.

The smaller rehearsal rooms under the Joan Sutherland Theatre on Level +12 originally had set plaster ceilings but still utilised the wobbly system on the walls.

In addition to the Main Rehearsal Room, in 1973 there were three large rehearsal rooms and two smaller ones. These rehearsal rooms were in the original locations determined by Utzon. However, all but two have been adapted for other uses and their original fitout removed. The orchestra / chorus rehearsal room under the Joan Sutherland Theatre (Opera Theatre) was considered too small and was soon converted to offices. In 2012, it was adapted for use as a central store / warehouse for production equipment; wobblies were removed and the original pine floor was retained. The smaller two were adapted and completely refitted to house the relocated recording studio in 2013. Only two rehearsal rooms survive with their original fitout: the Main Rehearsal Room on Level +30 off the Green Room, and Rehearsal Room 69 (Ballet Rehearsal Room) on Level +12. Other spaces in the Podium have since been adapted as small rehearsal / warm-up rooms. At the time of writing (late 2016) there is a proposal to relocate Rehearsal Room 69 to allow expanded facilities for the Northern Function Room facility.

Conflicting demands for the limited space within the Podium can only be resolved with long-term planning across the site in accordance with Policies 3.2, 20.1 and 20.2. For discussion on appropriate uses for spaces, refer to Sections 4.3 *Protecting the values* and 4.20.1 *Use and compatibility.*

It is preferable that none of the Hall elements be removed, but if removal of components such as wobblies is necessary to accommodate these uses, Policy 10.2 should be followed.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Rehearsal Rooms opposite.

Tolerance for Change

element:
Rehearsal rooms

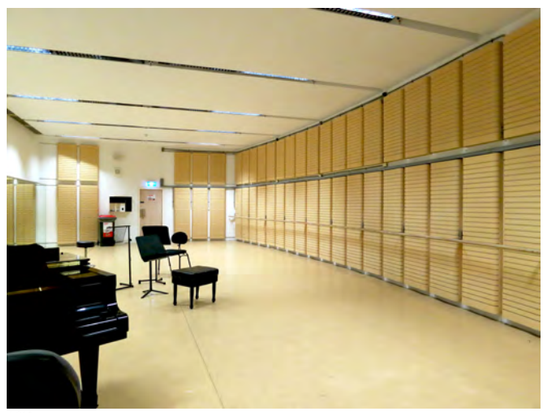
significance ranking **B-C**

Main rehearsal room under Concert Hall (ranked B) and smaller rehearsal rooms (ranked C) under Joan Sutherland Theatre (Opera Theatre)

selected components:	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Main Rehearsal Room with walls and ceiling lined with long lengths of wobbly regime and mirrored walls	**2**	**2**	**1**	**2**	Retain rehearsal use in this space. Retain existing Hall fitout including wobbly system and finishes. Any changes should retain wobblies in this space in accordance with Policy 4.8.
Ballet Rehearsal Room (RR69) under Joan Sutherland Theatre (Opera Theatre) with wobbly system on walls, set plaster ceilings and one mirrored wall	**2**	**2**	**2**	**2**	Retain as original use preferred as this is the only remaining rehearsal room beneath Joan Sutherland Theatre. Retain original Hall fitout and finishes. If some refinement is required, adaptation of original fitout is preferred to its replacement with a different design regime.
Former chorus rehearsal room on Level +12 (RR67)	**2**	**3**	**2**	**2**	Now used for production and storage. Retained floor finishes should be protected from damage. Removed wobblies and other fitout should be re-instated where possible. Ideally, use of RR67 should return to rehearsal and storage moved elsewhere.

Opportunities for Change

Explore opportunities – Rehearsal rooms	**Comment**
Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Rehearsal spaces	Consider existing provision of the whole suite of rehearsal and warm-up spaces, and plan for adequate and appropriate location of these spaces for all performance venues in accordance with Section 20.1 of the CMP.



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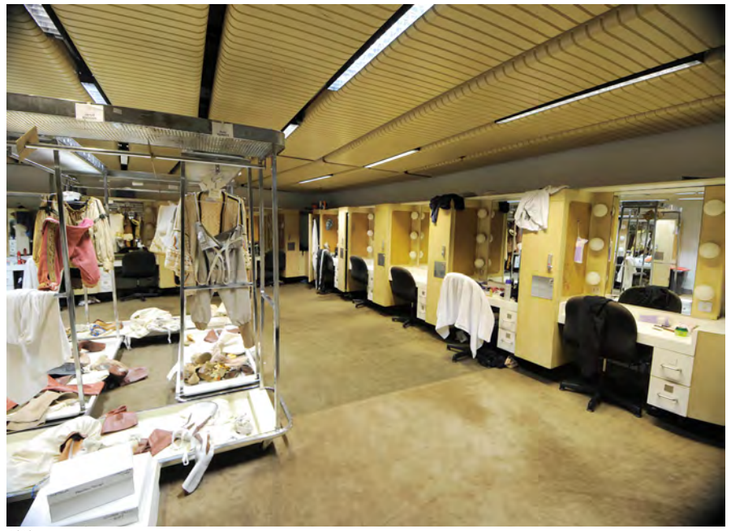
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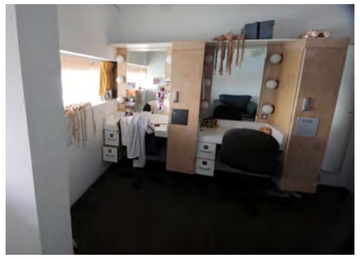
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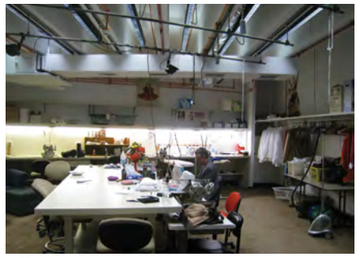
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4.316 *Chorus dressing room with original fitout, level +30, beneath Joan Sutherland Theate, 2010*
4.317 *Costumes room, level +30, 2010*
4.318 *Principal's dressing room with original fitout, level +30, 2010*
4.319 *Corridor in performers' area, level +30, beneath Joan Sutherland Theatre, 2010*
4.320 *'Indian Boy', temporary signage on dressing room door, 2010*
4.321 *Performers' dressing room with original fitout, level +30, beneath Concert Hall, 2017*
4.322 *Concert Hall conductor's suite, original fitout and carpet removed, level +30, 2010*
4.323 *Orchestra dressing room 59, with original lockers and 'wobbly' ceiling panels, level +30, 2017*
4.324 *Corridor, level +30, between main rehearsal room and orchestra dressing room, 2014*
4.325 *Concert Hall orchestra locker room with original fitout, 2017*
4.326 *Concert Hall orchestra assembly room (1999) above The Studio, 2017*

4.10.6 Artists' / performers' areas, including dressing rooms & artists' locker rooms

B-D High-Low significance

Ceilings and walls will be off-form concrete, painted or in the case of brick partitions, bagged and painted. ...Furniture will be of plywood, suspended or supported on steel frames. Dressing tables will have vinyl topping and chairs and seats will be covered with comfortable foam rubber cushions.[7]

The corridors connecting these spaces under the Joan Sutherland Theatre on Level +30 fully retain their Peter Hall design regime and characteristics in the same manner as those opposite in the management areas. Likewise, the dressing rooms and related areas under the Joan Sutherland Theatre on Levels +30 and +12 retain their Hall interiors, including fittings and lockers and are substantially intact except for loose furniture. Some fitout components are beginning to look tired and in need of more substantial repair and re-finishing, but they should be retained. Generally the wobbly system appears to be in good condition.

Therefore, Policies 4.4 and 4.8 apply to any minor works or adaptation to these areas. For substantial changes such as the complete renewal of the Joan Sutherland Theatre (Opera Theatre) and associated facilities, Policy 4.5 would apply.

The 1973 performers' areas under the Concert Hall, including dressing rooms, have in many cases been substantially altered in terms of fittings and finishes. These alterations, and the new areas created in 1999 as part of the Studio construction, bear little relation to the Hall regime. The gradual diminishing of the quality and integrity of these areas should be resisted, and if possible reversed, in any future work.

The performers' assembly area, created in 1999, incorporated some Hall components, such as the white birch plywood lockers, but used painted plasterboard ceilings instead of the wobbly system, and introduced the 'rust' carpet colour from the Studio below. The latter has since been changed to Hall's chocolate brown back-of-house carpet.

For discussion on appropriate uses for spaces, refer to Section 4.20.1 *Use and compatibility.*

Refer to Sections 4.11 *Doors, furniture & fittings* and 4.12.1 *Carpets.*

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Artists' / performers' areas, including dressing rooms opposite.

Tolerance for Change

element:
Artists' / performers' areas, including dressing rooms

significance ranking **B-D**

Original Peter Hall fitout to performers' areas, including dressing rooms under Joan Sutherland Theatre (Opera Theatre) and Concert Hall

selected components:

	Tolerance for Change 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				Further Considerations (to be read in conjunction with the relevant policy section for each element)
	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.
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.

Opportunities for Change

Explore opportunities – Artists' / performers' areas, including dressing rooms Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Comment Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
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.
New performers' areas	Introduce modified Peter Hall fitout in accordance with Policy 10.1, retaining chocolate brown carpet.


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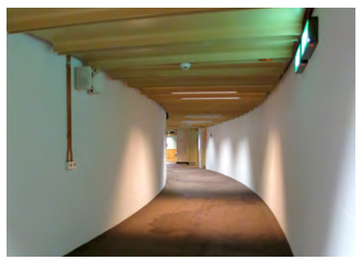
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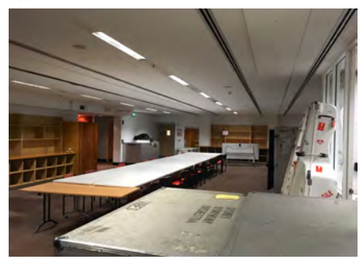
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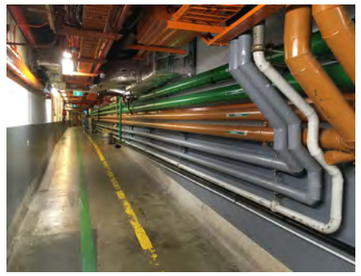

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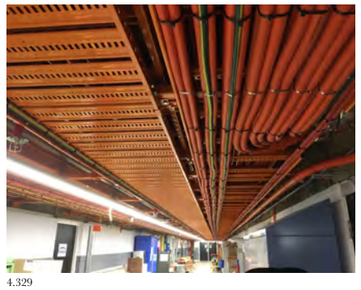

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4.327 *Services corridor, level +12, 2010*
4.328 *Services corridor, level B2, 2017*
4.329 *Services corridor on main central axis, level B2, 2017*
4.330 *Services passage above Concert Hall, 2010*
4.331 *Services and access corridor, east side of Drama Theatre, level +12, 2010*
4.332 *Colour coded and labelled services, 2017*

4.10.7 Service areas

C-D Moderate-Low significance

Walls and ceilings will be white-washed with cables and ducts exposed.[8]

Although finished by Hall with a pared back budget and palette, these areas have a directness and clarity consistent with good design and high quality workmanship. Any attempt to 'dress up' or 'update' these areas would only diminish these qualities. Any changes or alteration should retain and, if possible, strengthen the clarity and quality of these spaces, in accordance with Policy 4.8. Significant contributing factors to the quality of these spaces include:

- absence of false ceilings
- robust, generally masonry, surfaces
- white painted off-form finishes
- colour-coded or banded services in neatly aligned surface-mounted steel conduits and pipes
- consistent door finishes and colours, hardware and signage

Maintaining compliance with the Opera House's *Building Services Standard Specification* (BSSS) is important as it provides more detailed guidance on the technical and heritage requirements for building services, but the above contributing factors must be considered.

Those service areas now used as offices should retain as much of these qualities as possible, and only introduce carpet (dark brown to be consistent within the Podium) to soften the acoustic and improve comfort.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Back-of-house spaces generally.

4.10.8 Recording Studio

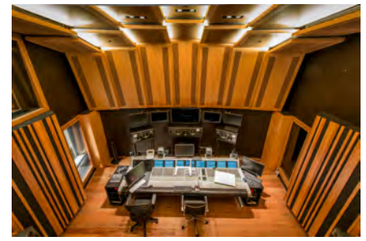
C Moderate significance

The Recording Studio facility has played a key role in the Opera House's ability to broadcast to a wider audience, and this is now expanding with live digital broadcasts. The original recording suite facility was at gallery level on the south side of the Rehearsal and Recording Hall. It remained in this location when the upper level of the hall was separated off for the orchestra assembly area and the hall itself transformed into The Studio. In this location the recording suite was refitted at least once. With the construction of the underground loading dock, part of this area was required for an additional lift to the backstage of the Concert Hall, and in 2013 the recording suite was moved to its present location.

Now known as the Recording Studio and multi-media suite, it is located in the former Rehearsal Rooms closest to the Joan Sutherland Theatre orchestra pit on Level +12. These originally separate rooms, and the small spaces immediately to the west, have been connected and refitted for their present use.

The 2013 transformation of this space designed by Scott Carver (architects) allows live recording within the studio and thus has a strong emphasis on acoustic excellence. All components of the original Rehearsal Room fitout were removed and replaced with a timber panelled interior, different to Hall's fitout in character and detail but consistent with his concepts and materials (brush box and white birch). To some extent, the strict acoustic requirements justify the deviation from Hall's design regime in this space. Any further changes or adjustments to this fitout should aim to strengthen its relationship to Hall's work in accordance with Policies 4.4 and 4.8.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for the Recording Studio below.



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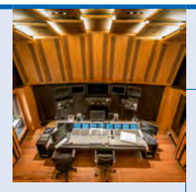
4.333 *Recording Studio, 2014*
4.334 *Recording Studio, 2014*

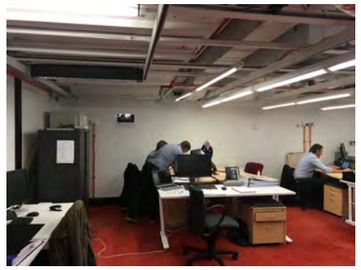
Tolerance for Change

element: **Recording Studio** significance ranking **C** Recording Studio and multi-media suite on Level +12 under Joan Sutherland Theatre in former rehearsal rooms RR63 and RR64 **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Entry lobby at west end with fully glazed doors, concrete floor, painted concrete walls and ceiling	**2**	**2**	**3**	**3**	Retain Hall finishes. Doors could be modified to better reflect Hall regime – refer to Section 4.11.
Office and lounge areas off entry lobby with brush box panelling	**3**	**3**	**3**	**3**	Important for spaces to be identifiably within the Opera House. Adjustments could be made to better reflect Hall design regime.
Recording Studio spaces including mezzanines with brush box flooring, brush box wall panelling and brush box veneered acoustic ceiling panels	**3**	**3**	**1**	**2**	Important for spaces to be identifiably within the Opera House. Adjustments could be made to better reflect Hall design regime, including doors.



Opportunities for Change

Explore opportunities – Recording Studio	**Comment**
Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Minor adjustments	Consider minor adjustments to doors, particularly those adjoining other spaces, to better align with Peter Hall design regime.



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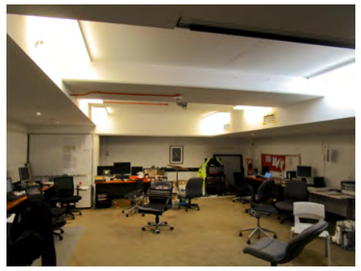

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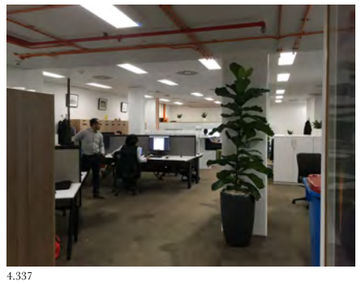

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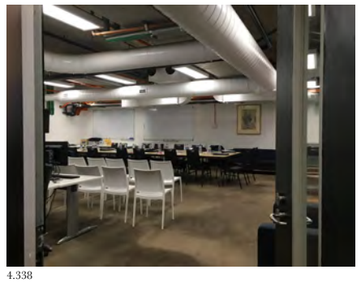

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4.335 *Mezzanine office below Concert Hall, west side of Central Passage, 2017*
4.336 *Lower level mezzanine office below Concert Hall, west side of Central Passage, 2016*
4.337 *Contractors' offices 1993, level B1, 2017*
4.338 *Training room 1993, level B1, 2017*
4.339 *Original fitout of back-of-house lockers and lavatories, administration level +30, 2014*
4.340 *Original fitout of back-of-house lockers and lavatories, administration level +30, 2010*
4.341 *Original fitout of back-of-house lavatory, adjacent to Green Room, 2010*

4.10.9 Spaces within the western part of the Podium

D Low significance

A number of the spaces left over from the removal of stage machinery and backstage facilities for the major hall have been altered and adapted more than once. With the reconfiguration of the exhibition space and its most recent adaptation into public lavatory facilities for the Western Foyer, and works to create the Studio, many areas have long ago lost whatever Hall design regime and finishes they had, except perhaps for the door finishes and numbering.

In order to regain some consistency in the identity of these areas and their association with other similar spaces in the Podium, it is important that the Hall design and finishes regime, including consistent signage, is re-applied to these aberrant spaces in accordance with Policies 4.8 and 10.1. If this is not done, fragmentation of the identity of Podium spaces, both original and new, will continue.

Refer to Section 4.11 *Doors, furniture & fittings.*

For discussion on appropriate uses on the site, refer to Section 4.20.1 *Use and compatibility.*

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Back-of-house spaces generally.

4.10.10 Maintenance and contractors' facilities 1993

D Low significance

These facilities on basement level (B1), completed in 1993, have adopted a modified service area palette of the original Hall regime, which still relates them to the rest of the Podium. Their palette of finishes should be retained and extended into any future additional areas at that level. However, they should incorporate Hall's signature dark brown carpet or dark vinyl finishes intended for back-of-house areas. They should also continue the consistent door colours and numbering system appropriate to each area.

4.10.11 Lavatories and locker rooms

C Moderate significance

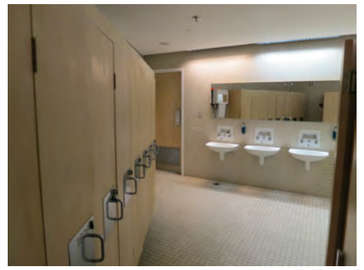
The cubicles themselves for coats and toilets are made of moulded plywood panels…the form of the individual cubicles is within the scope of the maximum and minimum capabilities of manufactured moulded plywood panels.[9]

Hall designed the lavatories and locker rooms with a consistent palette of fittings and finishes, with only the door finishes deferring to their location within the Podium. Two-inch square unglazed light grey tiles were used on floors and walls, and lavatory cubicles were of white birch veneered moulded plywood. These cubicles correlate closely with Utzon's original intent for the spaces and with Hall's amenities in the northern foyers of the major halls.

Inevitably, bathroom and locker room fittings will require repair or replacement over time, and it is almost universally accepted in the building industry that refurbishment of such facilities involves replacement of all fittings and complete re-tiling. This is not appropriate at Sydney Opera House and should be avoided if at all possible. In 2008 a trial at upgrading an existing original lavatory with new fittings within the existing regime proved that retention and refurbishment of Hall's design with minimal impact was possible, and this has now been continued in other areas. The trial was carried out in the men's lavatory adjacent to the Green Room canteen, and the existing tiles were simply cleaned and re-grouted. The result was a good conservation outcome with minimal expenditure, further safeguarding the integrity of the whole place.

This work accorded with Policy 4.8, and should be applied to all back-of-house lavatories and locker rooms.

Refer to *Tolerance for Change* and *Opportunities for Change* tables for Lavatories and Locker Rooms below.



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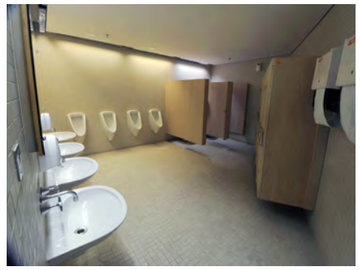

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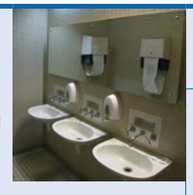
Tolerance for Change

element: **Lavatories & locker rooms** significance ranking **C** 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** (to be read in conjunction with the relevant policy section for each element)
	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.
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.
Metal towel dispenser units (design)	**Intrusive**				Replace with better design to Sydney Opera House standard of excellence.

Opportunities for Change

Explore opportunities – Lavatories & locker rooms	**Comment**
Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Upgrade	Potential upgrade of WCs and urinals to achieve water efficiency. Retain wall tiles, basins and ceramic wall units. Darker grout to match tiles could be used on floor.

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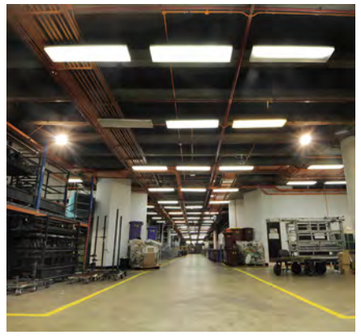

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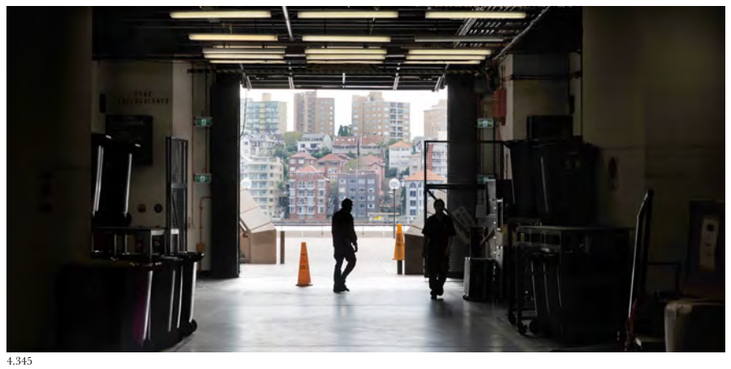

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4.10.12 Central Passage

B High significance

Utzon's original intent was for this passage to be a publicly accessible space, and the lift locations to foyers above were based on this. This concept has been included as a long term objective in the 2001 *Strategic Building Plan* and may be possible at some time in the future, but only if the service activities it presently houses can be relocated elsewhere.

The underground loading dock, completed in 2015-16, has removed most vehicles from Central Passage and relieved much of the pressure on the space. Other potential future projects of this nature might allow Utzon's intent to be fulfilled.

The Central Passage is arguably the most impressive (though in its present cluttered state, one of the least attractive) of the service areas. It extends from the Stage Door and Covered Concourse in the south to the Northern Broadwalk, and serves as the primary access spine for loading and unloading supplies, stage scenery, props and general services, as well as being the main back-of-house pedestrian thoroughfare at this level. All deliveries are now via the underground loading dock and then brought up by lift.

All staff and performers enter the passage from the Stage Door before proceeding to their workplace or other destination within the Podium. This intensity and multiplicity of use within Central Passage has resulted in some conflicting priorities. During a performance in any of the auditoria, activities within this space are restricted as it is also a required fire exit.

The width of the space has been effectively diminished over time with the addition of enclosed facilities and storage along each side, particularly on the west. While many of these have been removed, a long-term aim should be to remove those remaining facilities that diminish the efficient use of the space.

> ***Policy 10.5 – Central Passage***
> *Except for the underground loading dock and associated lifts, the Central Passage with its two existing vehicle entries must remain the only means of vehicle entry for goods and services into the Podium. The long-term objective for this space should be to open it up as a public space as Utzon intended.*

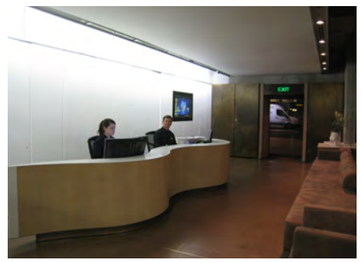
Refer also to *Tolerance for Change* and *Opportunities for Change* tables for Central Passage opposite.

Tolerance for Change

element: **Central Passage** significance ranking **B** Central back-of-house access passage, loading dock and Stage Door **selected components:**	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Continuous length of full-height open space	**2**	**2**	**1**	**1**	Clarity of space and legibility of roof piers, could be improved with removal of paint from roof piers as in Green Room.
Services overlay – neatly arranged, aligned and colour-coded	**2**	**3**	**1**	**2**	Quality of materials, fixings and workmanship most important.
Stage Door – performer and staff entry and security	**2**	**2**	**1**	**2**	Refitted in 2003. Efficient function and welcoming atmosphere most important. Visual connection with Central Passage also important.
Stair to Green Room	**2**	**2**	**1**	**2**	Should be kept clear of obstruction and be clearly visible in space.
Use of space as ancillary storage area	**3**	**3**	**2**	**3**	Relocate storage function to allow more efficient use of passage.
Concrete block additions for storage and services along western side	**Intrusive**				Compromise efficient use of main space – to be removed at earliest opportunity.
Cages for storage of equipment, props, etc.	**Intrusive**				Compromise efficient use and circulation of main space – to be removed at earliest opportunity.
Steel bollards	**Intrusive**				Safety is important but number and location of bollards should be reviewed.
Safety line markings	**Intrusive**				Safety is important, but floor has become a painted safety canvas that potentially distracts from simply looking out for danger. Extent and location of markings to be reviewed.

Opportunities for Change

Explore opportunities – Central Passage	**Comment**
Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Public space	Consider long-term objective to make Central Passage a public space / thoroughfare, connecting to Northern Broadwalk.



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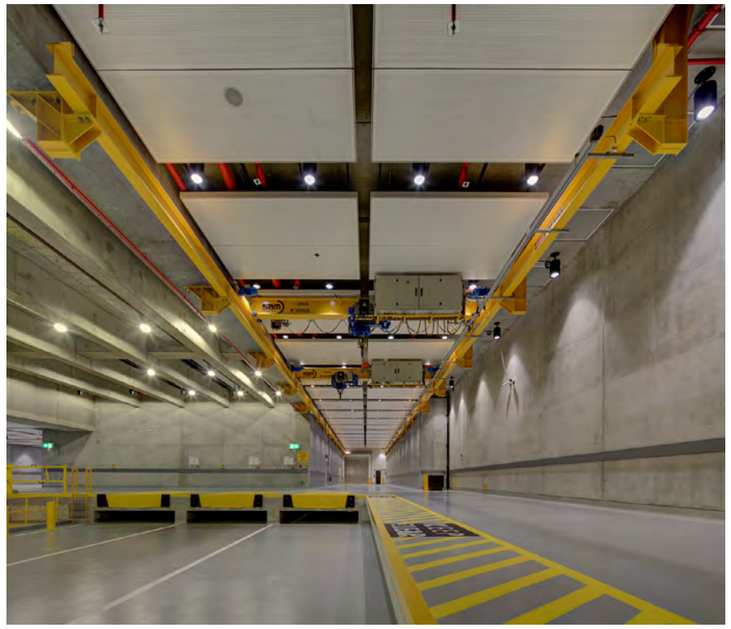
4.342 *Central Passage looking north, 2009*
4.343 *Central Passage stairs to Green Room, 2008*
4.344 *Central Passage looking south, 2010*
4.345 *Central Passage north door looking out, 2010*
4.346 *2003 fitout to Stage Door, 2011*
4.347 *Central Passage north door from outside, 2010*



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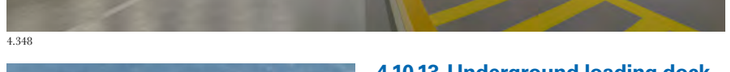

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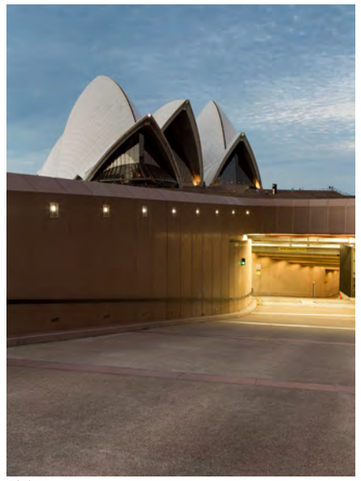

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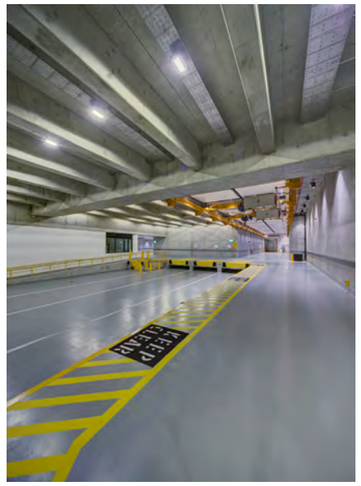
4.348 *Underground loading dock, 2015*
4.349 *Underground loading dock entry portal, 2015*
4.350 *Underground loading dock, 2015*
4.351 *Underground loading dock looking towards entry ramp, 2016*
4.352 *Corridor in basement office space above loading dock, 2015*
4.353 *Ceiling in basement offices (B2) above loading dock, with exposed underside of Covered Concourse tie-beams, 2016*
4.354 *Underground loading dock, looking towards Joan Sutherland Theatre lift, 2016*
4.355 *Basement offices (B2) above loading dock, 2016*
4.356 *Basement offices (B2) above loading dock, beneath tie-beams, 2016*
4.357 *Underground loading dock, with corridor to Concert Hall lift on left, with Joan Sutherland lift on right, 2015*

4.10.13 Underground loading dock and associated facilities (2015)

B High significance

A new underground loading dock under the Covered Concourse, accessed via a ramped tunnel entry on the south-western side of the Forecourt, with lifts connecting to the backstages of both main auditoria, was completed in 2015 as part of the Vehicle Access and Pedestrian Safety (VAPS) project.

The original concept design for this project was prepared by Johnson Pilton Walker, in association with Utzon Architects. Design development and construction phases were carried out by Scott Carver (Architects) in association with Utzon Architects. This project used a simple palette of white painted off-form concrete and blockwork with concrete floors and colour-coded exposed services – following Hall's regime for service areas. Loading equipment, barriers, etc. are painted in bright 'safety' yellow, giving a strong, direct and almost industrial character to the space. Facilities include heavy duty loading facilities and chilled garbage store. It has allowed a transformation of the Forecourt into a fully pedestrian area.



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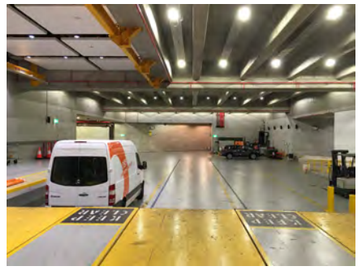

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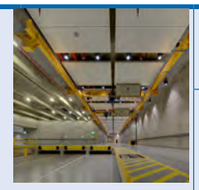
4.10.14 Service and administration areas above loading dock (2016)

D Low significance

Additional administration, maintenance and contracting facilities over two basement levels above the loading dock were completed in 2016 beneath the Covered Concourse as part of the Vehicle Access and Pedestrian Safety Project. They have used the original Hall regime of finishes and colours with a pared back palette, and demonstrated how these objectives can be achieved in new work. Any modifications or new work should continue this regime in accordance with Policy 4.2 and other policies in this CMP.

Tolerance for Change

element: **Underground loading dock** significance ranking **B-D** Underground loading dock, basement offices and facilities completed 2015-16 **selected components:** 	**Tolerance for Change** 1 = Low tolerance 2 = Moderate tolerance 3 = High tolerance				**Further Considerations** (to be read in conjunction with the relevant policy section for each element)
	Form	Fabric	Function	Location	
Underground loading dock and associated spaces, platforms, passages and equipment	**3**	**3**	**1**	**2**	Function is critical for Sydney Opera House operation. Simple palette with bold 'safety' colours to be retained.
Lifts to Joan Sutherland Theatre scenery dock and Concert Hall backstage	**3**	**3**	**1**	**1**	Function critical.
Basement offices (2 levels) below Covered Concourse	**3**	**3**	**3**	**2**	Ideal location for contractor offices and facilities. Covered Concourse tie beams (visible as ceiling at basement office level) should remain exposed and unpainted.
Service and plant areas	**3**	**3**	**2**	**2**	Function and efficient operation are important.

Opportunities for Change

Explore opportunities – Underground loading dock	**Comment**
Items listed as intrusive in TfC table above are opportunities for change. Additional opportunities listed below.	Generally, all changes must comply with the *Utzon Design Principles* and CMP, and may be subject to statutory approval
Taxi and vehicle drop-off facility	Potential to extend excavation under Covered Concourse to provide drop-off facility. Utzon's concept included escalators up to the Covered Concourse. Entry would use existing loading dock ramp.

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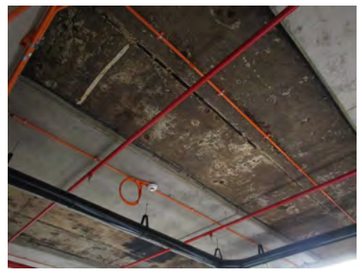

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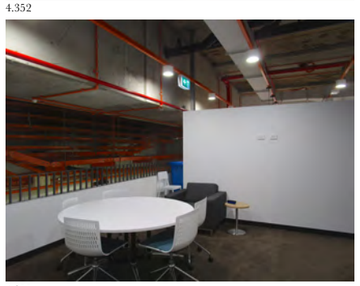

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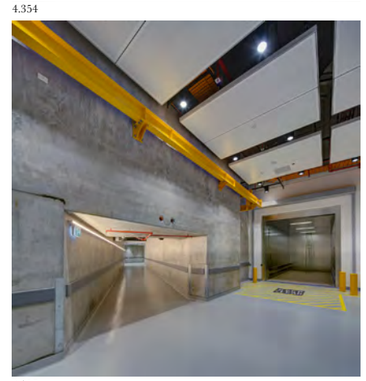

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4.358 *Door numbering and furniture, back-of-house door, level +30, lettering altered from original uppercase to align with* Signage Manual, *2017*
4.359 *Door furniture and numbering plate in 1990 service areas, 2017*
4.360 *Back-of-house door with original furniture and uppercase lettering and room name in red (OperaTheatre side of building), with lock added later, 2014*
4.361 *2009 front-of-house bronze door furniture in Western Foyer, note numbers after 'W' have been removed, 2009*

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4.11 DOORS, FURNITURE & FITTINGS

4.11.1 Doors and door furniture

An important legacy of Peter Hall's work are the various finishes and systems he introduced to give a sense of both commonality and clarity in the building, particularly within the Podium. This is especially evident in the hierarchy of design, finishes, door furniture, labelling and numbering of the doors throughout the site.

Doors vary according to their use and location, from the heavy acoustic doors finished in laminated brush box in the Concert Hall and Joan Sutherland Theatre (Opera Theatre), and solid core doors finished in white birch in much of the Podium, to paint-finished solid core doors in service areas on the lower levels. The original door hardware reflects this hierarchy, with bronze in front-of-house areas and satin chrome-plated bronze (and more recently brushed stainless steel) elsewhere. The door hardware for the Opera House was supplied by Keeler Hardware and, fortunately, designs very close to the originals are still available.[1] Electronic locking systems have been fitted in many areas but these have not adversely affected the original hardware.

Back-of-house doors on the Opera Theatre side had room names / uses in red uppercase lettering, while those on the Concert Hall side had magenta, and service rooms had orange.

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.

All doors in the building were numbered and catalogued according to their location and level, a system which allowed for adaptation and expansion. This system, instigated under Hall, is now being integrated into the Building Information Management Model (BIMM) system and should be continued and managed as part of it. It is fully explained in the document, *Guidelines for the Application of Labels for Door Numbering and Associated Text*, prepared by the Opera House's Building Development & Maintenance Portfolio. If updated, these guidelines must be consistent with this CMP and should be applied whenever work on the doors is undertaken.

Adhesion of the finely manufactured metal door labels and numbers has been problematic and repairs have often been ad hoc. Individual pieces are occasionally removed (souvenired) in both front and back-of-house areas, and maintaining them is a constant issue. Hall acknowledged in 1990 that an alternative to these individual numbers and letters may be considered in the back-of-house areas.[2] The *Guidelines for the Application of Labels for Door Numbering and Associated Text* document sets out such an alternative. However, because of its important contribution to Hall's design aesthetic for the doors, the individual letter system should be retained, at least in front-of-house areas and all back-of-house areas within the Podium accessed by management, performers, staging and production teams, with revised fixings if necessary.

Policy 11.3 – 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.

Refer also to 4.15 *Signage* and Section 4.19.2 *Building information management*.

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4.11.2 Furniture and fittings

The furniture in the halls is also made of moulded plywood supported on steel frames and padded with foam rubber of various types to obtain the different reflective properties required.[3]

Furniture and fittings make an important contribution to the setting and aesthetic presentation of the place. For interiors, particularly within the Podium, they may be the only decorative element. While often given less consideration than the building and its finishes, they should be selected to complement the character, quality and design aesthetic of the place and support its significant values. However, this does not necessarily mean they should be of the same period.

At the time of Utzon's departure, fittings, furniture and furnishings had not been chosen and it was Peter Hall's task to select them. Hall had a sound rationale for his selections, and these became important design components of the completed building. His choice was considered, maintained an appropriate quality and respected Utzon's vision and intent (as quoted above).

The seats in the auditoria consistently use the white birch plywood shells, designed specifically for the Opera House, upholstered in the signature colours and materials for each venue. Hall based this on Utzon's concept of creating mass-produced components from consistently sized plywood elements. The only departure from this has been in The Studio. The flexibility required for this space, with its retractable tiered seating, necessitated folding seats so plywood has been utilised only in the armrests.

The original upholstery fabric in the Joan Sutherland Theatre (Opera Theatre) was red leather, selected for acoustic reasons but since replaced with red wool. In all other auditoria, it was wool.

To respect and strengthen Hall's stated aim of unifying the spaces in the building (which Utzon also intended), there is a strong argument that any new seating design for the Joan Sutherland Theatre (Opera Theatre) Renewal Project should relate in some meaningful way to Hall's plywood shell design.

All of the original white birch auditoria seating was designed with the seat squabs set at an angle of 75°, with damped spring allowing them to be pushed back to 90° vertical. The acoustic testing was carried out with this configuration. Later alterations set the seat angle at 90° with no allowance for extension. This has strained its original mechanisms, causing frequent failure. This should be investigated and rectified in any future refurbishment of the seating.

Policies 4.4, 4.5 and 4.8 apply to any maintenance, adaptation or major changes to seating in Hall interiors, particularly in auditoria. Retention and refurbishment of existing plywood shell seating is always preferred to replacement, particularly when considering the increasingly reduced availability of the white birch.

Hall's selection of Eero Saarinen's Tulip chairs, designed in 1956, and their many variations for use in back-of-house areas (including the Board Room and the Bennelong Restaurant) further unified these areas and the singular identity of the whole building. The serviceability, code compliance and appropriateness of the Tulip design are understood to have been considered problematic, and all have now been replaced with more conventional chairs (and none have been found on site or in storage).

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4.362 *Joan Sutherland Theatre seating, 2008*
4.363 *Swan chairs in Bennelong Restaurant bar, 2016*
4.364 *2nd generation Board Room chair, Saarinen 1957 design*
4.365 *Southern Foyer original 1973 furniture, 2011*
4.366 *Utzon designed sofa and table, 2006*

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4.367 *Original chorus dressing room fitout (except chairs), 2010*
4.368 *Original sofas from Northern Foyer bar level (photographed off site), 2014*
4.369 *Original Green Room sofa (on site), 2014*
4.370 *Western Foyers furniture, 2017*
4.371 *Western Foyers furniture, 2017*
4.372 *Trinidad chairs in Utzon Room, 2017*
4.373 *Original orchestra locker room fitout, 2017*
4.374 *Original locker and lavatory fitout, administration level +30, 2014*
4.375 *Original front-of-house lavatory fitout, administration level +30, 2011*

The second generation of chairs in the Board Room were also a Saarinen design, the Executive Conference Chair (1957) from the Knoll range, but they too have been replaced. The original white birch tables in the Board Room and conductor's suites have also been removed. Individual pieces of some early or original furniture have survived and been found either in storage or elsewhere in the building. These should be identified and archived appropriately. This process should be part of a site-wide *Collections Management Policy* and strategy – refer to Section 4.18.11 *Collections Management*.

No doubt budgets, operational issues and statutory compliance, as well as changing fashions and expectations, all played a role in their removal, but this is where the original authenticity and integrity of the 1973 Sydney Opera House begins to diminish.

It is worth noting that Saarinen's designs are regarded as modern classics. They are still manufactured and readily available, and are once again gaining popularity among designers. The previously four-footed version of the Tulip chair is now available in a complying five-footed model. A number of other classic Scandinavian chair designs from this period are also readily available.

The 2003-2013 fitout of the Bennelong Restaurant incorporated the Swan chair in the bar areas and these were retained in the 2015 fitout. This is a modern classic by Danish designer Arne Jacobsen in 1958, and very appropriate in this context.

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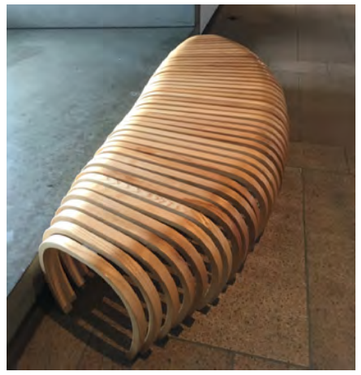

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Original Hall fittings, such as lockers and fitout in white birch plywood in dressing and locker rooms, have suffered a similar fate in some areas, particularly in areas beneath the Concert Hall. Such losses should be redressed in accordance with Policies 4.4 and 4.8.

Policy 11.4 – Furniture and fittings – audit and monitoring
A comprehensive audit of furniture and fittings must be undertaken for all areas of the Sydney Opera House, both externally and internally, including off-site storage facilities, and original pieces identified as part of a Collections Management Policy *and strategy. Where necessary, selected pieces must be appropriately stored within the Sydney Opera House archives.*

The use and condition of furniture and fittings, particularly in high use areas, must be monitored in accordance with Policy 18.2 Monitoring programs *to identify risks and formulate precautionary measures. Such measures must be implemented to mitigate against high risks of damage where possible.*

In 2006, a low table and single- and two-seater sofas, designed by Jørn Utzon in the 1960s for the Opera House, were purchased by the Sydney Opera House Trust (see Figure 4.366). First manufactured in 1967 by Fritz Hansen and known as the 'New Angle' range, they were intended to have laminated timber frames but these were found to be too weak and were later produced in aluminium.[4] These pieces are no longer in production and may not meet current standards, but a similar design could form the basis for new furniture in public areas and the more prominent back-of-house spaces. This may also provide the Opera House with some merchandising opportunities.

Original 1973 furniture surviving in the foyer spaces includes simple modern upholstered bench seating and circular tables. These are appropriate and should be retained with selected pieces kept within the Sydney Opera House archives in accordance with the *Collections Management Policy* and strategy.

The Green Room retains most of its original timber and steel tables in the cafeteria area, but most of the chairs and all of the sofas and lounge chairs have been replaced. The latter are of a sympathetic and serviceable design, and have recently been re-upholstered in an orange wool fabric selected by Jan Utzon. The tables and chairs, as well as timber elements on the lounges, were refinished utilising a white stain / filler similar to the original treatment of the white birch seating elsewhere in the building. These changes have been consistent with Hall's design regime.

One of the 1973 three-seater sofas with red wool upholstery from the Green Room survives on the site in a secluded location. Long-standing staff members remember there were originally both red and magenta upholstered sofas in the Green Room and surviving cushions on site and in storage confirm this. These reflected the signature colours of both the Concert Hall and Opera Theatre.

The recent timber furniture in the Western Foyer was selected for that space by Sydney Opera House in consultation with the Conservation Council and Eminent Architects Panel, but could be replaced with different designs if required.

Policy 11.5 – Furniture and fittings – replacement strategy
A strategy must be formulated to guide furniture replacement or new purchases based on a set of design selection principles that strengthen both Utzon and Hall's design regimes. This strategy should include consideration of original Utzon designs for the Opera House and / or reinstatement of original Saarinen designs in the more significant Peter Hall spaces.

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The stackable plywood Trinidad chairs, designed in 1993 by Danish designer Nanna Ditzel, were selected by Jørn Utzon for the Utzon Room and are considered modern classics. They are an important part of his design.

Policy 11.6 – Trinidad chairs in Utzon Room
The Trinidad stackable plywood chairs designed by Nanna Ditzel must be retained for use in the Utzon Room. Alternative designs should only be considered if the furniture is beyond repair and the Trinidad design is no longer available. This design may be used elsewhere in the Opera House if it is appropriate for both the space and the use.

Refer also to individual sections, *Tolerance for Change* and *Opportunities for Change* tables for each space or element, Section 4.6.8 *Exterior furniture* and Section 4.18.11 *Collections management*.

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4.376 Curtain of the Sun *by John Coburn, 2006*
4.377 Curtain of the Moon *by John Coburn, 1973*
4.378 Ballerina Sketch *by Brett Whiteley hanging in Green Room, 2017*

4.12 CARPETS, ARTWORKS & CURTAINS

4.12.1 Carpets

Peter Hall's intention to utilise finishes as a means of unifying the building, while still providing individual signatures for each auditorium, resulted in the use of plain, dark brown (chocolate) coloured carpet throughout all the back-of-house areas, and strong plain-coloured carpets in each auditorium and / or its associated foyer spaces. Each colour was chosen to reflect the primary use and mood of the venue, and co-ordinated with seat upholstery. This regime of carpet colours had been progressively diluted until a *Carpet Strategy*, prepared in 2006 by Design 5, was adopted and implemented.[1] This document sets out the original rationale for the carpet types and colours, with recommendations for future maintenance and replacement to retain and respect these Hall regimes.

Jørn Utzon had intended that the Northern Foyer be finished with the same precast paving as the Southern and Side Foyers, but Hall selected signature coloured carpets for the mural and bar levels and their associated stairs. The carpet provides added comfort, but requires frequent replacement because of its exposure to the sun.

> ***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.*

Refer also to individual sections and *Tolerance for Change* and *Opportunities for Change* tables for each space or element.

4.12.2 Artworks and curtains

It is possible to reinforce the experience of a building on the basis of sculptural or visual decoration making clear and describing the function of the building. I have thus attempted to express the function of the edifice as a building for the world of music by translating a piece of music into a visual experience expressed in a tapestry." [2]

"The ornamental curtains will probably be made of silk and in colours corresponding to the decoration of the hall.[3]

Utzon intended that colourful works by modern masters should be hung in the Opera House, however, he preferred to concentrate the festive colours in the auditorium itself – as the culmination of the journey. These intentions were re-focused by Hall and expressed in soft furnishings, curtains and artworks.

A number of artworks were commissioned specifically for the Opera House in 1973 and designed as significant focal pieces in their respective spaces. See Appendix D for a list of such artworks. The major ones were the *Curtain of the Sun* (Joan Sutherland Theatre (Opera Theatre) proscenium) and *Curtain of the Moon* (Drama Theatre proscenium), both designed by John Coburn; and the painted mural *Salute to Five Bells*, based on Kenneth Slessor's poem, by John Olsen (Concert Hall Northern Foyer).

Other works came later, some commissioned and others acquired by the Opera House or gifted to it. The most notable of these are the mural *Possum Dreaming* by Michael Nelson Tjakamarra in the Joan Sutherland Theatre Northern Foyer, and the tapestry *Homage to C.P.E. Bach* designed by Jørn Utzon and made in 2004 for the refurbished Utzon Room.

All five artworks are very significant pieces in themselves and play an important role in the spaces designated for them, however, except for the Utzon piece, all have major problems.

The Coburn curtains were made of wool and woven in Aubesson, France, but were taken down for repair many years ago after their woven structure deteriorated. Even while they were still in place, many theatre companies preferred not to use them, arguing they did not suit their performance or took up valuable space.[4]

In 1992 the curtains were sent to the Victorian Tapestry Workshop where they underwent extensive restoration, including replacement of the failed warp threads. Once returned, they were placed in purpose-made storage boxes. Since then, the *Curtain of the Sun* has been hung briefly, following Coburn's death in November 2006 and again in June 2007 when the Opera House was entered on the World Heritage List.

The two curtains are arguably the most important design components of their respective spaces and should, if at all possible, be re-hung in their original locations. There will always be conflict between available fly space and the presence of the curtains, but it should not be for the hirers of the theatres to determine whether the curtains remain in place or are removed.

> ***Policy 12.2 – Coburn curtains***
> *The* Curtain of the Sun *and the* Curtain of the Moon *should, if technically possible, be re-hung in their original locations. If the auditorium is affected by major works, then Policy 4.5 applies and the re-hanging may or may not be appropriate.*
>
> *Collections and interpretation strategies should also be considered.*

4.379

The 1973 *Ede Tapestry* in the Board Room, by Jutta Fedderson, covered much of the south wall and was an important piece commissioned for that space, but it has also been taken down. Many pieces such as this are works by notable artists; all should be assessed to determine their condition, whether they can or should be re-hung, and if so, where.[5]

As stated in Policy 4.2, changes in aesthetic taste or fashion should not be a justification for change at the Opera House.

Both murals in the Northern Foyers suffer from the fading effects of high daylight levels and are now protected by heavy and intrusive curtains and only exposed in the evenings. The Olsen mural in particular was badly affected. Its once almost luminescent colours were faded and lacking impact. It was restored in the 1990s and its protective curtains are now closed during the day. If it remains in this location it may eventually be stripped of its original qualities. In the 2003 CMP, Kerr suggested consideration be given to replicating and replacing it in a more durable fade-resistant material, such as ceramic, while the artist is still able to oversee the work. This recommendation is supported. If this is not possible, the work should ultimately be considered for replacement with a more durable piece, appropriate to its environment and exposure, in accordance with Policy 12.4 below.

It is hoped that the problems associated with these 1970s artworks will not affect the Utzon tapestry, but regular monitoring is necessary to detect any signs of deterioration. The physical accessibility of this tapestry is also an issue. Refer to Section 4.9.3 *Utzon Room*.

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4.379 Homage to C.P.E. Bach, *tapestry by Jørn Utzon in Utzon room, 2008*
4.380 Ede Tapestry *by Jutta Fedderson in Board Room, photo taken late 1973. Note green upholstered Tulip chairs and white birch table.*

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4.381 Salute to Five Bells *by John Olsen in Concert Hall Northern Foyer, 2010*
4.382 Possum Dreaming *by Michael Nelson Tjakamarra in Joan Sutherland Theatre Northern Foyer, 2011*
4.383 *1982 bust of Sir Eugene Goosens, by Peter Latona, 2011*

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of more traditional theatres, and should be kept free of added decoration, particularly in the foyers surrounding the main auditoria at Podium level. Nonetheless, some artworks are very significant to this building and should be appropriately accommodated and displayed, as long as they do not restrict the use of the space, detract from its significant qualities or damage its fabric.

An important consideration across all significant front-of-house and back-of-house spaces at the Opera House is the very limited availability of appropriate hanging or display space.

In terms of front-of-house spaces, the Box Office Foyer, the lounge and bar areas beneath the Northern Foyers, and the Western Foyers have a scale and configuration which may be appropriate for the display of artworks, but only in limited numbers and selected locations. In the Box Office Foyer, artworks should not be displayed in locations close to the stairs from the Covered Concourse or close to the Southern Foyers, and not at all within the stair, escalator or lift spaces, where they would dilute the visual strength and character of these spaces.

In the Western Foyer, the unpainted concrete roof support piers, smaller columns and spandrel above delineating the main space, and the unpainted concrete window embrasures should remain free and unobstructed from any decoration or artworks. Other painted wall areas may be considered, but must still comply with the policies and guidelines for this space and, most importantly, not detract from its unified simplicity and clarity.

The framed tapestry by Le Corbusier now provides a significant and appropriate focus on the south wall of this Utzon designed space and respects its simplicity, but there may be other appropriate locations for this work. The connection with Utzon is significant and should be considered in any relocation.

In the Bennelong Restaurant, the Aboriginal poles ('Larrakitj') from the North East Arnhem Land in the Northern Territory, were purchased by Sydney Opera House and ceremonially installed in the space in 2002 as part of a fitout designed by Dale Jones-Evans. The poles are a dramatic and significant Indigenous presence in this space and should preferably remain in their present location. Their presence and meaning is further strengthened by the Aboriginal name of the space. If relocated, they should be in a public space where they can be appropriately sited and appreciated with their significance and meaning clear.

In back-of-house, particularly the Green Room, and important spaces in the executive and performer areas, many of the available wall spaces already host important artworks, such as Donald Friend's *Bennelong Series* outside the CEO's office, and the many images of construction of the Opera House by Max Dupain and others.

These issues highlight the need for a comprehensive *Collections Management Policy* and strategy to be implemented across the site, covering all significant moveable items. Refer to Section 4.18.11.

Similar issues apply to the recently acquired tapestry by Le Corbusier, previously owned by the Utzon family. Now hung within a lighted, framed case in the Western Foyer, it would appear to be better protected from light and physical touch, but monitoring is still required.

Numerous smaller works have been gifted to the Opera House, often in commemoration of a significant performer, performance or event. Examples include the bust of Sir Eugene Goosens by Peter Latona in the Concert Hall Southern Foyer. The portrait of Dame Joan Sutherland and another of Sir Robert Helpmann, both by Judy Cassab, in the side foyers of the Joan Sutherland Theatre (Opera Theatre) were commissioned by the Sydney Opera House Trust in 1975. While some may be appropriate in terms of their size, material and location, others are not.

It is important to note that the character of the foyer spaces in the Opera House is quite different from the 'picture gallery' foyer spaces

There is considerable pressure for the display of artworks in the Green Room as this is the social hub of the Opera House staff, performers and technical support. In 2009, artwork then on display was re-assessed for its significance and relevance to this space and a number of pieces were removed. All artwork and associated fixings were removed from the roof support piers and they were stripped back to bare concrete. As already mentioned for the Western Foyer, these piers and others within the Podium must remain free of artworks.
The acquisition, replacement and disposal of artworks is a difficult issue and most institutions have specific guidelines and policies in this area. For the Opera House, this is complicated by the association (frequently significant) that a particular work may have with the place, and the likelihood that the work may need to be retained or interpreted if it goes off site.

Sydney Opera House presently has a policy not to "acquire artworks on any permanent basis either through purchase or as a gift or part of a sponsorship. Rather, Sydney Opera House will implement a program of selecting and exhibiting works on a rotating basis. The selection of works for temporary display will be made according to the following criteria:

- Works of excellence
- Preference for Australian works
- Works that are more than just decorative i.e., should include works that challenge (match the expectation of the building)
- Works are not on permanent display
- Works selected to complement the exhibition space[* 6]

Policy 12.3 – Artworks – management and ongoing care
A comprehensive inventory of all artworks in the care of the Sydney Opera House must be compiled and maintained, including information related to their acquisition, location and condition. All artworks should be assessed in terms of their significance and association with the place, and a Collections Management Policy *and strategy put in place for their ongoing management, monitoring and care.*

Artworks, whether curtains or murals, must not be cut into sections to fit convenient wall spaces elsewhere.

Significant artworks which may not be able to be reinstated or retained in their original location must be either safely stored or displayed in an appropriate location, possibly off site. Its association with Sydney Opera House should be made clear and interpreted.

Policy 12.4 – Artworks – acquisition and disposal
When considering acquisition of new artworks, whether on a temporary or permanent basis, the following criteria must be satisfied before the acquisition is approved:

- *an appropriate, non-intrusive location has been identified for the work which accords with the guidelines and policies of this CMP;*
- *the work has a strong connection or association with the Sydney Opera House and the space or location chosen for it;*
- *the work will not adversely impact any significant space or element or component of it;*
- *the work will not require any protective covering or other treatment in the chosen location.*

When considering disposal of original artworks, the following criteria must be satisfied:

- *the work is or was not an important or focal element in a significant space;*
- *disposal be contemplated only after consulting the wishes of the original donor or his or her family, noting that donors or their families should not be able to veto a disposal;*
- *no alternative appropriate location can be found on the site for the work.*

Concerning the last point, some works, such as Donald Friend's *Bennelong Series* and Sidney Nolan's *Little Shark* (which originally hung in the Playhouse foyer) are made up of a number of panels. It is important that the set not be broken up by the disposal of some panels. This need not prevent parts of the set being hung in different locations, as long as this allows it to remain on site and an up-to-date record is kept of where the various parts are placed.

Commemorative and other plaques are discussed in Section 4.16 *Interpretation.*

Collections management is discussed in Sections 4.18.11 and 4.19.

Refer also to individual sections and *Tolerance for Change* and *Opportunities for Change* tables for each space or element, particularly Sections 4.8.2 *Foyers surrounding major auditoria*, 4.8.4 *Joan Sutherland Theatre (Opera Theatre)*, 4.9.2 *Box Office Foyer*, 4.9.3 *Utzon Room*, 4.9.4 *Western Foyers*, and 4.9.5 *Drama Theatre.*

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4.384 *Portrait of Dame Joan Sutherland by Judy Cassab, 2011*
4.385 Bennelong Series *by Donald Friend, 2011*

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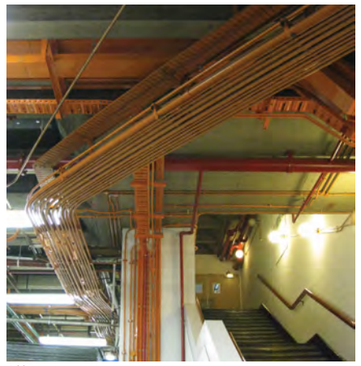

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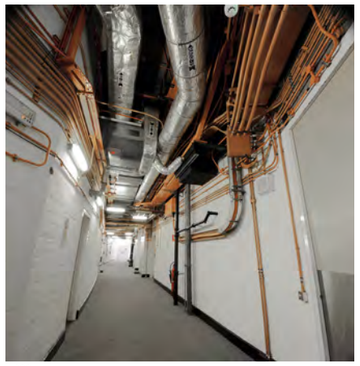

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4.13 SERVICES & MACHINERY

Along these corridors we also have the circulation of the services such as ventilation, electricity, water, fire protection, etc. Here again, we see the architect's philosophy: if humans circulate around a building through corridors, so also your services do the same thing.[1]

4.13.1 Repair or alteration of service lines

Services in the front-of-house areas, particularly those installed up to the time of the Opera House's opening, are generally concealed or discreetly located to avoid disfiguring or distracting from the character and quality of the structure and finishes. Exposed electrical conduits in public spaces and externally were run in semi-rigid mineral-insulated copper-clad cable similar to Pyrotenax.

In the back-of-house, services are more visible and, in areas not fitted with the wobbly regime, deliberately exposed and often densely arranged. Most are in painted steel with large spans between fixings. All are colour-coded or labelled for ease of identification. Their carefully ordered arrangement, precise spacing and careful fixing are testament to the skill and care of those who designed and executed the installation. This is an example at a very basic technical level of Utzon's vision for the Sydney Opera House as a place that inspires artists and technicians in the pursuit of excellence.[2] It is essential that the same skills and principles be applied to any alterations or additional services, as well as compliance with the Opera House's *Building Services Standard Specification* (BSSS).

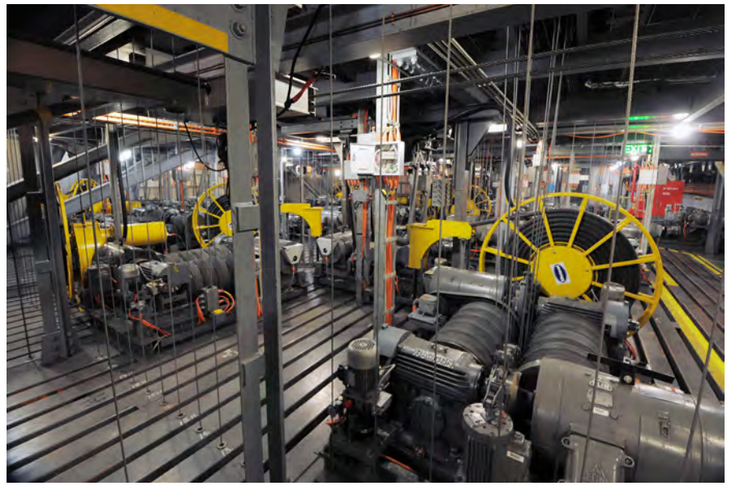
Policy 13.1 – Repair or alteration of service lines
The design and installation of new, upgraded or altered services, including those in new areas, must retain and respect the configuration, order, palette of materials, fixing methods and colour-coding used in the original service installations in the particular area concerned. Services with no likely future use could be removed.

Refer also to Section 4.10 *Conserving the interior: 'Back-of-house' performers' and staff areas.*

4.13.2 Machinery and equipment

When the Sydney Opera House was constructed, much of the technical equipment and machinery, particularly the stage machinery, were of the most up-to-date technology. Installations such as the sea water heat exchange system for the mechanical services and the chilled ceiling in the Drama Theatre were recent innovations at the time, and are still considered leading-edge and energy-efficient.[3] For some equipment, such as the sound and electrical systems and stage equipment, their original installation was closely followed by major changes brought about by computers.

The massive Waagner-Biro machinery for the major hall was removed following the decision to use it as a dedicated concert hall, but in the minor hall (Joan Sutherland Theatre) and the Drama Theatre, much of the original machinery remains, particularly the winches, stage lifts and revolve. The original Waagner-Biro machinery design for the Opera Theatre was reputedly based on another of their designs for the Burg Theatre in Vienna (1955 refit).[4] With changing theatre practices and demands, coupled with



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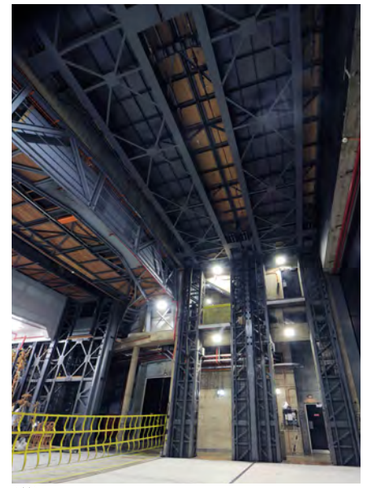

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work health and safety requirements, some of this machinery is now redundant or even obsolete, and in some cases replacement parts are no longer available. Computer technology has replaced the more conventional analogue or mechanical technology, and Sydney Opera House has little alternative but to upgrade if it is to remain competitive and comply with modern safety and operational requirements.

The quality and technology of these original installations is valued by those who understand it, but replacement is sometimes essential to the continued use of the stage or auditorium. Some original elements, such as the main sound desk from the Joan Sutherland Theatre (Opera Theatre), have already gone, but other important components may remain. A comprehensive audit and cataloguing of machinery and technical equipment should be undertaken to identify original or significant components and assist in determining their future.

In the past, collection institutions have not been interested in machinery and technical equipment from the Opera House, but this may change with increased recognition of the significance of the place, its machinery, and its World Heritage listing. Their future should be determined by a comprehensive *Collections Management Policy* and strategy in accordance with Section 4.18.11.

As part of a suite of renewal projects across the site, all of the above and below stage machinery and associated equipment in the Joan Sutherland Theatre is proposed to be upgraded or replaced in 2017.

Policy 13.2 – 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.

Refer also to individual sections and *Tolerance for Change* and *Opportunities for Change* tables for each space or element, particularly Sections 4.8.3 *Concert Hall*, 4.8.4 *Joan Sutherland Theatre (Opera Theatre)* and 4.9.5 *Drama Theatre*.

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4.386 *Joan Sutherland Theatre stage, 2010*
4.387 *Service conduits around Green Room stair in Central Passage, 2008*
4.388 *Exposed services in back-of-house, level +12, 2010*
4.389 *Fire Hose Reel and other services within 'wobbly' cupboard, back-of-house Level +30 , 2008*
4.390 *Winches on Joan Sutherland Theatre fly grid, 2010*
4.391 *Joan Sutherland Theatre stage lifts, level +12, 2010*
4.392 *Original overhead console in Joan Sutherland Theatre Lighting Control Room, 2016*

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4.393 *Floodlit shells, 2010*
4.394 *Floodlit shells, 2010*
4.395 *Forecourt approach, 2015*
4.396 *Southern Foyer to Concert Hall, 2010*

4.14 LIGHTING

The concourse area needs more light, in order for the area to have a more welcoming ambience. It is relatively dark space, due to the materials used and primarily due to the contrasting harsh sunlight at the eastern and western sides. One way to remedy this is to raise the light level in the area artificially.[1]

It is very important that the audience does not enter, and walk through the building along dark corridors to a dark hall.[2]

The visual presence of the Sydney Opera House in its setting is as important by night as it is by day. The place can be seen as a dramatic architectural and sculptural performance in itself, worthy of appropriate lighting. Lighting considerations are crucial to the sequence of spaces and their role in the visitor experience. Equally important is the issue of safety, which should not be overlooked or treated separately from aesthetic considerations.

Since the opening of the Sydney Opera House in 1973, there have been considerable advances in lighting technology and an opportunity exists to utilise some of these developments to improve and enhance existing lighting. Utzon's first comment above highlights one of the more difficult spaces in terms of lighting, the Covered Concourse.

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.*

To guide the implementation of these principles, a *Lighting Masterplan* has been prepared by consultants Steensen Varming, in collaboration with Utzon Architects and Johnson Pilton Walker.[3] This masterplan was adopted by the Sydney Opera House Trust in April 2007, and some of its recommendations have already been implemented. For its principles and direction, the masterplan draws on the Utzon Design Principles, the CMP 3rd edition and the 1968 report on lighting by John Waldram. Refer to discussion and associated endnotes in Section 4.14.3 *Lighting of interior spaces.* Any revision of this *Lighting Masterplan* should adhere to these same principles.

4.14.1 Floodlighting of shells

You can light a sphere in such a way that you accentuate its form, or you can light it so it will appear to be flat.[4]

The 1988 floodlighting scheme by Julius Poole and Gibson won a Certificate of Commendation from the Illuminating Engineering Society of Australia,[5] but time and technology meant that it has needed to be revised and upgraded. Lighting levels in the city have increased since 1973 and if the Opera House is to retain its iconic presence at night, its lighting will need to keep pace with its context.

In 2005 the floodlighting of the northern shell ribs and the western face of the main shells was revised with the aim of increasing lighting levels and improving the sense of modelling on the shells themselves. In 2014 similar lighting was installed on the eastern side of the building.

No doubt technical advances in the future will provide further possibilities to improve on the floodlighting, but the principles followed for the existing scheme should remain the same.

Policy 14.2 – Floodlighting
Any adaptation or alteration of floodlighting must:

- *retain the shells as the main focus on the site;*
- *retain a medium-intensity effect, bright enough to be distinctive in the Sydney night sky, but not harsh;*
- *retain a monochromatic light to render the natural colour of materials as accurately as possible;*
- *achieve as much modelling of the curvature of the shells as technical limitations permit;*
- *maintain a subtle hierarchy between the shell groups such that the smaller third group reads as the minor of the three groups, but all still read as a group;*
- *avoid horizontal shadow lines on the shells by lighting (if technically possible) the lowest part of each shell down to the Podium;*
- *light the structural ribs of the open north and south ends of the shells along their full height to the same level as the adjacent shell surfaces, consistent and in association with the enclosed foyer areas; and*
- *direct light in such a way that it does not create glare or interfere with the views from the glass-walled foyers and external Podium decks.*

Occasionally special-effect lighting or projections are proposed, particularly on the exterior of the shells. Such lighting has been used with great effect to celebrate particular events. Examples include the Olympic Games bid in 1993 that utilised lighted tubes in the Olympic colours fixed to the shell spines, and again in 2000 for the Games themselves with projections on the shells symbolising the effects of earth, wind, water and fire. A memorable and highly successful series of illuminations or projections were carried out as part of the 'Luminous' festival in May-June 2009. Three projection points were used: one on west Circular Quay, one in the Botanic Gardens and one on the Podium itself, transforming the main elevations of the shells into vast abstract canvases of brilliant, slowly changing colour. These projections were part of what has become an annual 2-4 week arts, light and music festival, 'Vivid', focused primarily on the Opera House. Much acclaimed, they demonstrated illumination possibilities that few had imagined, but their power and success may diminish if they are to extend over a much longer timeframe or occur more frequently.

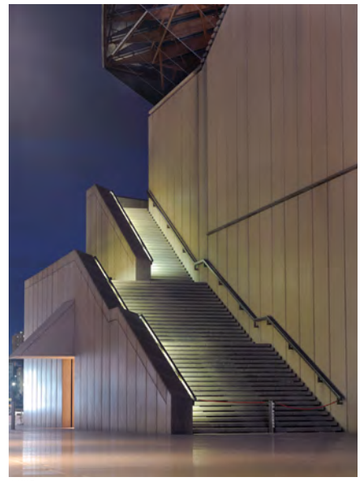
The Sydney Opera House exterior, particularly the shells (and even the Tarpeian Wall face), should not be regarded as a giant billboard or commercial / advertising opportunity. While the reality is that most events and celebrations will require commercial sponsorship, such sponsorship should not be on display in anything other than an appropriately discreet manner. The Sydney Opera House Trust has developed a policy for illumination of the shells – the *Illumination of Sydney Opera House Sails Policy* – and this should be referred to when considering any proposal.

Policy 14.3 – Temporary lighting projections
Use of the exterior of the Sydney Opera House, including the shells, for lighting projections is acceptable as long as these are exceptional occasions, non-commercial, infrequent and for a limited period of time, and any equipment or installation required can be erected and completely removed without damage to any fabric.

All projections should aim to maintain the legibility of the form of the shells.

Refer also to individual sections and *Tolerance for Change* and *Opportunities for Change* tables for each space or element in Section 4.7 *Conserving the exterior.*

Refer also to Section 4.6 *Events and uses externally.*



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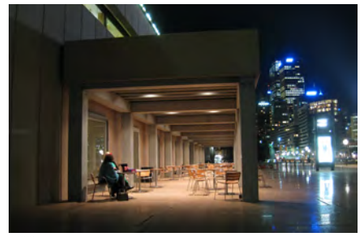

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4.397 *Podium lighting , 2009*
4.398 *Western Colonnade, 2009*
4.399 Vivid *festival 2016, projections designed by Aboriginal artists, curated by Rhoda Roberts*
4.400 Vivid *festival 2014, projections onto the shells interpreting internal structure and services*

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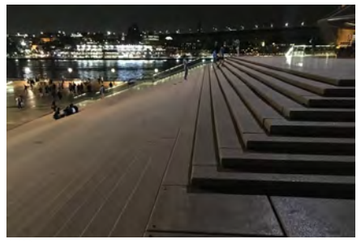

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4.401 *Forecourt during* Vivid *festival, 2016*
4.402 *Monumental Steps, 2017*
4.403 *Forecourt and Monumental Steps in the evening, 2010*
4.404 *Leaving after a performance, 2017*

4.14.2 Lighting of Forecourt, Broadwalk and Podium (monumental) steps

The podium and podium steps will be lit through a system of lights concealed in the handrails.[6]

Utzon's preference was for concealed and indirect light sources, both internally and externally, and at the time the Opera House was designed and built, relatively low lighting levels were considered acceptable in these outside areas. In more recent times, higher lighting levels in the city and issues of public safety have required these lighting strategies to be reconsidered. However, it is still an essential part of the approach experience that lighting in the Forecourt area be relatively subdued compared with that in the public spaces to follow.

General lighting of the Forecourt and the Monumental Steps originally came from floodlights on two tall poles adjacent to the Tarpeian Wall, one near the gatehouse and the other beyond the bottom of the stairs from the gardens above. This was supplemented by soft-tinted floodlighting of the cliff itself, baffled floodlights (nose-lights) on the apex of the southern-most shells, spherical lights on poles around the external perimeter and concealed lighting in the handrails. Low-level curb lighting defined the edge of the sunken roadway (now removed) across the Forecourt. More recently, the lighting pole near the gatehouse (removed in 1988) has been replaced with a new pole immediately east of the opening for the loading dock, and the baffles removed from the nose-lights. This pole has a more advanced array of LED light sources. The result is that lighting levels on the southern approach and western half of the Forecourt and Monumental Steps have considerably improved but the nose-lights remain a source of irritating glare at night, and a disfiguring appendage to the fine detail of the shells during the day. The *Lighting Masterplan* envisages installation of a similar replacement tower to the east of the Tarpeian Steps to improve lighting on the remainder of the Forecourt.

Lighting of the Monumental Steps is difficult. The handrails with their concealed lighting exist only at the ends of each flight, leaving most of the steps in relatively subdued light. However, it is essential that this lighting provide an acceptable level of safety. Higher lighting levels locally from the handrails at each end may be acceptable to improve safety in these areas, but this should be reassessed once the upgraded second lighting pole is installed on the south side of the Forecourt.

The lighting of spaces and activities in the Lower Concourse area also plays an important role in the night setting of the Opera House, and must be carefully designed and managed to avoid distracting light spill or competition with lighting on the Forecourt or Podium.

Policy 14.4 – Forecourt, Broadwalk, Podium steps and Lower Concourse lighting
Any adaptation or alteration of lighting to the Forecourt, Broadwalk, Podium steps and Lower Concourse must:

- *be sufficient to connect and relate the form of the Sydney Opera House to its peninsular setting, but not of a level that would compete with the illumination of the shells;*
- *be sufficient to provide safe pedestrian access;*
- *continue to be set at a height and so baffled that glare and distracting light spill are eliminated from the eyes of pedestrians, even when viewed from surrounding areas or from a distance;*
- *retain a monochromatic light with appropriate colour temperature to render the natural colour of materials as accurately as possible;*
- *be sufficient to provide adequate ambient light for activities in the Lower Concourse, but avoid light spill when viewed on approach or from surrounding areas;*
- *employ the minimum equipment necessary for the job and locate it as unobtrusively as possible.*

Since 1973, the Broadwalk areas have been lit around the perimeter by a row of 51 clear spherical polycarbonate balls on numbered bronze poles, fondly referred to as 'Hall's Balls' and developed specially for the site.[7] In 1988, these fittings were continued on un-numbered painted steel poles along the western perimeter of the Forecourt to its entry point at East Circular Quay. This same design was copied and continued around the perimeter of Circular Quay to Dawes Point, around Farm Cove, along the length of Macquarie Street and into Hyde Park, becoming a standard fitting for the public domain in these areas.

To reduce glare and make the spheres themselves look as unobtrusive as possible ('transparent by both day and night'[8]), the light source was placed inside the pole and a sophisticated reflector system installed inside the top of the sphere to maximise the spread of illumination. The clear polycarbonate spheres now appear more as white light sources in themselves, possibly due to weathering, providing an unwanted distraction from the singular clarity of the darker Podium base supporting the lighter shells. (Refer to Figures 4.404, 4.405 and 4.406). They do, however, provide much needed illumination to the ground plane of the public domain. Those fittings installed beyond the Opera House site have been fitted with a much cruder reflector system and, due to less frequent maintenance, produce an even brighter 'frosted bulb' effect.

A less intrusive means of lighting these areas should be investigated and then tested with prototypes, in co-operation with City of Sydney, the Sydney Harbour Foreshore Authority and any other authority using these lights.

A revised barricade / handrail detail with concealed lighting was developed in 2010 for the refurbished parapet wall above the Lower Concourse and could be utilised in a modified form around the Broadwalk, thus providing some level of light to these areas, but additional light sources at a higher level may still be required. The main issue is safety and security, and both require adequate lighting of persons as well as the ground plane. It may be possible to retain the original bronze poles and adapt them with a more appropriate baffled fitting, modifying or replacing the polycarbonate balls. The present fittings are considered harsh and distracting elements in the night views of the place.

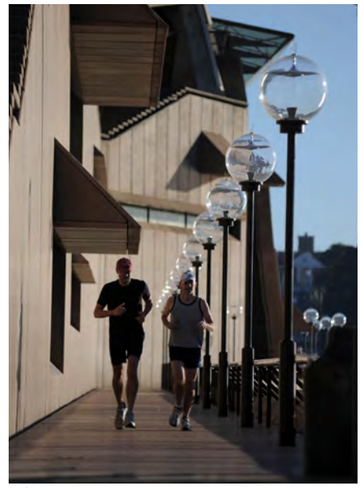
Policy 14.5 – Hall's Balls
The original numbered Hall's Balls fittings could be upgraded or adapted by modification or replacement of the polycarbonate spheres with a less obtrusive and more efficient fitting to produce a 'darker' fitting at night.

While not preferred, complete removal of the Hall's Balls fittings could be considered only if all of the following can be achieved:

- *better illumination levels, sufficient for public safety and security;*
- *a better aesthetic outcome, preferably using fewer fittings;*
- *strengthening of Utzon's concept of the broad uncluttered plane surrounding the Podium as articulated in the* Utzon Design Principles*;*
- *co-ordination of any change with the City of Sydney, the Sydney Harbour Foreshore Authority and any other authority as part of an integrated project for the whole precinct.*

Refer also to individual sections and *Tolerance for Change* and *Opportunities for Change* tables for each space or element in Section 4.7 *Conserving the exterior,* including Section 4.6.8 *Exterior furniture.*

Refer also to Sections 4.6 *Events and uses externally* and 4.17 *Accessibility.*



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4.405 *Hall's Balls fittings, Eastern Broadwalk, 2010*
4.406 *Hall's Balls fitting, detail of illuminated polycarbonate ball when new, 2009*

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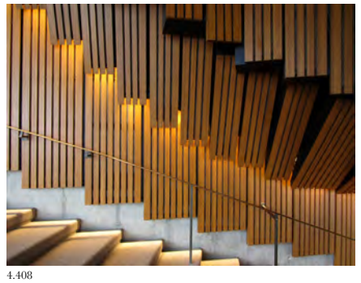

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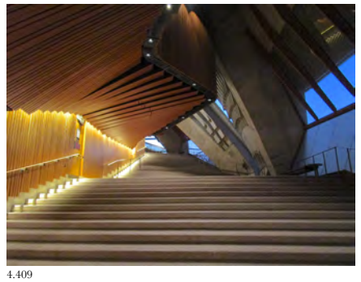

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4.407 *Concealed lighting in Covered Concourse to highlight folded beams, 2017*
4.408 *Concealed lighting in Side Foyers of Concert Hall, 2016*
4.409 *Concealed lighting in Side Foyers of Concert Hall, 2015*

4.14.3 Lighting of interior spaces

Referring to public and working areas:

> ***Lighting in these areas will be generally of an indirect nature although there will be situations where specially designed direct lighting fittings will be necessary. To give life to the skin and hair on the human form in much the same way as the light from candles.[9]***

Utzon's ideas on lighting were clearly articulated before he left the project in 1966. His aim was to achieve a system of indirect lighting which highlighted the structure, form and materials in each space. The approach and arrival spaces were to be lit in a way that heightened the visitor experience, accentuating their qualities as well as their sequence and role in the journey. For example, the stairways leading from the Covered (Vehicle) Concourse to the Box Office Foyer were to be "more brightly lit" to attract arrivals to them.[10] Utzon was also concerned that reflections in the glass walls did not interfere with the night views of the harbour, a concern shared by Hall. (Refer also to Section 4.7.3 *Glass Walls and Bronze Louvres*.)

In 1967 the firm of G.E.C. Philips Opera House Lighting Co. Pty Ltd, established specifically for this project, their appointed staff member Fred Drijver, and UK lighting consultant John Waldram combined their talents with Hall, Todd & Littlemore and the electrical consultants Julius Poole & Gibson to design the lighting for the Sydney Opera House.[11] A major objective of the team was to integrate lighting with the architecture in order to display it without drawing attention to the lighting.[12] It is now evident that their objectives and understanding of the sequence of approach and arrival experiences, and how each was to be treated, closely followed Utzon's ideas.

This approach, using indirect lighting with generally concealed luminaires, means that the fittings themselves are generally not as significant as the effect they produce. This is important when considering revised lighting and safety standards, and patron expectations particularly on stairs and at changes of level. Thus, upgrading the fittings as better technology becomes available is, in most cases, an appropriate response in heritage terms, except that care is required to maintain a consistency of colour temperature within a space and across spaces where they are connected.

In some instances lighting levels can be substantially improved by simply cleaning the fittings or the ceiling (where this is used to reflect light). All factors in the illumination of the space must be considered.

The lighting system selected by Utzon in 2003 for the Utzon Room confirmed the importance of cleaning the concrete surface, combined with indirect lighting, in achieving the desired lighting effect both on the folded beams and for the space itself. This approach was extended into the Box Office Foyer in 2015 and is now documented for future works in the Covered Concourse.

The different approaches taken between those spaces which are primarily Utzon's, those which are hybrid Utzon / Hall, and those which are primarily Hall (as set out in Section 4.4), should inform the treatment of lighting and care should be taken to retain and respect existing Utzon and Hall design regimes and their components.

Unlike many opera houses and performance venues around the world, the Sydney Opera House does not have specially designed chandeliers or feature lighting, except perhaps for the light 'trees' over the bars in the Southern Foyers. In 1973, the same fittings were also used in the Bennelong Restaurant, but have long since been removed with the regular refitting of this space. Opinions vary as to their aesthetic qualities, but they are significant elements in the original design and fitout by Hall, and were considered an appropriate response to a difficult lighting problem at the time. Nevertheless, they are now considered by some to be distracting and inappropriate in this essentially highly significant Utzon space, and could be treated in the same manner as any other element in the hybrid Utzon / Hall spaces. The bar fitout in the Northern Foyers utilises the same polycarbonate spheres on a simple pole, similar to the external 'Hall's Balls'. Refer to the *Tolerance for Change* and *Opportunities for Change* tables for Foyers surrounding major auditoria in Section 4.8 for guidance.

The Hall scheme for the corridors and offices within the Podium utilised wobbly panels spaced sufficiently to allow a black parabolic baffled strip-light fitting to be placed between them, sitting slightly above the bottom of the wobblies. The spacing and configuration of these fittings should be retained. If, through failure or damage, only a few are to be replaced, the fitting type, colour temperature and light levels should be matched so that the overall effect remains the same. If a whole ceiling is to be replaced, the overall effect and configuration should be retained, and as close a match as practical should be found, but the lighting levels may be adjusted if required.

The Northern and Western Foyer spaces and bar areas are frequently used for special functions. These include receptions, lectures and recitals, and each requires additional lighting and audio specific to the function. Such uses were not envisaged when the Opera House opened in 1973. Investigations should be made into providing discreet outlets for additional lighting equipment in appropriate but unobtrusive locations to allow efficient bump-in and bump-out in a way that reduces the possibility of unsightly or damaging temporary installations.

> ***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.

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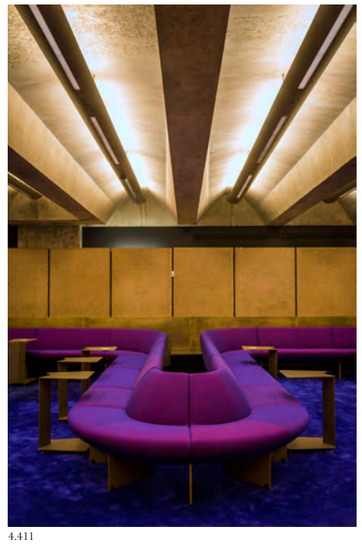

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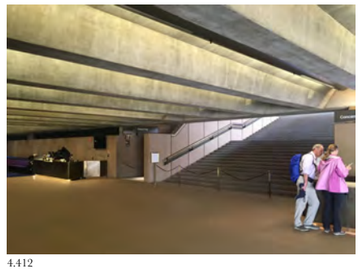

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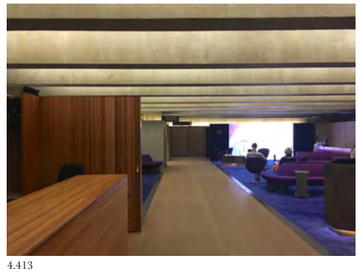

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Refer to individual sections and *Tolerance for Change* and *Opportunities for Change* tables for each space or element in Sections 4.8 *'Front-of-House' spaces above Podium*, 4.9 *'Front-of-House' Spaces within Podium*, and 4.10 *'Back-of-House' performers' and staff areas*. Refer to Section 4.17 *Accessibility*.

4.410 *Concealed lighting of beams in Utzon Room, 2008*
4.411 *Concealed lighting in Box Office Foyer, 2016*
4.412 *Oblique view of concealed lighting of beams in Box Office Foyer, 2017*
4.413 *Concealed lighting of beams in Box Office Foyer, 2017*

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4.414 *2015 information pylon ('totem-pole') near south entry to Forecourt, 2016*
4.415 *Black signage pylon, Western Broadwalk, 2014*
4.416 *Mobile 'rust-bucket' promotion sign, Western Broadwalk, 2017*
4.417 *Back-lit bronze signage, Lower Concourse, 2014*
4.418 *Wayfinding signage, west end of Covered Concourse, 2017*
4.419 *Covered Concourse, 1973 back-lit cut-out lettering to bronze faced signs over central stair entry, 2010*
4.420 *Blade sign, west end of Covered Concourse, 2017*
4.421 *Framed digital promotional signage in Covered Concourse, 2014*
4.422 *Framed digital promotional signage in Covered Concourse, 2014*

4.15 SIGNAGE

In the Sydney Opera House you are aware of your orientation at all times. It is important that each member of the audience has a simple, easily understood tour, from the entrance to his or her seat and out again.[1]

Utzon's description suggests that wayfinding for the public should be almost self-evident and thus need little signage. With the Opera House's high levels of visitation and performance, the reality is somewhat different. In 1973, when the building opened, the suite of signage throughout the site was carefully considered, comprehensive and well designed. It used only one typeface, Helvetica Medium, all upper case, and was a strong unifying element.

Over time and as needs arose, signs were added or altered, sometimes with little regard to the design and principles which underpinned the 1973 work. The names and uses of some spaces changed as did standards and statutory requirements. By 2003 a complete re-appraisal was required.

In 2004 a comprehensive *Signage Manual* was prepared for the Opera House by Emery Frost to guide the style, design and location of all signage, including upgrade or replacement of the existing. Some aspects of it have already been implemented across the site while others have been made obsolete through, for example, digital technology. A complete review of the *Signage Manual* is presently underway. The *Signage Manual* recommended that for all new signage, the font be altered to Neue Helvetica, a linotype version of the original Helvetica, in upper and lower case for improved legibility. With few exceptions, only those signage elements listed as significant in the 2003 CMP have been identified for retention (and, where required, adaptation). As part of any review of the *Signage Manual,* the identification and treatment of these fittings should be made consistent with this CMP.

The monumental scaled black signage units on the Forecourt, Broadwalks and Podium were originally bold, elegant and clear, with back-lit cut-out lettering. Their redesign some time ago to incorporate poster displays has diminished their quality and presence. Jørn Utzon made similar comments in January 2006.[2] *The Signage Manual* provides guidance for their replacement with a more appropriate and refined design that is more in harmony with the *Utzon Design Principles*. This should be implemented.

To cater for high visitation levels, and promote tours and events, a number of mobile signage units are frequently placed at strategic and often prominent locations around the Forecourt and Broadwalks. Made of steel and usually weighted by concrete blocks, they are frequently visually intrusive in their location and this is exacerbated by their frequency. Often referred to as 'rust-buckets' due to their potential to stain the paving, they are also discussed in Section 4.6.8 *Exterior furniture*.

The present collection of wayfinding, promotion and information signs lacks design consistency, excerbated by their often close proximity.

Design and placement of signage is critical if it is to be effective in communicating its message and not be the cause of distraction and clutter. A particular design may be acceptable in one location, but intrusive or clutter in another.

One distinctive feature of the 1973 signage surrounding the two major auditoria was the colour of the signage boxes – red on the west sides and green on the east. These corresponded to colour-coding on the tickets, allowing easier identification of door locations for patrons. This idea was introduced by the first general manager, Stuart Bacon, who had previously been deputy general manager at Royal Festival Hall London, where a similar colour-coding was used, apparently based on that used for maritime navigation.[3] The colours became irrelevant once automated ticketing systems were implemented and the signs were proposed for replacement with uniformly black boxes, in accordance with recommendations in the 2004 *Signage Manual*. While arguably less distracting than the red and green signage, such replacements have the potential to diminish the integrity of the 1973 work and should be reconsidered. The bulk and form of these signs could be revised to reduce impacts on views but the colours should be retained. Perhaps the original colour-coding could be reintroduced on the ticketing system. The original blue and white signage in the Box Office Foyer has been removed in 2015 as part of a lighting upgrade and replaced with smaller blade signs consistent with the *Lighting Masterplan*.

The wording on some original signage components, such as the moulded perspex signs in back-of-house areas, cannot be changed without replacing the perspex. This is a problem, particularly within the Podium where many spaces have changed uses or names. In such cases, these signs could be replaced with new but with the same design, form and configuration as the original. A ready means of changing the sign without disfiguring or replacing the perspex should also be investigated and, if possible, implemented.

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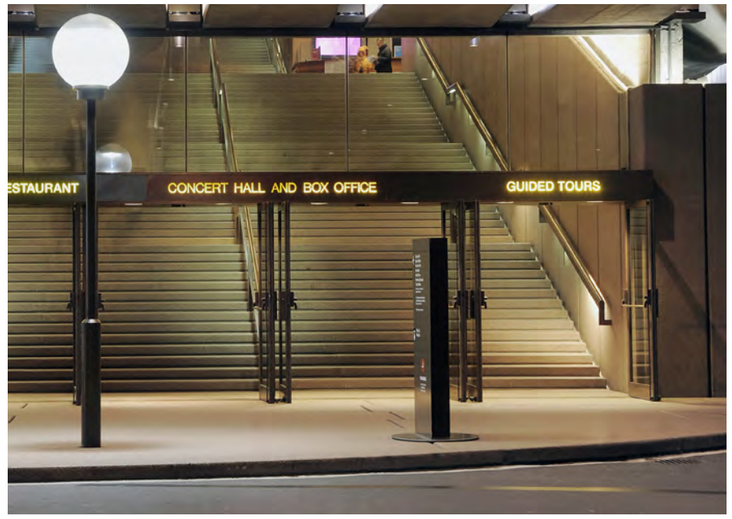

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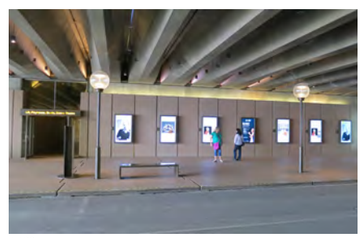

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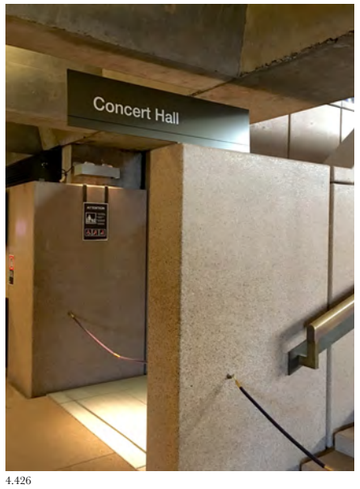

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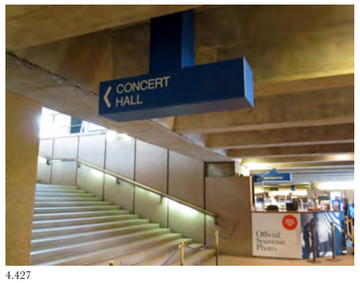

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4.423 *Box Office, 2017*
4.424 *Promotional as well as directional signage in Southern Foyer of Joan Sutherland Theatre (proportion and placement of promotional signage could be better), 2017*
4.425 *1973 red and green signs, Southern Foyer of Concert Hall, 2010*
4.426 *2016 bronze-coloured blade sign in Box Office Foyer, 2017*
4.427 *1973 blue box ceiling signs in Box Office Foyer, 2014, removed 2015*

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.*

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.*

Refer to Section 4.11.1 *Doors and door furniture* for discussion on the door numbering system and its application.

All public areas, both externally and internally (particularly foyer spaces), are considered ideal locations for the promotion of activities, events and sponsors. This is an important aspect of signage for a performing arts centre and cannot be ignored or dismissed, but any installation required to serve this function must be carefully considered and managed in addition to being appropriately designed for its location. The highly popular Opera House tours utilise projections onto walls and the sculptural concrete 'fan' pedestals in foyer areas as part of their content. While acceptable and appropriate for tours and interpretation, they should not be used for advertising or promotion at any time. The latter has been tested and it is very intrusive.

Where signage is associated with a particular event, the sale of merchandise may also be involved. Such installations can potentially clutter and detract from the significance and enjoyment of the space and should be kept to a minimum. A planned upgrade of the Southern Foyers will include designated facilities for promotion and merchandising within and behind a proposed new bar unit against the north wall of each space.

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.

Refer to Section 4.2 *Importance of Setting*, as well as individual sections and *Tolerance for Change* and *Opportunities for Change* tables for each external or internal space or element in Section 4.7 *Conserving the exterior*, Section 4.8 *'Front-of-House' spaces above Podium*, Section 4.9 *'Front-of-House' spaces within Podium*, Section 4.10 *'Back-of-house' performers' and staff areas*, Section 4.11 *Doors, furniture & fittings*, and Section 4.12 *Carpets, artworks & curtains*.

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4.428 *1973 back-of-house perspex sign, 2005*
4.429 *1973 back-of-house perspex sign with redundant lettering blanked over, 2008*
4.430 *1973 back-of-house 'exit' sign with new code compliant signage above, 2008*
4.431 *Simple clear perspex to allow temporary signage on performers' dressing room door, 2010*
4.432 *Fire door cleverly disguised in 'wobbly' wall panels, level +30 corridor, 2010*

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4.433 *Interpretation panels and projections adjacent to Welcome Centre in Lower Concourse, 2015*
4.434 *Floodlit shell ribs over Southern Foyer to Concert Hall, 2010*

OPERATION & MANAGEMENT (SECTION 4.16 – 4.20)

4.16 INTERPRETATION

The shapes of the shells give the building its character, which is emphasised by the fine lines defining the form of the curvature as the seams in a billowing sail ... The patron or tourist will see the shells from below as an expanse of curved wall changing constantly as he moves along the broadwalk or on top of the podium and particularly from these view points the lines will assist his appreciation of the simple, yet living geometrical forms which otherwise might escape his comprehension.[1]

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.

Many aspects of the place's history and significance, however, would remain hidden without some additional form of interpretation. In addition, World Heritage listing imposes an obligation on the Opera House to communicate these aspects. The Opera House is one of Australia's most visited sites, but the great majority of visitors do not proceed beyond the external form of the building to experience or even begin to understand its remarkable sequence of spaces, the ideas which inspired them, or the story of its construction, let alone attend a performance. Nonetheless, the form itself invites enquiry and raises questions; good interpretation should seek to answer these in a creative and engaging manner.

This is a multi-layered site – historically, structurally and functionally – and good interpretation can make even a brief visit a rich and uniquely inspiring experience. Interpretation of the evolution and history of the site is important, and ways and means of effectively and appropriately achieving this should be reviewed and updated to ensure effectiveness. The use of the site prior to and following European occupation, and its present meaning for Aboriginal and Torres Strait Islander peoples are under-represented in current interpretation on the site. These aspects should be explored and addressed in any future interpretation programs or developments. Refer to Section 4.20.9 *Aboriginal and Torres Strait Islander stakeholder consultation*.

A number of interpretation initiatives (such as the guided tours) are highly successful, but the risk is that some stories or aspects of the significance of the place may remain untold while others might be communicated in a more appropriate manner. It is generally acknowledged that good interpretation engages the physical, emotional and intellectual capacities of the visitor, revealing qualities and stories about a place which would not otherwise be evident.

The new Welcome Centre and shop, completed in 2015 in the Lower Concourse, includes interpretation display panels and is now the main starting point for tours, but its location potentially diverts visitors away from the principal approach path. An alternative location towards the southern entry of the Forecourt was explored, but any above ground structure in this area was considered potentially intrusive.

Nonetheless, the significant values of the Sydney Opera House, including its use and site, should be made accessible and communicated to all who use and visit the place, as well as those who access it by other means. Existing interpretation initiatives should be assessed to determine how well this is achieved.

Following in-house development of interpretation concepts in 2014, a draft *Heritage Interpretation Strategy* was prepared by GML Heritage and Trigger in 2015, outlining an holistic approach to planning for interpretation at the Opera House. This document awaits further development to become an interpretation strategy for the site.

Policy 16.1 – Interpretation
Interpretation of the significant values of Sydney Opera House, including its Outstanding Universal Values, should form a backdrop to, or be part of the use and presentation of the place and enhance rather than hinder the visitor / user experience.

Any infrastructure required for interpretation must comply with the policies in this CMP, and be minimal and discreet with no adverse impact on spaces or fabric.

To avoid fragmenting the site or trivialising it in any way, there must be an integrated and co-ordinated approach to interpretation across the whole site, and signs kept to a minimum.

Policy 16.2 – Interpretation Plan
Existing interpretation should be assessed and a comprehensive Interpretation Plan and Implementation Strategy prepared to inform, co-ordinate and direct interpretation initiatives across the site and through its use, activities and communication networks.

This Interpretation Plan and Strategy must include an approach to the recognition and interpretation of Aboriginal and Torres Strait Islander peoples' cultural values and Aboriginality associated with the Sydney Opera House. Aboriginal and Torres Strait Islander people are the rightful interpreters of their cultural heritage and any proposed interpretation at the Sydney Opera House must involve relevant stakeholders.[2]

The Burra Charter defines interpretation as meaning *all the ways of presenting the cultural significance of a place*.[3] It further explains that interpretation may be achieved by a combination of:

- the treatment of the fabric (e.g. maintenance, restoration, reconstruction);
- the use of and activities at the place; and
- the use of introduced explanatory material.[4]

4.16.1 Interpretation - treatment of the fabric

In order to retain and respect the integrity of the work of the original authors of the Sydney Opera House, particularly Utzon and Hall, and for this to remain legible, any work or changes to the place should strengthen our understanding of their work in accordance with Section 4.4 *Utzon, Hall and the approach to change* of this CMP, other policy sections to do with each element, and Section 4.20 *Managing the processes of change*.

For example, the removal of paint from some of the off-form concrete piers supporting the roof structure has allowed a clearer understanding of the main structure and the relationship between the roof and Podium. This interpretation initiative should be extended throughout the Podium, in accordance with Policy 10.3.

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.

All changes to the place should be identified, and this can be done in many ways, from the obvious and ordinary to the creative and inspired. Methods include simple date-stamping or the use of a different finish or modified design, depending on the particular situation. Examples of the creative approach are the 1988 works in the Lower Concourse and, most recently, the works on the Western Foyers (2009).

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.[5]
Where reconstruction or adaptation incorporates relocated or salvaged original elements, this should be noted and documented.

4.16.2 Interpretation - use and activities

The most important active interpretation of the Sydney Opera House site is through its ongoing use as a performing arts centre. As long as this activity continues, particularly if it is inspired by the place and celebrates it, inspiring patrons and visitors alike, then arguably the most significant aspects of the place are being interpreted.

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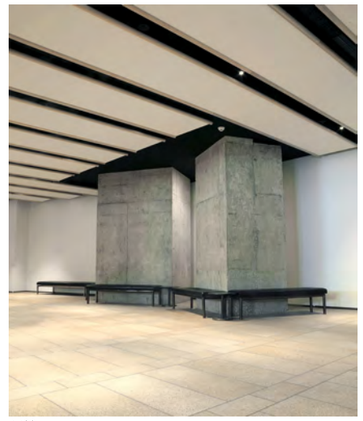

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4.435 *Set-out markings on Covered Concourse beams, 2016*
4.436 *Western Foyer lined with mass produced pre-fabricated components and paint stripped from roof piers, 2009*

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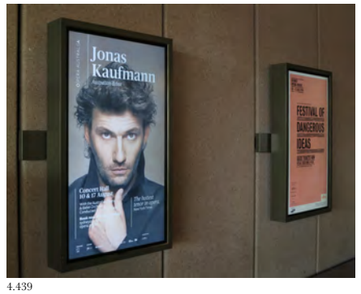

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4.437 *Tour group assembled in Lower Concourse, 2010*
4.438 *Digital projections on north wall of Lower Concourse, 2015*
4.439 *Digital promotional signage for shows in Covered Concourse, 2014*
4.440 *Projections for tours onto internal face of concrete shell fan pedestals in Side Foyers, 2007*

An ongoing commitment to this goal is clearly articulated in the mission statement in The *Opera House Enterprise Strategy*, released 2013 on the 40th anniversary:

The Sydney Opera House embodies beauty, inspiration and the liberating power of art and ideas. It is a masterpiece that belongs to all Australians.

- *We will treasure and renew the Opera House for future generations of artists, audiences and visitors.*
- *Everything we do will engage and inspire people through its excellence, ambition and breadth. We will strengthen our central role in Australia's life and identity.*[6]

In regard to the building itself, the dramatic lighting of structural elements and shell ribs is an important part of this excellence, adding drama and 'performance' to the approach and arrival experience.

The second most important interpretation on the site is presently through a range of popular guided tours, both front-of-house and backstage. Some of these incorporate soundscapes and video projections in a creative and meaningful way with discreetly placed infrastructure that has no detrimental impact on the spaces or fabric. This aspect of discreet interpretation is important, valuable and, at its best, non-intrusive.

An example of well-designed and appropriate infrastructure for such tours would be the audio tracks delivered wirelessly via headphones accompanying discreet projections on selected surfaces of the building in the present version of the Sydney Opera House tour. It is essential that such infrastructure be used carefully and sparingly. If used for advertising and promotion, it can be potentially very intrusive. Refer to Section 4.15 *Signage*.

The training of guides and the content and sequence of tours are of paramount importance. Ideally the tours should engage the visitor in Utzon's approach and arrival sequence,

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a fundamental aspect of its significance, elucidating stories and information on the way. This should be part of the Interpretation Plan – refer to Policy 16.2.

> *We will provide inspiring tour experiences that connect our visitors to the beauty and living stories of the Opera House.*[7]

Guided tours, or any other form of interpretation, should not become an end in themselves. If a tour group is unable to access an auditorium or other area because of a dress rehearsal, sound check or even a performance, this should invite engagement with the essence of the use of the place and be presented as one of the special and unique qualities of a visit to the Opera House. In this respect, the Opera House is not merely an object or historic site, but a busy and world-renowned centre for the performing arts, which also happens to be a World Heritage site.

> ***Policy 16.4 – Interpretation impacts on use***
> *Any interpretation or visitor experience program, including tours, must not put at risk or adversely impact on an element, space or significant use, and must respect the day-to-day functioning of the place as a busy performing arts centre.*

Marketing collateral, events, activities and even food and beverage outlets all share responsibilities for interpreting the heritage values of the place, including as a symbol and focus for the pursuit of excellence. All uses and activities on the site should aim to both support and reflect this.

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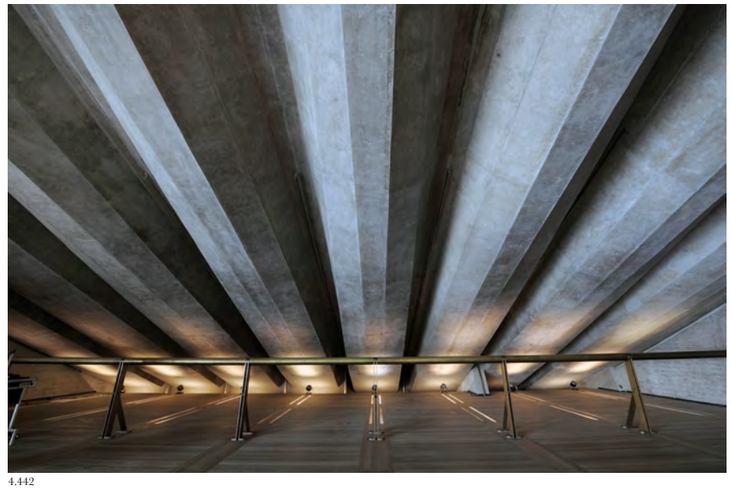
4.16.3 Interpretation - introduced explanatory material

There have been numerous publications about the design and construction of the Sydney Opera House, but most are no longer in print. In many instances, digital media is replacing hard copy, but this is not always a suitable medium for fine line drawings such as those that help illustrate the story of the design and construction of this building.

With increasing public access to the internet, the Sydney Opera House website has introduced a number of important initiatives including an online history, information and updates on the building program, and access to the principal conservation and management documents.

A joint initiative by the Sydney Opera House and the ABC – The Opera House Project (www.theoperahouseproject.com) has given unprecedented free internet access to information and documents about the Opera House, its design, construction and use. A similar initiative with the Google Cultural Institute provides considerable material plus virtual tours (wwww.google.com/culturalinstitute/beta/partner/sydney-opera-house).

Added interpretation signs and plaques should be avoided unless they are the only appropriate method of conveying the necessary information.



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> ***Policy 16.5 – Public access to interpretation information***
> *Public access to information about the Sydney Opera House, its significance, use, history, current initiatives and relevant publications should be maintained and enhanced by a combination of hard copy publications (not necessarily published by the Sydney Opera House Trust), electronic media and the internet.*

4.441 *Utzon concepts and construction drawings projected onto shells,* Vivid *festival 2014*
4.442 *Up-lighting of cranked beams in Utzon Room, 2011*

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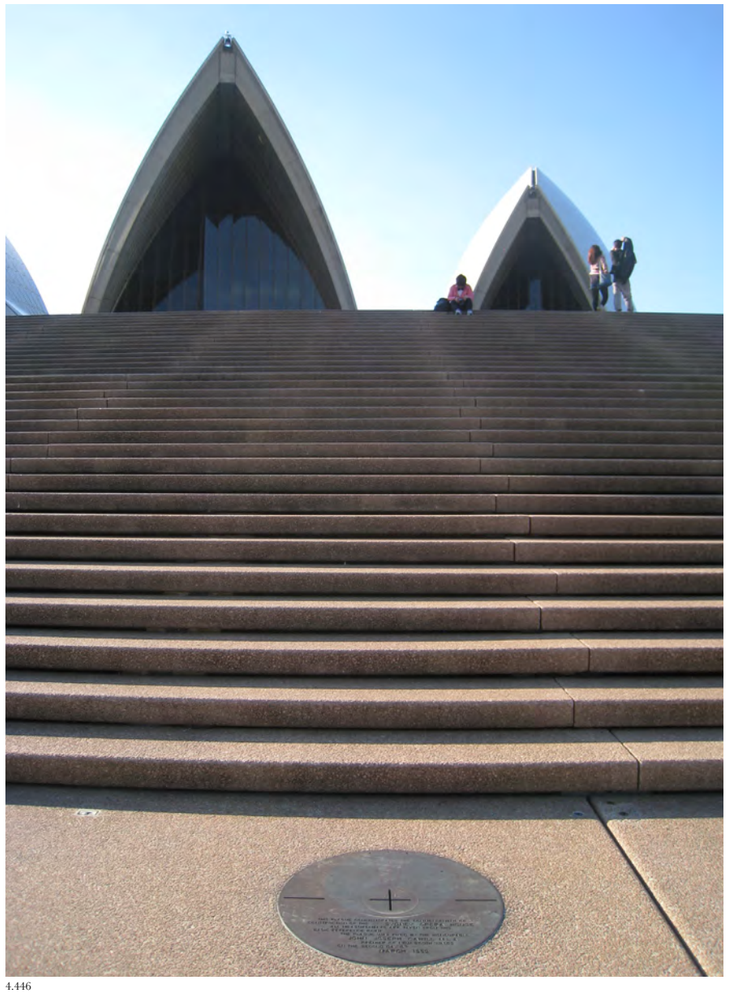

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4.443 *1973 dedication commemorating the official opening by Her Majesty The Queen in the Box Office Foyer, 2011*
4.444 *Bronze plaques on Tarpeian Wall commemorating the 1885 departure of troops for the Soudan War, 2016*
4.445 *1959 Jørn Utzon-designed bronze disc, marking commencement of the work and the set out point for the building, 2016*
4.446 *1959 bronze disc in relation to Monumental Steps and roof shells, 2011*

Some signage at the Opera House is of exceptional importance, particularly the bronze plaque laid by Premier Cahill in 1959, located on one of the lower treads in the monumental steps of the Podium, marking the set-out point for the building; or the discreet lettering in the Box Office Foyer, commemorating the opening by Her Majesty Queen Elizabeth II on 20 October 1973.

A sign marking the completion of the Concert Hall in December 1972 was originally located west of the Stage Door in the Covered Concourse. It comprised individual lettering bedded in a precast granite wall panel, but there was a problem with letters falling off or being stolen and it has since been removed. This marked a significant milestone in the construction of the Opera House, and its reinstatement in an appropriate form should be considered.

Other signage is of lesser symbolic importance, but may communicate an important message; for example, the bronze panels explaining the spherical solution for the shells, presently located on a pedestal near the entry to the Box Office Foyer. In this instance, the location is not as important as the message.

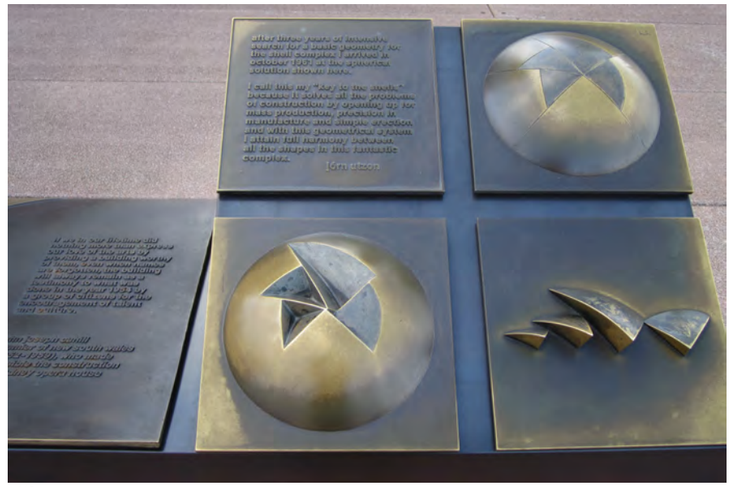
An example of an appropriate sign in an appropriate place would be the discreet explanatory plaque beside the Utzon designed tapestry, *Homage to C.P.E. Bach* in the Utzon Room. This was originally supplemented by an audio recording of the Hamburg Symphony, but has ceased to function. The bronze activation button is still in place and the audio should be reinstated to enhance the interpretation.

There are a small number of bronze plaques mounted on the Tarpeian Wall commemorating events on the Opera House site which predate its construction. While the wall is legally not on the Opera House site but immediately bordering it, these plaques are the only markers of these important events. To preserve the integrity of the wall and evidence of earlier uses and excavation, the wall should not be regarded as a location for further memorials or other forms of fixed interpretation. The power of the wall as a remnant of the original morphology of Bennelong Point, and the surviving evidence of former uses and activities on the site, make it a significant element in the setting and indeed interpretation of the Opera House and its design. For this reason it should remain exposed as a plain unadorned rock face with its surviving remnants of historic evidence. This is discussed in greater detail in Section 4.2 *Importance of setting.*

Other features, both on and off the site, commemorate events or associations with the Opera House. One example is the Lewis Fountain in the centre of the roundabout at the end of Macquarie Street. It was donated by Concrete Constructions Group, in association with the Sydney Opera House Trust, as a tribute to their founder Allen Lewis and employees of the company who contributed to work at the Opera House.

There are several circular bronze plaques in the Forecourt paving, commemorating various writers and forming part of the 'Writers Walk' series extending around the promenade of Circular Quay. These have little to do with the Opera House, however, their impact at present is minimal as they are restricted to the cobblestone paved area and do not extend into the prefabricated granite paving of the Broadwalks. While they are small in number and widely spaced, they are acceptable, but any proposal for further plaques would require careful consideration.

Refer also to *Tolerance for Change* and *Opportunities for Change* tables for each space or element, and individual sections, particularly Section 4.2 *Importance of setting*, Section 4.7 *Conserving the exterior*, Section 4.8 *'Front-of-house' spaces above the Podium*, Section 4.9 *'Front-of-house' spaces within the Podium*, Section 4.10 *'Back-of-house' performers' and staff areas*, Section 4.11 *Doors, furniture & fittings*, Section 4.12 *Carpets, artworks & curtains*, Section 4.14 *Lighting*, and Section 4.15 *Signage*.



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4.447 *1993 bronze panel explaining Utzon's spherical solution with added plaque in honour of JJ Cahill, 2011*
4.448 *Bronze plaque in Forecourt commemorating the Fort Macquarie Tramsheds, demolished 1959, 2009*
4.449 *1991 bronze 'Writers Walk' plaque in Forecourt, 2009*

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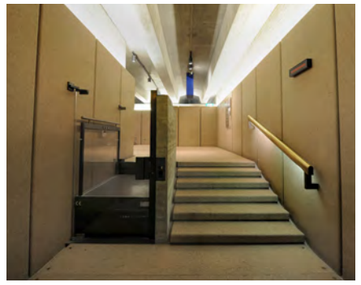

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4.17 ACCESSIBILITY

A total of ten lifts will service the Opera House, each lift being carefully located for a specific purpose. Four lifts serve the Major Hall area. Lift No.1 with landings at the 12'0", 30'30" and 42'0" levels has a primary function of transporting disabled persons from the ground floor level to the auditorium level.[1]

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.

4.17.1 Wheelchair access

Many changes have already been made, particularly within the Drama Theatre, Studio and Playhouse as part of the 2009 Western Foyer upgrade. Access and seating in these venues were modified to allow level access to selected areas for patrons using a wheelchair and their companions, and two platform stair-climber lifts have been installed between foyer level and the Playhouse auditorium. Foyer-accessible lavatory facilities were also upgraded.

This accessibility upgrade provided considerably improved access from the Lower Concourse and Covered Concourse levels up to the Box Office Foyer via the Bennelong Lift. For patrons using a wheelchair, the Southern Foyers are still accessed from the back-of-house lifts via the Box Office level and require staff escort. This will be addressed with the proposed renewal projects.

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.[2] The suite of projects currently proposed to both the Concert Hall and Joan Sutherland Theatre should substantially improve this situation.

As part of an earlier project, an open platform lift had been installed between the Box Office level and the Utzon Room.

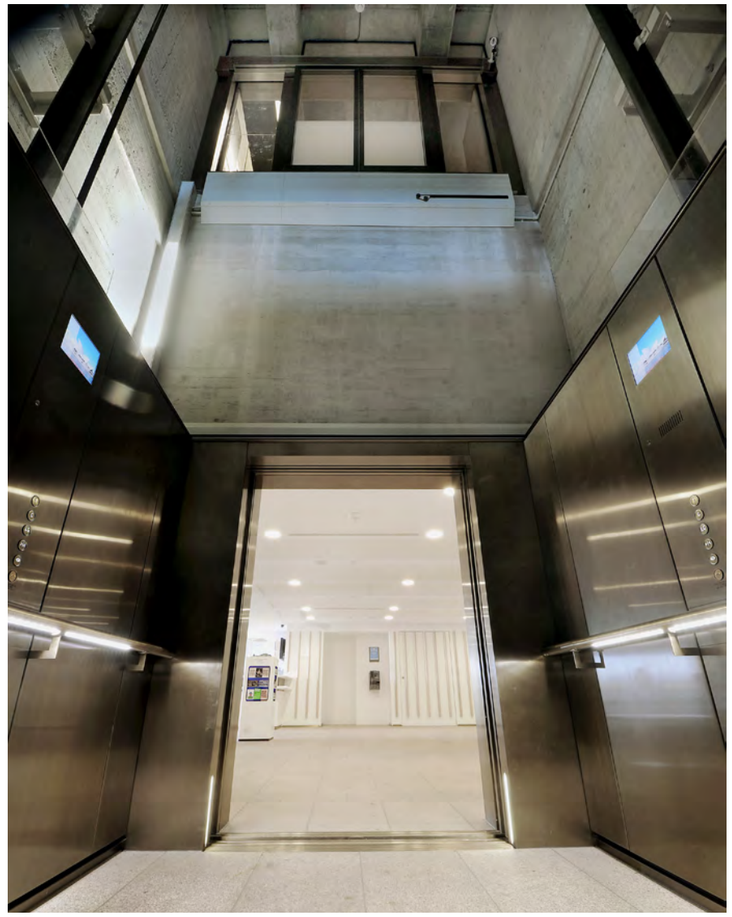
Access between the various levels in the Bennelong Restaurant is still by stairs only, and any modification to this could impact on the folded beam structure that supports them. In situations such as this, any access device (such as a platform lift or stair inclinator) would have to be placed above these beams and minimise its impact on the space itself, including the stairs. As part of the new fitout of the Bennelong Restaurant in 2015, a sesame lift (retractable stair platform) was installed between the Box Office and main restaurant levels.

4.17.2 Escalators

As part of the 2009 accessibility upgrade, escalators were installed on one side of each of the staircases linking the Box Office Foyer to the Southern Foyers of the Concert Hall and Joan Sutherland Theatre. Their carefully considered design and testing via a full-size mock-up of the dividing wall have resulted in a comfortable 'fit' within highly sensitive spaces, and much improved comfort for many patrons.

The 2003 CMP considered the possibility of an escalator from the Covered Concourse within the Bennelong Restaurant or Joan Sutherland Theatre (Opera Theatre) stair locations, and a wheelchair platform escalator in the present Utzon Room stair. The construction of the Bennelong Lift has partly answered this need.

Attempts in 2008 to source a platform escalator for the Southern Foyers suggest that such facilities may not be available in Australia for some time, and a more conventional escalator may be all that is available. Given the potential disparity between the angle of an escalator and that of the existing stairs, and consequent adverse visual impacts on Utzon's arrival sequence, it would be preferable if the two main stairs from the Covered Concourse remained without escalator or other mechanical devices. The narrower Utzon Room stair arriving at the eastern end of the Box Office Foyer is just wide enough to accommodate a pair of escalators, and would have no impact on any adjacent stair. This is proposed as part of one of the renewal projects. It is essential, however, that any such installation fit within the structural and physical constraints of the present space and continue to highlight and celebrate the concrete beams above.



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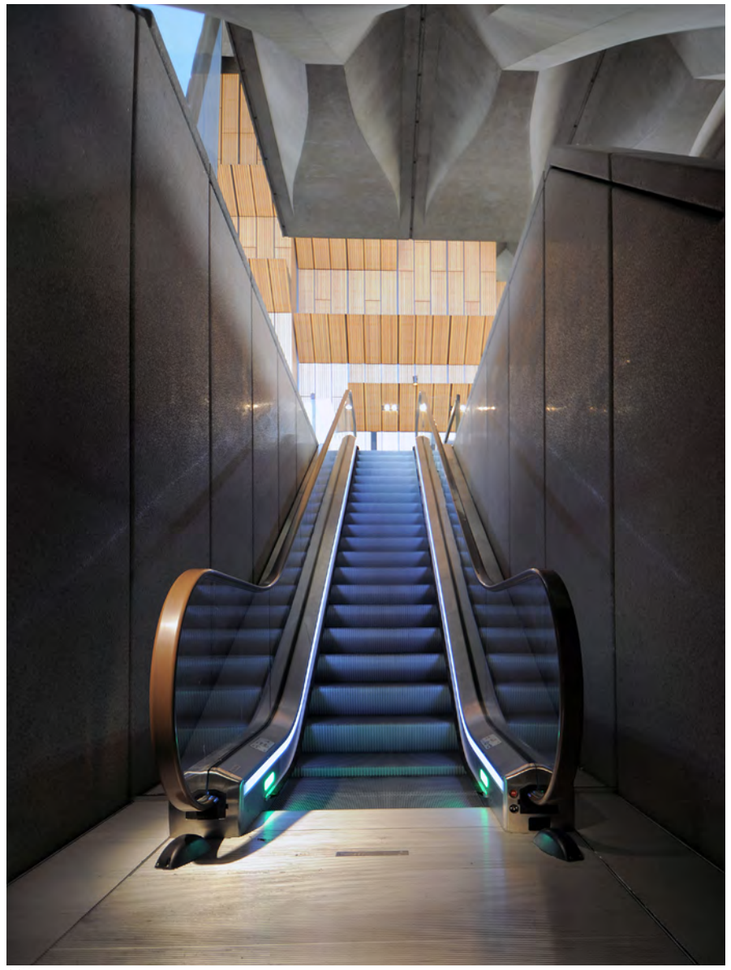
4.450 *Jan Utzon and Louise Saawage exiting the Bennelong Lift at the opening of the Western Foyers and the associated access upgrade 2009*
4.451 *Jan Utzon and Louise Saawage in the level access passage connecting the Lower Concourse to the Bennelong Lift 2009*
4.452 *Wheelchair platform lift from Box Office level to Utzon Room level, 2011*
4.453 *2015 sesame lift in operation between Box Office Foyer level and Bennelong Restaurant, 2015*
4.454 *Bennelong Lift, 2009*



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4.455 *Escalator from Box Office Foyer level to Southern Foyer of Concert Hall, 2009*

4.17.3 Monumental Steps and mobility aids

Not long after the opening in 1973, additional handrails were installed on the Monumental Steps from the Forecourt, but due to their substantial visual impact, they were removed.

Recent considerations of both support and visibility on these stairs have once again raised the question as to how these issues could be addressed. Whatever the solution, it should minimise its impact on the broad, continuous expanse of stairs which is such an important aspect of their significance. Any external escalator or inclinator should be avoided, as they will inevitably detract from the simplicity and visual continuity of the open expanse of the stairs. Concealed lighting between treads to improve night-time legibility has been considered but present limitations in technology have so far prevented this option.

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.

Refer to discussion and policies in Section 4.7.5 *Monumental Steps*, and Section 4.14.2 *Lighting of Forecourt, Broadwalk and Podium (monumental) Steps*.

4.17.4 Hearing and vision support

In all venues, an audio induction loop and an FM radio system have been installed to assist patrons with hearing impairments. 'Audio Description' is available for patrons who are blind or vision-impaired in some venues for some performances.[3] Current installations do not impact on spaces or fabric and are a successful example of services to enrich the experience of the hearing and vision-impaired.

Any installation to assist those with vision impairment, such as introducing visual contrast at changes of level, will require particular attention and prototyping to achieve a solution that avoids negative impacts. Tests of possible contrasting step-nosing treatments using coloured self-adhesive non-slip tape within the Joan Sutherland Theatre auditorium have resulted in an acceptable interim solution with minimal impact. Tests on other materials and situations should be undertaken to provide a suite of minimal impact location-specific solutions. Options should include refinement and upgrade of stair lighting within auditoria.

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. Refer to Section 4.20.11 *Code compliance*.

An updated *Access Strategic Plan* was approved by the Sydney Opera House Trust in 2013 and has guided works to date. The first *Access Strategic Plan* was released in 2006 and a more comprehensive version released in 2015, *Sydney Opera House Accessibility Master Plan*, prepared by Scott Carver. This has provided guidance for the design and implementation of the currently proposed accessibility upgrades and should be used to guide any future changes to address access issues, a core consideration in the Opera House *Renewal Plan*. Any changes, within public areas in particular, will have heritage implications that must be carefully worked through to ensure the solution has minimal impact on the character and significance of the affected spaces and elements.

James Semple Kerr wisely noted in the CMP 3rd edition:

> *Conservation plans do not solve design problems. They set parameters in such a way that heritage values are retained or, where some compromise is unavoidable, affected as little as possible. The need to improve access between levels is not at issue – how and where it is done is.*[4]

Policy 17.1 below is framed "*to enable significant characteristics and relationships to be retained, but to allow the chosen designer as much freedom as possible to explore options in an unusually difficult situation.*" [5]

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).*

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.

Refer also to Section 4.7 *Conserving the exterior*, Section 4.8 *'Front-of-house' spaces above the Podium*, Section 4.9 *'Front-of-house' spaces within the Podium*, Section 4.14 *Lighting*, Section 4.15 *Signage*, and Section 4.20.11 *Code compliance*.

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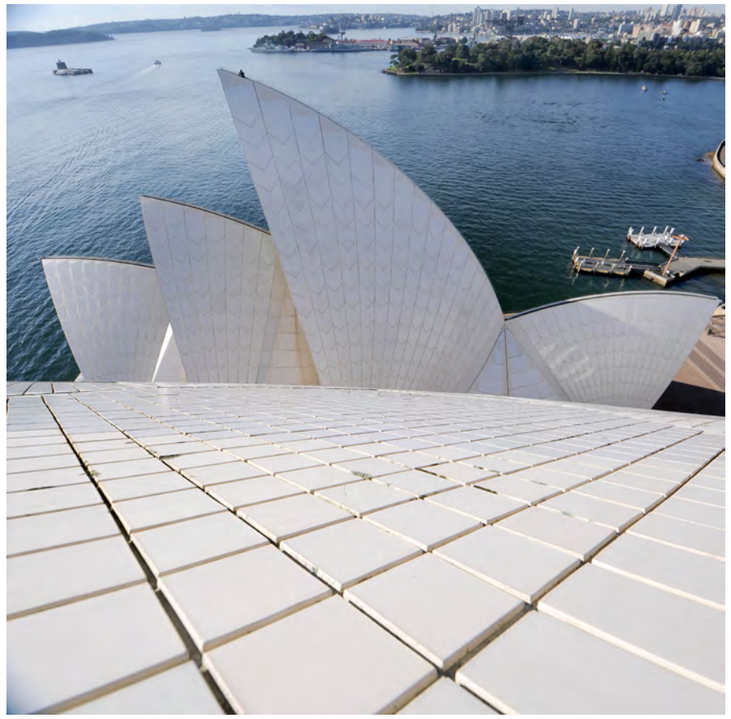
4.456 *Wheelchair sign on door in Western Foyers, note missing letter, 2009*



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4.457 *Tiled lids to shells, 2010*
4.458 *Cleaning glass walls of the Bennelong Restaurant, 2013*

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4.18 CARE OF THE FABRIC & HOUSEKEEPING

All the materials [externally] are non-corrosive, weather resistant, durable and will age and acquire a patina without changing their character, thereby preserving the character of the whole building through the ages.[1]

World Heritage Listing requires the affected property to be appropriately and effectively managed to protect its Outstanding Universal Values for present and future generations.[2] For the Sydney Opera House, caring for its physical fabric is an essential part of this management process.

The Sydney Opera House Asset *Management Policy* 2012 and *Asset Management Strategy* 2013 have been drafted to guide this process. Prepared in accordance with international standards (ISO 55000 Asset Management), they guide the maintenance and protection of the Opera House into the future. Any review of these documents should continue to reflect best practice and these international standards, but tempered with a thorough understanding of the significant values of the Opera House and the role the particular element or component plays in supporting these values. The policies, associated discussion and *Tolerance for Change* tables in this CMP provide essential information to aid this understanding.

Timely and intelligent monitoring, maintenance and repair are the most important part of any conservation and building management program, and are fundamental to conserving the significant fabric and values of the place. Without it, deterioration will proceed unchecked and, unless addressed promptly, failure and consequent expensive repair or replacement will result. Being such a young building, the Opera House has a unique opportunity to put in place responsible strategies to prevent or minimise deterioration and ensure the longevity of the building. These issues are discussed below and identified in the *Heritage Risk Management Plan*, presently being revised. Refer to Section 4.20.13 *Heritage risk management*.

A fundamental principle that applies to all works at the Opera House, whether it be maintenance, repair, alteration or new work, is to "think three times before cutting only once". Even casual fixings for temporary services have the potential to cause irreparable damage to significant fabric.

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.

Where necessary, advice regarding approvals should be sought from relevant authorities.

4.18.1 Monitoring

With so many surfaces exposed to the weather and the corrosive effects of salt water, coupled with constant use and visitation, consistent and comprehensive monitoring of the building fabric, services and machinery is essential. This will inform the maintenance program and identify potential problems before they become serious.

Many factors may degrade the fabric of the Opera House and potentially impact on its significant values. They can be grouped under the following headings:

- environmental factors (weathering and exposure to corrosion);
- use (wear and tear as a result of type, intensity and frequency of use);
- visitation (related to use, but includes passive visitation and tourism as well as performance related visits);
- maintenance (potentially damaging effects of cleaning or periodic repair);
- changes to components or elements.

Many of these issues are already included in current monitoring programs, but it is essential that all are addressed.

The Opera House presents some quite unique risks and challenges in this regard with a number of key components concealed from view. One of the most difficult is the tile-covered roof structures – a fundamental element in the significant values of the place.

The configuration of the prefabricated reinforced concrete shell ribs and their concealment beneath the tile-covered lids make it difficult to monitor their condition. At one time, an access hatch made in the tiled lids allowed periodic inspection, but the visual consequences were unacceptable and it was removed. Any leak between the lids into these concealed spaces would cause damage that could potentially go unchecked. Various methods of gaining at least visual access to these spaces have been investigated, but the problem remains to be solved. Rather than damage or endanger significant fabric or values to address such issues, the use of applied research should be explored to develop appropriate monitoring techniques. In 2014, a research project funded by the Getty Foundation's 'Keeping It Modern' grants program was announced to investigate these and other concrete issues. Phase 1 of the project is now complete with a 'Concrete Conservation Strategy' released late 2016.[3]

Other structures, such as that supporting the Broadwalks and seawall skirting, are particularly exposed to corrosion and require regular inspection, monitoring and timely remedial action.

Policy 18.2 – Monitoring programs
A comprehensive set of programs should be designed and implemented to monitor the structure, fabric, finishes, fittings, furniture, services and machinery across the Sydney Opera House site for any form of change or deterioration. The data collected should be used to identify potential problems, inform the Heritage Risk Management Plan *and maintenance and repair programs, and assist formulation of mitigation or protection measures.*

The World Heritage Listing requires monitoring of the World Heritage Values, including authenticity and integrity, and periodic reporting on these. The Opera House's Conservation Council currently prepares an annual report to relevant Ministers about the World Heritage values. This should be extended to include monitoring of National Heritage Values. The condition of the building fabric is reported at each meeting of the Building and Heritage Committee (at least four times per year), and is reported on a needs basis to the Conservation Council. It would be prudent to integrate, where possible, the parameters for this monitoring into the Trust's heritage risk management framework to facilitate this reporting. Refer to Section 4.20.13 *Heritage risk management*, Policy 20.14 *World Heritage reporting*, and Policy 20.19 *Implementation of and adherence to CMP*.

4.18.2 Maintenance and repair

Fundamental to the appropriate and effective care of the fabric is a thorough knowledge of the material being maintained and appropriate maintenance and repair techniques, based on sound conservation practice. Equally important is the care and skilled craftsmanship of those carrying out the maintenance and repair. Striving for excellence and high quality of craftsmanship are significant hallmarks of the Opera House which must be retained and continued. Patchwork, inappropriate materials and poor workmanship must be avoided. Inappropriate methods or the engagement of unskilled operatives could easily disfigure or destroy important components and elements of this place.

Policy 18.3 – Maintenance and repair program
The Sydney Opera House must continue to be cared for under a planned maintenance and repair program based on regular inspection and monitoring, a complete knowledge of the building and its materials, and prompt preventative maintenance and repair.

Policy 18.4 – Appropriate skills, experience and supervision
Only persons with appropriate skills, qualifications and experience in treating the relevant material (stone, ceramic, bronze, timber, steel, etc.) should be employed to carry out inspections, monitoring, maintenance and repair.

To maintain excellence in standards and consistency, care must be taken in the supervision and, where relevant, the training and continuity of contractor management and operatives to ensure that fabric is not damaged, diminished or put at risk by maintenance, repair or cleaning activities.

Policy 18.5 – Maintain drainage and weather resistance
Particular attention must be paid to keeping surfaces, channels and systems that conduct water safely from the building in good order.

Makeshift openings and alterations in the external fabric made to accommodate past and present services must be sealed or modified to ensure they do not present a threat to the fabric.

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4.459 *Repair of drainage and waterproofing membrane beneath Monumental Steps, 2011*
4.460 *Repair of edge of Forecourt over Lower Concourse and replacement of failed precast parapet panels, 2009*
4.461 *Forecourt after a concert and before cleaning, 2016*
4.462 *Adhesive remains before cleaning, 2016*

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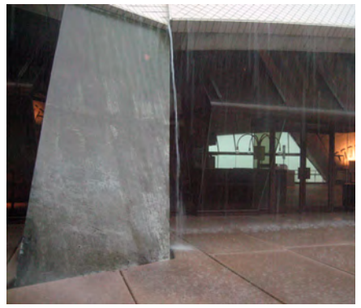

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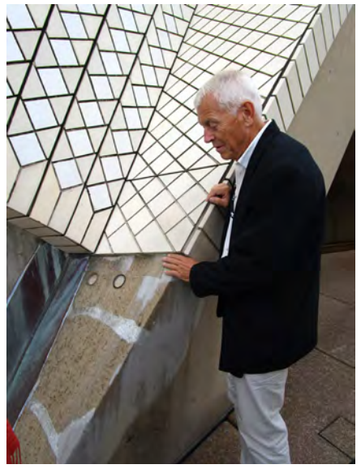

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4.18.3 Treatment of unpainted and precast off-form concrete

The high-class concrete finish, which will be the result of such a procedure makes any further treatment of the surfaces unnecessary and the underside of the shells where it is shown outside or through the glass walls, will show the concrete as it comes off the form.[4]

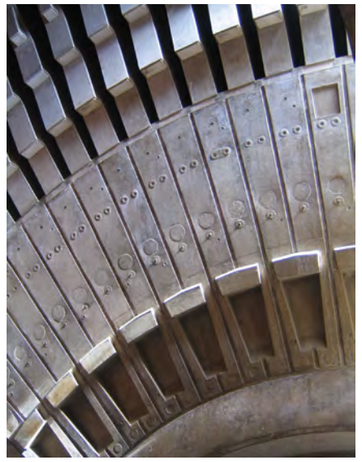
At one stage during construction, Corbet Gore, Hornibrook's construction manager for Stage II, complained to Utzon about architects: "*You know you architects are all the same. We builders produce good off-form concrete and all you do is bag it, paint it or cover it with a false ceiling.*" Utzon responded by picking up a piece of plywood lying on the floor and writing on it: "*To Bob Woods and Corbet Gore, I, Jørn Utzon, undertake never to cover this concrete but to leave it in the completed building as it comes off the form.*" [5]

The unpainted concrete shell ribs, pedestals and podium beams are defining elements in both the structure and visual character of the Opera House. They form an essential component in the palette of materials, textures and colours, particularly externally, and Utzon envisaged that these would weather naturally.

Peter Hall supported this approach in his work and recommended that it should remain so in the future.[6]

The exposed unpainted concrete surfaces, particularly externally, are vulnerable to the elements and both airborne and waterborne pollutants, as well as human contact, leading to discolouration and degradation. While discolouration may be considered an acceptable by-product of natural weathering, degradation of the concrete itself is potentially dangerous. The gradual loss of alkalinity as a result of exposure leads to a loss of protection of the steel reinforcement from corrosion. Proven methodologies now exist for reinstating this alkalinity.

Cathodic protection is already in place for some of the concrete structure wholly or partly



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submerged under the Western Broadwalk. The cathodic protection system should be extended to all marine substructures and appropriately monitored and maintained. Methods to reinstate and maintain the alkalinity, integrity and condition of exposed concrete above the water should be explored and tested.

The shell pedestals on top of the Podium have suffered the greatest surface deterioration, due in large part to their location and exposure to the full force of rainwater drainage from the shell surfaces above. In a number of areas, the smooth off-form finish has eroded, leaving the aggregate exposed. Various methods have been attempted to cover and protect these, but to date they have generally resulted in an unacceptably artificial appearance. A research project funded by the Getty Foundation is currently investigating this issue and options are being explored.

Deterioration of exposed concrete will need to be addressed if serious damage and concrete spalling are to be avoided. This requires regular monitoring of all exposed concrete, particularly externally, and implementation of a comprehensive treatment and repair program based on sound research and testing.

A 'Keeping It Modern' research grant from the Getty Foundation has facilitated and supported Sydney Opera House to partner with University of Sydney and Arup to undertake research into this and other concrete issues on the site. The outcome of the project is a Concrete Conservation Framework, of which a *Concrete Conservation Strategy* has been released in 2016. This strategy identified opportunities and methodologies for further investigation and trials to address these issues.[7]

Frequency of monitoring will be dependant on location and exposure, and should follow the recommendations of the *Concrete Conservation Strategy.*

4.463 *Rain spilling from roof shells onto concrete pedestals and granite paving, 2007*
4.464 *Eroded surface treatment on concrete pedestals of roof shells, 2009*
4.465 *Jan Utzon assessing possible repairs to concrete as part of The Getty Project* - Keeping It Modern, *2016*
4.466 *Unpainted off-form cranked concrete beams in Northern Foyer of Concert Hall, 2008*
4.467 *Internal unpainted off-form pedestal base with radial ribs in Side Foyers, 2005*

Policy 18.6 – Remediation of concrete surfaces
A long-term program of remediation to retard deterioration of concrete surfaces must be implemented. The methodology used must be based on sound research and testing, and its consequences fully understood before implementation. As well as affording protection, treatments should approximate the colour and texture of adjacent surfaces, and be visually continuous with them after two or three years of weathering.

In the early period of construction, Utzon was disappointed with the extent of imperfections and deformations in the finished surfaces of the in-situ concrete work, particularly the folded and cranked beams over the Covered Concourse, and reserved judgement on their final treatment.[8] Later work showed some improvement, and in the bar areas of the Northern Foyers the finish was exceptional, considered by some "*the most even and smooth that has been achieved anywhere in the world in reinforced concrete*".[9] Nonetheless, the condition of the concrete in the Covered Concourse was a major factor in persuading Utzon to prefer the greater quality control offered by prefabrication for Stage 2 works.[10]

Left unpainted and with prolonged use of the Covered Concourse as a bus drop-off area, the beams had become dirty and discoloured. In 2000, following his re-engagement, Utzon suggested that one way to increase the lighting levels in the space would be to whitewash these beams.[11] This recommendation remains an exception to his expressed intent of not painting off-form concrete surfaces.

To resolve the problem, Kerr proposed a sequence of actions in 2003:

- reduction of source contaminants;
- cleaning; and
- decision of whether to apply a light wash or not.[12]

Since then buses, with their polluting diesel fumes, have been excluded from the area and other vehicle parking has been almost entirely removed. A test area has been cleaned, but the technique used has since been further developed and is now more efficient. It is recommended that when resources are available, the whole of the Covered Concourse area be cleaned. Cleaning of these exposed surfaces should be considered once the repair and re-waterproofing of the structure above is completed. Refurbishment of this area is one of the projects proposed in the suite of renewal projects and includes a revised lighting installation, similar to the Box Office Foyer. This will provide a brighter and more visually powerful space. The imperfections in the concrete are considered acceptable and far outweighed by the sculptural and structural majesty of the beams.

A painted finish would improve the surface only if patch repairs were carried out to disguise the imperfections. The downside would be a reduction or loss of visibility of the formwork chalk markings and possibly a greater awareness of the irregular deformations in some of the beams.[13]

The consensus now by management and, we believe, the public is for the beams to remain unpainted – at least for the foreseeable future. Utzon's suggestion of whitewashing could be kept in mind and revisited in light of further experience, but it is not a preferred solution at this stage.

The lines and markings on the folded beams in the Covered Concourse result from chalked set-out lines and annotations written on the original formwork having transferred to the finished concrete surface. They provide tangible evidence of the structural systems and skills used to construct the building and link directly to major aspects of its significance; they should remain exposed and visible wherever possible.

Policy 18.7 – Formwork markings
Any treatment of unpainted concrete must retain existing textures and allow markings from its construction process to continue to tell the story of the underlying structural systems.

Other unpainted concrete surfaces in public and non-public areas of the building have become dirty and discoloured by various pollutants, including cigarette smoke (now banned in public buildings). A number of the ceiling areas, such as the Green Room, have been cleaned to reveal their original colour and sheen but others remain untreated. Cleaning has been done using a careful wash with bicarbonate of soda to reactivate the surface – a methodology developed on site during the 2003-2004 refurbishment of the space now known as the Utzon Room. The technique, developed by JPW and Trevor Waters, was based on an understanding of how Jørn Utzon achieved his original finish for these surfaces. His method was to strip the formwork early and buff the concrete to direct the mica particles to the surface to obtain a translucent whitish finish. One of the original workmen, Steve Tsoukalas, still had an original 'buffer' and Utzon told the story of the technique. It was then documented by Trevor Waters.[14] At the time of writing, Steve is one of the few people still working on the site who worked on the construction of the original building.

The cleaned ceiling areas, particularly the beams, have provided enhanced lighting levels and a greater visual awareness of the quality and form of the concrete finishes.

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4.468 *Partially cleaned fan pedestal in Southern Foyer of Concert Hall, 2012*
4.469 *Steve Tsoukalas cleaning concrete fan pedestal, 2012*
4.470 *Soiling on unpainted concrete reveal to lift in Side Foyer, 2010*

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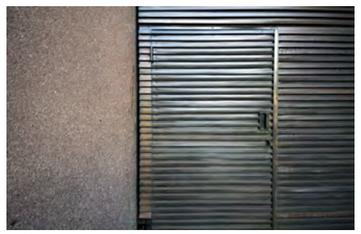
4.471 *Pressure cleaning of Monumental Steps, 2015*
4.472 *Eroded precast pink granite paving surface, 2014*
4.473 *Marks remaining from removed exhibition stands on Western Broadwalk prior to cleaning of surrounding area, 2011*
4.474 *Bronze door to Central Passage, 2010*
4.475 *Treatment of exposed bronze to glass wall ribs, 2016*
4.476 *Bronze door joinery after cleaning and waxing, 2009*
4.477 *Brush box refinishing - new finish on right hand side of door, 2013*
4.478 *Brush box stairs in Side Foyer of Concert Hall in process of refinishing, 2008*



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Surfaces within easy reach have been affected by the touch of many hands and fingers, and this is particularly evident on the concrete columns and shell pedestals in the Side Foyers. Discolouration due to constant handling is considered less intrusive and should be regarded as an integral part of the patina of use, unless such discolouration or surface handling has a disfiguring or detrimental effect on the surface itself, in which case it should be carefully cleaned.

Policy 18.8 – Cleaning and protection of unpainted concrete
The sources of pollution or staining on unpainted concrete surfaces within the public areas should be identified by testing, and both the originating causes and the transmission of the polluting agents be reduced as far as practicable.

These surfaces, particularly the concrete beams, must be cleaned in accordance with the methodology trialled in the Covered Concourse and Utzon Room, and then developed for the Box Office and Green Room, and kept clean using the same method (documented in Sydney Opera House – Analysis and Cleaning of the Concrete 2005*).*

The patina of use and handling, where this does not disfigure or endanger the fabric, should be respected and retained.

Unpainted concrete surfaces must not be treated with any form of sealant or other protective coating unless this is required for their survival. If such treatment is proposed, it can only be considered where the full implications of its application have been fully tested and are known not to cause any detrimental effects or discolouration over a long period of time, i.e. the life of the concrete. Where the outcome is uncertain, the surface should remain unsealed.

4.18.4 Cleaning of reconstituted granite paving and cladding

Past practices for cleaning reconstituted granite paving and cladding have used high-pressure wash techniques. These can be quite aggressive and gradually erode the cement matrix binding the aggregate. Kerr noted in 2003 that there was already evidence of this and advised "*the lower the water pressure and the fewer the cleanings the longer the life of the slabs*".[15] This is becoming increasingly important with the diminishing availability of the appropriate granite. Refer to Section 4.18.10 *Lifecycle Planning.*

There needs to be a fine balance between the necessary objective of clean surfaces and the impact of the cleaning process.

Policy 18.9 – Cleaning reconstituted granite
Investigations must be carried out to determine the best method and appropriate frequency of cleaning necessary to retain an acceptable appearance, while minimising degradation.

Operators should be trained and supervised in the method appropriate to the job, the purpose being to prolong the life of the reconstituted granite paving and cladding.

Another important aspect of cleaning is that of emergency response. If a graffiti strike or spill is treated inappropriately or not dealt with promptly, the damage could be permanent. Technical expertise to address the problem may not be readily available, so it is essential that staff have some training and clear procedures in how to deal with such issues until appropriate assistance arrives.

Policy 18.10 – Response to graffiti and spills
Maintenance staff must be trained to provide appropriate and prompt in-house first responses to graffiti strikes or potentially damaging spills of any kind until appropriate contractors arrive to deal with them.

All staff must be briefed to alert maintenance personnel to graffiti strikes on any fabric as quickly as possible.

4.18.5 Care of bronze

Bronze, in particular the lead-free manganese bronze alloy selected for this project (known as Austral Alloy 412), was chosen for its ability to be extruded, machined and manufactured to fine tolerances, its durability in exposed positions and its ability to weather with a stable natural patina. It is used extensively externally and in public areas internally. No coatings were applied to it and in many cases it was linished on completion.[16]

The Austral Alloy 412 is no longer available. The 1988 Bicentennial work used alloy 678, a close match to the Austral Alloy 412. Again in 2009, the work on handrails on the western edge of the Forecourt used an alloy similar to the 412.[17] Original properties and finish of the 412 must be retained in any change to the specification, in accordance with Policy 7.19.

A report on the maintenance of bronze at the Opera House was prepared by Trevor Waters of Lucas Stuart in 2005. It assessed all the applications of bronze across the site and made detailed recommendations for their maintenance and repair.[18] Practice on site has developed a revised technique involving the use of olive oil and this has been successfully used for a number of years.

Previous lessees of the Bennelong Restaurant have polished the bronze handrails in that space, removing the patina favoured by both Utzon and Hall. This should be discouraged and the patinated finish reinstated.

Policy 18.11 – Cleaning bronze
Any cleaning or maintenance on the bronze, both externally and internally, should be carried out in accordance with the Lucas Stewart 2005 Report on the Maintenance of Bronze Components *and, as modified, with the use of olive oil.*

The patina of age, weathering or use must not be removed unless it is damaging the surface of the particular component or endangers its survival. Any potentially damaging or disfiguring oxidation or encrustations must be removed with as little damage to the patina as possible.

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4.18.6 Care of timber floors and wall cladding

The original timber floors in the two main auditoria were made from brush box *Lophostemon confertus* (formerly known as *Tristania conferta*), laid in glulam planks and originally polished - "*treated with Wattyl products, wax finished*".[19] The product was Wattyl Uformel, a clear urethane paint.

Original brush box wall cladding was finished in the same manner as the floors, while the white birch elements including the chair shells were finished with Wattyl Uformel (clear) with a small amount of white pigment to counter yellowing tendencies.[20]

The Studio (formerly Rehearsal and Recording Hall) originally had a parquetry floor of tallow wood, *Eucalyptus microcorys*, finished in the same manner as the auditoria, but the present floor is of tongue-and-grooved brush box. Rehearsal rooms were finished with tongue-and-grooved floors of Oregon, *Douglas Fir,* and these were sealed.[21]

In more recent years a polyurethane finish has been applied in some of the high-traffic areas, such as the stairs and upper-level walkways to the Concert Hall auditorium doors. The Concert Hall and Joan Sutherland Theatre (Opera Theatre) floor finish was changed to an acrylic-based polyurethane product during the NSW Department of Public Works upgrade program in the 1990s. Such finishes look good when new, but cannot be repaired and require regular stripping back and replacement to maintain their appearance. This process requires several days and is therefore not feasible in most theatres due to performance schedules. Each replacement involves a fine sanding to remove the degraded coating and thus a fine layer of timber is removed with it. Inevitably this process results in the need to replace the timber, which may have limited availability. Another issue with these high-strength finishes is that they effectively 'glue' the timber together at joints, such as in tongue-and-grooved flooring, resulting in split boards with changes in humidity or other movement. Such finishes should not be used.

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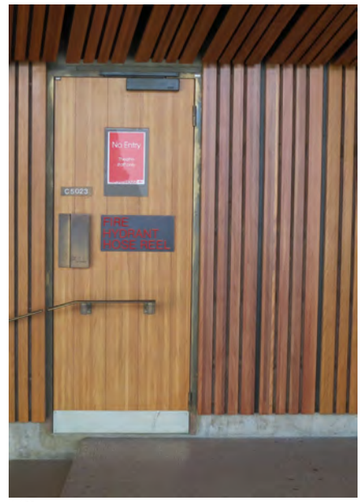

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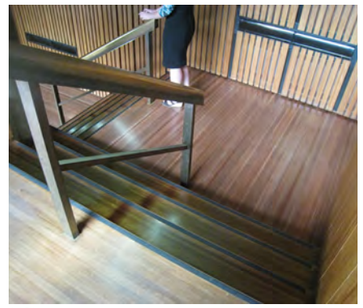

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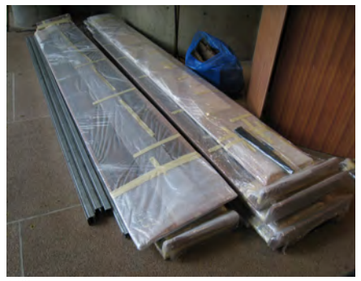

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Some areas of the brush box wall panelling have become yellowed and slightly bleached as a result of exposure to strong sun and will need refinishing if they are to retain their intended quality of appearance. Recent re-finishing of these panels and the brush box flooring has used a water-based urethane product – 'Bona Traffic'. It retains the colour of the fresh timber, does not require sanding back when re-coating and can be done overnight – an important consideration in a busy performing arts centre.

Product technology and availability change frequently, and it is important that the Sydney Opera House remains informed. New products should always be tested before application.

Policy 18.12 – Timber finishes
Wherever possible the original polished timber finishes on floors, wall panelling and timber joinery must be retained and maintained.

Where replacement of this finish is required, it must:

- *not require complete removal, sanding back, or any loss of timber when repaired or replaced;*
- *not discolour the timber (unless this was originally intended);*
- *retain the same surface sheen and look as the original finish;*
- *have low film-build; and*
- *not glue the timbers together.*

Changes were made in the early 2000s to the humidification regime in the air-conditioning system in the Concert Hall and associated foyers, resulting in excessive drying out of the timber, particularly the glue-laminated brush box panelling and linings. This led to the cracking and splitting of these elements as well as malfunctioning of the grand organ. This has since been rectified and the climate control altered to maintain appropriate levels of humidity in the space, but many of the cracks and splits may never repair themselves.

Policy 18.13 – Humidity control
Appropriate humidity levels must be maintained in all areas where there is timber joinery or sensitive equipment to prevent excessive drying out of timber and consequent splitting or warping.

The flooring, wall lining and doors in the refurbished Utzon Room are made of Tasmanian Blue Gum (*Eucalyptus globulus*), with a natural soapy wash finish. This finish, chosen by Utzon himself and documented by the Opera House, is based on a traditional Scandinavian soap and kaolin wash technique and requires careful use of the same materials for its cleaning and maintenance.[22]

Policy 18.14 – Soapy wash finish in Utzon Room
The soapy wash finish on the floor and joinery in the Utzon Room must be cleaned and maintained in accordance with instructions for this finish. Any repairs or new timber elements in this space must be finished and maintained in the same manner.

4.18.7 Removal or alteration of fabric

The continued use of the Sydney Opera House as a performing arts centre is dependent on its ability to adapt to constantly changing demands and priorities. As part of this process, it is inevitable that there will be times when original fabric, or fabric from significant elements, will need to be altered, removed or relocated. Some components may be able to be used elsewhere or adapted to accommodate the change, but others may not. The wobbly panels, key to the identity and character of many back-of-house spaces, have been moved around to suit changing configurations, and can continue to be moved in order to maintain the character of those areas where their fitting was intended.

All removals or replacements should be recorded, and sample sections of removed elements should be retained within Sydney Opera House archives.

Ad hoc removals or alterations, including furniture and fittings, should be avoided. Such actions, unless considered as part of an overall plan, will lead to the progressive degradation and, ultimately, destruction of significant elements.

Refer to Section 4.18.11 *Collections Management*.

Policy 18.15 – Checklist for removal or alteration of fabric
Any proposal to remove or alter any fabric must:

- *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;*
- *only be considered in the context of an overall plan such as the* Strategic Building Plan 2001 *or* Opera House Renewal Plan 2014*; and*
- *where not considered exempt works, be approved by the relevant statutory authority.*

Policy 18.16 – Removal of fabric
Where significant fabric is removed and capable of subsequent re-use on site, its location must 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 must 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.

4.18.8 Treatment of intrusive items

Intrusive items have been identified and listed at the end of the *Tolerance for Change* tables for each element in Sections 4.6 to 4.10. The tables provide guidance as to the nature of the intrusiveness and how each item should be dealt with. Some are required for public safety, such as the steel crash bollards on the Broadwalks beneath the perimeter of projecting hoods, and may need to remain while vehicles can access these areas, but their location and subsequent impact on the quality of a significant space (Western Broadwalk) make them intrusive.

Other elements may simply be intrusive because of poor or inappropriate design or because they clutter or detract from significant elements; these include the northern marquee, the added guardrails in the Side Foyers of the major auditoria to prevent access under low head-height areas, and the guardrail to protect the Utzon tapestry in the Utzon Room. Some may be easily addressed by removal, others by a redesign or relocation or, as in the case of the various suspended lighting and technical supports in the Concert Hall, by being moved out of sight when not in use (good housekeeping and management).

Temporary items have a habit of being intrusive because they are either crudely designed, executed or poorly placed. This is discussed in greater detail in Section 4.18.9 *Housekeeping*.

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 Sections 4.6 to 4.10 of this CMP.*

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

Refer also to *Tolerance for Change* tables for each space or element at the end of Section 4.7 *Conserving the exterior*, Section 4.8 *'Front-of-house' spaces above Podium*, Section 4.9 *'Front-of-house' spaces within the Podium*, and Section 4.10 *'Back-of-house' performers' and staff areas*.

4.18.9 Housekeeping

I should also like to suggest that a person is, or persons are, charged with the maintenance of this particular space [Utzon Room], ie, taking care of the space as if it was their own living room. Such a personal responsibility often results in a very meticulous and conscientious maintenance of the entire space.[23]

It is essential that the highest standards of housekeeping and presentation are constantly maintained at the Opera House, particularly in public areas and significant or publically accessible back-of-house areas. The litmus test for these spaces should be: '**if it would not be acceptable in the foyer of a five-star hotel, then it is not acceptable here**'.

Adherence to the guidelines and policies in this 4th edition CMP and the *Heritage Risk Management Plan* should ensure that most housekeeping issues are addressed. However, in any large organisation there will undoubtedly be times when vigilance will give way to expedience, resulting in the appearance of crudely mounted temporary signs, the odd promotional sign left in place, gaffer tape or barrier tape left on a column or handrail, or a loose cable hanging from a ceiling. Whatever is required to address a temporary issue should be done elegantly and discreetly, and removed or tidied up immediately afterwards. In unseen areas, such as the overhead spaces between the shells and the auditoria, off-cuts and other waste material from repairs or servicing can become a fire or safety hazard, or a catalyst for deterioration, with potentially disastrous impacts on the significance of the place.

In this respect, adherence to the *Heritage Risk Management Plan* is essential. Refer to Section 4.20.13 *Heritage risk management*.

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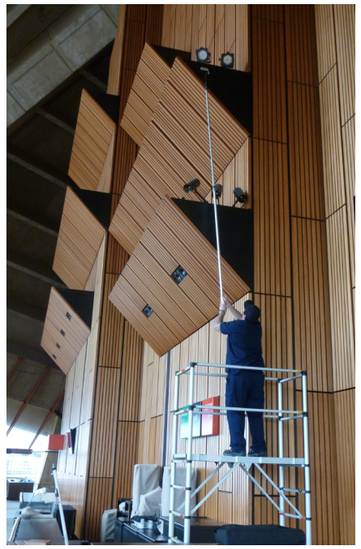
4.479 *Removed white birch veneered 'wobbly' panels from small rehearsal room prior to fitout of spaces for the Recording Studio, 2010*
4.480 *Removing saw-tooth panels in Concert Hall, 2011*
4.481 *Tagged and wrapped saw-tooth panels ready for safe storage, 2011*
4.482 *Soapy wash finish to flooring in Utzon Room, 2011*
4.483 *Bronze rails in Side Foyers beneath areas of restricted head-height, 2010*
4.484 *Marquee and furniture associated with the Northern Function Room facility, 2009*



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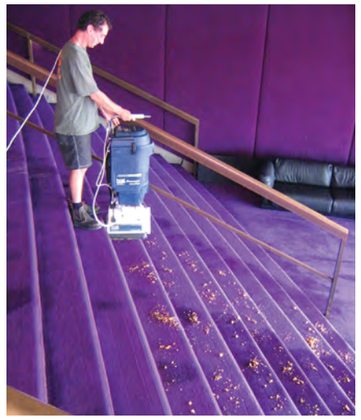

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4.485 *Cleaning of brush box panelling in Southern Foyer, 2014*
4.486 *Carpet cleaning, Northern Foyer of Concert Hall, 2005*
4.487 *Brush box panelling in foyers surrounding Concert Hall, 2016*
4.488 *White birch 'wobbly' plywood ceiling panels in Board Room, 2016*

Housekeeping also includes maintenance such as regular cleaning of carpets, touching up damaged / chipped paint, and prompt replacement of non-functioning or mismatched light bulbs.

If left unattended, such transgressions lead to an untidy presentation and a lowering of standards, as well as possible operational, fire or safety hazards.

> ***Policy 18.18 – Housekeeping***
> *Constant vigilance on the part of all management, staff, contractors, hirers and performers is crucial to ensure that all leftover material is removed on completion of any task, event or performance, minor damage repaired, spaces tided and the highest standard of presentation maintained across all areas of the site at all times.*

Information setting out guidelines and limitations for each venue, as well as specifications, access, technical and production information must be provided to all hirers. This information is available on the Sydney Opera House website. For example, the limitations for one of the most sensitive venues, the Utzon Room, include exclusion of: "*Gaffa tape on any surface, including the floor; … Fixings or decorations of any type attached to the walls, floor, tapestry or ceiling*".[24] Such information is vital if hirers are to take any responsibility for the care and presentation of the place.

Adherence to these and other guidelines, as well as their effectiveness, should be monitored and regularly reviewed to ensure appropriateness.

The recent practice of allowing patrons to take drinks into the auditoria is a venue management issue but significantly increases the risk of soiling carpets and upholstery and causing damage to other finishes, as well as being a potential annoyance to other patrons. While this practice may be appropriate in venues such as the Utzon Room or The Studio, depending on the performance, it is recommended that this be reconsidered for other auditoria.

> ***Policy 18.19 – Housekeeping – training and review***
> *Information and training is to be provided to staff, contractors, lessees and hirers regarding housekeeping and care of the place. It must be monitored and regularly reviewed to ensure it remains appropriate, relevant and comprehensive.*
>
> *In addition to daily / regular informed supervision, a simple six-monthly audit of current practice should be carried out to ensure that it is appropriate and the quality of the housekeeping regime is maintained.*

4.18.10 Lifecycle planning

Many of the materials used at the Sydney Opera House have been specifically made for the project, sometimes by firms that no longer exist. Even where these firms are still trading, changes in the technologies used may result in a product with different qualities and characteristics from the original.

Components such as the roof tiles, glass walls, reconstituted granite paving units, brush box walls and floors, white birch plywood seat shells, Concert Hall ceiling panels, doors and wobblies, bronze, and door hardware all require periodic repair or replacement. It is essential that such replacements replicate the originals as closely as possible.

Höganäs, the original roof tile manufacturer, still exists and has supplied matching tiles, but the original glass manufacturer, Boussois-Souchon-Neuvesel, has closed. Austral Bronze, suppliers of the Austral Alloy 412, still exists, but no longer supplies this product and other manufacturers have difficulty matching it. A global search for suppliers of equivalent bronze material was documented with recommendations for the Opera House in a 2008 report by Peter Clark and Associates.[25] Other materials, particularly natural ones such as the pink granite and various timbers, are becoming increasingly difficult to source.

The Opera House *Asset Management Plan* or its equivalent should incorporate strategies to ensure the ongoing security and availability of these materials.

> ***Policy 18.20 – Supply of replacement material***
> *Replacement material should, where possible, be sourced from the same supplier / manufacturer, and use the same specifications and methods as the original to achieve an exact match, or as close a match as possible.*
>
> *If the original supplier / manufacturer is no longer available, a new supplier must be found who can meet the required specification, match the material and supply the required quantities.*
>
> *A strategy for maintaining security and availability of replacement materials and components should be part of the Sydney Opera House* Asset Management Plan *or its equivalent.*

> ***Policy 18.21 – Maintain adequate stocks***
> *All material secured for future use must be properly stored and protected, with appropriate environmental controls to suit the material, in a secure off-site facility. All material must be logged and stocks monitored against projected needs.*

Because of the transitory nature of suppliers and the difficulty of matching previous batches, any order should consider the necessary lead times and include adequate stocks for future repair and replacement. The following timbers have been used in significant spaces or elements:

White Birch, *Schizomeria ovata*, used as crown-cut veneer on panelling, doors and plywood elements – a relatively uncommon hardwood from coastal rainforests and now in limited supply, originally sourced from the Wauchope area in NSW and transformed into plywood by Cemac.

Brush Box, *Lophostemon confertus*, used as solid timber or as glue-laminated panels for floors and wall panelling – originally sourced from the Dungog area in NSW, where the original supplier has closed. While brush box is generally readily available, the continuing availability of timber of matching quality to that in the Opera House is uncertain.

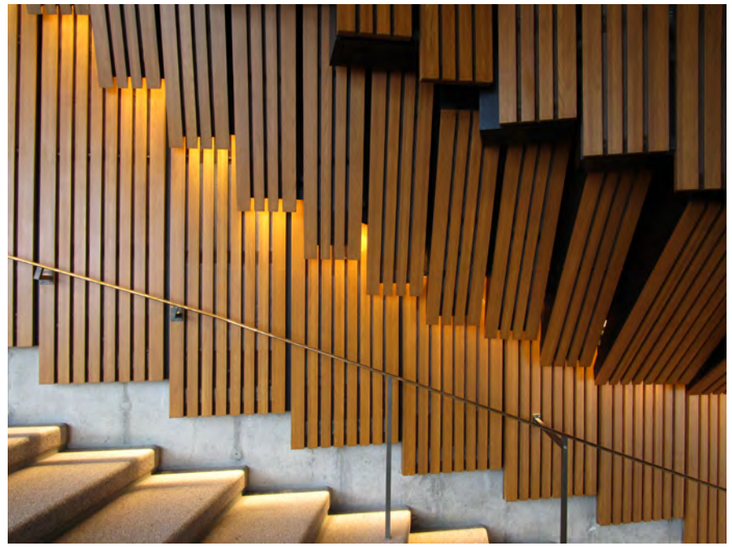
Yellow Carabeen, *Sloanea woollsii*, used as veneer on plywood ceiling in the Joan Sutherland Theatre (Opera Theatre), but now painted black – still available in limited supply. Due to the black painted finish, this timber need not be matched, except in relation to texture and density. This is unless and until a full renewal of the auditoria goes ahead, in which case Policy 4.5 would apply.

Tasmanian (Southern) Blue Gum, *Eucalyptus globulus*, used for panelling and flooring in the Utzon Room – still readily available.

The white birch is a signature timber species at Sydney Opera House, and adequate forward supplies should be secured if possible. The veneers used were book- and end-matched from carefully selected sections of the tree. The ceiling panelling in the Concert Hall used one flitch from only one exceptionally large log, and would therefore be very difficult to match.[26]

In other countries and cultures, particular trees are cultivated and secured for use in repairing or rebuilding significant structures.[27] This approach could be considered for the Opera House.

Should it be required, a substitute timber could be considered only when supplies are no longer available.



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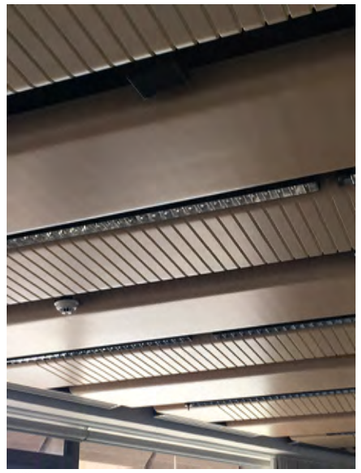
> ***Policy 18.22 – Supply of white birch***
> *The Opera House should investigate, and if possible implement, ways of obtaining security over future supplies of white birch* (Schizomeria ovata) *so that the required crown-cut veneer can be used for any repair or replacement of existing elements.*
>
> *Investigation should be made into which readily available Australian timber species can closely match the white birch to enable its possible future use in new fitout. This would only be acceptable where it would not be seen near existing white birch components.*

The pink granite used in the reconstituted and solid granite panels and paving was originally sourced from a quarry at Tarana, near Oberon, NSW, but this quarry closed down. Matching material is currently sourced from the same seam in a quarry to the west of Tarana. In 1988 the new Lower Concourse and refurbished Forecourt were paved in matching pink granite from two quarries in South Australia, 'Calca' for the slabs (from the Calca quarry east of Streaky Bay on the Eyre Peninsular) and 'Sienna' for the setts (from a quarry near Blackhill). These were supplied by Monier, and were much more expensive than imported equivalents, but the government at the time wanted only Australian granite used.[28] In 2010, supplies of the Calca pink granite were still available, while the Sienna was uncertain.



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4.489 *Laying granite setts on raised roadway in Forecourt, 2014*
4.490 *Granite paving on Forecourt, 1988 paving at top of photo with 2014 below, 2017*
4.491 *Selecting matching granite setts for Forecourt, 2012*
4.492 Bennelong Series *by Donald Friend, 2011*
4.493 *1973 back-of-house perspex signage with original lettering, 2005*
4.494 *Original winches on Joan Sutherland Theatre fly grid, 2010*
4.495 *1960s model to test mechanical services*
4.496 *Tagged and wrapped original saw-tooth panels from Concert Hall ready for safe storage, 2011*

For the Vehicle Access and Pedestrian Safety Project and repaving of the Forecourt in 2014, the Calca was sourced from the same quarry as in 1988. The quarry was re-opened for the Sienna but its extraction licence expires in 2017. Whilst there were some issues initially in matching the pink tones in the Sienna, these were resolved and an acceptable outcome was achieved.

The precast cladding units made for the Western Colonnade and the Western Foyers, including the glass fibre reinforced concrete (GRC) paving units, used a similar pink granite from a quarry near Orange, NSW, and this may be an alternative source. Nonetheless, these are all finite resources and should therefore be carefully managed.

Suitable replacement granite will depend on what is available at the time, but it is important that any replacement panels be as close a match to the original as possible. It is essential that adequate stocks be maintained for such use. Consideration should be given to procuring and stockpiling an adequate supply of larger slabs in case they become unavailable in the future.

Policy 18.23 – Granite supplies
Sufficient supplies of Australian pink granite aggregate for wall and paving panels, matching the original from Tarana, should be obtained and stockpiled to provide for future works including repairs or replacement of panels. The availability of matching granite, both as aggregate and large solid slabs, should be regularly monitored, and adequate supplies maintained.

Pink granite precast panels, setts or slabs no longer required on site must be considered for salvage and securely stockpiled for potential future use in new precast panels or paving to ensure a match with original work.

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4.18.11 Collections management

This CMP identifies many (potentially) moveable items and collections, both on and off site, that contribute to the significance and integrity of the Sydney Opera House. They include archives and records (plans, images, books, ephemera, oral histories, etc.), and collections of objects (artworks, curtains, furniture, removed or stored pieces of significant building fabric, machinery or fittings, commemorative plaques, archaeological relics, etc.). Many were part of the original 1973 building and fitout, salvaged during repair or upgrading works, while others are later. However, all play a role in supporting the significance of the Opera House and telling its story and must therefore be carefully looked after.

Significant pieces, such as the Saarinen Tulip chairs and table from the Boardroom, have already been lost but many others remain (often in storage), such as the Coburn curtains. These require careful monitoring and management to ensure appropriate preventative and reactive conservation.

Sydney Opera House Trust should consider the appointment of a professional conservator to develop and implement a *Collections Mangagement Policy* and management strategy, which should be implemented to care for these archives, objects and collections.

Policy 18.24 – Collections management
A comprehensive Collections Management Policy *must be prepared and implemented to identify, manage and protect original or significant items of furniture, fittings, machinery, commemorative plaques, artworks, curtains, ephemera, archives, removed and stored significant building fabric or archaeological and other collections. This policy should include a strategy to monitor, maintain and manage the collections to retain and protect their significance into the future, even if they are still in use or on display.*

The policy should include loan, acquisition and disposal processes and be prepared, managed and implemented by an appropriately experienced conservation consultant.

Refer also to Section 4.19 *Managing records and information.*

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4.19 MANAGING RECORDS & INFORMATION

Usually things that are constructed have some sort of logical history and when this is known it is easier to take the right decisions at any one time.[1]

The Sydney Opera House is a large and complex building and a busy performing arts centre. In order to function efficiently, it requires proper monitoring and recording of all works and maintenance, as well as efficient access to these records. This would be expected of any similar building, but when the building is of World Heritage significance, the importance of managing such records and information is pushed to a much higher level.

4.19.1 Archives and related documents

Many researchers have studied the design, documentation and construction of the Sydney Opera House and the politics and dramas that accompanied it. Until 1996 they were able to do much of this research through a comprehensive archive kept on site as part of the Dennis Wolanski Library of the Performing Arts. This was housed within the Podium and then moved to the former Recording and Rehearsal Studio space until the dispersal of the collection in 1997 and renovation of the space to create The Studio.[2]

Documents relating to the design, construction and operation of the Opera House are now scattered among a range of repositories, many public but some private.

A selection of material from the Dennis Wolanski Library was retained by the Opera House Trust as the Dennis Wolanski Archives of the Sydney Opera House. However, there is presently no consolidated archive or record of all the available source material related to the site and building, its history and use.

Utzon's re-engagement in 1999 spurred a renewed interest in his original ideas and documentation, and has enabled greater access to archival material held in Denmark, including the Utzon Archives. Other people involved with the project have recently published previously unpublished material. They include Yuzo Mikami, Mogens Prip-Buus, Peter Compagnoni and Clive Buhrich, all of whom worked in Utzon's Studio on this project. No doubt there will be more to come.

Following Utzon's re-engagement in 1999, he had many meetings and discussions with Richard Johnson. Video and sound recordings from these are archived with Sydney Opera House, and are an important source of information.

Peter Hall's work has, until recently, remained largely under-explored and, to some extent, misunderstood. Anne Watson has recently undertaken extensive research into the Hall archives for a PhD thesis and with her kind permission some of this research has informed the preparation of this CMP. Further research into all aspects of Sydney Opera House should be encouraged.

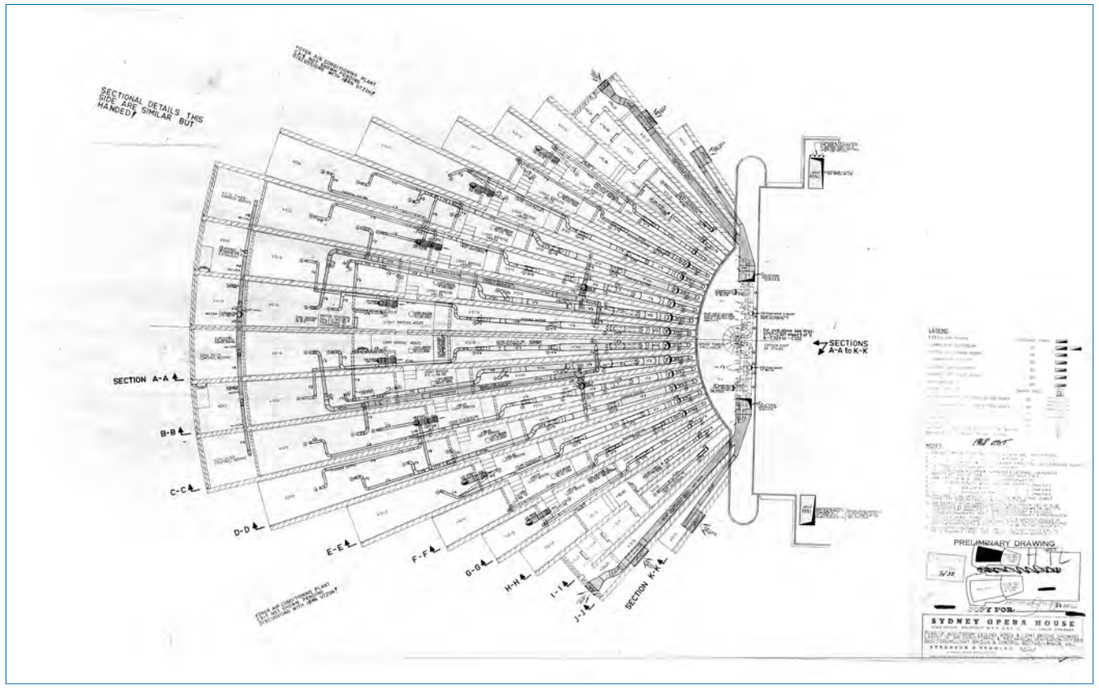
Many of the original consultant firms still exist and hold records and information about the design and construction of the place. Those who worked on the Opera House's construction are now retired but remain a valuable resource.

Likewise, many of the original contractors (who would have been in the early stages of their careers at the time) have valuable information on practices and methodologies used on the site which could assist our understanding of the place. Some of these people continued to work at the Opera House after it opened, but very few now remain on site. Steve Tsoukalas, now a maintenance contractor, is one of these. His knowledge of the building and its construction, and continued dedication to the Opera House has proved invaluable in developing cleaning and maintenance techniques for concrete and bronze.

As part of the Getty 2014 'Keeping It Modern' project, a number of these people were identified and interviewed.[3] Historical material held by them includes drawings, papers and reports as well as invaluable information, much unwritten, including stories and anecdotes. These interviews were professionally conducted, recorded and transcribed and are now held in Sydney Opera House archives. This information has directly informed how the Opera House will proceed in terms of prioritising and setting objectives for future investigations arising out of the Getty project.

Utzon's 1959 drawings designate a space for a 'Library' in the area occupied in 1973 by the Harbour Restaurant. The present 'library' function is split between engineering and corporate information, but there is much cross over between the two. The engineering information is managed by the Building Information officers within the Building portfolio; the corporate information is managed by the Corporate Archivist within the Legal Division of the Corporate Portfolio. These should be closely linked and any collections management system or other database appropriately integrated. Refer to Section 4.18.11 *Collections management*.

Both hard-copy documentation and soft-copy computer files are held. Hard-copy documentation is held to archive standards where necessary and soft-copy files are held according to current and approved State Government information systems policies.



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Policy 19.1 – Documents and archives
A comprehensive inventory of all known documents, graphics, images and oral records relating to the design, development, construction, social and political history, and ongoing use of the Sydney Opera House must be established, maintained and made accessible to those requiring it. The inventory should provide details on location and, where possible, access and copyright.

It should be the long-term objective of the Sydney Opera House Trust, to bring together at one accessible location (or in the minimum possible number of such locations) copies of all documentary, graphic and oral records relating to the design, engineering, construction and development of the Opera House and its site, social and political history, corporate business records, salvaged building material samples, and collections (including art and archaeology). These collections and archives are to be managed through the Opera House Collections Management Policy *and strategy.*

The management and maintenance of the Opera House require the services of many individuals, consultants and contractors. It is important that their knowledge and experience is captured and passed on to those who follow. An understanding of what was done and why is essential to the long-term conservation of the place. Without this continuity of collective memory, there is a real chance of losing aspects of the integrity and authenticity of the place by ad hoc decisions or changes based on "short-lived aesthetic and operational fashions".[4] Refer also to Section 4.4.1 *Research.*

Policy 19.2 – Recording oral histories
The contribution and reminiscences of the lesser known but important consultants, contractors and staff of the Opera House and the Department of Public Works who had an intimate connection with the Opera House at any time, as well as artists who performed there, should be recorded and all material archived.

4.497 *Steensen & Varming drawing dated July 1965 - plan of Utzon's minor hall ceiling showing mechanical services*
Steensen & Varming No. 5727-C07 Sheet 4, 1965

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4.498 *Sydney Opera House survey marker, 2011*

4.19.2 Building information management

The Sydney Opera House requires a comprehensive information management system which allows all of its component parts to be accurately identified, located and monitored. To facilitate this, an enhanced technology and process system called *Building Information Modeling* (BIM) is currently being developed for the site.[5] BIM is being developed within the Opera House's Building portfolio, and will eventually provide a simple, intuitive interface and directory to all the disparate databases for all building elements, components, systems and documentation, including this CMP, allowing efficient and accurate filing and retrieval of records relating to each of them. Sydney Opera House is presently leading the development of BIM within the industry, working with its software designers to provide a digital interface that will allow facilities management and other information to be attached to particular spaces, elements or components within the BIM model for the site. This interface is referred to as the Building Information Management Model (BIMM). This continues the Opera House tradition of being at 'the cutting edge'.

BIM enshrines and continues the original numbering system for locating rooms, spaces, doors, lifts and other components, and aligns with the asset groups defined in the *Asset Management Strategy* and *Heritage Risk Management Plan* currently being revised by Sydney Opera House. Refer to Section 4.20.13 *Heritage risk management*.

Policy 19.3 – Building numbering system
The original numbering system for levels, rooms, spaces, doors, lifts and other components is an important aspect of the building and remains relevant. It must be retained and, where necessary, expanded to accommodate new elements and components.

Policy 19.4 – Application of BIM
In order to retain accuracy and availability of building records, information and systems across the Sydney Opera House campus, it is essential that a comprehensive geo-spatially accurate enhanced technology and process system such as BIM is consistently and thoroughly implemented across all areas of building systems and process management, and that it be properly resourced, maintained and, when necessary, upgraded. All appropriate staff, consultants and contractors should participate in the development and use of this system and its parameters as the basis for their own work.

4.19.3 Measuring and survey systems

Utzon's original setout of orthogonal grids, radial axes and concentric curves was consistently applied in three dimensions across the site to locate walls, openings, junctions and other elements. It served as the basis for the work of other consultants and is an important aspect of the building's design, documentation and construction. With construction commencing prior to Australia's conversion to the metric system in 1970, all measurements were a mixture of feet and inches or 'decimal feet' (eg 5'9" or 5.75' respectively). The primary set-out point – the intersection of the major and minor auditorium centre lines – is marked by a bronze disc (designed by Utzon himself) and located on one of the lower treads in the Monumental Steps of the Podium (see Figures 4.445 and 4.446).

As part of the development of BIM and linked with it, these original set-out points and building geometry are related to a wider national standard of geographic reference systems, the Map Grid of Australia (MGA) and the building's levels (elevation) to Australian Height Datum (AHD).

An arrangement of permanently fixed bronze survey markers has been installed at selected specific points within and around the building and site. Each marker is a small purpose-made bronze disc, inspired by Utzon's original, providing necessary coordinate information and enabling any component of the building to be located in three dimensions (i.e. geo-spatially located). This system allows efficient, accurate and consistent spatial surveys to be made whenever required for monitoring or proposed works. It provides the basis for the coordination and integration of 3D models into the BIM system. In addition, it enhances an understanding of the original design and construction set-out for the building and site.

The imperial system of measurement ceased to be the standard in Australia in 1970, but the building was documented and completed under this system and all floor levels are still referred to by it. For example, the Forecourt / Broadwalk level is at +12' (12 feet above a nominal sea level = 3.6 metres); the Box Office is at +30' (9.14 metres), etc. These original level references are an important part of the original set-out, documentation and construction, and should not be lost. Table 4.1 details all the current levels, including the levels associated with the recently completed underground loading dock.

Policy 19.5 – Coordinated survey markers
The system of geo-spatially coordinated survey markers related to original design and construction set-out, 3D model coordination and integration, and the building's physical location in relationship to national survey network protocols must be maintained and / or re-established whenever building works are to be effected to facilitate efficient, accurate and consistent geo-spatial surveys for monitoring building works, services and any other purpose.

Policy 19.6 – Floor level naming systems
Should various floor levels across the site be referred to using a more conventional naming system, reference to the original level names, based on feet relative to sea level, is important and must not be lost.

Table 5.1 – Level Names

(Note – FFL refers to Finished Floor Level, and LMR refers to Lift Motor Room)

Level ID	Level Name (Feet above Sea Level)	Definition	Nominal AHD Value
B5	L-052	Basement Five – FFL of LMR 21 (Joan Sutherland Theatre scenery lift)	-15.91m
B4	L-033	Basement Four – Loading Dock at Dock Level	-10.06m
B3	L-020	Basement Three – Mechanical Plant Room #51	-5.96m
B2	L-013	Basement Two – Utility Space & Future Vehicle Drop-Off	-3.91m
		Basement Two – FFL of Electrical Substation	-2.26m
B1	L+001	Basement One – Previously referred to as 'Basement'	-0.30m
LC	L+003	Lower Concourse – Bars, Cafes and Retail Outlets	0.60m
GR	L+012	Ground – including all Broadwalks & Covered Concourse	3.60m
GF	L+012	Ground Forecourt – all areas south of Monumental Steps	3.60m
GM	L+021	Ground Mezzanine	6.40m
L1	L+030	Level One – First Level - Green Room, Box Office	9.14m
L2	L+042	Level Two – Second Level – Podium & Bars	12.80m
L3	L+051	Level Three – Third Level – Northern Foyer Mural Level	15.54m
L4	L+061	Level Four – Fourth Level – 'Granite' Level	18.59m
L5	L+070	Level Five – Auditoria – Gallery, Loges & Boxes	21.34m
L6	L+085	Level Six – Auditoria – Upper Areas	25.91m
L7	L+100	Level Seven – Auditoria – Ceiling Level +100	30.48m
L8	L+115	Level Eight – Auditoria – Ceiling Upper Level +115	35.05m
L9	L+130	Level Nine – Auditoria – Ceiling Above Level +130	39.62m
L10	L+140	Level Ten – Auditoria – Under Concrete Shells	42.67m

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4.499 *Excavation to construct underground loading dock, 2012*

4.20 MANAGING THE PROCESSES OF CHANGE

So I really advise the future decision-makers to carefully contemplate all aspects of the intended modifications before changing the Opera House as such.[1]

4.20.1 Use and compatibility

The use of Sydney Opera House as a world-renowned venue for the performing arts is an integral and fundamental part of its significance. Therefore, any proposal on or around the site that has the potential to threaten or diminish this significant use should not be pursued. This includes related functions or uses which, if accommodated within the building, might threaten or reduce the available space for activities directly related to the preparation and presentation of performances. An example would be the use of rehearsal rooms or performers' dressing rooms for storage or offices for support facilities, some of which may be able to function efficiently off site. Space on the site is limited and facilities or activities that can be relocated on site or accommodated off site without affecting the efficient use of the building as a suite of performance venues, should be identified as part of a co-ordinated long-term plan for uses across the site and progressively implemented. Refer to Policy 3.2 *Primary use as performing arts centre.*

Related to this is the relocation of functions within the Podium. The existing structure and spaces offer opportunities and also limitations – alterations to these should be minimised wherever possible. Allocation of function to spaces must be based on a sound understanding and recognition of the location and functional requirements of each activity, and an overall plan that ensures a 'best fit' for each. This will ensure the continued viability of the place as a world-class performing arts centre.

A co-ordinated long-term plan would consider which functions must be kept on site and which may be located elsewhere, and establish priorities.

Policy 20.1 – Change of use of spaces
Proposed changes of use of any internal or external space must 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 co-ordinated planning for the whole site in accordance with Policy 3.2;*
- *be in accordance with Policy 20.18.*

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

In a number of instances, alteration of existing spaces, expansion of existing facilities or the addition of new ones have already adversely affected significant parts of the building and site. These have been identified as intrusive in the *Tolerance for Change* and *Opportunities for Change* tables, and should be addressed in accordance with recommendations in these tables and Policy 18.17. Such situations should be avoided.

Likewise, the selection and operation of commercial leases should support the primary function of the Sydney Opera House. Commercial imperatives must not conflict with or endanger the primary use of the place as a performing arts centre, or its presentation as a masterpiece of human creative genius.

In some instances, the expectations of lessees conflict with the ability of the available space to accommodate them. This puts strain on adjacent spaces and services, on management and, in some cases (such as the Lower Concourse), on the space available for the free passage of patrons and visitors. This can inhibit appreciation of the place and its primary use, and potentially impact on its significance.

The responsibility for drafting, implementing and monitoring leases lies with Sydney Opera House management and it is essential that they ensure lessees and hirers understand the significance and primary purpose of the Opera House. This should provide some interest or incentive for lessees and hirers to treat the place with care and respect, and would assist Opera House staff in their management.

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.*

Policy 20.3 – Lease and hire agreements
All lease and hire agreements on the Sydney Opera House site must be:

- *developed in accordance with this CMP and the* Utzon Design Principles, *and in conjunction with heritage advice;*
- *clear that the lessee or hirer is responsible for damage and adverse impacts; and*
- *regularly monitored and audited for compliance by relevant management teams / portfolio within Sydney Opera House in consultation with Building portfolio.*

Where problems arise or breaches occur, corrective actions must be taken.

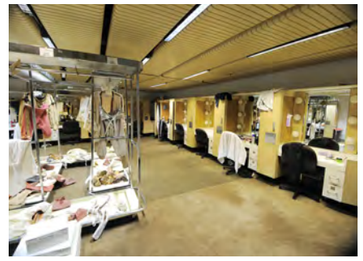
All lessees and hirers are to be inducted about the significance and sensitivity of the Opera House and its site:

- *during the tender process;*
- *at the commencement of their contract; and*
- *at regular intervals as required to keep their management and staff informed.*

An important consideration related to use is the capacity of the whole site, as well as its various parts, to accommodate the increased frequency and scale of uses demanded of it and increasing visitor numbers. At what point do these begin to negatively impact on the primary use of the place, its fabric, and its significant values, and how should these demands be managed? A related issue concerns some of the key materials used on site that are increasingly difficult to procure, and the consequent impact on repair or replacement cycles. (Refer to Section 4.18 *Care of the fabric and housekeeping.*) These are important heritage risk management issues. It could be argued that parts of the Lower Concourse have reached this point but research will be required in order to understand and define them. The research methodology could be based on patron, visitor and staff surveys, wear monitors, and / or other appropriate indicators, but should be directly referenced back to the significant values of the Opera House including its primary use.

Policy 20.4 – Use and visitor capacity
Research should be undertaken to determine the capacity for the various elements and spaces at the Opera House to accommodate existing and projected scale and frequency of uses and events, and patron and visitor numbers (and services expected by them) without negatively impacting on significant fabric, values, primary use of the place or the enjoyment and experience of patrons and visitors. Findings must inform long-term planning for uses on the site, be incorporated into the Heritage Risk Management Plan, *and the spaces and facilities managed and monitored in accordance with the recommendations of the plan and the policies in this CMP.*

Refer to Section 4.18 *Care of the fabric and housekeeping,* Section 4.20.2 *Consultant advice and project procurement processes* and Section 4.20.3 *Sequence of heritage advice in developing proposals* and Section 4.20.13 *Heritage risk management.*



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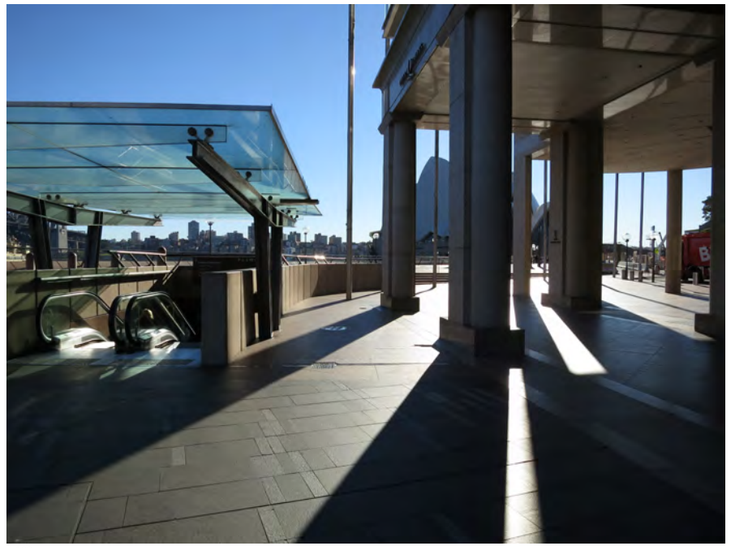
4.500 *Chorus dressing room beneath Joan Sutherland Theatre, 2010*
4.501 *Conflict between pedestrian movement and food and beverage function in Lower Concourse, 2015*
4.502 *Lower Concourse, popular after-hours meeting place, February 2014*



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4.503 *First glimpse from east Circular Quay, 2014*
4.504 *South end of Forecourt approach, 2014*

4.20.2 Consultant advice and procurement processes

Proposals for change or development at the Sydney Opera House generally have a protracted gestation period and relate to the cyclic review of the *Strategic Building Plan*, available funding and a complex approval process. Only when all options have been considered and assessed for their impact is the preferred option developed to some degree of certainty and the Sydney Opera House Trust in a position to seek funding to carry out the project. Once this is secured, documentation is then prepared for the approvals process. Depending on the scale and complexity of the project, this sequence may take many years and incur considerable consultant fees. In 2014 funding was granted to develop a comprehensive Renewal Plan for the future with a number of major projects commencing their concept design stage in 2015.

In most non-government situations, funding is secured much earlier in the process, and the consultant team may or may not be engaged to continue to document and then inspect and monitor the works through to completion. It is widely acknowledged, at least among design professionals (and also by many clients), that in order to ensure a consistent and unified implementation of the design intent down to detail level, the original team should also be engaged to document and implement the works through to completion. This has been the traditional method of procurement in Australia up until the latter part of the 20th century. However, with an increased focus on reducing costs (often leading to unnecessary variations and additional costs), this practice is now not always followed.

In government projects, issues of public accountability often dictate that, for costs above a pre-determined value, consultancies must be re-tendered for different stages of the project. When this requirement is overlaid on a project such as the Opera House, where the process of obtaining funding (and thus certainty) may lead to long delays and necessitate the division of the project into manageable packages or stages, there is a possibility that the original design and consultant team may not continue to document or implement the works. This can lead to a discontinuity in knowledge and understanding obtained during research and design, potentially affecting the design resolution, quality and integrity of the finished work. Short-term savings may be made, but long-term negative impacts may well be the result. This is also a heritage risk management issue. Such discontinuity would be reminiscent of Jørn Utzon's fate in 1966. Refer to Section 4.20.13 *Heritage risk management*.

While this practice may be acceptable on less significant projects, it should be avoided at the Opera House, where continued involvement of consultants who demonstrate excellence and integrity, and a preparedness to fully engage with Utzon's vision and ideas, are fundamental to retention of its significance.

In such a complex and significant building, it is essential that key individuals in the design and consultancy team are able to bring their hard earned knowledge and understanding of the building, and the issues involved to inform and assist all stages of the project. Refer also to Policies 4.4 and 4.5.

Partly to address this problem and provide ongoing and consistent high-level independent expert advice on future development at the Opera House, an Eminent Architects Panel was established in 2010. Refer to Section 4.20.8 *Eminent Architects Panel*.

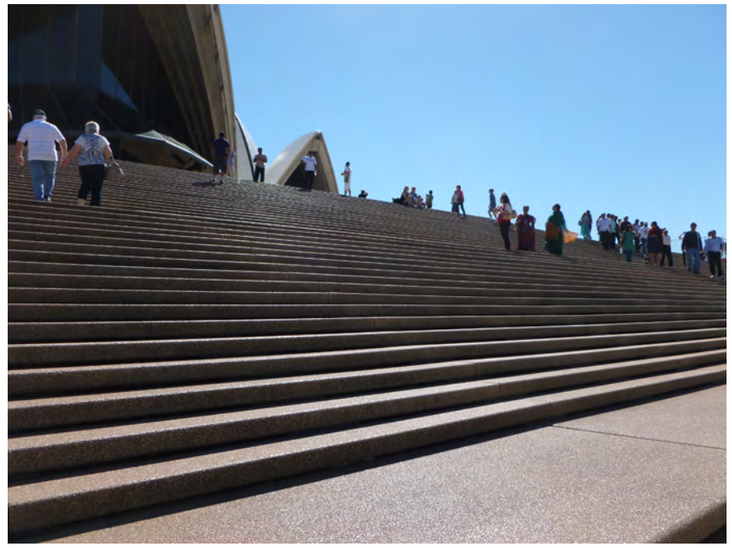
Procurement processes at Sydney Opera House should be determined in consultation with the Eminent Architects Panel and the Conservation Council, and not be constrained by established practices.

Policy 20.5 – Continuity of advice
The procurement processes for projects at the Sydney Opera House should, except in extenuating circumstances, both encourage and allow key individuals of the original design and consultant team to be engaged for all stages of a project or projects, providing continuity from inception to completion. This will encourage and nurture a deeper engagement with Utzon's vision and the significance of the place, and ensure the quality, integrity and detail of the agreed design intent is consistently implemented.

In 1998-99, when the then chair of the Sydney Opera House Trust, Joseph Skrzynski, negotiated the re-engagement of Jørn Utzon to guide future changes to the Opera House, the link between the original architect, his philosophy and his creation – the Sydney Opera House – was at last restored. This re-engagement was the basis on which the whole direction for future changes and development at the Opera House would be established. Jørn Utzon's involvement was facilitated by the eminent Australian architect, Richard Johnson, and Jørn's architect son, Jan, with whom he was in partnership.

Jan Utzon's continued involvement as an advisor to the Sydney Opera House Trust, and as an architect / collaborator involved with various Opera House projects, remains a vital link with the philosophy and thinking of his late father. He is a valued and respected resource.

Policy 20.6 – Continued Utzon involvement
Jørn Utzon's son, Jan, should continue to be consulted on changes, development and design related issues at Sydney Opera House while he is both willing and able to do so. His involvement should be encouraged and supported by Sydney Opera House Trust and management, and his input and opinions given due respect and consideration.



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4.20.3 Sequence of heritage advice in developing proposals

In order to ensure that adverse impacts on significant components, elements or values are minimised (for example, by upgrading existing fittings instead of replacement), it is essential that appropriately experienced heritage advice is sought during the initial planning stages, as well as throughout design, documentation and construction for any proposed change or development whether it be temporary or permanent. This is as important for small projects as it is for large ones. The issues discussed in Section 4.20.2 also apply here.

Infrastructure and ongoing management issues, such as security, safety and signage are often addressed or solved without necessarily understanding related issues, including heritage. To avoid inappropriate solutions it is essential to have heritage input and broader design advice as early as possible in the development of proposals.

The discussion and policies in this CMP will set goals and guide direction for proposals, but cannot necessarily resolve matters of detail. The involvement of appropriately experienced heritage advice in this process will ensure that potential impacts are identified and minimised. The arrangement for accessing this advice should be flexible and adapted to suit the nature of the proposal or issue to be addressed.

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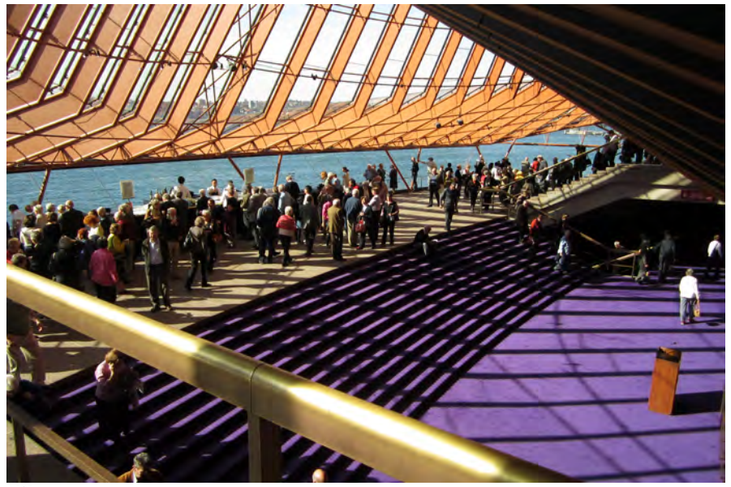
4.505 *Ascending the Monumental Steps, 2012*
4.506 *Concert Hall west Side Foyer, 2011*



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4.507 *Concert Hall Northern Foyer during interval, 2011*
4.508 *Performance in the Concert Hall, 2016*

This also applies to the preparation of masterplans, strategies, manuals, or guidelines for issues such as signage, lighting, wayfinding, advertising, leases, events, etc.

Policy 20.7 – Heritage advice
Continuity of relevant and experienced heritage conservation and Conservation Council advice must 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 must 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.

Refer to Section 4.20.13 *Heritage risk management*.

4.20.4 Awareness and coordination of heritage issues

Conservation Management Plans are of little use if they are simply left on the shelf and those involved with maintenance, repair and management of the place are not familiar with their content and policies. It is intended that this CMP be understood and applied by Trustees, senior management and supervisors, as well as tradespersons and technicians. It is to be used as a reference tool for all staff and contractors, including event managers, tour guides, etc. For any given task or action, an understanding of the philosophy behind the decision or methodology will make sense of it and invite engagement and commitment by those carrying it out.

Ready access to this CMP is therefore essential and should be part of the base information provided to all involved with the place. This could be via a web-based document or hard copy, but it is important that no parts of it be considered in isolation. Refer to Policy 1.1.

Reference to the CMP should form an integral part of briefings and training programs across the site. This process is already formalised with responsibility for its implementation co-ordinated by the Building portfolio at Sydney Opera House, and this should continue. All members of the Executive, individually and collectively, and all portfolios within the management and operations of the place carry a responsibility in caring for the significant values of the place and implementing this CMP. They should advise the Sydney Opera House Trust executive of any issue or proposal which may impact on the fabric or values of the place, and liaise with them to resolve it. The Director of the Building portfolio should continue to have the responsibility for coordinating and following up on heritage matters.

At least two levels of heritage awareness training are needed.

- Basic induction for all new staff as part of any new staff induction program.
- Advanced job-specific training for those dealing with particular aspects or parts of the Opera House, including management, events and tourism. This would include tailored training packages with overarching management and support.

Policy 20.8 – Heritage awareness and training
All Sydney Opera House Trust members, management, staff, contractors, lessees, hirers and consultants must have access to a copy of this CMP.

A heritage component must be incorporated into the induction and training of senior and medium-level staff and all involved in any repair, maintenance or changes to the building and its setting, and also those involved in events, marketing and presentation. This includes building workers, event workers, marketing and commercial partnerships, and tourism. (Staff turnover will make continuity of training a necessity.)

The Director of the Building portfolio or any subsequent position assuming this authority must be formally responsible for co-ordinating advice on heritage issues.

4.20.5 The Burra Charter

The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (Burra Charter) is an internationally recognised guide to the conservation and management of significant places such as Sydney Opera House. It sets out the philosophy, principles and processes necessary to retain the significant values of a place, both tangible and intangible, and recognises the need for compatible development and continued use. It also recognises that significant values are embodied not just in the fabric of the place, but in the way it is used, managed and presented, including in its setting. This is especially important in the case of the Opera House.

The diagram setting out the Burra Charter process at the end of the document is particularly useful as a guide for decision making and is included in this CMP as Appendix E.

Local, state and federal government legislation and planning instruments refer to it and require compliance with it. The Opera House is listed at all levels of government.

Policy 20.9 – Burra Charter
All conservation (including maintenance and repair), future changes and development at the Sydney Opera House must 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.

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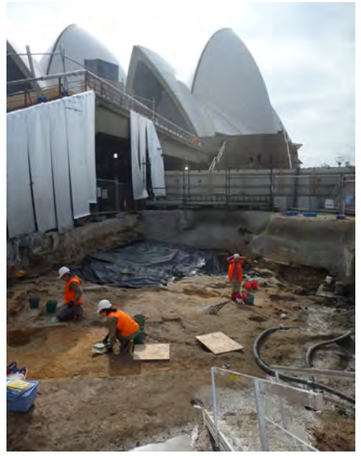
4.20.6 Excavation and archaeology

With the history of excavation and major construction on the site, and the low-lying rocky nature of the original peninsula, the likelihood of finding material evidence relating to pre-European use and occupation of the site is considered to be limited. However, any surviving material evidence of Aboriginal occupation of the site, including Bennelong's Hut, would be of significance and add to the overall Indigenous cultural heritage values of the site. Any research or archaeological finds resulting from excavation or other disturbance on the site could provide invaluable material for understanding the evolution and occupation of the site, and should be appropriately interpreted to the public. Refer also to Section 4.16 *Interpretation*.



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Parts of the original Fort Macquarie walls, constructed c.1817-1821, are the earliest known surviving structures on the site. Although substantially demolished for the tram depot, some sections remain below the Podium and may extend to other areas.[2] Sections of later seawalls and remains of wharves and jetties are also known to exist.

The Bennelong Drain, constructed in the 1850s, originally traversed the site but was diverted and encased in concrete during construction work in the 1960s, '70s and '80s. It was diverted again in 2011 as part of the construction of a new underground loading dock under the Forecourt, but remnants of the original drain remain to the south of the Opera House site.[3]

The remains of a crude pit for burning shells for building lime was located on the eastern foreshore during the Vehicle Access and Pedestrian Safety Project and has been interpreted in a short film.

The location of archaeological features and material already found on the site to date should serve as a guide for future work.

Policy 20.10 – Archaeology

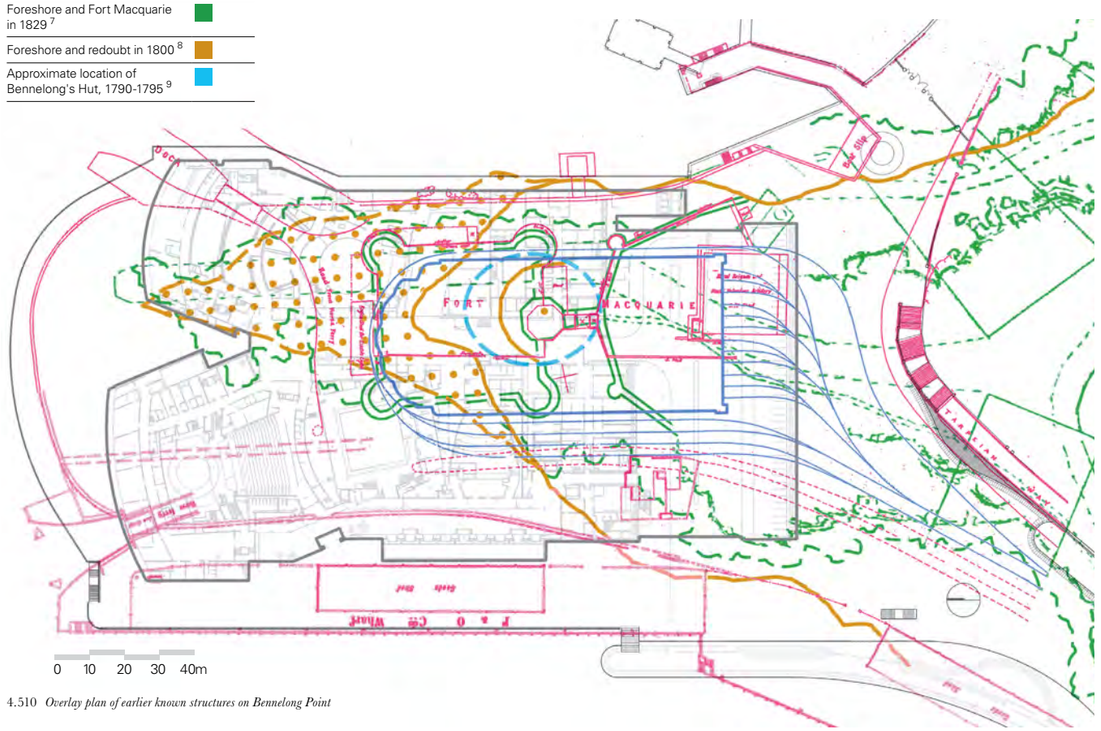
Work involving excavation or investigation of sub-surface objects must be planned and executed in accordance with the requirements of relevant legislation regarding archaeology. This includes:

- *Assessments of the likely archaeological impact of any proposed excavation works by a qualified archaeologist during the planning stages so that any mitigation procedures are handled in a planned and timely manner.*
- *Disturbance or removal of archaeological material, including unexpected finds, carried out under the guidance of a qualified archaeologist.*

Sydney Opera House is responsible for the proper engagement of archaeological expertise and for commissioning post-excavation analysis. It is also responsible for the conservation, storage and interpretation of archaeological findings and collections.

Key

Current Sydney Opera House Ground Level + 12 [4]	
Tram Shed [5]	
Site in 1901 prior to Tram Shed (including Fort Macquarie) [6]	
Foreshore and Fort Macquarie in 1829 [7]	
Foreshore and redoubt in 1800 [8]	
Approximate location of Bennelong's Hut, 1790-1795 [9]	



4.510 *Overlay plan of earlier known structures on Bennelong Point*

4.20.7 Conservation Council

The primary aim of the Conservation Council is to provide advice during development of any ideas for change affecting the place, and to adhere to and uphold this CMP and the *Utzon Design Principles*. They were appointed in 1996 and held its first meeting on 24th March of that year. Since then the charter setting out its role and membership has been revised four times, most recently in November 2014.

Under the 2014 charter, the Council comprises a panel of experts providing advice on heritage and conservation matters to the Building and Heritage Committee, which in turn reports to the full Sydney Opera House Trust. Therefore, the relevant expertise and knowledge of members and their collective memory are essential to maintain its effectiveness. The Building and Heritage Committee, advised by the Conservation Council, will be largely responsible for government reporting on heritage and conservation matters that may be required from time to time. Full details of the composition, role and conduct of the Conservation Council are set out in its Charter.

The Conservation Council has, as one of its members, the NSW Government Architect who also chairs the Eminent Architects Panel (see Section 4.20.8). This provides contact and some continuity between them, and this arrangement should be facilitated and maintained. Many design issues have heritage conservation implications and, to a lesser extent, many heritage conservation issues have design implications. Thus close consultation between the two bodies is essential.

Policy 20.11 – Conservation Council

Consideration should be given to the following points in deliberations on the nature and role of any committee appointed to give conservation advice to the Sydney Opera House Trust:

- *members should be chosen primarily for the relevance of their expertise and knowledge;*
- *the Council should meet frequently enough to be kept abreast of any proposed changes or issues and enable provision of timely advice; and*
- *the Council should retain a collective memory through reasonable continuity of membership.*

The Council must be made aware of:

- *all management and operational issues, and any conservation or other studies that may affect its advice; and*
- *any deliberations in progress or advice given by the Eminent Architects Panel, so that potential related conservation issues can be identified and resolved at an early stage.*

Since the launch of the Reconciliation Action Plan by the Sydney Opera House Trust in 2011, an Indigenous representative has been appointed to the Conservation Council. Refer to Policy 20.13.

Refer also to Section 4.20.8 *Eminent Architects Panel*, Section 4.20.10 *World Heritage Listing* and 4.20.15 *Statutory approvals*.

4.20.8 Eminent Architects Panel

The Eminent Architects Panel was established in 2010 as an advisory body to the Sydney Opera House Trust to provide *high-level independent expert advice (via the Trust Building and Heritage Committee) on issues of architecture or design to continue to protect the building as it adapts to changing circumstances.*[10]

The Panel's guiding documents are the *Utzon Design Principles*, Conservation Management Plan and the *Strategic Building Plan*.[11] The contribution of and relationships between the work of the various architects, engineers and designers at the Opera House are both complex and subtle, and their significance must be properly understood when considering any change or proposal.

Membership of the panel is set out in the Terms of Reference document. The panel is chaired by the NSW Government Architect (ex officio position) who is also a member of the Conservation Council, providing an important continuity and contact between the two bodies. This arrangement should be maintained (refer to Section 4.20.7).

Policy 20.12 – Eminent Architects Panel

The Eminent Architects Panel members should be fully conversant with Jørn Utzon's ideas and concepts and the Utzon Design Principles, *as well as Peter Hall's ideas and concepts when forming views or providing advice in relation to development at the Sydney Opera House. They should also be conversant with this CMP and made aware of all management and operational issues relating to the proposal under discussion.*

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4.509 *Archaeologists at work during excavation of the loading dock as part of the VAPS project, 2012*
4.511 *South-looking view of loading dock excavation showing evidence of lime burning pits with natural bedrock stained black, 2012*

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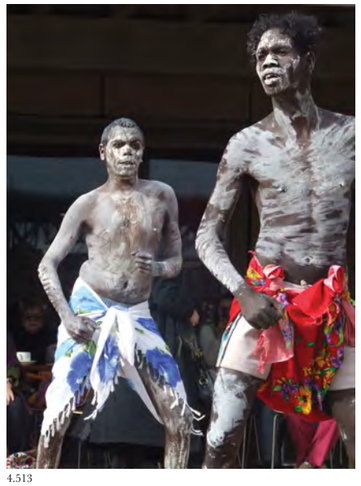

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4.512 *Cathy Freeman commencing the Australian leg of the Olympic torch relay for the Athens 2004 Olympics*
4.513 *The Chooky Dancers from Elcho Island performing on the Western Broadwalk, July 2008*

4.20.9 Aboriginal and Torres Strait Island Stakeholder Consultation

The association of the Opera House site with Bennelong, as the site of his European-built hut, is well known, but there have been and continue to be many other associations with Aboriginal and Torres Strait Islander people and their culture, particularly with performance, art and cultural exchange. In an interview with Phillip Adams on the ABC, the renowned Indigenous soprano Deborah Cheetham made the point that it is through the visual and performance arts that Aboriginal and Torres Strait Islander people have told their stories and survived as the longest continuing culture in the world.[12]

A report prepared by Godden Mackay Logan (GML Heritage) in 2009-2010 assessed the Aboriginal and Torres Strait Islander Cultural Values for the Sydney Opera House site, identifying these through an Aboriginal community consultation process.[13] The recommendations in this report covered aspects of cultural significance assessment, interpretation, and ongoing involvement and consultation. They have been incorporated into this 4th edition of the CMP and can be found in the following sections and policies:

- Section 2.6 – *Important past events, activities and uses at Bennelong Point*
- Section 4.16 *Interpretation*
  Policy 16.2 – *Interpretation Plan*
- Section 4.20.14 *Statutory approvals*
  Policy 20.18 – *Statutory approvals*

In May 2011 the Opera House launched its first *Reconciliation Action Plan* (RAP) to address the issues raised in the GML report and integrate them into Sydney Opera House management and business. The third and current RAP is for the period 2014-2016. It identifies opportunities and sets targets for greater engagement with and support and respect for Aboriginal and Torres Strait Islander artists and performers. In 2012, Rhoda Roberts was appointed Head of Indigenous Programming, providing advice and guidance to the RAP Working Group.

Policy 20.13 – Aboriginal and Torres Strait Islander stakeholder consultation and engagement
The protocols developed by the Sydney Opera House Trust for ongoing Aboriginal and Torres Strait Islander stakeholder consultation and engagement as part of the long-term management of the Sydney Opera House should be regularly reviewed to ensure currency and relevance. The Aboriginal advisory panel and the appointment of an Aboriginal member to the Conservation Council should also remain.[14]

4.20.10 World Heritage Listing

The inscription of the Sydney Opera House on the World Heritage List carries with it a number of obligations. Foremost of these is that the state party (the Australian Government) must put in place 'an appropriate management plan or other documented management system' to protect its World Heritage values. This Conservation Management Plan is part of that management system (refer to the diagram showing the relationship of this CMP to other documents detailed in Section 1.4). Protection of these values must be regularly monitored and reported back to the World Heritage Committee through a system of periodic reporting. The main purpose of these periodic reports (presently submitted every six years) is:

- "*to provide an assessment of the application of the World Heritage Convention by the State Party;*
- *to provide an assessment as to whether the World Heritage values of the properties inscribed on the World Heritage List are being maintained over time;*
- *to provide up-dated information about the World Heritage properties to record the changing circumstances and state of conservation of the properties;*
- *to provide a mechanism for regional co-operation and exchange of information and experiences between State Parties concerning the implementation of the Convention and World Heritage conservation.*" [15]

These reports must include assessments against an identified set of indicators, including authenticity and integrity.

Generally the reports capture the following:

- works completed, being carried out or proposed;
- assessment of impact on World Heritage values; and
- recommendations to reduce adverse impacts.

The *Management Plan for the Sydney Opera House,* submitted as part of the World Heritage Nomination, required the development of a *Heritage Risk Management Plan* that is regularly updated and, is integrated with the Sydney Opera House Trust's *Asset Management Plan.* The *Heritage Risk Management Plan* reflects the policies and principles of the CMP to ensure that the Trust's heritage risk responsibilities are fully implemented and monitored.

Policy 20.14 – World Heritage reporting
The Sydney Opera House Trust must ensure it fulfils its obligations arising from the World Heritage Listing, including risk management and periodic monitoring. The Conservation Council should provide advice to the Trust in this regard.

Refer also to Section 4.20.13 *Heritage risk management* and Section 4.20.14 *Statutory approvals.*

4.20.11 Code and statutory compliance

A serious and ever-present threat to the conservation of the Opera House's significant values is that of compliance with constantly revised and updated codes and statutes. These presently include the *National Construction Code* (NCC, formerly the *Building Code of Australia* (BCA)), *Disability Discrimination Act* (DDA), *Work Health and Safety Act 2011* (WHS), and the *Heritage Act 1977.* The Opera House was designed and built to comply with the codes of the time and its concrete structure, stairs, lifts and facilities were all set in place in accordance with those codes. The flexibility for many of these to be upgraded or altered to comply with current codes is limited. Masterplans and proposals are already in preparation to improve accessibility and public safety to achieve better compliance, but all must take account of their potential impact on the significant values of the place to ensure a balanced solution. Balance is the key.

In many cases, alteration to achieve compliance may result in serious and destructive impacts on significant values and therefore non-compliance with heritage legislation. For example, to adjust the riser and tread dimensions on the Monumental Steps, or even the stairs in the Side or Northern Foyers, would result in unacceptable impacts on their very significant fabric and values. Clearly the Sydney Opera House Trust has an obligation to try to achieve compliance where it can, but some requirements may conflict with the building, or be beyond its ability to accommodate them.

Most statutory documents have a guiding set of principles or objectives, followed by more prescriptive regulations setting out detailed requirements. In considering compliance, it should be the principles and objectives that are most important, and compliance with these should be the aim, rather than compliance to the letter of the more prescriptive regulations.

Policy 20.15 – Code and statutory compliance
Where issues of non-compliance cannot be addressed without compromising the significant values of the place, including minimum obstruction to views, the Fire, Access & Services Advisory Panel (FASAP), or its equivalent, of the NSW Heritage Council should be consulted for advice on how to proceed.

4.20.12 Climate change

According to available assessments, the major effects of climate change relevant to the Sydney Opera House may include:

- sea level rise
- increased frequency of extreme weather events, including flash flooding and hail
- increased temperatures with more extended periods of extreme heat

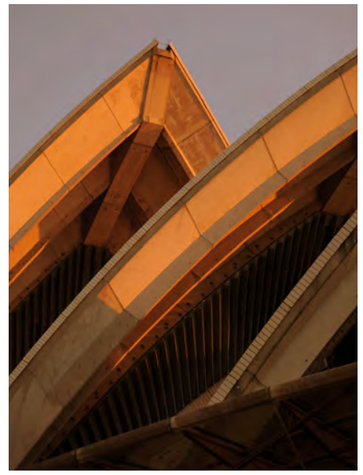
A preliminary assessment in 2009 of the *Implications of Climate Change for Australia's World Heritage Properties* concluded that the Sydney Opera House would have a 'moderate to high' capacity to adapt to those changes.[16]

The large roof and glass wall areas, as well as unprotected concrete, have been designed to withstand long-term exposure, but the effects of climate change may accelerate deterioration.

Sea level rise and the possibility of storm surges are important factors with a number of service outlets and intake shafts situated out of sight below the Broadwalk. In addition, the Lower Concourse and Broadwalk levels are not far above sea level (approximately +0.6m and +3.6m respectively). Areas below sea level include the underground loading dock, a number of plant rooms and the Opera House Carpark (not Sydney Opera House property). Predictions for sea level rise are regularly reviewed but potential impacts must not be ignored.

Assessments of climate change implications and risks on some aspects of the Sydney Opera House have been prepared and vulnerabilities identified, but a comprehensive assessment remains to be carried out.

The regular monitoring and timely maintenance and repair of the various material components of the place should address the main risks of exposure, temperature rise, extreme weather or other impacts that may be identified with further research. Sea level rise and potential storm surges may require structural change or at least some form of additional protection, and these may impact on the significant values of the place, particularly its setting and external form.



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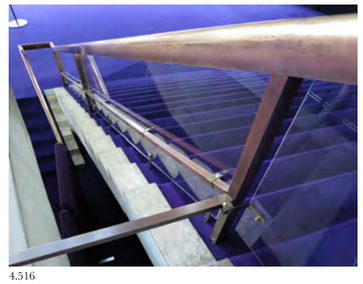
4.514 *North face of shell ribs at sunset, 2010*
4.515 *The* Queen Elizabeth *arriving in Sydney Harbour on its maiden voyage, February 2011*
4.516 *Temporary acrylic panels added to the open balustrades for code compliance, Concert Hall Northern Foyer, 2012*



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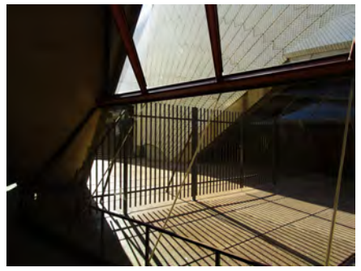

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4.517 *Weathered tiles on shells, 2010*
4.518 *Sydney Opera House Broadwalk platform in relationship to water level, 2010*
4.519 *Security barrier preventing public access in 'cleavage' space, 2016*

The above issues have been considered in the Vehicle Access and Pedestrian Safety Project, and should be considered in any future works.

Policy 20.16 – Climate change
The effects of climate change should be researched and assessed as fully as possible and then modelled to afford an understanding of what measures may be required to mitigate them.

Any climate change mitigation measures should:

- *be designed and implemented to protect the significant values of the place but not adversely impact on them;*
- *comply with the guidelines and policies in this CMP and the* Utzon Design Principles*;*
- *be at the forefront of technological innovation, tested and proven before implementation on the site.*

4.20.13 Heritage risk management

Sydney Opera House is revising its Heritage Risk Management framework that includes a Heritage Risk Management plan. This revision will be based on the policies and guidelines in this 4th edition CMP.

Policy 20.17 – Heritage risk management
Any future revision of Sydney Opera House Heritage Risk Management Plan *and associated documents must reflect the current CMP.*

4.20.14 Statutory approvals

Since the endorsement of the CMP 3rd edition in 2003, the Sydney Opera House has been heritage listed at state, national and international levels. This has led to an increased awareness and recognition of its significance, coupled with the need for more rigorous management and statutory processes to ensure this significance is maintained and protected. This has resulted in multiple layers of protective legislation.

When considering any proposal or activity at the Opera House, there is an internal process of consultation, review and assessment to determine its potential impacts and whether or not it will require statutory approval. This internal assessment process is described in the diagram in Section 1.5 *Assessment & approval process for development within Sydney Opera House boundary.*

In addition to powers conferred under the *Sydney Opera House Trust Act 1961* (SOHT Act), the following statutory framework applies where external approval is required. This framework ensures that any proposal which may have a potential impact on the State, National or World Heritage values of the place is rigorously assessed before any approval is granted. The relevant legislation includes:

- *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act);
- *Heritage Act 1977* (NSW); and
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act).

Under the EP&A Act, the Opera House is listed as a State Significant Site (*State Environmental Planning Policy (State & Regional Development) 2011)* and a Buffer Zone has been established, which is subject to planning controls that protect the setting of the Opera House *(Sydney Regional Environmental Plan (Sydney Harbour Catchment).* This is also referred to as the World Heritage Area Buffer Zone (refer to Figure 4.10, Section 4.2 *Importance of Setting*). 'Exempt development' provisions covering certain minor works and outdoor events are contained in the *State Environmental Planning Policy (State Significant Precincts) 2005 (SEPP).* Planned works that fall outside the 'exempt development' provisions in the SEPP must be submitted for approval by the Minister for Planning via a State Significant Development Application. (Refer to Appendix B.) As part of any submission, an assessment of the heritage impacts of the proposal must be attached. Such assessments should consider any cumulative impacts that may arise.

The Opera House received State Heritage listing in 2003 under the *Heritage Act*. A set of heritage exemptions were granted under this Act for certain minor works and outdoor events. Works and activities not covered by these exemptions must be submitted for separate approval (Section 60) under the Act by the Heritage Council of New South Wales prior to being undertaken. This is in addition to any other approvals required in relation to the action.

Australia is a signatory to the *Convention Concerning the Protection of the World Cultural and Natural Heritage* (the Convention) in relation to World Heritage-listed sites, including the Opera House. The relevant Commonwealth environment agency represents the Australian Government in all matters relating to the Convention. It liaises with the World Heritage Centre (which acts as Secretariat to the World Heritage Committee) to ensure Australia fulfils its obligations. Obligations arising from this listing include periodic reporting. Refer to Section 4.20.10 *World Heritage Listing.*

The EPBC Act is the legislative mechanism underpinning this framework. The Opera House is a matter of national environmental significance under the EPBC Act by virtue of its status as a World Heritage property and National Heritage place (Part 3). As such, a proposed action that potentially will have a

'significant impact' on the Opera House requires referral and may require assessment under the EPBC Act.

Policy 20.18 – Statutory approvals
Consideration of any proposed works or development must first be assessed internally by Sydney Opera House in accordance with the process described in the discussion in Section 1.5 of this CMP. If external approval is required, it must be carried out within the statutory framework current at the time.

An essential part of the review and approval process is community engagement and consultation. Both state and federal legislation have a public exhibition and comment process built into their assessment and approval frameworks. In addition, the Sydney Opera House undertakes community consultation and briefing sessions, including with specific interest groups, on proposals to public spaces or where there may be an impact on the significance of the place. Ideally this should happen before any formal applications are made for statutory approval. Refer to the flow diagram in Section 1.5 *Assessment of approval process for development within Sydney Opera House boundary.*

4.20.15 Implementation

This CMP establishes a philosophical and practical framework for change, conservation and care at the Sydney Opera House. It has been formulated with considerable input and support from Opera House management and staff and has been endorsed by the Sydney Opera House Trust. The use and implementation of this framework will vary according to the issue but a timeframe should be established for those recommendations and policies requiring action (e.g. incorporating heritage awareness into management and maintenance practices). Effective adherence to and compliance with the policies should also be monitored.

Policy 20.19 – Implementation of and adherence to CMP
An action plan for implementation of this CMP must be prepared in close consultation with the Opera House's Conservation Council (CC) and Eminent Architects Panel (EAP) and adherence to the CMP monitored. Progress reports should be provided every six-months to the CC and EAP, and annually to the Sydney Opera House Trust. The action plan should be reviewed annually. These reports should be in addition to any periodic reporting required under the National or World Heritage Listing, in accordance with Policy 20.14.

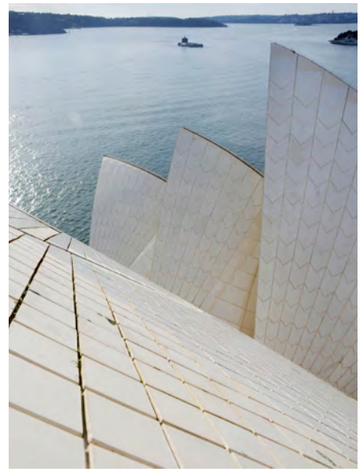
4.20.16 Endorsement and review of this plan

This CMP has been written, developed and reviewed in close consultation with a CMP Working Group. This process included extensive consultation and review within Opera House management and an external Expert Peer Review Panel. The document has been endorsed by those charged with its implementation. At a formal level, it has been endorsed by the Sydney Opera House Trust, its Conservation Council and Eminent Architects Panel. In addition, this CMP has been through the necessary consultation and approvals processes within the NSW and Federal governments to ensure it fulfils legislative requirements.

This review and approvals process has allowed an exploration of a range of possibilities and scenarios in development of the policies. There will undoubtedly be some situations that may not be addressed, but the policy framework should still provide guidance and direction for achieving appropriate solutions where necessary.

The process of preparing a CMP for a place as complex and significant as the Sydney Opera House is not a simple task. It requires considerable resources, particularly in terms of time and cost, not just for the author or the owner, but also for many individuals, government departments and the public in their consultations and reviews. The current requirement at both state and federal level is that CMPs must be reviewed every five years. However, with the Sydney Opera House, where the ownership and management remain relatively unchanged and any major project requires a long gestation period, a larger time frame for review, such as 10 years, would be more appropriate. This would not preclude an earlier review should circumstances require it.

Policy 20.20 – Review of CMP
This CMP, and in particular the conservation policy section, should be reviewed every ten (10) years or sooner if circumstances require it. Sydney Opera House Trust should establish an expert panel to guide the review and it should be undertaken by a heritage consultant with extensive knowledge of the Opera House, its fabric and function.



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4.520 *The shells in their harbour setting, 2010*

SECTION 05

HISTORY OF THE PLACE

"After interesting and intense work with the various specialists, we are convinced that the far seeing aspirations and efforts of the committee, sponsors and other supporters of the scheme can be crystallised in a building which, in a functional, festive and inspiring manner will shelter the activities and the life lived within it, and in doing so enhance the face of Sydney".

Jørn Utzon, *Red Book*, 1958

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5.1 CHRONOLOGY

The following chronology provides the historical framework and evolution of the Sydney Opera House site, its use and structures. It is drawn from material prepared by James Semple Kerr in the 3rd edition of the *Sydney Opera House: A Revised Plan for the Conservation of The Sydney Opera House and its Site* (2003). This has been updated and supplemented with additional information from other sources including published and unpublished material, and from Sydney Opera House archives and personnel.

	Before 1788
Over 50,000 years ago	Ancestral Aborigines present in Australia.[1]
20,000 years ago	Peak of last glaciation, a period of low sea levels. River flows along floor of present Sydney Harbour in a valley extending about 25km further east.[2]
7,000-6,500 years ago	Rising sea approximates present level, creating harbour with sandstone foreshores and eight small islands.[3]
5,000-4,000 years ago	Widespread change in Aboriginal technology and location patterns.[4] At the time of European contact, more than 250 languages spoken by Aboriginal people across the country.
Pre-1788	Harbour and islands provide life support and cultural framework to its Aboriginal inhabitants. The territory stretching from South Head along the south side of Port Jackson to a point near Petersham is inhabited by the Gadigal.[5] The area at the head of what is now known as Farm Cove was used as a gathering place and corroboree area for various clans. Bennelong Point was a low rocky outcrop with a shell midden adjacent to this important area and may have been used in association with it.[6]

	From 'east point of the cove' to Bennelong Point, 1788-1810
1788 (January 25)	HMS *Supply*, with Governor Arthur Phillip on board, arrives from Botany Bay and anchors about a cable's length (one-tenth of a nautical mile, or approximately 185 metres) from what later becomes known as Bennelong Point. The remainder of First Fleet arrives at Sydney Cove the following day and disembarks at 'the east point of the cove', known to the Aborigines as 'Tu-bow-gule'.[7]
1788	A battery is positioned at the northern tip of the point, site of the colony's first defensive work. The battery is abandoned by 1791.[8]
1789 (November 25)	Governor Phillip captures two Aboriginal men on the north side of the harbour, Ba-na-lang (Bennelong – about 25 years old) from the Wangal clan and Co-al-by (Colbee – about 35 years old) from the Gadigal clan, but Colbee escapes 17 days later. Phillip endeavours to treat Bennelong kindly and 'reconcile' him to the Europeans.[9]
1790	Bennelong asks the government to build him a hut at the extremity of the eastern point of the cove. The site where Sydney Opera House now stands is chosen by Bennelong and a brick hut is built for him in November 1790.[10] From this time on, the headland becomes increasingly known as Bennelong's Point or East Battery.[11]
1791 (March)	Colonists are invited to a corroboree at Bennelong's house.[12]
1795	'Erah ba-diang', a traditional initiation ceremony is held at Farm Cove.[13]
1795	Bennelong's hut is demolished and the bricks used elsewhere.[14] (Bennelong died at Kissing Point – present-day Sydney suburb of Putney – in 1813).
1795-1796	John Boston, a free settler, is granted approval by Governor Hunter to construct and operate salt works on the western side of the point.[15]

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5.1 *Sydney Harbour from 20,000 feet, 1992*
5.2 *Portrait of Bennelong, c.1790*
5.3 *Bennelong's hut in middle distance, 1793-95*

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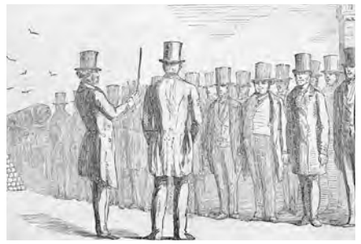

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5.4 *Lycett painting of Sydney, c.1827*
5.5 *Drill of Artillery Volunteers at Fort Macquarie, 1854*
5.6 *Fort Macquarie, late 1850s*
5.7 *Halsted painting of Bennelong Point, c.1863*
5.8 *Fort Macquarie from Government House, 1870*

1798	The earlier battery falls into decay and a half-moon redoubt is built at the site of Bennelong's demolished house. By 1800, this second battery, known as the East Battery, is in 'a total state of decay.' Crude shell burning pits established on eastern foreshore to provide building lime for Sydney. For the next few years, the point becomes a shore camp for visiting foreign expeditions.[16]
1802	English and French scientific expeditions exploring and charting the southern coastline of Australia, led respectively by naval captains Matthew Flinders and Nicolas Baudin, spend several months at Port Jackson and share cordial relations at Bennelong Point.[17]
1806	Under Governors Hunter and King, a variety of leases and buildings are allowed at the peninsula between Sydney Cove and Farm Cove. Governor Bligh takes over in 1806. He cancels previously issued land leases on the government domain and requires removal of the buildings. Clearance is reinforced and completed by the next Governor, Lachlan Macquarie.[18]
1810 (January 1)	Lachlan Macquarie is sworn in as Governor of New South Wales.[19]

Fort Macquarie and other uses, 1810s-1900

1812	Construction of Billy Blue's house (a small octagonal two-storeyed picturesque Gothic structure) on the western foreshore of Bennelong Point.[20]
1817 (December 16)	Foundation stone for a fort is laid at Bennelong Point. Macquarie names fort after himself. Governor Macquarie emancipates the architect and convicted forger, Francis Greenway. The fort is a 130-foot square structure with circular bastions on the four corners. The fort is entered by a bridge over a dry moat and then through an octagonal Gothic guard tower.[21]
1819	Building of government stables (now the Sydney Conservatorium of Music), designed by Greenway, begins at the southern end of the Bennelong Point ridge.[22]
1821	Fort Macquarie, designed by Greenway to Macquarie's brief, is completed at Bennelong Point.[23]
1822-c.1845	Sketches show evidence of lime burning activity adjacent to the eastern foreshore of Bennelong Point, confirmed by archeologists in 2012 as part of the Vehicle Access and Pedestrian Safety Project (VAPS) excavation.[24]
1843	A new Government House is completed halfway between Fort Macquarie and the government stables.[25]
1840s	The Man o'War Steps at the south-east of Bennelong Point is built by 1845.[26]
1850s	In 1854, Fort Macquarie becomes the drill ground of the colonial volunteer artillery. A drill shed within the dry moat (to the south of the guard tower), shown in later drawings, is most likely built at around this time.[27]
1860s	In the early 1860s, an esplanade is created around the fort by erecting an encircling seawall and filling the area formerly covered by high tides. A landing for the Milsons Point vehicular steam ferry is built at the western side of Bennelong Point.[28]
1879	A theatre for comic opera and vaudeville, known as Sydney Opera House, opens in a warehouse on the corner of King and York Streets. The theatre undergoes a series of renovations and reconstructions; it is condemned in 1900.[29] From 1879, Sydney is progressively covered by a tramway network.[30]

1880s	By the 1880s, ferry landings are established along the shore of Bennelong Point, including passenger jetties, horse ferry docks, and the Peninsular and Oriental Steam Navigation Company (P&O) wharf at the western side of Bennelong Point.[31]
1895 (April 16)	Ove Arup is born in Newcastle-upon-Tyne, England.[32]
1890s	A fifty-foot wide road, shown in an 1890 plan, is proposed to traverse where the drill shed and the western half of Fort Macquarie are located. This necessitates the removal of these structures in the path of the proposed road.[33] In 1891, plans are drawn up for a new drill hall and lecture rooms to replace the old, with the new sited to the south-east of Fort Macquarie's guard tower.[34] The old drill shed and the western half of Fort Macquarie have been demolished by 1894. In their place, a 'road to ferry' is constructed, connecting Macquarie Street North to the wharves at the western edge of Bennelong Point (P&O Co. Wharf and horse ferry wharf).[35] In 1898, the horse ferry wharf is superseded by a ferry dock at the north-east tip of Bennelong Point.[36]

Tram Shed, 1901-1950s

1901	The naval brigade's drill hall and lecture rooms are relocated from Fort Macquarie to Rushcutters Bay. Fort Macquarie is demolished to make way for a new tram shed – to a design by the NSW Government Architect's Office (Walter Liberty Vernon) of the Department of Public Works – for an electric tramway linking Belmore Park (near Central Railway Station) to Circular Quay. The outer shell of the tram shed is of brick and sandstone in a fortified Gothic mode.[37]
1903	Bennelong Point tram shed opens.[38] The twelve-track depot, housing 60 electric tram cars, serves the George Street lines via Circular Quay.[39]
1918 (April 9)	Jørn Utzon is born in Copenhagen, Denmark.[40]
1931 (May 16)	Peter Hall is born in Narrabri, NSW.[41]
1946 (April 1)	Ove Arup opens engineering practice (Ove N. Arup, Consulting Engineers) in London. It becomes Ove Arup & Partners in 1949.[42]
1946	English-born conductor Eugene Goossens III (1893-1962) is appointed the Sydney Symphony Orchestra's first chief conductor, arriving in Sydney in July 1947 to take up the baton.[43]
1947 (July 2)	Goossens, unhappy with the acoustics and facilities of the Sydney Town Hall, begins lobbying for "a fine concert hall for the orchestra with perfect acoustics and seating for 3,500 people, a home for an opera company, and a smaller hall for chamber music." [44]
1950s	Sydney's trams are progressively phased out in favour of buses. Bennelong Point tram shed becomes redundant.[45]

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5.9 *King Street Opera House, 1882*
5.10 *Bird's eye view of Sydney, 1888*
5.11 *Bennelong Point from Government House, 1898*
5.12 *Eugene Goossens, 1956*

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5.13 *Aerial view of Bennelong Point, 1943*
5.14 *Aerial view of Bennelong Point, c.1955*
5.15 *Proposed site at Bennelong Point, c.1955*
5.16 *Competition judges, 1957*

Genesis of Sydney Opera House, 1950s

1951	Harry Ingham Ashworth (new dean of the University of Sydney's Faculty of Architecture) and George Molnar (lecturer at the faculty) set their fifth-year students a project of designing an opera house at 'Fort Macquarie'.[46]
1952 (April 3)	John Joseph Cahill (1891-1959) becomes Labor premier of NSW. Cahill supports Goossens' idea for a new opera house.[47]
1954 (March 31)	A model of what looks to be the 1951 architectural student scheme for the 'Fort Macquarie' opera house appears in the *Sydney Morning Herald*. It is attributed to Ashworth's and Molnar's students, with Goossens being 'technical adviser'. Two days before its publication, the *Herald* reports that Goossens proposed an opera house be sited over the Wynyard Station ramp between George and Carrington Streets in central Sydney. This alternative to the 'Fort Macquarie' scheme is a response to the Minister for Transport's opposition to an opera house at Bennelong Point and demolition of the tram shed. Goossens explains, "It [Wynyard Station] is not the ideal site for an opera house in Sydney – I still say Fort Macquarie is – but it [Wynyard site] is the next best." [48]
1954	A committee is formed to advise government on the building of an opera house. The committee consists of Goossens, Ashworth, Charles Moses (General Manager of the Australian Broadcasting Commission), Roy Hendy (Sydney City Council town clerk) and Stan Haviland (Head of the Department of Local Government) who serves as chairman.[49]
1955 (May 13)	The Opera House committee recommends Bennelong Point tram shed and park area as the site. It also recommends an international competition to select the design. A competition is announced on December 7.[50]

Sydney Opera House design competition, 1956-1957

1956 (February 15)	The international competition conditions and program – known as the *Brown Book* – are released for the design of a 'National Opera House' to be erected at Bennelong Point.[51] The brief states that there shall be two halls – one large and one small. The large hall should seat between 3,000–3,500 persons. The small hall should seat approximately 1,200. The large hall is to be for symphony concerts, large-scale opera, ballet and dance, choral, pageants and mass meetings, and the small hall for dramatic presentations, intimate opera, chamber music, concerts and recitals, and lectures. The brief also notes that 'ample parking space' could be found 'within easy walking distance of the site'. There is no limit placed on the estimated cost of the project.[52]
1956	933 competitors from around the world are registered. Of these, 222 entries are eventually received from 28 countries.[53] The competition closes on December 3.[54] The assessors are Ashworth, John Leslie Martin (Professor of Architecture at Cambridge and a member of the design team for the Royal Festival Hall, London, and an Ashworth acquaintance from their Manchester days), Cobden Parkes (the NSW Government Architect) and Eero Saarinen (the renowned Finnish architect from Michigan, USA).[55]

1957 (January 29)	A scheme by a 38-year old Danish architect, Jørn Utzon, is announced as the winning entry. There are conflicting views of what took place during the jury's deliberations but all agree that Saarinen advocated strongly for Utzon's design. Second prize is awarded to a team from Philadelphia, USA, headed by J. Marzella, and third prize to Boissevain and Osmond, of London.[56] The following day, a spokesperson for the Opera House committee announces that a public appeal will be launched to raise £3,500,000 to build the National Opera House.[57]
1957	Utzon makes his first trip to Sydney from July 29 - August 22.[58] (Utzon designed his Sydney Opera House competition entry without having visited the site. He relied on photographs, shipping maps and first-hand accounts).

LATE EDITION

The Sydney Morning Herald.

PRICE, 4d

TELEPHONE: B0044 ONE HUNDRED AND TWENTY-SIXTH YEAR OF PUBLICATION 80 PAGES SYDNEY, WEDNESDAY, JANUARY 30, 1957

DANE'S CONTROVERSIAL DESIGN WINS OPERA HOUSE CONTEST

Jorrn Utzon, 38, of Helbeback, Denmark, has won the £5,000 first prize in a world-wide contest for a design for a National Opera House to be built at Bennelong Point.

"CHEAPEST TO BUILD"

PHONE TALK TO WINNER

Rocket Range Talks Started

Boy Drowns After 25ft Fall In Pool

Fire, Flood Threats

LATE NEWS

QLD. STUDY OF PETROL PRICE ORDERED

Six Players In Team For Tennis Tour

New Liner On Proving Flight

Other Stories On Design

On Other Pages

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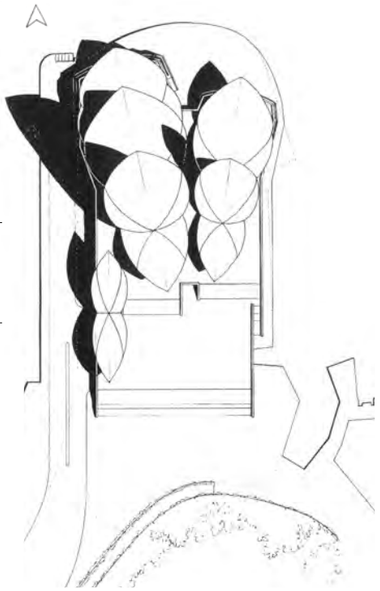

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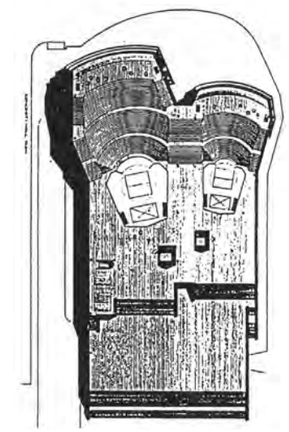

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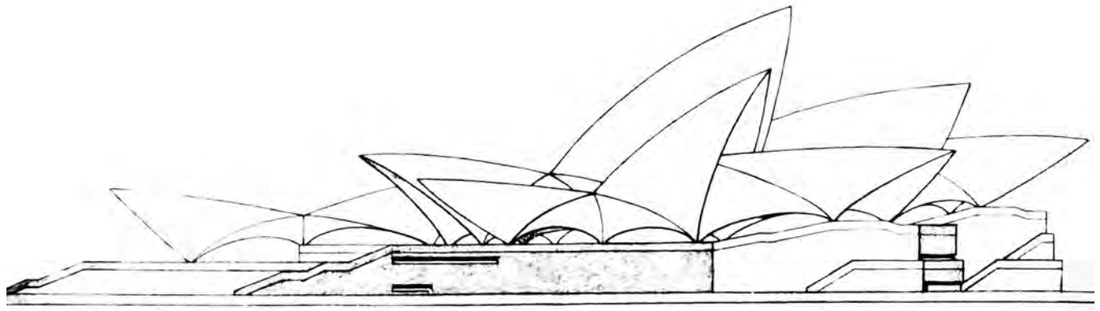
5.17 Sydney Morning Herald *front page, 1957*
5.18 *Utzon drawing, Plan, 1956*
5.19 *Utzon drawing, Platform, 1956*



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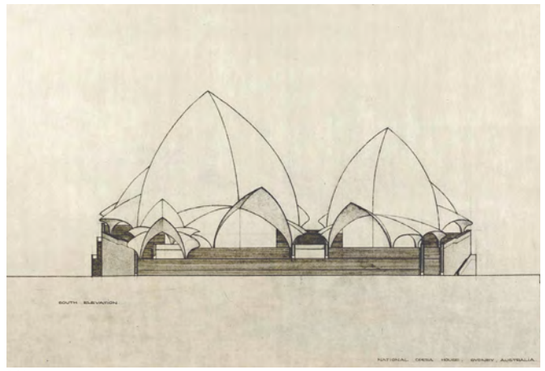

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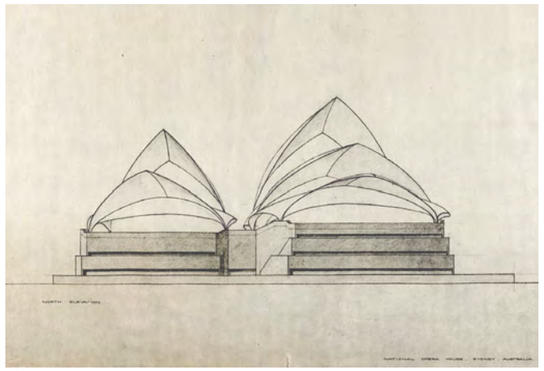

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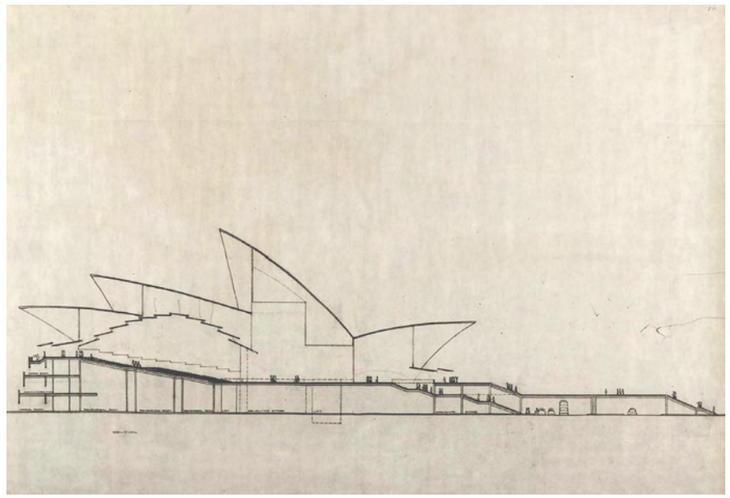

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5.20 *Utzon drawing, East elevation, 1956*
5.21 *Utzon drawing, South elevation, 1956*
5.22 *Utzon drawing, North elevation, 1956*
5.23 *Utzon drawing, Section, 1956*
5.24 *Utzon drawing, Perspective, 1956*

1957 (July 29)	Utzon's original model, made in Denmark, is flown to Sydney in mid-1957 for display at the Sydney Town Hall as the centrepiece for the establishment of the Sydney Opera House Lottery fundraising appeal. (Over 16 years, the lotteries, conducted at regular intervals, raise more than 90 per cent of the A$102 million ultimately expended on building the Sydney Opera House).[59]
1957	A committee is appointed by Cahill to act for the client. Ashworth, chairman of the technical advisory panel, becomes the de facto client.[60]

Utzon's evolving concept, 1958-1966

1958 (March 26)	Utzon presents the first of his presentation documents (prepared for the NSW Government), known as the *Red Book*, which contains plans, sections, elevations and photographs of models of the Sydney Opera House. Also included are reports by other consultants on structure (Ove Arup), acoustics (Vilhelm Lassen Jordan), mechanical services (Jorgen Varming), electrical installations (M. Balslev) and theatre technique (S. Malmquist).[61] In this document, the curvature of the shells has already changed from the original scheme. It undergoes several more variations before the final 'spherical solution'.
1958 (March 31)	Utzon and Arup are interviewed by Premier Cahill, who asks that construction of the Sydney Opera House be started in February 1959.[62]
1958 (April 11)	A firm of quantity surveyors, Rider Hunt & Partners, makes a new cost estimate of £4,880,000.[63]
1958 (August 18)	Demolition of Bennelong Point tram shed begins.[64]
1958 (November 26	On Utzon's recommendation, Ove Arup & Partners are engaged as structural engineers for the project.[65]
1959 (January 21)	Rider Hunt provides a new cost estimate of £5,300,000.[66]
1959	Premier Cahill insists construction of Sydney Opera House be commenced before NSW state elections in March, despite Utzon's protest that plans are not finalised.[67]

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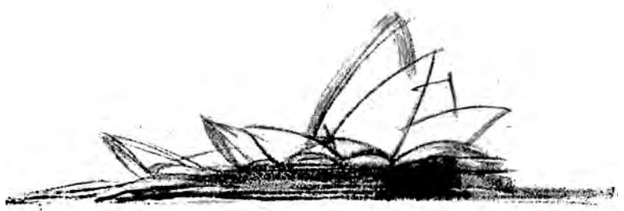

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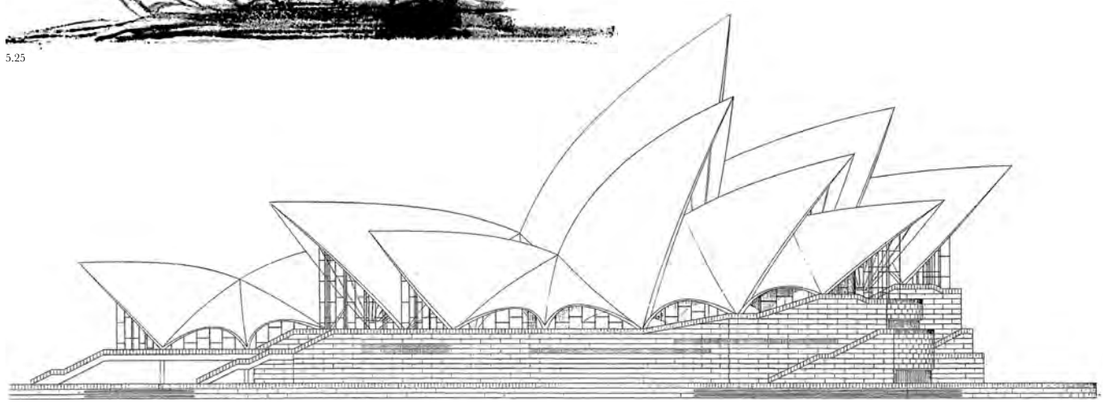

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5.25 Red Book *concept sketch, 1958*
5.26 Red Book *east elevation, 1958*
5.27 *Utzon with model at Sydney Town Hall, 1957*

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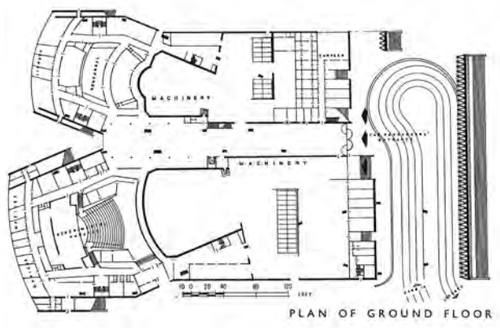

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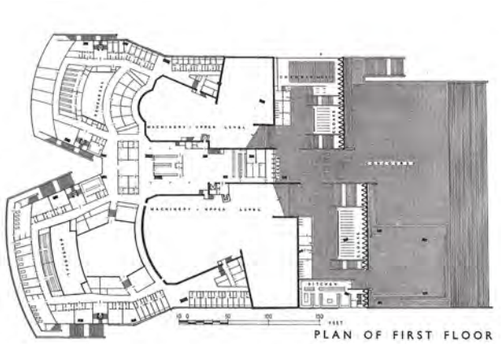

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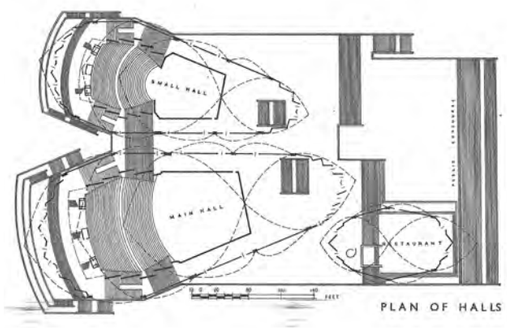

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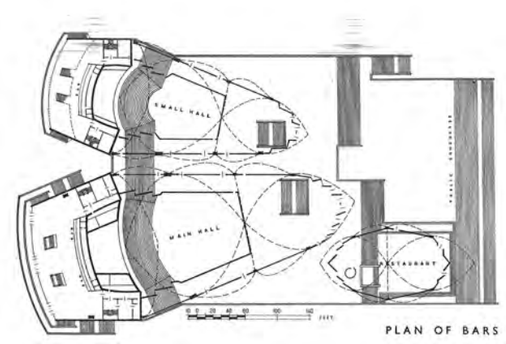

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5.28 Gold Book *plan of ground floor, 1959*
5.29 Gold Book *plan of first floor, 1959*
5.30 Gold Book *plan of halls, 1959*
5.31 Gold Book *plan of bars, 1959*
5.32 *NSW Premier fixes commemorative plaque, 1959*
5.33 *Commencement ceremony, 1959*

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1959 (March 2)	Stage 1 of construction (building of foundations and podium) commences with Civil & Civic as contractors.[68] The Department of Public Works issues its *Gold Book* to coincide with a ceremony marking the commencement of building. At the ceremony, Premier Cahill fixes in position an inscribed commemorative plaque indicating the point from which all measurements of the Sydney Opera House will be taken. The target date for the formal opening is the 175th anniversary of the First Fleet's arrival, 26 January 1963.[69]
1959 (March 21)	NSW State Elections; Labor Party retains government.[70]
1959 (October 22)	Premier Cahill dies in Sydney, aged 68.[71]
1960 (November 9)	At the first 'unofficial' concert at the Opera House, Paul Robeson (American performer, political activist and human rights campaigner) sings songs of solidarity and protest to an admiring crowd of construction workers.[72]
1961 (March 1)	The Sydney Opera House Trust is appointed under the *Sydney Opera House Trust Act 1961* to maintain and operate Sydney Opera House on behalf of the NSW Government. Sir Philip Baxter, KBE, CMG, is the first Chairman of the Sydney Opera House Trust.[73]
1961 (October)	Utzon advises Arup he has changed the shape of the shells so that all are based on a sphere of the same radius, thereby solving issues of pre-casting and construction.[74] The final scheme is arrived at after three years of engineering research and development of some 12 different roof schemes including parabolic, ellipsoidal and circular arc ribs.
1962 (January)	Utzon presents a progress report, known as the *Yellow Book*, showing resolution of various parts of the building and containing plans of major and minor halls, shells of major hall, details of a precast lid, tiling on shells and development of shells.[75] The cover shows principles of spherical geometry arrived at in late 1961 – the 'spherical solution'.

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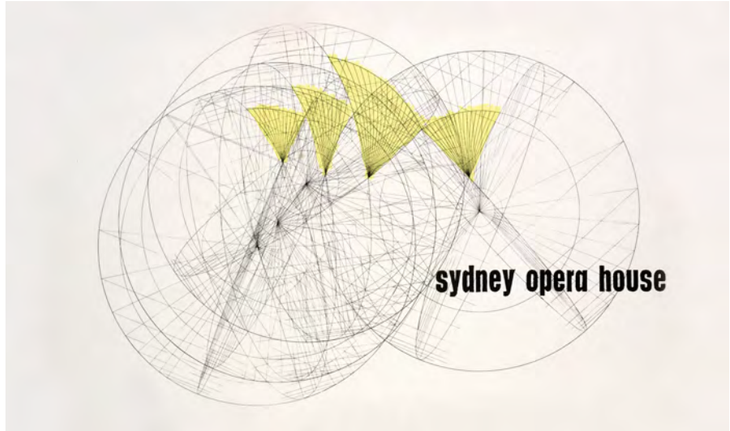
5.34 *Paul Robeson sings, 1960*
5.35 *Utzon's studio, Hellebaek, Denmark, 1960*
5.36 Yellow Book *cover, 1962*
5.37 *Opera House Hat in* Australian Women's Weekly, *1962*



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5.38 *Arup's team, Mick Lewis, Ove Arup and Jack Zunz, 1960s*
5.39 *Formwork for Concourse beams, 1962*
5.40 *Podium completed, c.1963*
5.41 *Beams underside Monumental Steps, c.1963*
5.42 *Protest demonstration, March 1966*

1962 (March 14)	Utzon and Arup's Jack Zunz[76] present to the Sydney Opera House's technical advisory panel the refined spherical scheme for the roof shells – a ribbed shell system based on the geometry of a single sphere where each rib is built up of a number of standard reinforced concrete segments to be cast on site.[77]
1962 (November)	Utzon presents recommendations for a carpark, bus terminus and pedestrian approach in a report known as the *Blue Book*.[78]
1963 (January)	Stage 1 of construction (podium) is completed.[79]
1963 (March 4)	Jørn Utzon and family arrive to live in Sydney.[80]
1963 (March 25)	New contractors, M.R. Hornibrook, begin construction of roof shells (Stage 2 of construction).[81]
1964 (June 16)	*Blue Book* proposal for parking is rejected.[82]
1964 (October 29)	Utzon is made a Fellow of the Royal Australian Institute of Architects.[83]
1964 (October 29)	The NSW Labor government is defeated and a Liberal government takes office under Premier Robert (Robin) William Askin (1907-1981). Davis Hughes (1910-2003) becomes NSW Minister for Public Works.[84]
1965 (August-October)	Authority to approve payment of fees is transferred from the executive committee to the Minister for Public Works. Funding is refused for construction of plywood mock-ups for Utzon's proposed Stage 3 works. Concerned over spiralling building costs and unfamiliar with Utzon's method of working (use of prototypes and continuous experimentation in search of the perfect solution), the Minister attempts to take control of the project by delaying or withholding payment of Utzon's fees over several months.[85]
1965 (August 30)	Minister Hughes announces a new cost estimate of £24.7 million ($49.4 million) and pushes the completion date from 1967 to 1969.[86]

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1966 (February 28)	In a letter to Hughes, Utzon maintains that non-payment of his fees and a lack of collaboration from Hughes' department have forced him to leave the job: "In the meeting between yourself and Mr Wheatland and me today, you stated that you still could not accept my fee claim for £51,000 for Stage Technique which I have requested from you for the past several months and which is completely justified. I have been forced to set the 15th February, 1966, as the final date for the receipt of this payment, and as you could not, at this date, 28th February, 1966, satisfy me on this, you have forced me to leave the job. As I explained to you and as you know also from meetings and discussions, there has been no collaboration on the most vital items on the job in the last many months from your Department's side, and this also forces me to leave the job as I see clearly that you do not respect me as the architect. I have therefore today given my staff notice of dismissal. I will notify the consultants and contractors and I will have cleared the office of my belongings and you will receive my final account before the 14th March, 1966." [87] Hughes issues a press statement that Utzon has resigned.[88]
1966 (March 3)	1,000 people march to State Parliament House demanding Utzon's reinstatement; a 3,000-signature petition demands the same, to no avail.[89]
1966 (March 7)	A 'Basis of Proposal' prepared by Minister Hughes for Utzon's continued engagement is tabled at a meeting with Utzon. The proposal includes Utzon as Design Architect working with a team of architects appointed by the Government.[90]
1966 (March 7)	Utzon responds to Hughes' 'Basis of Proposal', disputing claims that he and his firm are not capable of running the project and that his authority had been undermined by the Government. He seeks clarification on other issues in order to resolve the impasse.[91]
1966 (March 8)	Utzon proposes modifications to the 'Basis of Proposal'.[92]
1966 (March 15)	In a letter from Utzon responding to the Minister's proposal, Utzon does not agree to being "relegated to the subordinate role of 'design architect'" with an architectural team under the control of the Government Architect.[93]
1966 (March 21)	75 out of 85 staff of the Government Architect's Branch of the NSW Department of Public Works sign a petition supporting Utzon as "the only Architect technically and ethically able to complete the Opera House as it should be completed". A number of signatories later sign 'retraction' statements.[94]
1966 (March / April)	Support for Utzon also comes from many Australian architects (including NSW Chapter of the Royal Australian Institute of Architects, Harry Seidler, Robin Boyd, Neville Gruzman and Clive Buhrich) and some of the world's most esteemed architects (including Louis Kahn, Richard Neutra, Walter Gropius, Oscar Niemeyer, Sigfried Giedion, Kenzo Tange and Christian Norberg-Schulz).[95]

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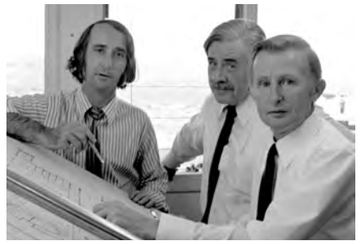
5.42 *Protest demonstration, March 1966*



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5.43 *Peter Hall, David Littlemore and Lionel Todd 1960s*
5.44 *1960s model to test mechanical services*
5.45 *Roof shells under construction, 1966*

Completing the House, 1966-1973

1966 (April 19)	Hughes appoints a panel of Sydney architects to complete the project. It consists of Peter Hall (from the NSW Department of Public Works), Lionel Todd (of Hanson, Todd & Partners) and David Littlemore (of Rudder, Littlemore & Rudder). They become Hall, Todd & Littlemore for the duration of the project. Hall is responsible for design. The Government Architect, Edward (Ted) H. Farmer, by virtue of his office, acts as client. At the time, the structure of the podium is complete, the shells nearly so, the first tile lids are being placed on the shells and the stage machinery in the Major Hall has been partially constructed.[96]
1966 (April 28)	Utzon leaves Sydney, never to return.[97]
1966 (May 17)	Following partial resolution of a dispute over fees, Utzon hands over a batch of drawings relating to the proposed Stage 3. The drawings cover aspects of paving and cladding, glass and louvre walls, side foyers, restaurant, major and minor halls, Drama Theatre, patron facilities and back-of-house areas.[98]
1966 (June 7)	The Australian Broadcasting Commission, on behalf of the Sydney Symphony Orchestra, sends a detailed list of its requirements for the Sydney Opera House.[99]
1966 (June 21)	Ove Arup is awarded the Royal Institute of British Architects' Gold Medal for his "involvement in all the best buildings in this country [United Kingdom] since the 1930s, which have always been the better for it".[100]
1966	Hall, Todd & Littlemore submit a 'Review of Program' report, recommending the Major Hall be a single-purpose concert hall and Minor Hall an opera theatre.[101]
1966 (December 12)	Installation of the last precast shell segment effectively marks completion of Stage 2 works.[102]
1967 (March 21)	At the belated request of the Australian Broadcasting Commission on behalf of the Sydney Symphony Orchestra, and despite fierce opposition from the Elizabethan Theatre Trust Opera Company (which became known as the Australian Opera in 1970), the NSW Government announces the proposed larger opera hall will be changed to a single-purpose concert hall on the stated grounds that symphony concerts, managed by the ABC, are more popular and draw larger audiences than opera. The minor hall is concomitantly changed from a drama theatre to an opera theatre and the experimental theatre to a drama theatre.[103]
1968 (February)	Hall, Todd & Littlemore produce a *White Book* containing their designs for the building's interior and glass walls.[104]
1969 (March)	Final acoustic testing of Peter Hall's design for the major hall (Concert Hall).[105]

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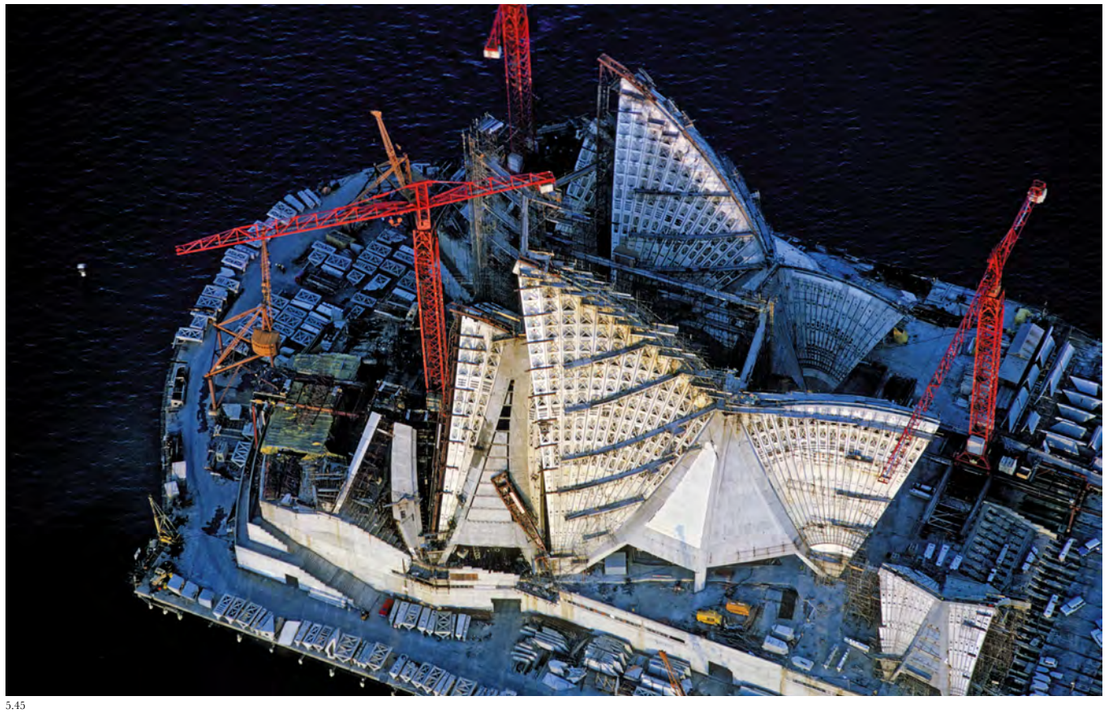
1969 (Late)	Commencement of Stage 3 construction after Hall, Todd & Littlemore's 'detailed and estimated brief' is approved. Apart from the changes to the performance spaces, Stage 3 involves a major re-working of mechanical and electrical services. Contractors are the Hornibrook Group.[106]
1969	Ove Arup & Partners receive The Queen's Award for Technological Achievement, the highest official UK awards for British businesses and other organisations that excel at international trade or innovation.[107]
1972	The Association of Consulting Engineers, Australia, gives an Excellence Award for the design and construction of the Sydney Opera House glass walls.[108]
1972 (December 17)	The first orchestral performance at the Sydney Opera House is given by the Sydney Symphony Orchestra, conducted by Sir Bernard Heinze, to test the Concert Hall acoustics.[109]
1973 (January 21)	ABC National Training Orchestra performances to test acoustics: Concert Hall conducted by Robert Miller. Opera Theatre conducted by Robert Miller.
1973 (July 1)	To enable people to get to know the building before public performances commence, guided tours are introduced from July 1, three months in advance of the inaugural performances (with more than half a million people touring the complex within the first year).[110]
1973 (July 28)	First test performance takes place in the Opera Theatre. The Australian Opera presents *Fall of the House of Usher* by Larry Sitsky and *Dalgerie* by James Penberthy.[111]
1973 (August 31)	Project reaches 'practical completion'.[112]
1973 (September 28)	The first public performance, a production of Prokofiev's *War and Peace* by the Australian Opera, is given in the Opera Theatre. The following night Charles Mackerras conducts the Sydney Symphony Orchestra in the Concert Hall.[113]



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5.46 *Her Majesty The Queen opens Sydney Opera House, 1973*
5.47 *Concert Hall c.1973*
5.48 *Lettered plaque in Box Office Foyer, commemorating opening by Her Majesty The Queen*
5.49 *Sydney Opera House, 20 October 1973*

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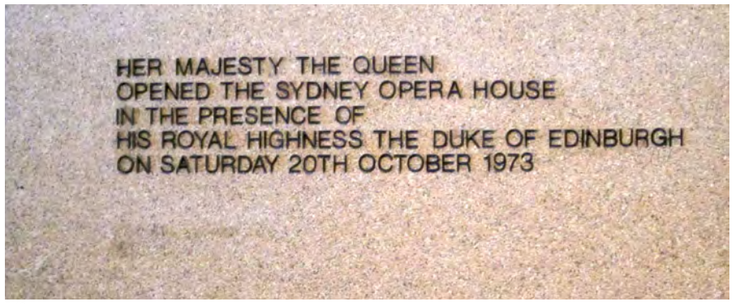
Sydney Opera House opens, 1973

1973 (October 20)	More than 10 years later than initially anticipated, Sydney Opera House is formally opened by Her Majesty Queen Elizabeth II. Utzon is not present at the opening and his name does not appear on the plaque in the entry concourse.[114] Sydney Opera House opens with four main performance halls: the Concert Hall which seats 2,679, the Opera Theatre (1,507), the Drama Theatre (544) and the Music Room, subsequently renamed Playhouse (398). There is an Exhibition Hall (located to the south and east of the Music Room), a Rehearsal and Recording Hall (now The Studio) and a Reception Hall (now the Utzon Room), as well as five rehearsal rooms, two restaurants, six theatre bars and extensive foyers.[115] The final estimated cost is A$102 million. The estimate was £3,500,000 in 1957; £4,880,000 in 1958; and £24,700,000 ($49.4 million) in 1965.[116]
1973	In recognition of his distinguished achievement, the Royal Australian Institute of Architects awards Jørn Utzon its highest honour, the Gold Medal. Ove Arup is awarded the Gold Medal of the UK Institution of Structural Engineers.[117]
1973	The Sydney Opera House Trust establishes the Dennis Wolanski Library of the Performing Arts.[118] The library's role is to facilitate management, production and appreciation of the performing arts through the provision of library and archival services to Sydney Opera House management and staff, the entertainment industry, students and other users. In 1975, the library is housed in part of the Exhibition Hall.[119]
1973 (November-December)	The inaugural Biennale of Sydney (international festival of contemporary art) is opened by Prime Minister Gough Whitlam in the Exhibition Hall.[120]



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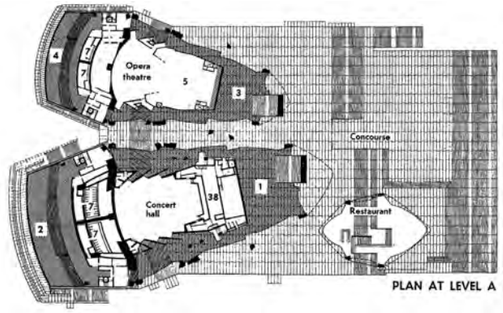

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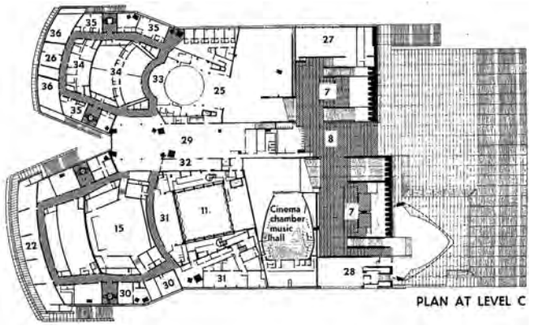

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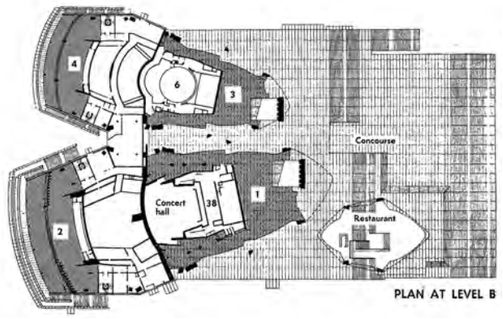

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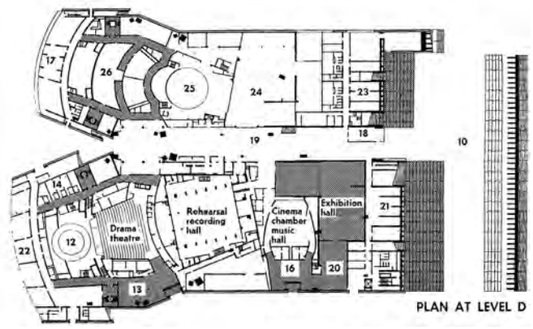

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5.50 *Plan at Level A (upper auditorium level), 1973*
5.51 *Plan at Level B (+42), 1973*
5.52 *Plan at Level C (+30), 1973*
5.53 *Plan at Level D (+12), 1973*
5.54 Curtain of the Sun *(Opera Theatre), 1973*
5.55 Curtain of the Moon *(Drama Theatre), 1973*

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The First 25 Years, 1973-1998

1978 (January)	The Opera Theatre orchestra pit is enlarged, allowing maximum orchestral strength of between 70 and 75.[121]
1978	Utzon is awarded the Royal Institute of British Architects' Gold Medal in recognition of his body of work that has influenced architecture at an international level.[122]
1979 (May)	The grand organ in the Sydney Opera House's Concert Hall is completed by world-renowned Australian organ builder Ronald Sharp (b.1929). A comprehensive and flexible instrument with more than 10,000 pipes, it is believed to be the largest mechanical-action pipe organ in the world.[123]
1981	The Australian Government withdraws its 1980 nomination of the Sydney Opera House for inscription on the World Heritage List following advice from the World Heritage Bureau that the Opera House was too recent to establish Outstanding Universal Value, but that a revised nomination "*based on the outstanding features of Sydney Harbour, both as a bay and as the site of the first permanent European Settlement in Australia – to include structures such as the Opera House and the Sydney Harbour Bridge, but they would not constitute the primary elements*" would be considered. [124]
1983 (October 20)	At the 10th anniversary of the opening, the Guest of Honour, Jill Wran, observes that "only in Australia is our greatest building a monument to the arts – to human creativity and imagination." [125]
1985	The Australian Government confers on Utzon Australia's highest civic honour – Companion of the Order of Australia (AC) (Honorary Award) – for his eminent achievement and merit of the highest degree in service to Australia.[126]
1985 (November)	The stage revolve in the Opera Theatre is used for the last time for Sydney Dance Company's production of Boxes (choreographed by Graeme Murphy with music composed by Iva Davies and Bob Kretschmer, performed by Icehouse).[127]
1986-1988	As part of a NSW Government Bicentennial project, new works are undertaken to transform the Forecourt to provide an unobstructed view of the soaring architecture of the building. Utzon lets the Trust know he is pleased "that the Government has decided to finish the Forecourt as the originally planned open plaza." A second and lower promenade (containing shops, a cafe and an information centre) – known as the Lower Concourse – is constructed, providing pedestrians with an undercover approach to the building. The works are developed under the supervision of NSW Assistant Government Architect, Andrew Andersons, in collaboration with Peter Hall, and are completed in time for Australia Day 1988, when the Opera House is the main outdoor venue for Bicentennial celebrations.[128]
1988 (February 5)	Ove Arup dies, aged 92.[129]
1988	*Building of the Century* exhibition is held in the Exhibition Hall (June 3, 1988 – March 31, 1989), celebrating the 15th anniversary of the Sydney Opera House and attracting 78,000 visitors.[130]
1989	The Broadwalk Studio (originally the Rehearsal and Recording Hall) becomes the Dennis Wolanski Library.[131]

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5.56 *Aerial view, c.1979*
5.57 *Lower Concourse*
5.58 *Lower Concourse*
5.59 *Rehearsal and Recording Hall, c.1973*

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1988-1998	A 10-year Major Maintenance Program is launched, with 650 projects aimed at restoring the building to 'top condition' and ensuring 'the survival of the house for future generations.' Projects in this program, carried out under the direction of the NSW Department of Public Works (with their completion dates in brackets), include:[132] – construction of an underground carparking station (1993), in the form of a double helical coil, to accommodate 1,100 vehicles – a public-private partnership between the NSW Government and Enacon Parking Pty Ltd (part of the Mulpha Group). The carpark is not owned or operated by Sydney Opera House – conservation of the Concert Hall ceiling surfaces – excavation of additional facilities below the Podium – resealing joints between roof tile lids (1994) – removing, renewing, waterproofing and reseating slabs on ceremonial stairs and parts of Podium – resealing glass wall joints – refurbishing auditoria seating (1993) – second stage of Opera Theatre orchestra pit extension (1994) including lowering of the floor in front of the stalls and installation of a new hydraulic stage extension system – development and adoption of a 'Total Asset Management Plan' (a complete preventative maintenance program for the building) – major structural refurbishment of supports to the Broadwalk – upgrading of fire protection and suppression systems – installation of new winch control systems in the Drama and Opera Theatres and the Concert Hall – development and installation of new edge tiles for the roof shells From 1989, the Exhibition Hall is reduced in size and excavated below to make space for payroll and administration offices at Basement (Level +1). A Playhouse dock and extra dressing rooms are built.
1992 (May)	Jørn Utzon is awarded the Wolf Foundation Prize in Arts (Architecture) in recognition of "qualities existing well beyond the range of passing fashion, qualities that enhance use, transform construction and liberate the mind." [133]
1992 (May)	The Sydney Opera House is awarded the Sulman Medal, the annual architectural award of the NSW Chapter of the Royal Australian Institute of Architects (and its most prestigious).[134]
1993 (March 8)	A bronze plaque honouring Jørn Utzon is unveiled on the Podium exterior, outside the Box Office Foyer at Sydney Opera House by his daughter Lin. In correspondence with the Sydney Opera House Trust, Utzon insists the plaque not be about himself but should be a demonstration of the 'spherical solution'.[135]
1993	The Sydney Opera House becomes the focal point for Sydney's bid to host the Olympic Games in 2000. The bid logo features a stylised roofline of the Opera House in the colours of the Olympic rings. Light tubes are installed on the Opera House roof in Olympic colours.

5.60 *Tile maintenance, c.1990's*
5.61 *Spherical solution bronze plaque, 2009*
5.62 *Olympic colours on sails, 1993*

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1993	The first *Sydney Opera House: A Plan for the Conservation of The Sydney Opera House and its Site* is prepared by Dr James Semple Kerr. (Subsequent editions in 1999 and 2003 are also prepared by Dr Kerr.)
1994	A 12-year contract is signed for operation of the catering venues at Sydney Opera House and in the Lower Concourse, resulting in redesign or enlargement of some catering, dining and kitchen facilities.[136]
1994	*The Unseen Utzon* exhibition is held in the Exhibition Hall (November 1, 1994 – June 30, 1995), showing Utzon's designs for the interiors of the building, which would have been used had he continued to work as the architect.[137] It includes computer modeling of the two major halls by then architecture student Philip Nobis from Utzon's concepts.
1995 (May 19)	Peter Hall dies, aged 64.[138]
1995 (October 14)	World premiere of *The Eighth Wonder*, an opera about the Sydney Opera House saga, composed by Alan John, libretto by Dennis Watkins and premiered by the Australian Opera.[139]
1995-96	A nomination to inscribe 'the Sydney Opera House in its Harbour Setting' on the World Heritage List is prepared, with four supporting expert essays, one being an international comparative assessment by Norwegian architectural historian and critic Christian Norberg-Schulz.
1996	The Sydney Opera House Trust establishes a Conservation Council as "an advisory group to assist and advise the Trust with particular reference to the care, control and maintenance of the building." [140] First meeting held on March 24th. (The Council lapsed when the Trust, in 1998, began negotiations for the return of Jørn Utzon as an adviser and believed that a successful outcome could make Council recommendations redundant. The reconstituted Council did not meet again until November 2002).[141]
1996	The World Heritage nomination is prepared for forwarding to UNESCO World Heritage Centre in Paris but withheld by the Commonwealth Government until well beyond the submission date.[142]
1996 (October)	The Dennis Wolanski Library closes. Its collection relating to Sydney Opera House is dispersed to the State Library of NSW and other organisations in Australia.[143]
1997	Exhibition Hall converted to office accommodation for Theatre Department and other administrative staff.[144]
1997 (September)	A 'Masterplan Report' for Sydney Opera House is prepared by the NSW Department of Public Works and Services, setting out "a strategy for the building and site developments which will position the Sydney Opera House as one of the great arts centres of the world by the year 2000." The masterplan is later amended to embody a co-ordinated approach in which all issues (including operational requirements and heritage needs) are considered.[145]
1997	*Festival of the Dreaming* (directed by Rhoda Roberts) – the first of four Olympic Arts Festivals in the lead-up to Sydney 2000 Olympic Games – opens with Bangarra Dance Theatre's "awakening ceremony" performance on the steps of the Sydney Opera House (September 11 – October 6).[146]
1998 (April 17)	Jørn Utzon is awarded Denmark's prestigious Sonning Prize for "an outstanding contribution toward the advancement of European Civilisation." [147]
1998 (May 24)	The head of the NSW Arts Ministry, Evan Williams, in Copenhagen conveys 80th birthday greetings to Utzon from the NSW Government, Sir Gordon Samuels (Governor of NSW), and Premier Carr, together with a formal invitation to visit Sydney. The invitation is later declined on health grounds.
1998 (July 8)	Utzon accepts the 'Keys of the City of Sydney' from Sydney Lord Mayor Frank Sartor in Majorca, Spain.[148]

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5.63 *First Conservation Plan, 1993 - Cover*
5.64 *World Heritage Nomination document, 1996 - Cover*

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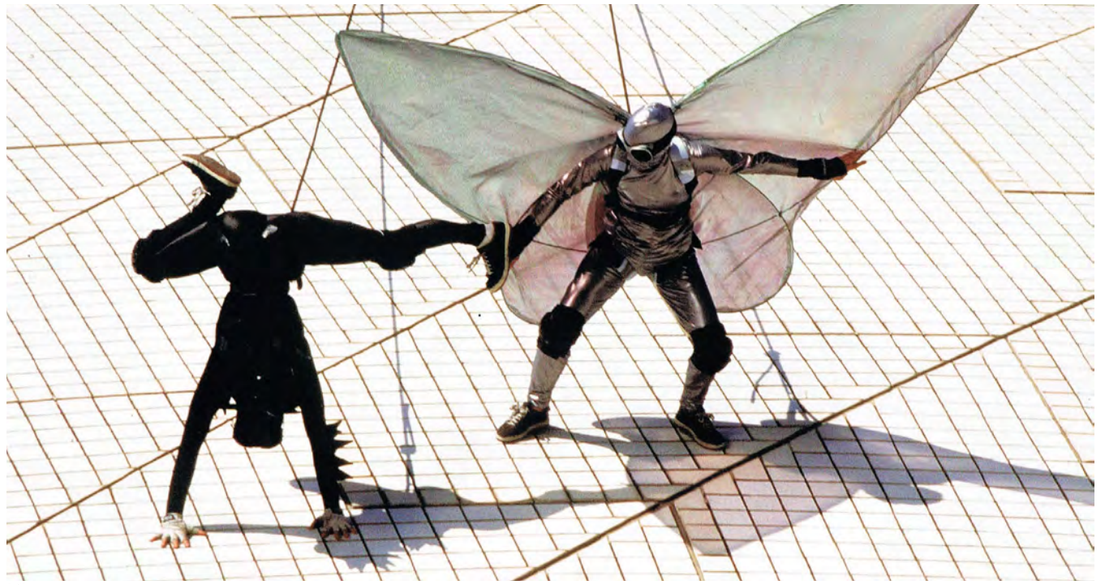

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5.65 *Insectascape by ERTH, 1998*
5.66 *Richard Johnson, Jørn Utzon and Jan Utzon*
5.67 *House Dance NYE, 1999*
5.68 *NYE fireworks, 1999*
5.69 *Triathalon finish at SOH, 2000*
5.70 Utzon Design Principles, *2002 - Cover*

1998 (September 1)	Richard Johnson of Denton Corker Marshall is appointed to advise on future development works, establish planning principles and review the 1997 'Masterplan Report'. Chair of Sydney Opera House Trust, Joseph Skrzynski's announcement also refers to engagement of James Semple Kerr to "update the conservation plan". Kerr's revised plan is completed May 1999 but is overtaken by negotiations for Utzon's return and this edition remains unpublished. Further revision of the conservation plan commissioned in 2002.[149]
1998 (October 23)	NSW Premier Bob Carr sends an offer in writing to Utzon for him to serve as design consultant for the Sydney Opera House renewal works. The offer is delivered personally to Utzon at his home in Majorca by Richard Johnson (then of the architectural firm Denton Corker Marshall), who has been engaged by the Sydney Opera House Trust to develop a Strategic Plan for the future of the Sydney Opera House.[150] Premier Carr announces his offer to Utzon at a performance of operatic arias at the Sydney Opera House on October 25.[151]
1998 (October-November)	Celebrations marking the 25th anniversary of the Opera House draw more than 85,000 people. Utzon's reconciliation with the NSW Government is confirmed in a videotaped message for the occasion. "The highlight of the 25th birthday [is] the public reconciliation with Jørn Utzon through his specially taped video message for the occasion, and the launch of the Utzon Foundation, so named in recognition of his extraordinary contribution to Australian and world culture." [152] (The Utzon Foundation awards a biennial international prize to recognise creativity and excellence in the performing arts.)

The Master and his masterpiece, 1999-2008

1999	On instructions of State and Federal governments, the 1996 World Heritage Nomination, together with updated material, is prepared and submitted to the World Heritage Centre in Paris. Just before its formal registration, the whole nomination is withdrawn on instructions by the Commonwealth Government.[153]
1999 (March)	The Studio, initially the Rehearsal and Recording Hall (later the Broadwalk Studio, and then the Dennis Wolanski Library), is refurbished as a flexible venue for contemporary and innovative performances, and opens in March. A continuous foyer serving the Playhouse, The Studio and the Drama Theatre is created by relocating a plant room below the Broadwalk level. Works are carried out to a design by Leif Kristensen and project-managed by the NSW Department of Public Works.[154]
1999 (August 11)	Jørn Utzon engaged as design consultant to the Sydney Opera House Trust to work from Denmark and Majorca on an upgrade program and the preparation of a set of design principles for use as a reference point in all future development of the building and the site. Utzon's role is facilitated through liaison with his architect son, Jan Utzon, and the Sydney architect Richard Johnson. Jørn Utzon writes in the foreword of *Building a masterpiece: the Sydney Opera House*: "My renewed contact with Sydney and my work with the refurbishment of the Opera House … has felt like a wonderful welcome back to Australia, a hand extended in the spirit of reconciliation, a hand I shake with warmth and gratitude." [155]
1999 (December 31)	*House Dance* (choreographed by Garry Stewart of Australian Dance Theatre) is performed on the Sydney Opera House sails and broadcast live to the world. (This 'millennium' celebration is the first time fireworks are launched from the Opera House roof. This is repeated in 2013 in celebration of the Opera House's 40th Anniversary.)
2000 (May 27)	Sydney Opera House hosts *Corroboree 2000*, a reconciliation event initiated by the Council for Aboriginal Reconciliation on the 33rd anniversary of the 1967 Referendum and as part of National Reconciliation Week 2000.[156]
2000 (September)	Sydney hosts the 27th Summer Olympiad. The Olympic Arts Festival opens with Opera Australia's production of *Don Giovanni* at the Opera House. Opera Australia and The Australian Ballet share the Opera Theatre for the first time in a repertory of opera and ballet performances. The Opera House is the venue for the torch relay, Olympic triathlons and sailing medal presentations.[157]
2001 (March)	International Concert Attractions (in association with Hocking and Vigo and Sydney Opera House) presents *Buena Vista Social Club* – the first concert on the Forecourt with ticketed seating.[158] The event wins the 2002 Helpmann Award for Best Special Event.
2001 (December)	Sydney Opera House releases *Sydney Opera House Strategic Building Plan*, outlining proposals to address the building's aesthetic and functional needs.
2002 (April)	J.S. Kerr commissioned to revise the Sydney Opera House Conservation Plan.
2002 (May 29)	The Sydney Opera House Trust releases *Sydney Opera House Utzon Design Principles* – "a permanent reference for the conservation of the building and its setting" intended "to clarify original design intent, to manage proposals for change and influence planning controls for the precinct". At the same time a *Venue Improvement Plan* (with Jørn Utzon's input) is also released. The NSW Government announces funding to refurbish the Reception Hall (to Utzon's design), construct a Western Broadwalk colonnade, explore options for improving Concert Hall acoustics, improve services to the Forecourt to support performances, modify the orchestra pit and interior of the Opera Theatre, and improve disabled access to the Reception Hall.
2002 (May)	Sydney Opera House wins two Helpmann Awards at the inaugural ceremony (which recognise excellence in live performance, similar to the Tony Awards on Broadway and the Olivier Awards in London). One of these awards, 2001 Best Special Event / Performance, is given to the Sydney Opera House for the staging of *Buena Vista Social Club* on the Forecourt in March 2001.[159]
2002 (November)	Reconstituted Conservation Council recommences regular meetings.

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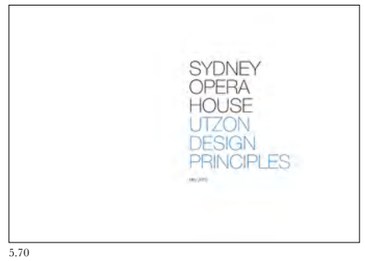

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5.71 *Utzon's design for Utzon Room tapestry, SOH CEO Norman Gillespie and Jørn Utzon, 2003*
5.72 *SOH Conservation Plan, 3rd edition 2003 - Cover*
5.73 *World Heritage Nomination Document, 2006 - Cover*
5.74 *Her Majesty The Queen opens Western Colonnade, 2006*
5.75 *Installation of escalators to Southern Foyer, 2009*

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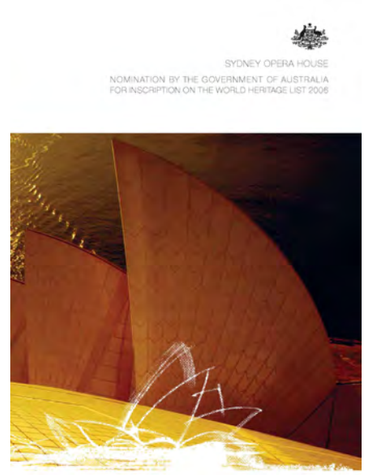
2003 (May 20)	Jørn Utzon is awarded the Pritzker Prize for architecture, and Sydney Opera House receives citation as a masterpiece of the twentieth century.[160]
2003 (June 23)	Sydney Opera House: *A Revised Plan for the Conservation of The Sydney Opera House and its Site*, 3rd edition, by James Semple Kerr is adopted by Sydney Opera House Trust.
2003 (July 19)	The Royal Australian Institute of Architects (NSW chapter) presents its 25 Year Award to Jørn Utzon for the Sydney Opera House. The jury says: "Designed at the vast scale of Sydney Harbour itself, the Opera House established itself as a world icon of modern design long before 'iconic' buildings such as the Guggenheim in Bilbao were consciously conceived for their commercial effect." [161]
2003	Refurbishment of Box Office public lavatories completed following *Utzon Design Principles*. Designed by Richard Johnson and peer-reviewed by Jørn Utzon.
2003 (October 3)	Coinciding with Sydney Opera House's 30th anniversary, Jørn Utzon's son, Jan, opens the reconfigured Exhibition Hall with Max Dupain's Sydney Opera House photographic exhibition.[162]
2003 (October 20)	Sydney Opera House celebrates its 30th birthday with a multi-genre concert that includes the world premiere performance of Meryl Tankard's *Pearl* and a performance by Sydney Symphony of works by Australian composers and librettists.[163]
2003 (December 3)	Sydney Opera House is listed on the NSW State Heritage Register as a place of State significance.[164]
2004 (September 16)	With the design and guidance of Jørn Utzon, the Reception Hall is refurbished to become the first authentic interior space by the Sydney Opera House architect. Officially reopened by NSW Premier Bob Carr on September 16 as the Utzon Room. It includes the wool and cotton tapestry *Homage to C.P.E. Bach*, also designed by Jørn Utzon. To Utzon "it was the greatest honour he could ever receive" to have the room named after him.[165]
2004	Transformation begins of the Western Foyers and Broadwalk – the first structural change to the exterior of the building since it opened in 1973. Construction begins of the Utzon-designed Colonnade, designed to open up the Western Foyers to natural light and allow visitors and patrons to the Drama Theatre, The Studio and the Playhouse to enjoy water and city views – one of Utzon's key principles in his original design for Sydney Opera House.[166]
2004 (December 18)	*The studio of Jørn Utzon* exhibition – the most comprehensive exhibition to date of the designs and drawings for the Opera House from his studio – opens at the Museum of Sydney. The exhibition shows Utzon's personal design process and the diverse sources of his inspiration. It includes many items not exhibited previously, including his original competition drawings and his final unrealised schemes for the interiors, completed in 1966 shortly before he left Sydney. It also includes his ideas as he worked again on Sydney Opera House as its architect in collaboration with his son, architect Jan Utzon, and Australian architect Richard Johnson.[167] (Exhibition is open until May 1, 2005).
2005 (March)	Utzon's concept design for the Opera Theatre (now Joan Sutherland Theatre) renewal is completed. It is described in the *Gold Book*, presented to Sydney Opera House Trust.
2005 (July 12)	Sydney Opera House is included in the Australian Government's National Heritage List. The Federal Minister for the Environment and Heritage, Senator Ian Campbell, says: "The Opera House is a vital part of Australia's cultural heritage and most worthy of the protection provided by the listing … Since its emergence on the Australian stage in 1957 when Danish architect Jørn Utzon's outstanding design won an international competition, the Opera House has become a symbol of Australia." [168]

2005	A *Management Plan* (with an accompanying *Heritage Risk Management Plan*) for the Sydney Opera House is prepared as part of a bilateral agreement between the Australian Government and State of NSW to ensure its National Heritage values are protected. Two statutory plans – *State Environmental Planning Policy (Major Development) 2005* and *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005* – are legislated to protect the significant values of the Sydney Opera House and control activities that may adversely affect the building and its setting.
2006 (January 16)	Sydney Opera House is officially nominated for inscription on the UNESCO World Heritage List. The despatch of the official submission to Paris is announced on the Opera House steps by the Federal Minister for the Environment and Heritage, Senator Ian Campbell, the NSW Arts Minister, Bob Debus, and the NSW Planning Minister, Frank Sartor.[169] The submission includes the *Utzon Design Principles* (2002) and the *Sydney Opera House: A Revised Plan for the Conservation of The Sydney Opera House and its Site* (2003) by James Semple Kerr.
2006 (March 13)	The Western Colonnade is officially opened by Her Majesty Queen Elizabeth II with Jan Utzon in attendance.[170]
2006 (June 28)	The Royal Australian Institute of Architects (NSW chapter) presents its 25 Year Award to Peter Hall for his work on the Concert Hall and Opera Theatre. The jury says: "Peter Hall and his partners completed the building in very difficult and controversial circumstances, conferring with Utzon himself, respecting his framework and ensuring the functional performance of the venues".[171]
2006 (August 25)	As part of the *Venue Improvement Plan* released in 2002, a $38 million grant is provided by the NSW Government for the *Accessibility and Western Foyers Project*.[172]
2007 (January)	Construction commences on the *Accessibility and Western Foyers Project*. Works include a lift from the Lower Concourse level to the Box Office Foyer, escalators from the Box Office Foyer to the Southern Foyers of the main venues and the refurbishment of the Western Foyer interiors to a design by Jørn Utzon, in collaboration with his son Jan and Richard Johnson.[173] The Exhibition Hall closes to make way for extensions to the Western Foyers.
2007	Utzon Architects and Johnson Pilton Walker present their *Gold Book* to the Sydney Opera House Trust, containing Jørn Utzon's vision for the rebuilding of the Opera Theatre (the concept completed in 2005).[174]



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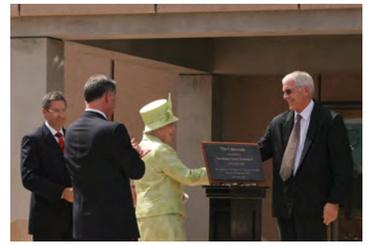

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5.76 *Luminous, 2009*
5.77 *State Memorial for Jørn Utzon, March 25, 2009*
5.78 *Western Foyer, 2008*
5.79 *Jan Utzon and Louise Sauvage in new access passage, 2009*
5.80 *Sting Concert, 2011*
5.81 *Bennelong drain diversion, 2011*
5.82 *Construction of underground loading dock, 2013*

2007 (June 28)	In recognition of its Outstanding Universal Value, Sydney Opera House is inscribed on UNESCO's World Heritage List, meeting its selection criterion as "a masterpiece of human creative genius".[175] The expert evaluation report to the World Heritage Committee states: "… it stands by itself as one of the indisputable masterpieces of human creativity, not only in the 20th century but in the history of humankind." With an opening year of 1973, Sydney Opera House is the newest cultural site on the list – it is one of only two sites listed within the lifetime of their architects (the other is Brasilia, by Oscar Niemeyer and Lucio Costa).
2007 (September 2-10)	The Australian Government hosts the Asia-Pacific Economic Cooperation (APEC) forum at Sydney Opera House. (The site is closed to the public for the first time since its opening.)
2008	The Exhibition Hall space is adapted to provide better lavatory facilities for venues off the Western Foyers (Drama Theatre, The Studio and Playhouse) with work completed in June.
2008 (November 29)	Jørn Utzon dies in Copenhagen, aged 90. Tributes are received from around the world.

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A Living Legacy, 2009-

2009 (March 25)	A State Memorial ceremony for Jørn Utzon is held in the Concert Hall and broadcast live on the ABC. Proceedings include dance (Bangarra Dance Theatre); speeches by the Federal Minister for the Environment, Heritage and the Arts Peter Garrett, the NSW Premier Nathan Rees, Richard Johnson (Johnson Pilton Walker), and the Artistic Director of The Australian Ballet David McAllister; music (Sydney Symphony); arietta (Opera Australia); song (Ursula Yovich and Neil Finn) and readings (John Bell and Cate Blanchett). Responses are given by two of Jørn's children, Jan and Lin, representing the Utzon family.[176]
2009 (May 26-June 14)	Inaugural Vivid Festival, a mid-year music and light festival. The Opera House is the main focus of the festival with *Luminous*, incorporating lighting projections on the sails (roof shells), performances, and music events curated by Brian Eno.
2009 (November 17)	The refurbished Western Foyers, the building's first public lift and new escalators to the Concert Hall and Opera Theatre are officially opened by NSW Minister Assisting the Premier on the Arts, the Hon. Virginia Judge, with Jan Utzon present. Louise Sauvage OAM, Paralympian and one of Australia's most decorated athletes, accepts the role of inaugural Sydney Opera House Accessibility Ambassador from the Sydney Opera House Trust.
2010 (June)	Sydney Opera House Environmental Sustainability Plan is endorsed by the Trust.
2010 (June 6)	NSW Premier Kristina Keneally announces funding of $152 million for the Vehicle Access and Pedestrian Safety Project to remove trucks from the Forecourt by constructing an underground tunnel and loading dock (improving safety and security on the Forecourt) and an associated new scenery lift for the Opera Theatre. Involving the excavation of some 50,000m^3 of sandstone from beneath the Forecourt and building, it is the biggest building project on the site since Sydney Opera House opened in 1973.
2010 (December)	Recognising Sydney Opera House as the symbol of Australia, Oprah Winfrey (whom Forbes calls the world's most powerful entertainer) records two programs at the Opera House for *The Oprah Winfrey Show* during an Australian broadcast tour.
2011 (February 3)	An Eminent Architects Panel is appointed to advise the Sydney Opera House Trust on architectural issues and provide overarching design advice for future works on the site. The panel, consisting of four highly respected Australian architects, is chaired by the NSW Government Architect Peter Mould.
2011 (February 3-4)	Sting's *Symphonicity* is performed on the Forecourt – the last concert there before commencement of the Vehicle Access and Pedestrian Safety Project and the eventual reconfiguration of the Forecourt area.
2011 (February 7)	Works commence on the Vehicle Access and Pedestrian Safety Project. Works include:[177] – Diversion of Bennelong Drain – Excavation of a new access road and loading dock under the Forecourt and Covered Concourse – Remediation of existing road on Forecourt to remove kerbs – Construction of new gatehouse
2011 (July 1)	First *Reconciliation Action Plan* implemented, Sydney Opera House's first commitment to embrace, engender respect for and celebrate the cultures of our First Peoples with the nation. It sets out actions that will expand Indigenous artistic content, audience participation, education, employment opportunities and cultural awareness.[178]
2012 (March 12)	*Beyond Bennelong: Sydney Opera House – a Digital Education Program* is launched. It provides digital access to the building, its theatres and performances for NSW schools via the NSW Government Connected Classroom technology.[179] The program is also launched to schools in South Korea.
2012 (October 16)	The Opera Theatre is officially renamed the Joan Sutherland Theatre as a lasting tribute to one of Australia's and the world's greatest artists.

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5.83 *Scottish 10 Digital Survey, 2013*
5.84 *40th Anniversary Concert, 2013*
5.85 *Le Corbusier tapestry, 2017*
5.86 *Underground loading dock entry and Forecourt, 2016*

2012 (October 23)	The Scottish Government announces that Sydney Opera House has been chosen as one of 10 international World Heritage listed sites to be digitally documented for the benefit of future generations.[180]
2012 (November 22)	The Opera House Project, a collaboration between Sydney Opera House and ABC Innovation, is launched. Hosted by the ABC, the website www.theoperahouseproject.com includes original interviews, archival footage, audio, written and 3D documentation providing a non-linear documentary of the inception, design and construction of the Opera House. It includes material not previously released.[181]
2012 (December 17)	Sydney Opera House and YouTube announce an agreement that will deliver 20 unique live performances over two years. Performances are to be streamed on a new YouTube channel, live at Sydney Opera House.[182]
2013	Former Rehearsal Room spaces below the Joan Sutherland Theatre are adapted and fitted out as a new Recording Studio and multi-media suite. The old recording studio space is cleared to make way for a second Concert Hall goods lift.
2013 (October – November)	Sydney Opera House celebrates its 40th birthday with concerts, events and extensive media coverage. Celebrations include re-creation of the 1973 opening concert on the partially re-opened Forecourt.
2013 (October 17)	A report by Deloitte Access Economics is released, providing confirmation of the tangible and intangible value of the Sydney Opera House to Australia. The report concludes that Sydney Opera House is one of Australia's key assets, with a "total social asset value" of $4.6billion.[183] First public screening in Australia of documentary 'Autopsy on a Dream'. The Australian Premiere is screened in the Concert Hall of the Opera House as part of the 40th birthday celebrations. It is broadcast on AB later that week. Directed by John Weiley in 1968, the film contains rare interviews with key players involved with the design and construction of the Sydney Opera House up to 1968.
2013 (November)	Detailed 3D digital model of Sydney Opera House delivered by Scottish Ten project – a collaboration between Historic Scotland, Glasgow School of Art and CyArk.[184]

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2014 (September 16)	Research project announced to study concrete elements of the Opera House, to "be funded by the Getty Foundation at cost of $US 200,000 ($224,000). Sydney Opera House is one of 10 modern buildings awarded grants by the Getty Foundation as part of its philanthropic project, Keeping It Modern, to conserve 20th century architecture around the world." [185]
2015 (February 24)	NSW State Government announces $202 million to fund upgrade (renewal) projects at Sydney Opera House if re-elected. Government is re-elected on 28 March 2015 and funds are committed from Cultural Infrastructure Fund.[186]
2015 (June)	Sydney Opera House Trust purchases tapestry by Le Corbusier from the Utzon family. The tapestry originally hung in Jørn Utzon's dining room in Hellebaek.[187]
2015 (June 23)	Major project to upgrade theatre machinery in Joan Sutherland Theatre announced. Scott Carver appointed to design and document functional and access upgrade for Joan Sutherland Theatre and foyers. Theatre to close for 7 months in mid-2017.[188]
2015 (August 20)	Building Management technology project announced. Consortium led by global professional technical services firm AECOM, appointed to "deliver ground-breaking interface between traditional Building Management Control Systems, Building Information databases and Building Information Modelling (BIM)." The new technology will provide "innovative, web-based 3D graphical interface that maps both the physical and functional characteristics" of the Opera House.[189]
2015 (September)	Melbourne architecture firm ARM appointed to design major upgrade of the Concert Hall. Project includes acoustic and access upgrades.[190] Sydney architecture firm Tonkin Zulaikha Greer appointed to design functional and access upgrades for front-of-house spaces including the Box Office, Southern Foyers, Covered Concourse, Function Centre on the Northern Broadwalk and a new Creative Learning Centre.[191]
2015 (November)	Underground loading dock completed (constructed as part of the Vehicle Access and Pedestrian Safety Project).
2015 (December 9)	New Welcome Centre on Lower Concourse officially opened by Greg Hunt, Minister for the Environment. New Centre incorporates heritage interpretation of the site, retail, tour meeting point and associated cloaking and ticketing. Project designed by Freeman Ryan Design.[192]
2016 (March 29)	Le Corbusier tapestry, *Les Dés Sont Jetés* (The Dice are Cast), originally owned by Jørn Utzon, is publically unveiled and subsequently hung in the Western Foyers (designed by Jørn Utzon after his re-engagement). It was his intent that the public spaces at the Opera House be filled with the work of great artists of the day.[193]
2016 (August)	Concept designs released for a suite of renewal projects (Joan Sutherland Theatre access upgrade, designed by Scott Carver; Concert Hall acoustic and access upgrade, designed by ARM; and Front-of-House spaces, designed by Tonkin Zulaikha Greer).

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APPENDICES

ENDNOTES

IMAGE CREDITS

INDEX

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STATUTORY HERITAGE LISTINGS

As of June 2017, the Sydney Opera House is provided statutory heritage protection under the following listings.

WORLD HERITAGE LIST (UNESCO)

- Listed on 28 June 2007
- Listing No. 166rev
- Full details can be accessed at http://whc.unesco.org/en/list/166/

Relevant verbatim extract from the WHL listing is included below.

Brief description

Inaugurated in 1973, the Sydney Opera House is a great architectural work of the 20th century that brings together multiple strands of creativity and innovation in both architectural form and structural design. A great urban sculpture set in a remarkable waterscape, at the tip of a peninsula projecting into Sydney Harbour, the building has had an enduring influence on architecture. The Sydney Opera House comprises three groups of interlocking vaulted 'shells' which roof two main performance halls and a restaurant. These shell-structures are set upon a vast platform and are surrounded by terrace areas that function as pedestrian concourses. In 1957, when the project of the Sydney Opera House was awarded by an international jury to Danish architect Jørn Utzon, it marked a radically new approach to construction.

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.

The Sydney Opera House was included in the National Heritage List in 2005 under the Environment Protection and Biodiversity Conservation Act 1999 and on the State Heritage Register of New South Wales in 2003 under the Heritage Act 1977. Listing in the National Heritage List implies that any proposed action to be taken inside or outside the boundaries of a National Heritage place or a World Heritage property that may have a significant impact on the heritage values is prohibited without the approval of the Minister for the Environment and Heritage. A buffer zone has been established.

The present state of conservation is very good. The property is maintained and preserved through regular and rigorous repair and conservation programmes. The management system of the Sydney Opera House takes into account a wide range of measures provided under planning and heritage legislation and policies of both the Australian Government and the New South Wales Government. The Management Plan for the Sydney Opera House, the Conservation Plan and the Utzon Design Principles together provide the policy framework for the conservation and management of the Sydney Opera House.

Historical description

A major cultural centre for Sydney and its siting at Bennelong Point had been discussed since the 1940s. In 1956 the New South Wales Government called an open-ended international design competition and appointed an independent jury, rather than commissioning a local firm. The competition brief provided broad specifications to attract the best design talent in the world; it did not specify design parameters or set a cost limit. The main requirement of the competition brief was a design for a dual function building with two performance halls.

The competition generated enormous interest in Australia and overseas. The New South Wales Government's decision to commission Jørn Utzon as the sole architect was unexpected, bold and visionary. There was scepticism as to whether the structure could be built given Utzon's limited experience, the rudimentary

and unique design concept and the absence of any engineering advice. The competition drawings were largely diagrammatic, the design had not been fully costed and neither Utzon nor the jury had consulted a structural engineer. Utzon's design concept included unprecedented architectural forms and demanded solutions that required new technologies and materials. The New South Wales Government also faced public pressure to select an Australian architect.

The Sydney Opera House is often thought of as being constructed in three stages and this is useful in understanding the history of the three key elements of its architectural composition: the podium (stage 1: 1958–1961), the vaulted shells (stage 2: 1962–1967) and the glass walls and interiors (stage 3: 1967–1973). Architect Jørn Utzon conceived the overall design and supervised the construction of the podium and the vaulted shells. The glass walls and interiors were designed and their construction supervised by architect Peter Hall supported by Lionel Todd and David Littlemore in conjunction with the then New South Wales Government Architect, Ted Farmer. Peter Hall was in conversation with Utzon on various aspects of the design for at least eighteen months following his departure. Ove Arup & Partners provided the engineering expertise for all three stages of construction.

Design and construction were closely intertwined. Utzon's unique design together with his radical approach to the construction of the building fostered an exceptional collaborative and innovative environment. His collaborative model marked a break from conventional architectural practice at the time. The design solution and construction of the shell structure took eight years to complete and the development of the special ceramic tiles for the shells took over three years. The Sydney Opera House became a testing laboratory and a vast, open-air pre-casting factory.

The Sydney Opera House took sixteen years to build; this was six years longer than scheduled and ten times more than its original estimated cost. On 20 October 1973 the Sydney Opera House was officially opened by Queen Elizabeth II. After inauguration, new works were undertaken over time. Between 1986 and 1988 the land approach and forecourt were reconstructed and the lower concourse developed under the supervision of the then New South Wales [Assistant] Government Architect (sic), Andrew Andersons, with contributions by Peter Hall.

Between 1998 and 1999 the recording and rehearsal room was converted into two areas: an assembly area for the orchestra and the Studio, a revitalised performance space for the presentation of innovative music and performing arts. In 1998, in accordance with the celebration of the 25th anniversary of inauguration, the Sydney Opera House Trust appointed Sydney architect Richard Johnson to advise on future development of the site and to establish planning principles. Through Johnson, the Sydney Opera House Trust began negotiations to reconcile with Utzon and to re-engage him with the building in an advisory capacity. In 1999 Utzon formally accepted Premier Carr's invitation to re-engage with the project by setting down design principles that outline his vision for the building and explain the principles behind his design. Over three years he worked with his architect son and business partner, Jan Utzon, and Richard Johnson to draw up his design principles for the Sydney Opera House, including the refurbishment of the reception hall, construction of the western loggia, exploration of options for improving the Concert Hall acoustics, improving services to the forecourt to support performances, modification of the orchestra pit and interior of the Opera Theatre. In 2002 The Sydney Opera House Trust released the Utzon Design Principles. In 2004 refurbishment of the Utzon Room (formerly known as the reception hall) was completed.

For World Heritage Buffer Zone area, refer to Sydney Opera House Buffer Zone Map on page 280.

For the World Heritage List property boundary, refer to the map opposite.

World Heritage List - declared property boundary

NATIONAL HERITAGE LIST (Australian Government)

- Listed on 12 July 2005
- Listing No. 105738
- Full details can be accessed at http://alturl.com/op8io

The National Heritage values of the Sydney Opera House that are protected under the Australian Government's *Environment Protection and Biodiversity Conservation Act 1999* are encapsulated in the official values under the National Heritage List's criteria A, B, E, F, G and H as shown in the verbatim extract from the NHL listing below.

NHL criterion A: Events, Processes

The Sydney Opera House is significant in the course of Australia's cultural history, both for its place in the national history of building design and construction, as well as the history of the performing arts in Australia. 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. From the earliest concept drawings, the building's striking design, its quality as a monumental sculpture in the round, and its inspired design solution in response to its prominent setting on Bennelong Point in Sydney Harbour, have attracted national and international professional and public acclaim. 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. Since the official opening on 20 October 1973 by Queen Elizabeth II, the Sydney Opera House has played 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. The achievement of its design and construction between 1957 and 1973 is all the more remarkable because it marks a significant transitional period in Australian political and economic development, and changing social attitudes towards Australian cultural life in the decades following World War II.

NHL criterion B: Rarity

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.

NHL criterion E: Aesthetic characteristics

The design, form, scale and location of the Opera House make it one of the most significant landmarks in Australia. The aesthetic qualities of the Sydney Opera House relate both to its topographical setting on Bennelong Point, and its distinctive architectural features. Its landmark qualities are enhanced by the building's juxtaposition with Sydney Harbour, its relationship with the Sydney Harbour Bridge, the garden landscape of Bennelong Ridge, the sandstone cliff face of Tarpeian Rock, and the vistas and views to and from The Rocks, Circular Quay, East Circular Quay, Macquarie Street, the Botanic Gardens and the harbour. The sculptural, billowing sail-like roof shells provide a visual link to and artistic representation of the yacht-scattered harbour waters. The ceramic white tiles of the roof further add to this relationship and provide a dramatic contrast with the blue waters of the harbour. The building with its strongly curved design emphasis is juxtaposed with the nearby Sydney Harbour Bridge which itself has a strongly emphasized curvature, and this visual relationship is a further element of the place's aesthetic appeal. The place's dramatic aesthetic appeal is enhanced by subtle floodlighting on the white roof shells at night. 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 public promenades including the Forecourt, Broadwalk, and podium platform and steps contribute to the majestic qualities of the place. 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. The two large murals commissioned specifically for the Sydney Opera House, including John Olsen's 'Five Bells' and Michael Nelson Jagamara's 'Possum Dreaming', enhance the aesthetic values of the interior.

NHL criterion F: Creative or technical achievement

The Sydney Opera House represents a masterpiece of architectural creativity and technical accomplishment unparalleled in Australia's history. In every respect, it is a structure at the leading edge of endeavour. Its many awards, including the Royal Australian Institute of Architects Gold Award given to architect Jørn Utzon in 1973, reflect its pivotal place in the national story of creative achievement providing, as Utzon envisioned, 'an individual face for Australia in the world of art' (Frampton and Cava 1995, 296). The design of the building reflects Utzon's intention to create a sculptural form that would be both a focal point in Sydney Harbour and a reflection of its character. 'The white sail-like forms of the shell vaults relate as naturally to the Harbour as the sails to its yachts' (Assessors Report cited in Norberg-Schulz 1980, 56).

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). In his *Design Principles* booklet submitted to the Sydney Opera House Trust in 2002, Utzon revealed the two ideas of particular importance in his design: first, his use of organic forms from nature, evident in the leaf form pattern devised for the ceramic roof tiles, and second was 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. On a grander scale, the light toned shells of the building were to stand out against the (then) darker fabric of the city' (Kerr 2003, 44).

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 paneling, 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.

The process of building the Sydney Opera House resulted in the development of a number of innovative technical and creative solutions that were groundbreaking in the history of building design and construction in Australia. This is especially the case with the design and construction of the roof, based on the geometry of the sphere. The roof shells had to span large areas to accommodate the main hall and smaller hall. The solution to the structural challenges of the roof shells devised by Utzon and Ove Arup and Partners over a four year period involved the production of arched segments of varying curvature from the same range of precast modular units. The concrete shells were finally produced by cutting a three-sided segment out of a sphere and by deriving regularly modulated curved surfaces from this solid (Frampton and Cava 1995, 273). The roof shells with their vaulted concrete ribs were constructed using precast concrete segments fixed together with epoxy resin and held together by pre-stressing tendons, representing a considerable structural innovation for the period. The roof shells were faced in off-white Swedish Hoganas tiles inspired by the Chinese ceramic tradition. Using a European technique of prefabrication, over one million tiles were cast into precast concrete lids on the ground then bonded onto the ribbed superstructure of the shells (Frampton and Cava 1995, 280). From the point of view of science, the Opera House embodies within its structure the integration of sophisticated geometry, technology and art. It epitomizes the extraordinary creative potential of the assembly of prefabricated, repeated components (Norberg-Schulz 1996, 101).

The building was the first of its kind in Australia to use computer-based three-dimensional site positioning devices, geothermal pumps, tower cranes, chemical anchors, non-competitive tendering, life-cycle engineering, parametric design (such as the use of governing equations to model a design), and critical path methods. It gave rise to the establishment of a testing laboratory at the University of New South Wales that became one of the first organizations in the world to commercialise university research and support technology transfer. It also promoted Australian expertise internationally, and opened the way for international engineering

construction firms such as Ove Arup to establish their operations in Australia. Utzon's approach to project management was instrumental in changing Australian building and building procurement practices, including *de facto* pre-qualification of bidders, use of scope drawings, performance-based design assistance from trade specialists, mock-up testing, and on-the-job skill development (Tombesi 2005).

NHL criterion G: Social value

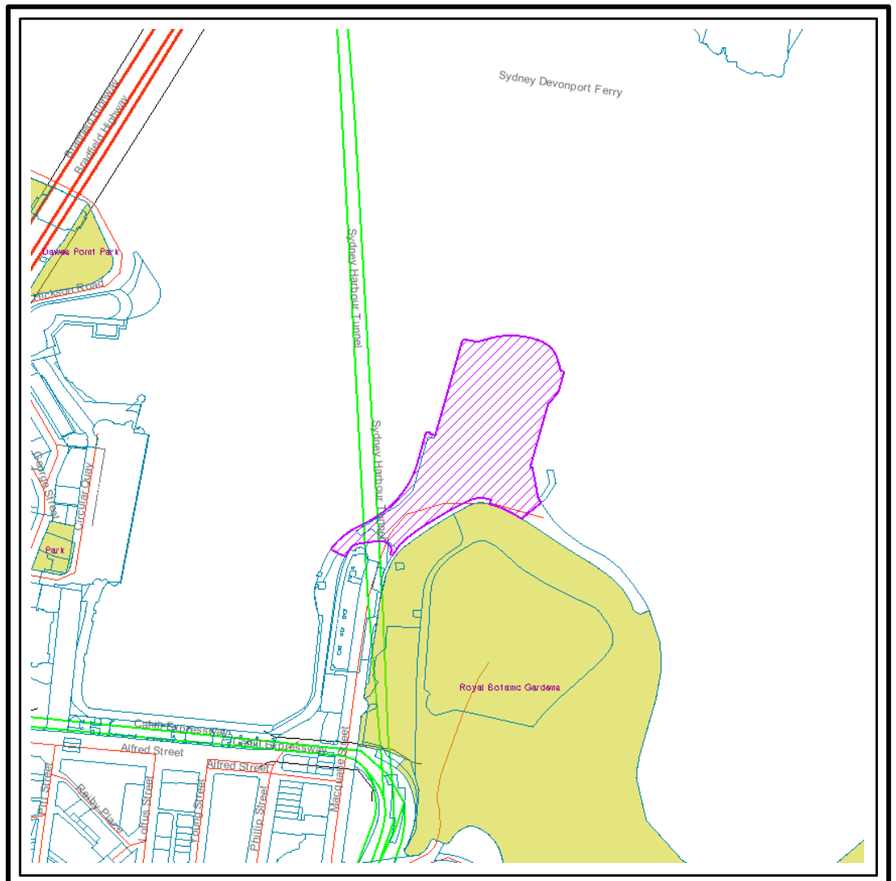
The Sydney Opera House is an enduring symbol of modern Sydney and Australia, both nationally and internationally. Indeed, the profile of the distinctive ceramic clad roof shells has become an instantly-recognisable national emblem. For example, it provided the inspiration for the logo used to promote the 2000 Olympic Games held in Sydney. The 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. The high cost of construction was met by a major public lottery that served to enhance its status as a place for the people.

NHL criterion H: Significant people

The Sydney Opera House is directly associated with Jørn Utzon, whose design won an international competition in 1957 and was hailed by the architectural critic Sigfried Giedion as opening a new chapter in contemporary architecture. Utzon's design represented a significant development in the basic concepts of the Modern Movement in architecture associated with free plan and clear construction. It evolved during a period of experimentation in modern architecture occurring internationally in the 1950s. Utzon was influenced by the architecture of the ancient Mayans and Aztecs, as well as the work of earlier twentieth century architects including the Finnish architect, Alvar Aalto with whom Utzon worked in 1945, Frank Lloyd Wright, and Mies van der Rohe. Utzon's creative genius, exemplified in the Sydney Opera House, is widely acknowledged amongst national and international scholars of modern architectural history. Athough Utzon left the project in 1966, prior to the building's completion, the Sydney Opera House is nevertheless identified with him and he has attracted national and international acclaim. His professional recognition in Australia is reflected by awards such as the Royal Australian Institute of Architects' Gold Award mentioned above, and internationally in awards such as the prestigious Pritzker Prize for Architecture awarded to Utzon in 2003.

The peninsula on which the Sydney Opera House now stands has a special association with Bennelong, an Aboriginal man 'captured' by Governor Arthur Phillip in 1789. Bennelong became a prominent and influential figure in the early Sydney colony, sharing information about his culture with Governor Phillip and regularly visiting the Governor's residence. He was the first Aboriginal adult in the new colony to play a significant role in mediating interactions between Aboriginal people and the early settlers, and was reportedly highly regarded by both Aboriginal people and Europeans. Governor Phillip built the first structure - a house - on the peninsula for Bennelong's use, and from the 1790s the peninsula became known as 'Bennelong Point', and was known to Aboriginal people as Tyubow-gule (McBryde 1989, 17).

For the National Heritage List property boundary, refer to the map opposite.



Place Details

Scale 1:7000

Place Name:	Sydney Opera House
Place ID:	105738
Heritage List:	National Heritage List
Class:	Historic
Status:	Listed place
Street Name:	Circular Quay East
Suburb or Town:	Sydney
State	NSW
Postcode:	2000

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Australian Government
Department of the Environment and Heritage

National Heritage List - property boundary

STATE HERITAGE REGISTER (New South Wales Government)

- Listed on 3 December 2003
- Listing No. 01685
- Full details can be accessed at: http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5054880

Listing on the State Heritage Register (SHR) means that the heritage item:

- is of particular importance to the people of NSW and enriches our understanding of our history and identity;
- is legally protected as a heritage item under the NSW Heritage Act;
- requires approval from the Heritage Council of NSW for major changes; and
- is eligible for financial incentives from the NSW and Commonwealth governments.

The Sydney Opera House has been assessed as meeting the following criteria for listing on the SHR. The following is a verbatim extract from the SHR listing.

SHR criterion a) Historical significance

The Sydney Opera House has historical significance as a modern architectural masterpiece, recognised internationally as a symbol of Sydney and Australia, and created throughout many years of creative and financial controversy. Its historical significance is furthermore enhanced by the extensive associations of the site with major themes in Australian history such as Aboriginal and European contact, scientific investigation, defence, picturesque planning, marine and urban transport, popular recreation and cultural icons. (Kerr 1993: 28)

SHR criterion b) Associative significance

The Sydney Opera House site is of significance for its many associations with people prominent in NSW's history including the early colonial governors of NSW, the Aboriginal man Bennelong, the architect Francis Greenway and many artists who have depicted the site. Many significant people are associated with the construction of the Sydney Opera House, including Eugene Goossens, Joe Cahill, Jrn Utzon, Eero Saarinen and Ove Arup. Many famous artistic performers from Australia and overseas have been associated with the Sydney Opera House since its completion, indeed, 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".

SHR criterion c) Aesthetic significance

The Sydney Opera House 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 setting and the picturesque quality of the 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. Its aesthetic quality is largely attributed to the 1957 prize-winning design by Jørn Utzon. Utzon was then a relatively unknown Danish architect whose subsequent international fame has been in part a result of the success of the building. 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".

SHR criterion d) Social significance

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. It has also hosted many "everyday" cultural activities as well as providing free public access to its harbour-side Broadwalk. Of the 85,000 people estimated to visit each week in 2003, about a quarter came for performance-related reasons while the rest came to experience the building and its environment. 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".

SHR criterion e) Research potential

The Sydney Opera House is significant for its research potential as an internationally recognised icon of modern architecture. The development of the roof shell design was a difficult and lengthy process that extended skills and pushed technology to the limit. There is also research potential in investigating Utzon's design motivations and methods.

Furthermore there is research potential in investigating the role of the Sydney Opera House in the changing image of Sydney throughout the twentieth century, from being a colonial outpost to a world city. There is also scope for investigating the role of the Sydney Opera House in alerting an international audience to the existence of Sydney as a modern city, including the possibility that the Sydney Opera House may have helped in attracting migrants to Australia in the post World War II period. There is also potential for investigating the controversies surrounding the construction of the building as a reflection of "broader planning problems in the City" (Ashton, 1993, 83).

After the profound building effort required to build the Sydney Opera House, it is unlikely that much archaeological potential is retained in relation to its historical associations with famous people and important themes in Australian history. A 1988 maritime archaeological survey found no remaining evidence of the shipwreck site of the Three Bees, 1814, thought to have been near the north west corner of Bennelong Point.

SHR criterion f) Rarity

The Sydney Opera House has significance for its rarity as a twentieth century architectural masterpiece sited on a prominent peninsular in Sydney Harbour. 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. It is also unique in so far as it has become an internationally recognised symbol of Sydney and Australia, which is also widely admired by local citizens.

SHR criterion g) Representativeness

The Sydney Opera House has significance for being 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. As an icon of modern architecture it combines an expressive, sculptural freedom of form with the precise technology of the machine age. 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" (Kerr, 2003, 26).

For the State Heritage Register property boundary, refer to the map on page 278 following.

Heritage Council of New South Wales

State Heritage Register - SHR 01685, Plan:1918
Sydney Opera House

Gazettal Date: 03 December 2003

0 30 60 90 120 Metres

Scale: 1:2,000 @A4
Datum/Projection: GCS GDA 1994

Legend
- SHR Curtilage
- Land Parcels
- Railways
- Roads
- LGAs
- Suburbs

State Heritage Register - gazetted property boundary

STATE ENVIRONMENTAL PLANNING POLICY (STATE SIGNIFICANT PRECINCTS) 2005 (New South Wales Government) (as at 29 August 2016)

- Sydney Opera House is identified as a State significant site under Schedule 3.
- Part 1 of Schedule 3 has provisions for development at the Sydney Opera House that is exempt from requiring development consent from the NSW Minister for Planning.
- Full details can be accessed at: http://alturl.com/m92j5

STATE REGIONAL ENVIRONMENTAL PLAN (SYDNEY HARBOUR CATCHMENT) 2005 (New South Wales Government)

- Sydney Opera House buffer zone defined and protected
- Division 3A of Part 5 has heritage provisions for the buffer zone of the Sydney Opera House.
- Full details can be accessed at: http://alturl.com/7pjnq

The following is a verbatim quote of the relevant SREP 2005 clauses.

Division 3A Sydney Opera House

58A Land to which Division applies

This Division applies to the Sydney Opera House buffer zone, as shown edged heavy black on the Sydney Opera House Buffer Zone Map (opposite).

58B Protection of world heritage value of Sydney Opera House

The matters to be taken into consideration in relation to development within the Sydney Opera House buffer zone include the following:

(a) the objectives set out in clause 53 (2),

(b) the need for development to preserve views and vistas between the Sydney Opera House and other public places within that zone,

(c) the need for development to preserve the world heritage value of the Sydney Opera House,

(d) the need for development to avoid any diminution of the visual prominence of the Sydney Opera House when viewed from other public places within that zone.

58C Minor development

(1) This Division does not apply to or in respect of building work that merely involves:

(a) the renovation, repair, rebuilding or demolition of a building, or

(b) internal alterations to a building, or

(c) external alterations to a building that are carried out below ground level.

(2) This Division does not apply to or in respect of the subdivision of land.

APPENDIX B

(3) This Division does not apply to or in respect of any use of a building or place, other than:

(a) the temporary use of a public open space, and the erection of temporary structures in connection with any such use, for more than 50 days in any single period of 12 months, or

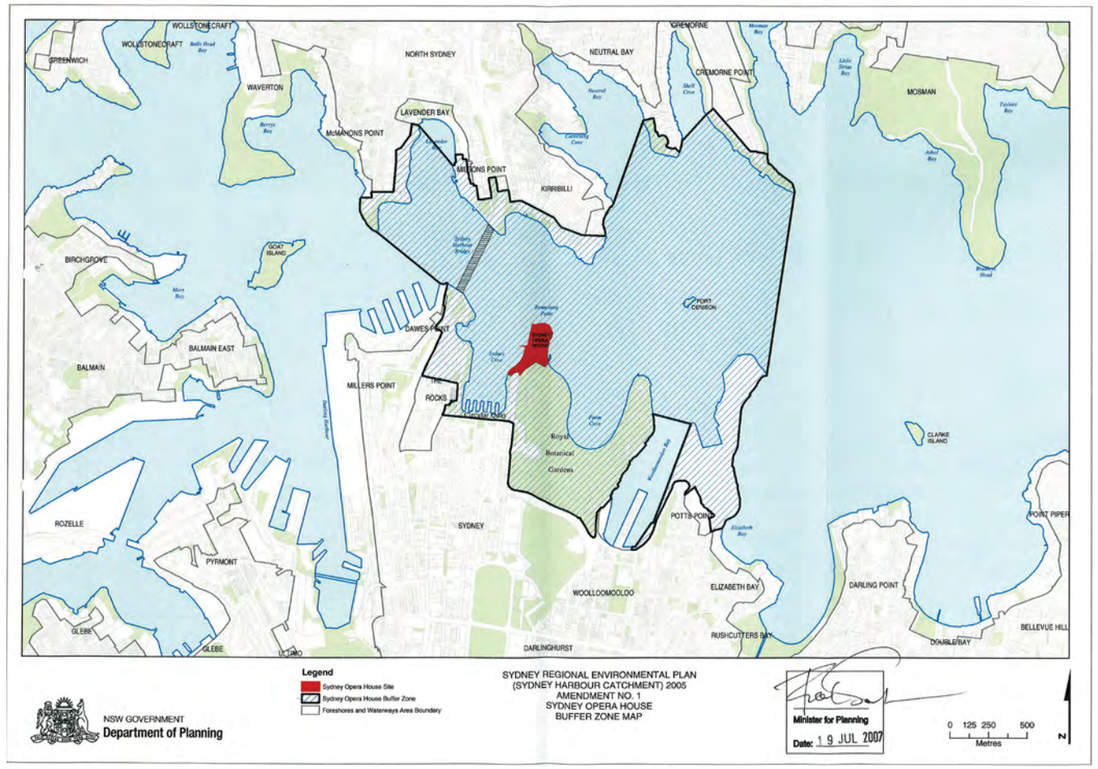
(b) the temporary use of a private open space for more than 2 years.

(4) This Division does not apply to or in respect of:

(a) the installation or erection in any open space of any artwork, time capsule, bollard, tree surround, street furniture, pathway, driveway steps or flagpole, or

(b) any landscaping or tree planting.

For World Heritage Buffer Zone map, see below.



Sydney Opera House Buffer Zone Map included in the SREP (Sydney Harbour Catchment) 2005

SYDNEY LOCAL ENVIRONMENTAL PLAN 2005 (Local Government: City of Sydney Council)

- Listed as heritage item under Schedule 8
- Listing No. 1064
- Full details can be accessed at: http://alturl.com/6o3bb

The Sydney Opera House is listed on the NSW State Heritage Register, which means that actions affecting the Sydney Opera House require the approval of the NSW Heritage Council.

Under the bilateral agreement between the Australian Government and the State of New South Wales, the approval body for actions that may impact on the National and World Heritage values of the Sydney Opera House is the State of NSW or an agency of NSW, which is the NSW Heritage Council in this instance.

To minimise duplication in the environmental assessment and approval of actions, no statutory approval is required from the City of Sydney Council for works to the Sydney Opera House.

NON-STATUTORY HERITAGE LISTINGS

As of May 2013, the Sydney Opera House is listed on the following non-statutory heritage registers.

NATIONAL TRUST OF AUSTRALIA (NSW) REGISTER

- Classified on 21 November 1983
- Listing No. 6088
- Further information on the National Trust Register can be accessed at: https://www.nationaltrust.org.au/services/trust-register-nsw/

While the National Trust is a non-statutory body, its listings are highly regarded by government authorities and the general public.

Relevant verbatim extract from this listing is included below.

Reasons for listing

This magnificently sited and imaginatively designed building has become an internationally recognised symbol of the City of Sydney. The dramatic roof form at Bennelong Point is a masterful transition between the Harbour and the City, with its gardens and tall buildings. The large expanses of glass which give expansive views both from and into the foyers of the major halls contrast with the white vaults resting on the brown-red base. Dramatic internal spaces approached by grand stairways both internally and externally and an outstanding harbourside promenade also contribute to one of the world's most significant buildings of the latter half of the twentieth century.

"The 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 methods; so that not only Australia's but the world's architecture was advanced and enriched by it." (J.M.Freeland)

REGISTER OF SIGNIFICANT 20TH CENTURY BUILDINGS (Australian Institute of Architects, NSW Chapter)

- Listed on 31 August 1990
- Listing No. 4702929
- The list can be obtained from: https://dynamic.architecture.com.au/i-cms?page=1.13262.156.3143.8450

The Sydney Opera House is listed on the NSW Chapter of the Australian Institute of Architects' (AIA) Register of Significant 20th Century Buildings.

The AIA (National Office) has also nominated the Sydney Opera House to the International Union of Architects' (UIA) World Register of Significant Twentieth Century Australian Architecture.

REGISTER OF MODERN MOVEMENT BUILDINGS, SITES AND LANDSCAPES (Documentation and Conservation of Buildings, Sites and Neighbourhoods of the Modern Movement – DOCOMOMO)

The Australian Working Party of DOCOMOMO has begun to compile a register of Modern Movement buildings, sites and landscapes in Australia. The Sydney Opera House is among the first twenty buildings of the DOCOMOMO Australia National Register included in the publication by DOCOMOMO International *The Modern Movement in Architecture: Selections from the DOCOMOMO Register* in 2000.

Full details can be accessed at: http://docomomoaustralia.com.au/dcmm/sydney-opera-house-1963-1973-nsw/

REGISTER OF THE NATIONAL ESTATE (Australian Government)

- Registered on 21 October 1980
- Listing No. 2353
- Full details can be accessed at: http://alturl.com/5ibrv

The Register of the National Estate (RNE) was a statutory register established under the *Australian Heritage Commission* Act 1975.

The RNE is a list of natural, Indigenous and historic heritage places throughout Australia. Under that Act, the Australian Heritage Commission entered more than 13,000 places in the register.

The *Australian Heritage Commission* Act 1975 has now been repealed and from 19 February 2007 the RNE was frozen, meaning that no places can be added or removed. On 19 February 2012 all references to the RNE were removed from the *Environment Protection and Biodiversity Conservation Act* and the *Australian Heritage Council Act 2003*. The RNE is now maintained on a non-statutory basis as a publicly available archive and educational resource.

In the case of the Sydney Opera House, it is listed on the National Heritage List, and therefore receives protection under the EPBC Act.

APPENDIX B

HONOURS & AWARDS

The honours and awards given to the Sydney Opera House and its significant contributors indicate the high esteem with which both are held.

The following awards have been received by the Sydney Opera House and associated designers.

1966 Royal Institute of British Architects, Gold Medal, awarded to Ove Arup.

1969 The Queen's Award to Industry, awarded to Ove Arup & Partners for technological innovation in pre-stressed concrete roofing.

1972 Association of Consulting Engineers, Australia, Excellence Award, for the design and construction of the Sydney Opera House glass walls.

1973 Royal Australian Institute of Architects, Gold Medal, awarded to Jørn Utzon.

1973 UK Institution of Structural Engineers, Gold Medal, awarded to Ove Arup.

1974 Royal Australian Institute of Architects (NSW chapter), Civic Design (later renamed Lloyd Rees Award) Merit Award, awarded to Jørn Utzon, Hall Todd & Littlemore for work of outstanding environmental design.

1974 Illuminating Engineering Society of Australia, Meritorious Lighting Award, for the Opera Theatre.

1978 Royal Institute of British Architects, Gold Medal, awarded to Jørn Utzon.

1980 Royal Australian Institute of Architects (NSW chapter), Civic Award (later renamed Lloyd Rees Award), for the Sydney Opera House.

1982 Museum of Finnish Architecture and the Finnish Association of Architects, Alvar Aalto Medal, awarded to Jørn Utzon for significant achievements in creative architecture.

1985 Australian Government, Companion of the Order of Australia (AC), conferred on Jørn Utzon.

1988 Royal Australian Institute of Architects (NSW chapter), Lloyd Rees Award (Urban Design), for the Sydney Opera House Forecourt as part of the Circular Quay and Macquarie Street revitalisation (Sydney Opera House is one of four entries which received a joint award).

1988 Royal Australian Institute of Architects, inaugural Civic Design Award, for the Sydney Opera House Forecourt as part of the Circular Quay and Macquarie Street revitalisation.

1988 Illuminating Engineering Society of Australia, Certificate of Commendation, for the shell floodlighting.

1992 Royal Australian Institute of Architects (NSW chapter), The Commemorative Sulman Award, for the Sydney Opera House.

1998 Council of the City of Sydney, Keys of the City of Sydney, granted to Jørn Utzon.

1998 University of Copenhagen, Sonning Prize (Denmark's prestigious and largest cultural award), awarded to Jørn Utzon for commendable work that benefits European culture.

2003 The Hyatt Foundation, The Pritzker Architecture Prize, awarded to Jørn Utzon.

2003 Royal Australian Institute of Architects, 25 Year Award, awarded to Jørn Utzon (Stage 2, Hall Todd & Littlemore) for the Sydney Opera House.

2006 Royal Australian Institute of Architects (NSW chapter), NSW 25 Year Award, awarded to Peter Hall for the Concert Hall and Opera Theatre.

APPENDIX D – ARTWORKS

The Sydney Opera House possesses a collection of artworks in a variety of media. A small selection of significant artworks that were designed to be a focal element in a significant space (such as murals and curtains that are normally an integral or fixed part of the fabric in which they were set) are listed below. This list is far from complete.

An extensive list of artworks acquired by the Sydney Opera House Trust can be found on The Wolanski Foundation website, http://www.twf.org.au/library/catalogueartworks.html

Refer to Section 4.12.2 of this CMP for discussion of the assessment and management of artworks, and Section 4.18.11 for the management of collections.

Artist	Description	Location or intended location	Status
Cassab, Judy	*Portrait of Dame Joan Sutherland,* 1975	Side Foyer (western) of Opera Theatre	In situ
Cassab, Judy	*Portrait of Sir Robert Helpmann*, 1975	Side Foyer (eastern) of Opera Theatre	In situ
Coburn, John	Curtain of the Sun, 1971	Proscenium curtain in Opera Theatre	Recently fully repaired and removed to storage
Coburn, John	*Curtain of the Moon,* 1971	Proscenium curtain in Drama Theatre	Recently fully repaired and removed to storage
Federson, Jutta	*Ede Tapestry,* 1974. 8521 x 274 centimetres	South wall of boardroom	Removed to storage
Friend, Donald	*Bennelong series*, c.1960. Series of nine paintings	General manager's office	Foyer space outside General manager's office
Latona, Peter	*Bronze bust of Sir Eugene Goossens*, 1962	Southern Foyer of Concert Hall	In situ
Nolan, Sydney	*Little Shark*, 1973, 224 crayon and dye sketches on paper	Panels 1–13 on east wall of Playhouse Theatre, panel 14 in general manager's office	Removed to storage
Olsen, John	*Salute to* [Slessor's] *Five Bells*, 1973, mural, acrylic on plywood, approx. 21 x 3 metres	Installed in the Northern Foyer of the Concert Hall in 1973	In situ
Tjakamarra, Michael Nelson	*Possum Dreaming*, 1987, acrylic on canvas, 10 x 1.8 metres	Northern Foyer of Opera Theatre	In situ
Utzon, Jørn	*Portrait of Sir Robert Helpmann*, 1975	Side Foyer (eastern) of Opera Theatre	In situ
	Homage to C.P.E. Bach, wool and cotton tapestry, 2004	Utzon Room	In situ
Zofrea, Salvatore	*Summer of the Seventeenth Doll*, fresco on detachable panels	Playhouse Foyer	Removed to storage

APPENDIX D

The process diagram below is an extract from The Burra Charter 2013.
The full document can be found at:
http://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf

The Burra Charter Process

Steps in planning for and managing a place of cultural significance

The Burra Charter should be read as a whole.

Key articles relevant to each step are shown in the boxes. Article 6 summarises the Burra Charter Process.

Section 2

1 Commonwealth of Australia 2006, Australian Government Department of the Environment and Heritage, *Sydney Opera House Nomination by the Government of Australia for Inscription on the World Heritage List 2006*, report submitted to the UNESCO World Heritage Committee, pp27-43

2 Norberg-Schulz essay in Department of the Environment, Sports and Territories (Commonwealth) & Department of Urban Affairs and Planning (NSW) 1996, *Sydney Opera House in its Harbour Setting*, unpublished World Heritage nomination, p172

3 Utzon 2002, *Utzon Design Principles*, p57

4 Weston 2002, p132 cited in Commonwealth of Australia 2006, p34

5 Weston chapter in Watson 2006, p34

6 Commonwealth of Australia 2006, p34

7 Messent 1997, p411 cited in Commonwealth of Australia 2006, p34

8 Commonwealth of Australia 2006, p34

9 According to the author of *Utzon: Inspiration – Vision – Architecture* and noted expert on Nordic architecture, Professor Richard Weston, *On Growth and Form* was the only book Utzon recommended to his new staff to read (Weston, 2nd edition, 2008, pp22-23). Specifically in relation to the Sydney Opera House, Utzon said he thought the variations possible with the 'spherical solution' were analogous to the famous geometric transformations in Thompson's book (email from Richard Weston to Design 5 – Architects, 14 April 2011).

Recommended reading of *On Growth and Form* for Utzon's new staff is also cited in Pardey 2004, p60.

10 Utzon 2002, *Utzon Design Principles*, p59

11 Utzon 2002, *Utzon Design Principles*, p65 & p68

12 Utzon 1962a, *Zodiac* No. 10, p117

13 Commonwealth of Australia 2006, p28

14 Commonwealth of Australia 2006, p28

15 Commonwealth of Australia 2006, p28

16 Weston 2004a, p180 cited in Commonwealth of Australia 2006, p30

17 Murray 2004, pp137-144 cited in Commonwealth of Australia 2006, p30

18 Commonwealth of Australia 2006, p30

19 Murray 2004, pxvii & p41 cited in Commonwealth of Australia 2006, p30

20 Heading in WHL nomination, Commonwealth of Australia 2006

21 Boyd 1973, p54, cited in Commonwealth of Australia 2006, p32

22 Goad 2005 cited in Commonwealth of Australia 2006, p32

23 Utzon 2002, p24

24 Utzon 1962, pp114-16

25 Commonwealth of Australia 2006, p33

26 Utzon 1956, note on original competition drawings, accessed from State Records NSW, NRS: 12825, 'Competition Drawings submitted by Jørn Utzon to the Opera House Committee'

27 Utzon quoted in Frampton 2004, pp18-19 cited in Commonwealth of Australia 2006, p34

28 Commonwealth of Australia 2006, p34

29 Giedion 1967, p694 cited in Norberg-Schulz essay in NSW Department of Urban Affairs and Planning 1996, p171

30 Kerr 2003, pp44-45

31 Commonwealth of Australia 2006, p30

32 Commonwealth of Australia 2006, p30

33 Utzon 1965a, p49 cited in Commonwealth of Australia 2006, p30

34 Commonwealth of Australia 2006, p31

35 Murray 2004, p1 cited in Commonwealth of Australia 2006, p31

36 Commonwealth of Australia 2006, p31

37 Australian Heritage Commission 1980, Appendix 1 cited in Commonwealth of Australia 2006, p31

38 Jan Utzon – interview recorded by SOH in Utzon Room April 2009

39 Paragraph from Commonwealth of Australia 2006, p31

40 Norberg-Schulz 1996, p168 cited in Commonwealth of Australia 2006, p32

41 Norberg-Schulz 1996, p168 cited in Commonwealth of Australia 2006, p32

42 The Opera House Project, Chapter 20, http://theoperahouseproject.com/ie/transcripts/Stage-3-Hall-Todd-Littlemore-And-Farmer.htm

43 Peter Hall wrote in his foreword to *Sydney Opera House: The design approach to the building with recommendations on its conservation*: "*The purpose of this document is to provide in reasonably brief form some history and background to the important design decisions made on the job so that the maintenance and preservation of the building can be managed in the light of some continuity of knowledge. In 1966, when Jørn Utzon left the job, there was an undesirable break in that continuity. To a great extent, the resulting gap was filled by the job knowledge of the consultants, all of whom stayed on. But there were instances (the granite for the paving and cladding, for one) when there was no way of knowing what was intended and it became a case of making the best judgement in the light of the available evidence. As much as possible, such instances are to be avoided in the future, which is one of the reasons for the preparation of this report.*" (Hall 1990, p3)

44 Surviving Utzon documents, particularly drawings, prepared by his office before his departure, show clearly the extent of detailed resolution of the interiors, which although incomplete, were well advanced. His *Descriptive Narrative* of January 1965 provides many details for both exterior and interior elements. Utzon's selection of the finish for the Podium paving and cladding is clearly given in this narrative (p6), but in 1990 Hall states that "*it was not clear precisely what he had in mind for colour or surface finish.*" (Hall 1990, p52)

45 One clear example of Hall's intent to respect Utzon's vision was his choice of furniture. For the Bennelong Restaurant, the administration and artists' areas, he chose mainly 'Tulip' chairs from the Knoll range, designed in the 1950s by Eero Saarinen, the Finnish architect who had been on the assessment panel for the Sydney Opera House competition and architect for the TWA Terminal in New York. Saarinen's furniture designs are considered by many to be timeless mid 20th century classics and Hall selected them for their strong connection to Utzon and the genesis of the building itself. (Hall 1990, p197)

For various reasons, mainly functional, none of the original furniture survives on the site, except for some tables throughout the Podium and the low black leather lounges in the northern foyers.

46 Hall considered the budgetary constraints as "*a healthy discipline in detail design that undoubtedly benefitted the job. Quality where it counted most or was essential to performance was affordable, but care had to be taken to economize where possible.*" (Hall 1990, p22)

47 Hall 1990, p187

48 "*We thought it desirable that all the spaces of the Opera House be recognizably part of the same building. This implies some commonality of character throughout. The concrete walls throughout the Podium make an important contribution to this, but could not on their own be accepted, for various reasons, in areas where a higher standard of finish was required. These are the heavily used spaces, for public, artists and administration. With the decision to use the white birch veneered plywood for the Concert Hall ceiling and chair shells it seemed logical, for both practical and aesthetic reasons, to extend its use to these other areas.*" (Hall 1990, p187)

49 Based on their character and mood Hall chose different signature colours for each auditorium and its associated foyers. Cerise / purple for the Concert Hall, and red for the Opera Hall, both of which had no carpet in the auditoria; orange upholstery and blue carpet for the Drama Theatre; deep blue upholstery and grey carpet for the Playhouse. Throughout the whole of the back-of-house areas within the Podium, apart from service areas, he used a chocolate brown carpet. (Design 5 - Architects 2006, p2)

50 Utzon in *Zodiac* No. 14 explained the logic behind his proposal to use plywood elements for the corridors. His principal reason was that the constantly varying shape of the corridors made conventional ceiling and wall systems unsuitable.

"*The corridors, as Utzon rightly observed, carry people, pipes and ducts. In service areas, where there are few people, it was thought reasonable simply to expose the services. In public, artists and office areas, however, it was desirable that they be concealed. The walls of these corridors accordingly are lined on the side where services are located with moulded plywood panels. The walls opposite are simply painted concrete.*" (Hall 1990, p187)

51 Prior to its 2004 refurbishment it was referred to by Utzon in 1965 as a Chamber Music Hall and then as Recital Reception Room by Hall (1990, p28) and also by Littlemore ('*Green Book*', p65), but referred to by SOHT as Reception Hall.

52 Paragraph from Commonwealth of Australia 2006, p35

53 Commonwealth of Australia 2006, p36

54 Pritzker Prize citation 2003, cited in Commonwealth of Australia 2006, p36

55 Letter dated 29 September 1964 from Utzon addressed to the Minister for Public Works on plywood constructions in the Opera House, included as Appendix 5 in Baume 1967, p144

56 Commonwealth of Australia 2006, p36

57 Commonwealth of Australia 2006, p36

58 Paragraph from Commonwealth of Australia 2006, p36

59 Weston 2002, p129 cited in Commonwealth of Australia 2006, p37

60 Murray 2004, p25 cited in Commonwealth of Australia 2006, p37

61 Murray 2004, pp26-27 cited in Commonwealth of Australia 2006, p37

62 Murray 2004, p27 cited in Commonwealth of Australia 2006, p37

63 Utzon 1965a, *Descriptive Narrative*, p4

64 Utzon quoted in Weston 2004a, p131

65 Paragraph from Commonwealth of Australia 2006, p37

66 Commonwealth of Australia 2006, p38

67 Weston 2002, p130 cited in Commonwealth of Australia 2006, p38

68 Commonwealth of Australia 2006, p38

69 Murphy 2004, p6 cited in Commonwealth of Australia 2006, p38

70 Transcript of Ove Arup's address to the Prestressed Concrete Development Group, London, on 14 January 1965, included as Appendix 1 in Baume 1967, p129. This address was given prior to Utzon's departure from the project in early 1966.
This address continues "*Also the side shells are changed to consist of a piece of sphere, flanked by two twisted surfaces connecting the side shells with the main shells. These twisted surfaces form the upper facets of the main arches, situated at the valleys formed between the side shells and the main shells or louvre shells respectively, and these arches are the backbone of each of the three groups of shells in which each hall complex is divided. These arches are also made of rather complicated pre-cast sections, and the side shells are made up of pre-cast beams and tile lids.*"

In a letter dated 29 September 1961, Utzon wrote to Henry Ashworth (Ashworth Papers, Box 1, Folder 9): "*Mr Arup has been here with us this weekend. We have found a very ingenious and marvellous way of producing the shells and they are, finally, as we want them.*" (Cited in Fromonot 2000, p85)

A month later, Arup provided his account in his letter to Ashworth dated 30 October 1961 (Ashworth Papers, Box 1, Folder 2): "*… some months ago* [prior to October 1961] *Utzon made a suggestion which seemed to be a clue to a possible solution of our difficulties. As you know, one of the things which made the construction of these shells extremely difficult was that all the surfaces were different, so that there was no possibility of repetition, which is always the key to economical construction. … in the course of our discussions, Utzon came up with an idea for making all the shells out of a uniform curvature throughout in both directions … this would mean that every segment of the shell was identical.*" (Cited in Fromonot 2000, p85)

However, the version of Ove Arup & Partners is a little different: "*It is not entirely clear who thought of this solution first. Utzon claimed that it was his, and thus it became cited as an example of his helping the engineers out of their difficulties; yet there is an even stronger case for saying that it derived from a radical rethink at Arup's, which Utzon quickly recognized as a breakthrough*" – from an account in a chapter on the history of the company in Dunster 1999. (Cited in Fromonot 2000, p133, endnote 4)

71 Nobis 2004, p47 cited in Commonwealth of Australia 2006, p38

72 Drew 1999, pp196-7 and note 40, p530 cited in Weston 2008, p133 describes the events that took place at this time; Mikami 2001, p65 recounts Utzon's explanation of his discovery; Utzon wrote about orange slices in Zodiac No. 14 (1965), p.49

73 Addis 2005 cited in Commonwealth of Australia 2006, p38

74 Commonwealth of Australia 2006, p38

75 Carter 2005 cited in Commonwealth of Australia 2006, p38

76 *The New Yorker*, 17 October 2005, p100 cited in Commonwealth of Australia 2006, p40

77 Commonwealth of Australia 2006, p41

78 Weston chapter in Watson 2006, p34

79 Comment by Richard Johnson to the author

80 Commonwealth of Australia 2006, p42

81 Lewis 1973, pp18-32

82 See also Utzon 1965b, *Zodiac* No.14

83 Utzon quoted in Utzon 2002, *Utzon Design Principles*, p41. This latest Utzon design for the glass walls was referred to and illustrated in Fromonot 2000, pp141-151. Drawings of the scheme survive in the Mitchell Library. It was further explained in 2006 by Peter Compagnoni and Clive Buhrich in their privately published work *Rethinking the glass walls of Sydney Opera House*. Compagnoni and Buhrich worked with Utzon on the glass wall design.

84 Mick Lewis of Ove Arup's firm, quoted in Utzon 2002, *Utzon Design Principles*, p30 and in Compagnoni & Buhrich 2006, p38

85 Utzon quoted in Utzon 2002, *Utzon Design Principles*, p30

86 Commonwealth of Australia 2006, p40

87 Murray 2004, p129 cited in Commonwealth of Australia 2006, p40

88 Commonwealth of Australia 2006, p40

89 Kerr 2003, p24

90 Hall 1990, pp130-32

91 Weston 2002, p185 cited in Commonwealth of Australia 2006, p42

92 Commonwealth of Australia 2006, p43

93 Weston 2002, p186 cited in Commonwealth of Australia 2006, p43

94 Sharp 2005; Jencks 2005, p11; Goad 2005 – cited in Commonwealth of Australia 2006, p43

95 Godden Mackay Logan 2010c, pp10-12

96 Utzon quoted in Ellis 1992

97 Federal Minister for Environment Protection, Heritage and the Arts, the Hon Peter Garrett MP, 2009

98 Utzon 1965a, *Descriptive Narrative*, p2

99 Smith 2001, p69

100 Godden Mackay Logan 2010c, pp10-12

101 Bonnemains et al. 1988, p57; *Historical Records of NSW*, Vol. IV, p948

102 Godden Mackay Logan 2010b, p15

103 Jones 2006, p122 & p319

104 Jones 2006, p303

105 Drew 2000, p74

106 Jones 2006, p303

107 Watson, Anne, *Peter Hall and the Sydney Opera House: the "Lost" Years 1966-70*, PhD thesis, University of Sydney, 2013. This is discussed by Watson in some detail in Ch 9 Divided Loyalties.

108 Watson 2013. Hall's intent to adhere to Utzon's documents and ideas is evident from Hall's own descriptions in 1990, but is confirmed by Watson's research and her detailed account of Hall's design processes throughout all aspects of his work. In particular, Chapters 6, 7, 8, 9 and 10.

109 Commonwealth of Australia 2006, p46

110 Weston 2004b, cited in Commonwealth of Australia 2006, p46

111 Frampton 2004 p21, cited in Commonwealth of Australia 2006, p46

112 Commonwealth of Australia 2006 pp 46-52

Section 4.0

1 SOHT 2013, *Sydney Opera House Enterprise Strategy*, p15

Section 4.1

1 Utzon 2002, *Utzon Design Principles*, p63

2 Utzon 2002, *Utzon Design Principles*, p34

3 These three key documents were created to guide and manage the Sydney Opera House into the future. (Comment from Richard Johnson, January 2017).

Section 4.2

1 Utzon 2002, *Utzon Design Principles*, p63

2 The world heritage listing requires a listed property to be appropriately managed to protect it for present and future generations.

"*Effective management involves a cycle of short, medium and long-term actions to protect, conserve and present the nominated property. An integrated approach to planning and management is essential to guide the evolution of properties over time and to ensure maintenance of all aspects of their Outstanding Universal Value. This approach goes beyond the property to include any buffer zone(s), as well as the broader setting. The broader setting, may relate to the property's topography, natural and built environment, and other elements such as infrastructure, land use patterns, spatial organization, and visual relationships. It may also include related social and cultural practices, economic processes and other intangible dimensions of heritage such as perceptions and associations. Management of the broader setting is related to its role in supporting the Outstanding Universal Value.*"
(Operational Guidelines for the Implementation of the World Heritage Convention, UNESCO, revised 2015, paragraph 112)

3 Sydney Regional Environmental Plan (SREP) (Sydney Harbour Catchment) 2005, Part 5 – Heritage, Division 3A, Clause 58B

4 *Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas*, adopted by ICOMOS in Xi'an, China, in October 2005, and available from the following website: www.international.icomos.org/charters.htm

5 ibid., text in italics taken from Articles 1, 2 and 3.

Section 4.3

1 Operational Guidelines for the Implementation of the World Heritage Convention, World Heritage Centre, UNESCO, as revised January 2008, paragraph 49

Section 4.4

1 Utzon 2002, *Utzon Design Principles*, p48

2 Utzon 2002, *Utzon Design Principles*, p40

3 Hall, like Utzon, very wisely advised that when changes are contemplated, "*that they be not considered in isolation but that their effect on the whole building be taken into account. Great care was taken in the design to relate the parts to the whole and produce the feeling, despite its size and the diversity of its functions, that it is one building. Isolated detail changes are enough to undermine that quality.*"
(Hall 1990, p199-200)

4 Utzon 2002, *Utzon Design Principles*, p52

5 Utzon 2002, *Utzon Design Principles*, p53

ENDNOTES

6 Operational Guidelines for the Implementation of the World Heritage Convention, World Heritage Centre, UNESCO, revised 2015, paragraph 78

7 Operational Guidelines for the Implementation of the World Heritage Convention, World Heritage Centre, UNESCO, revised 2015, paragraph 82

8 Refer to Commonwealth of Australia 2006, pp53-56

9 Operational Guidelines for the Implementation of the World Heritage Convention, World Heritage Centre, UNESCO, revised 2015, paragraph 88-89

10 *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* 2013, Article 3, clause 3.1

11 Kerr 2003, p44

12 Kerr 2003, p44

13 Utzon 2002, *Utzon Design Principles*, p40, p48 & p52

14 Utzon 2002, *Utzon Design Principles*, p50

15 Utzon 2002, *Utzon Design Principles*, p50

Section 4.5

1 Utzon, letter dated 7 June 2006 to Sydney Opera House Trust

2 Kerr 2003, p48

3 Utzon 2002, *Utzon Design Principles*, p10

Section 4.6

1 Utzon 2002, *Utzon Design Principles*, p67

2 *Sydney Opera House – Outdoor Events & Activities – Heritage Guidelines*

3 Kerr 2004, p3

4 Refer to *Sydney Opera House – Outdoor Events & Activities – Heritage Guidelines*

5 Utzon, letter dated 2 January 2006 to Sydney Opera House Trust

6 Utzon, letter dated 2 January 2006 to Sydney Opera House Trust

7 Utzon, letter dated 2 January 2006 to Sydney Opera House Trust

8 Utzon, letter dated 7 June 2006 to Sydney Opera House Trust

9 Utzon 1962, *Blue Book*

Section 4.7

1 Utzon 2002, *Utzon Design Principles*, p9

2 Utzon 2002, *Utzon Design Principles*, p58

3 Utzon 2002, *Utzon Design Principles*, p18. This is a mis-quote of Louis Kahn's famous comment "*The sun never knew how great it was until it struck the side of a building.*" The occasion of Kahn's comment has not been sourced for this CMP but it appears that he was speaking generally, and not specifically about the Sydney Opera House.

4 Author's discussion with Richard Johnson, April 2016

5 Hall 1990, p42

6 Kerr 2003, p52

7 Utzon 1965, *Descriptive Narrative*, p4

8 "*On the whole, the results were not too bad. The geometry, described in detail in "Sydney Opera House Glass Walls" got better as the constraints decreased. Probably the side shells, where the geometry is simply a (sic) extension of the roof geometry, are the most successful. Looked at from the inside they are fine, but from the outside the corners stick out too far. All kinds of alternatives, none of them computable, were studied in the attempt to avoid that, but they were not any better and in that they obviously were not part of the overall geometric system they probably would have looked worse.*" (Hall 1990, p171)

9 Utzon, Jørn, July 2001, *Virtual Tour of the Sydney Opera House with comments by Jørn Utzon*, transcription in English, pp67-71

10 Refer to Croft & Hooper, 1973, pp31-32

11 Kerr 2003, p53

12 Utzon 2002, *Utzon Design Principles*, p9

13 Utzon 2002, *Utzon Design Principles*, p9

14 Utzon 2002, *Utzon Design Principles*, p9

15 Utzon, Jørn, July 2001, *Virtual Tour of the Sydney Opera House with comments by Jørn Utzon*, transcription in English, p41

16 Utzon, Jørn, July 2001, *Virtual Tour of the Sydney Opera House with comments by Jørn Utzon*, transcription in English, p39

17 Utzon 2002, *Utzon Design Principles*, p49

18 Hall 1990, p200

19 "*Its solution seemed to call for elements of either very large or very small scale, with the edges strongly defined and some kind of architectural organization of pattern. Perhaps the best model was St. Peter's Square, Rome, where a combination of granite setts and travertine strips relate the paving to the great scale of St. Peters and the Bernini Colonnade.*" (Hall 1990, p63)

20 Hall 1990, p64

21 Utzon, Jørn, July 2001, *Virtual Tour of the Sydney Opera House with comments by Jørn Utzon*, transcription in English, p27

22 Utzon 2002, *Utzon Design Principles*, p7

23 Fromonot 2000, p135

24 "*The finish is obtained by grinding flat the surface of the facing slabs on special steel tables. This gives a perfectly flat surface which exposes the body of the granite chips, showing a pinkish-grey colour. However, this surface has a tendency to shine which, in view of the desire for a contrast with the shiny roof tiles, it was desired to avoid. Therefore, a process of needlehammering is carried out, giving a slightly matt surface which should also have the advantage of weathering evenly.*" (Utzon 1965a, *Descriptive Narrative*, p6)
Kerr (2003, p56) verified these same points with Bill Wheatland who had worked in Utzon's office.

25 "*Utzon had been developing the design with Monier, one of the largest building material suppliers in the country. In 1966 he left drawings which made clear his ideas for shapes and modules, but it was not clear precisely what he had in mind for colour or surface finish. At Monier's casting yard samples of three finishes had been made - a black granite exposed aggregate needle-pointed, producing a dark grey matt finish, pink Tarana granite exposed aggregate needle-pointed, producing a very pale pink matt finish, and the same aggregate acid-etched and satin polished. The black material was ruled out as too strong a colour and one which would be of so dark a tone that it would be out of character with the foreshore colours of Sydney Harbour, which are generally those of sandstone, whether natural rock or sea walls. The acid-etched, satin polished version was selected as strong enough in colour and tone without being brutal, because the polish showed up the character of the stone.*" (Hall 1990, p52).
From these words of Peter Hall in 1990, it would appear that he was not aware of Utzon's 1965 *Descriptive Narrative*, now found in the State Records NSW.

26 Utzon 1965, *Descriptive Narrative*, p3

27 Waters 2005, p2

28 Utzon, Jørn, July 2001, *Virtual Tour of the Sydney Opera House with comments by Jørn Utzon*, transcription in English, p41

29 Utzon, letter dated 2 January 2006 to Sydney Opera House Trust

30 "*The decision to take all the skirting panels below the water line was felt to be aesthetically right, but there was really no option, as the Maritime Services Board considered the short version would be a hazard for small boats and insisted on complete enclosure of the Broadwalk's perimeter.*"
(Hall 1990, p52)

31 Kerr 2003, p57

32 Utzon 1965, *Descriptive Narrative*, p10

33 SOH *Strategic Building Plan*, SOHT, 2001 pp82-83

34 Utzon's drawings consistently show an indented seawall at the east end of this concourse to allow ferry and water taxi passengers to alight undercover. This arrangement was the generator for the narrower flight of stairs to the east of the concourse leading to the top of the Podium.

Section 4.8

1 Utzon 1965, *Descriptive Narrative*, p18

2 Ziegler 1973, p70

3 Utzon 1965, *Descriptive Narrative*, pp11-12

4 Utzon 2002, *Utzon Design Principles*, p59

5 "*Achieving the required seating area and volume was going to be a very tight fit. Reasonable circulation space had to be preserved outside the hall, while the sloping shells severly limited headroom. There was simply not enough area for the seats without the addition of some form of side and rear galleries. Both these possibilities had been recognised by Utzon.*" (Hall 1990, p74)

6 "*The walls will be covered wholly or in part by modular sized, moulded plywood panels, finished in the natural colour of the wood. The panels are stopped short of the ceilings and the floors, where they form a continuous fitting for concealed light.*"
(Utzon 1965, *Descriptive Narrative*, p16)

7 Design 5 - Architects, 2006, pp22-23

8 Utzon 2002, *Utzon Design Principles*, p75

9 Utzon 2002, *Utzon Design Principles*, p60

10 "*The first step was to define priorities, since one hall cannot be all things to all uses if it is to achieve excellence for any. These priorities were:*
Concerts
- *Symphony concerts including organ recitals*
- *Chamber music and school concerts*
- *Jazz concerts and recitals*
- *Recording of performances*

Conferences and Congress
Film projection" (Hall 1990, p73)

11 "*For visual reasons, it was decided to use the floor material for the wall and box front surfaces below the ceiling. Again the requirement was thick wood, also with a non-reflective finish, partly because of the down lights and partly because perimeter walls are wall-washed at the wall and ceiling junction. Some capacity for sound absorption was required and provided by leaving out laminates to provide vertical slots. These could be filled in with strips of wood if required for fine tuning. For sound diffusion, it was desirable that the box fronts be arranged as a zig-zag on plan. It was also desirable that they slope outwards, to reflect some sound upwards into the ceiling zone. The zig-zag was of major visual concern. The planes needed for acoustic reasons needed to be large; architectural reasons said their scale should be fairly small. Acousticians and architects agreed on a dimension both could live with, smaller than Jordan's original request and a little larger than the architects'.*" (Hall 1990, pp80-81)

12 "*The other major element required for acoustics was the reflectors over the platform. The model tests had shown them to be valuable, but they were likely to present a visual problem in that they would divide the volume above the platform. The organ builder was worried about their effect for organ recitals. Jordan* [V.L. Jordan, Danish acoustics engineer] *was asked if they could be small and transparent, to avoid the need for them to contain the platform lighting, as they do it at Rotterdam. For the model tests, acrylic reflectors were tried, convex on top and bottom surfaces, a bit like flying saucers. This didn't solve the visual problem, so he was asked if any other form was possible. His response was that quite a large diameter was needed for each reflector, but that they would be equally effective if they were hollow in plan, like a doughnut. The doughnut idea appealed, because enough light would get through from the crown for lighting in the reflectors to be unnecessary.*" (Hall 1990, p82)

13 Beale, J., letter dated 23 March 2009 to Mr Daryl Maguire MP, copy held by SOH

14 "*It seemed logical, in that case, to eliminate the stage machinery. Doing so made the related spaces below stage redundant to the auditorium, so other uses were found for them. Hindsight and the success of the hall for opera bring into question the wisdom of this decision. Perhaps the opportunity was lost to make a concert hall with extraordinary adaptibility in that it could have had the potential for the introduction of large built sets by means of the elevator platforms already in store. At the time, however, neither of the protagonists in the struggle for priority in the hall was in a mood for compromise and the possibility was not studied.*" (Hall 1990, p74)

15 Utzon 1965, *Descriptive Narrative*, p2

16 Utzon 2002, *Utzon Design Principles*, p59

17 Utzon 1965, *Descriptive Narrative*, p15

18 Hall 1990, pp130-132

19 Hall 1990, p130

20 Littlemore, *Green Book*, p27

21 Hall 1990, p133

Section 4.9

1 Utzon 1965, *Descriptive Narrative*, p10

2 Ove Arup letter to Davis Hughes, 27 January 1970. Quoted in Kerr 2003, p62

3 Utzon 1965, *Descriptive Narrative*, p11

4 Sydney Opera House Trust 2001 (December), *Strategic Building Plan*, p79

5 Utzon, quoted in Sydney Opera House Trust 2001, p52

6 The methodology for cleaning and conserving the folded concrete beams at the Opera House was researched and first tested on the beams in the Utzon Room. The research and methodology has been described in an article "Sydney Opera House – Analysis and Cleaning of the Concrete" by Paul Akhurst, Susan Macdonald & Trevor Waters (2005) Sydney Opera House, Journal of Architectural Conservation, 11:3, 45-64, DOI: 10.1080/13556207.2005.10784952.

7 Utzon, letter dated 2 January 2006 to Sydney Opera House Trust

8 Utzon 1965, *Descriptive Narrative*, p26

9 Jørn Utzon's views on this matter were explicitly stated in a letter written by his son Jan. "*From an architectural point of view, placement of a bar in*

the original location [at the south end of foyer] *will severely disturb the potential beauty of the Western Foyer, whereas a placement under the bulkhead is in keeping with the architectural logic of the entire foyer.*" Utzon, letter dated 18 September 2007 to Sydney Opera House Trust

10 Jan Utzon confirmed his father was the designer of the Western Foyer ceiling panels in an email to the author, 5 April 2011.

11 Utzon, letter dated 18 September 2007 to Sydney Opera House Trust

12 Utzon indicated a Le Corbusier tapestry for the Box Office Foyer: "*I am going to make a building, here you came in and up the staircase, you are in a darkened room but the staircase is obvious for the staircase is well lit...a period passes and you came up and in front of you, you see a big tapestry by le Corbusier.*" Utzon 2002, *Utzon Design Principles*, p59

13 Utzon 1965, *Descriptive Narrative*, p16

14 "*Because of the straightforwardness of the space and the roughness of the side walls it was decided that the colour scheme should be dark, minimising the "presence" of the room and focusing attention on the stage. The darkness is relieved by the theatrical red of the chair upholstery and the white birch elements of the chairs.*" (Hall 1990, p190)

"*With the stage as the focal point of the room it was thought appropriate that the proscenium be the "principal object of regard" (Waldram's phrase) both before and during performance. Accordingly, the John Coburn "Curtain of the Moon" was commissioned and special lighting for it provided. The colours of the curtain were intended to be calm and sympathetic with the kind of performances expected in the drama theatre, in contrast to the grander and possibly more exciting nature of opera productions. In practice directors do not all want to use the Curtain of the Moon. Since they normally provide a curtain specially designed for the production, there is always something at the proscenium for the audience to look at.*" (ibid., p191)

15 Hall 1990, p193

16 "*But assessed on architectural grounds, it is not a bad room, with a height and volume not often to be experienced in modern buildings. Slightly mad, maybe, because of its origins, but could not that be said of the whole Opera House?*" (Hall 1990, p193)

17 Kerr 2003, p80

18 Sydney Opera House Trust 1973

19 Hall 1990, p195

20 Hubble 1983, *More Than An Opera House*, p11

21 Utzon 1965, *Descriptive Narrative*, p10

Section 4.10

1 Utzon 1965, *Descriptive Narrative*, p20

2 Hall 1990, p23

3 Utzon 1965, *Descriptive Narrative*, p21

4 Utzon 1965, *Descriptive Narrative*, p2

5 Utzon 1965, *Descriptive Narrative*, p23

6 Utzon 1965, *Descriptive Narrative*, p18

7 Utzon 1965, *Descriptive Narrative*, p19

8 Utzon 1965, *Descriptive Narrative*, p21

9 Utzon 2002, *Utzon Design Principles*, p74

Section 4.11

1 Littlemore, *Green Book*, p50

2 Hall 1990, p203

3 Utzon 1965, *Descriptive Narrative*, p14

4 Fritz Hansen website: http://www.fritzhansen.com/fh/microsites/museum/htmlversion/showproduct.asp?lang=uk&thumbimage=p5_ju_angle.jpg&designer=Jørn+Utzon

Section 4.12

1 Design 5 - Architects 2006

2 Utzon, quoted in Sydney Opera House Trust 2001, p52

3 Utzon 1965, *Descriptive Narrative*, p13

4 Hall commented on the curtains in 1990: "*As in the Drama Theatre, a tapestry curtain was commissioned and its own lighting provided for it. This is the "Curtain of the Sun", so called by its artist, John Coburn, who saw its strong warm colours as evocative of the atmosphere of opera. Woven at Aubusson, France, the curtain is a work of art in its own right. In practice, as in the Drama Theatre, it is not always used by producers who prefer to set their own pre-performance mood.*" (Hall 1990, p133)

5 An extensive list of artworks acquired by the Sydney Opera House Trust can be found on The Wolanski Foundation website <www.twf.org.au/library/cataloguеartworks.html>

6 Sydney Opera House, Artworks Management Policy, November 2000

Section 4.13

1 Utzon 1965, *Descriptive Narrative*, p20

2 Refer to Utzon 2002, *Utzon Design Principles*, p62

3 The sea water exchange system (referred to by Utzon as a "*heat pump and refrigeration system*"), "*was the first to be proposed for the Sydney Circular Quay area.*" (Utzon 1965, *Descriptive Narrative*, p43)

4 Based on conversation in late 2016 with Lou Rosicky, one of the Theatre Managers at Sydney Opera House

Section 4.14

1 Utzon 2002, *Utzon Design Principles*, p24

2 Utzon 2002, *Utzon Design Principles*, p12

3 Steensen Varming 2007

4 Utzon 2002, *Utzon Design Principles*, p82

5 Kerr 2003, p40

6 Utzon 2002, *Utzon Design Principles*, p83

7 Hall 1990, p183

8 Hall 1990, p183

9 Utzon 1965, *Descriptive Narrative*, p67

10 Kerr 2003, p66

11 Hall 1990, pp180-181

12 Kerr gives a detailed account of the lighting scheme proposed in Waldram's report of February 1968. It is worth repeating here because it encapsulates Utzon's ideas and the progression through the various public spaces. (Kerr 2003, pp66-67)

"***Vehicle arrival concourse***
The vehicle arrival concourse was to have subdued general lighting "as a preparation for later views", supplemented at kerbside by sufficient lighting for dismounting from and mounting cars. In addition concealed lighting of low intensity was to be used to emphasise the folded beams overhead (Waldram, 5–6).

Stairs to Box Office foyer
The four stairways which led to the Box Office foyer were to be "more brightly lit" to attract arrivals to them and were to have their folded beams emphasised (ibid, 6).

Box Office foyer
The level of lighting in the Box Office foyer was to be "not very high" but patrons were to be attracted to specific "well lit" destinations such as the ticket sales counter and the stairs to the foyers under the southern shells (ibid, 7).

Stair canopy to southern foyers
The folded beams which form the canopies over the stairs to the southern foyers terminated in curious scroll soffits and were to be revealed by lighting (ibid, 7).

Southern and side foyers under the shells
The dramatic contrast between the low Box Office with its modest lighting levels and the southern foyers with their soaring rib vaults was intended to create an "effect of awe". Foyer lighting was to emphasise architectural qualities. For example, the rib pedestals and spreading ribs should be clearly revealed but the brightness should fade out towards the summit to enhance the effect of height. "There should be adequate light on the floor" and "the lighting should be such that people look attractive and can be well seen" (ibid. 7–8).

The side foyers which pass on either side of the major auditoria were to be emphasised by "local lighting which would serve to draw the visitor to one or the other". As those foyers which overlook the harbour had fine views, lighting should be at a low level and care taken to eliminate reflections. Emphasis lighting was needed at entry points to the auditoria and to the broad foyer steps by which patrons ascend to the upper parts of the auditoria and northern foyer. The walls of the auditoria were panelled in wood and were to be "gently washed with light" (ibid, 8–9).

Two years earlier, when speaking of the foyers underneath the shells, Utzon had said:

I want you to imagine the sort of lighting I want. The movement of people is to be accentuated by their passing through lighting of varying intensity.

I want the patrons to be able to see the harbour at night. If there is a ferry passing by, I want them to see it, so lighting in the lounges and foyers is to be arranged in a way that night views will be seen clearly without internal reflections (Utzon to Matthews, Anderson & Cochrane, 82).

The northern foyers
The lounges Utzon refers to are set on two levels in the northern foyers overlooking the main shipping channel and the north shore. The prevention of reflection was to remain a leit-motif in all utterances on the design of lighting for areas exposed to harbour views. The elimination of reflection in such areas was achieved by Waldram's scheme of placing a black band of louvres above the outward tilted glass (fig.50).

The northern foyers are complex interrelated spaces with an arrangement analogous to the landings of an immensely broad imperial staircase (fig.49). The brush box clad rump of the auditoria and the glass walls with their spectacular geometry almost meet overhead.

Waldram suggested that the upper and outer part against the glass should receive "subdued lighting" and that the inner and lower part should be provided with "more light". The brush box soffits of the auditoria were to be washed in light and would in turn provide fixing points for lighting the area. In addition the beams of the ceilings and stair soffits were to be emphasised and bar area well lit. It was an adequate solution for the uses originally intended, but by the 1990s new activities required supplementary light. As elsewhere, the gap between original intention and actual performance was becoming marked." (Kerr 2003, pp66-67)

Section 4.15

1 Utzon 2002, *Utzon Design Principles*, p67

2 Utzon, letter dated 2 January 2006 to Sydney Opera House Trust "*I feel that the large, box-like, rectangular signs, located at the Western Broadwalk, should be replaced with some that are more in harmony with the Design Principles. These are to be designed.*"

3 Source: Peter Marshall, formerly of SOH Building Development and Maintenance

Section 4.16

1 Utzon 1965, *Descriptive Narrative*, p3

2 Godden Mackay Logan 2010, Sydney Opera House: *Vehicle and Pedestrian Safety Project* and Forecourt: Aborignal Cultural Values Assessment

3 *The Burra Charter* 2013, Article 1.17

4 *The Burra Charter* 2013, Explanatory note to Article 1.17

5 *The Burra Charter* 2013, Article 22

6 SOHT 2013, *The Sydney Opera House Enterprise Strategy*, p4

7 SOHT 2013, *The Sydney Opera House Enterprise Strategy*, p19

Section 4.17

1 Utzon 1965, *Descriptive Narrative*, p68

2 SOHT 2001, Sydney Opera House *Strategic Building Plan*. Shown on plan 'Accessible public space' p27 and described on pp68-69

3 *Sydney Opera House Access Guide*, 2007

4 Kerr 2003, p63

5 Kerr 2003, p63

Section 4.18

1 Utzon 1965, *Descriptive Narrative*, p3

2 UNESCO 2013, *Operational Guidelines for the Implementation of the World Heritage Convention*, paragraphs 108-109

3 Sydney Opera House *Concrete Conservation Strategy* Annual Progress Report to the Getty Foundation, Final Report, 1 September 2016

4 Utzon 1965, *Descriptive Narrative*, p5

5 Messent 1997, p390

6 Hall 1990, p201

7 Sydney Opera House *Concrete Conservation Strategy* Annual Progress Report to the Getty Foundation, Final Report, 1 September 2016

8 Utzon expressed these views in 1965: "*The first portion of the building was made of concrete poured in situ and the results showed that it would not be possible, neither technically nor economically to see the project through by this method. The folded concrete beams under the concourse are an example of the unsatisfactory results of this technique, - a series of beams, each different from its neighbour, and not a continuous even surface as visualised.*" (Utzon 1965, *Descriptive Narrative*, p4)

"*A decision has to be made on the inferior finish of the folded beams under the concourse – this will influence the off-form finishes of the above.*" [other off-form concrete surfaces within the podium] (ibid., p25)

9 Messent 1997, p391

10 "*The unsuccessful results in the concourse as well as other areas during Stage I proved that the only way to attack the problem of the other major parts of the building, - the shells and the cover for them, the paving and cladding, and the glass walls, would be to bring them under control by a strict geometry and then divide them into uniform components, which can be produced by machine under strict control both as regards dimensions and quality.*

The shells were therefore re-designed to a new geometry as parts of a sphere and to be made up of standard ribs, cast in standard forms to the maximum size which can be handled mechanically on site. The high class concrete finish, which will be the result of such a procedure makes any further treatment of the surfaces unnecessary and the underside of the shells where it is shown outside, or through the glass walls, will show the concrete as it comes off the form." (Utzon 1965a, *Descriptive Narrative*, p5)

11 "*The concourse area needs more light, in order for the area to have a more welcoming ambience. It is relatively dark space, due to the materials used and primarily due to the contrasting harsh sunlight at the eastern and western sides. One way to remedy this is to raise the light level in the area artificially. Another way could be to white wash the concrete surfaces of the ceiling above the area. Whitewash can be cleaned off again, or applied in such a way that it does not camouflage the concrete texture. Trials in `selected areas would be needed to establish the correct procedure.*" (Utzon 2002, *Utzon Design Principles*, p24)

12 Kerr 2003, p88

13 Messent 1997, pp189-192

14 Ackhurst, Macdonald and Waters 2005, Sydney Opera House – Analysis and Cleaning of the Concrete. Further information on this technique was gained through discussions with Richard Johnson, April 2016.

15 Kerr 2003, p88

16 Littlemore, *Green Book*, p70

17 Peter Clark & Associates, 2008, *Search for Suppliers of Architectural Bronze Extrusions, Search Notes, Material, Specification and Recommended Supplier.* Specification for the alloy for this work is provided in Appendix 2 of the report.

18 Waters 2005, *Report on the Maintenance of Bronze Components, Sydney Opera House* – Issue C April 2005

19 Littlemore, *Green Book*, p35

20 Littlemore, *Green Book*, p154

21 Littlemore, *Green Book*, p154

22 Timber in Internal Applications No. 23, http://www.timber.org.au/resources/23

23 Utzon letter 2 January 2006 to SOHT

24 Utzon Room Technical and Production Information – revised March 2016, p13, accessed November 2016 from SOH website, http://www.sydneyoperahouse.com/the_building/venues/utzon_room.aspx?mencid=meganav:The_Building:Venue_Info:Utzon_Room

25 Peter Clark & Associates, 2008, *Search for Suppliers of Architectural Bronze Extrusions, Search Notes, Material, Specification and Recommended Supplier*

26 Information supplied in a letter dated 23 March 2009 from Mr Jim Beale of Tumut to his local member Daryl Maguire MP, member for Wagga Wagga and forwarded to the Opera House by the Premier of NSW at the time. Mr Beale expressed concern at the possible removal of the Hall interiors with their white birch and brush box fitouts, and the reduced availability of these timbers. He also described the artistry and skill of those involved with selecting and matching the veneers for this fitout.

27 In Japan, particular forests are quarantined to supply timber only for the rebuilding of scared shrines such as the Grand Shrine of Ise.

28 Hall 1990, pp64-65

Section 4.19

1 Utzon 2002, *Utzon Design Principles*, p52

2 Established in 1973 by the Sydney Opera House Trust and generally known as the Wolanski Library, it housed documents, books, journals, press articles and records relating to the Sydney Opera House and its beginnings as well as its ongoing use and performances. The principal sponsors were Sydney businessman and sculptor Dennis Wolanski (1917-1992) and his son Phillip.

Following closure of the library and dispersal of its collection in 1997, the family continued its involvement in the performing arts and established The Wolanski Foundation, which among other things maintains an online catalogue of material relating to the Sydney Opera House, including details of their location.

(The Wolanski Foundation website, http://www.twf.org.au)

3 The following people were interviewed as part of this project:

People from the early construction phases:
- Ian Mackenzie – Arup
- John Nutt – Arup
- John Kuner – Hornibrook
- Malcolm and Marjorie Nicklin – MacDonald Wagner & Priddle
- Steve Tsoukalas – Hornibrooks & SOH
- Ron Bergin – Hornibrooks & Arup

Some from the mid 1980's to early 2000's:
- Malcom Brady – NSW Department of Public Works
- John Dare – NSW Department of Public Works & SOH
- Colin Ging – consultant

And some who have a current role with SOH:
- Mike Cook – Arup
- Robert Hale – Arup
- David Moorehead – Arup
- Greg McTaggart – SOH
- Bob Moffat – SOH
- Dean Jakubowski – SOH

A group interview with Ian Mackenzie, John Dare, and John Nutt was also recorded and transcribed.

4 Kerr 2003, p98

5 For the purpose of the CMP, Building Information Modeling and Building Information Model (both referred to as BIM) are defined as follows:

Building Information Modeling *is the development and use of a computer software model to simulate the construction, maintenance and operation of a facility. The resulting model, a* ***Building Information Model****, is a data-rich, object-oriented, intelligent and parametric digital representation of the facility, from which view and data appropriate to various user's needs can be extracted and analyzed to generate information that can be used to make decisions and improve the process of delivering the facility.* (The Associated General Contractors of America (AGC), Contractor's Guide to BIM, Edition 1, 2010, p3.) This information supplied to the author by the Manager, Building Information at SOH.

Section 4.20

1 Utzon 2002, *Utzon Design Principles*, p52

2 Excavation for a lift pit adjacent to the Utzon Room in 2004 revealed a section of the outer wall of the 1817 Fort Macquarie structure. This enabled a more accurate prediction to be made on its location relative to the existing structures above.

3 Godden Mackay Logan 2010a

4 Thalis and Cantrill 2013

5 Thalis and Cantrill 2013

6 Thalis and Cantrill 2013

7 Thalis and Cantrill 2013

8 1800 Grimes' Plan of Sydney, reproduced in HRNSW, 1897, Vol V. opp. p.838, cited in First Views of Australia

9 Approximate location of Bennelong's Hut, based on records and contemporary illustrations

10 Sydney Opera House Eminent Architects Panel, Terms of Reference (2010), Section 3: Purpose

11 Sydney Opera House Eminent Architects Panel, Terms of Reference (2010), Section 2: Guiding Documents

12 Late Night Live, 23 January 2014, ABC Radio National, Phillip Adams interview with Deborah Cheetham.

13 Godden Mackay Logan 2010, *Sydney Opera House: Vehicle and Pedestrian Safety Project and Forecourt: Aboriginal Cultural Values Assessment*

14 Adapted from Godden Mackay Logan 2010, *Sydney Opera House: Vehicle and Pedestrian Safety Project and Forecourt: Aboriginal Cultural Values Assessment*

15 Periodic Reporting on the Implementation of the World Heritage Convention – paragraphs 199 and 201, accessed 13/6/2011 from website, http://whc.unesco.org/pg.cfm?cid=2#2

16 *Implications of Climate Change for Australia's World Heritage Properties: A Preliminary Assessment*, 2009, prepared by The Australian National University for the Department of Climate Change and the Department of the Environment, Water, Heritage and the Arts

Section 5

1 The Government of Australia 1996, *Sydney Opera House in its Harbour Setting: Nomination of Sydney Opera House in its Harbour Setting for inscription on the World Heritage List by the Government of Australia,* p 76.

2 The Government of Australia 1996, p 76.

3 The Government of Australia 1996, p 76.

4 The Government of Australia 1996, p 76.

5 Turbet 2001, p21

6 Godden Mackay Logan 2010c, pp10-12

7 Kerr 2003, p1. The Aboriginal name for Bennelong Point is referred to in various sources as 'Tubow-gule', 'Too-bow-gu-lie', 'Tobegully', 'Jubughalee' and 'Jubughallee'.

8 Kerr 2003, p3

9 Kerr 2003, p1 and Hunter 1793, pp166-169. The original spelling of Bennelong and Colbee's names are quoted directly from Hunter.

10 It was a "*substantial brick house (built at Bennelong's) earnest request and at a site of his own choosing and that 'in his reports Phillip was always careful to refer to this grace-and-favour dwelling as a 'hut', but Collins makes clear that the 'hut' was 'a brick one twelve feet square, covered with tiles.*" (Clendinnen 2005, p137)

11 Kerr 2003, pp1-2

12 Hunter 1793, pp210-213

13 Collins 1798 [1975, pp118&122] cited in Attenbrow 2002, p137. The Aboriginal name for the ceremony provided by Keith Vincent Smith in email correspondence with the authors in May 2013.

14 McBryde 1989, p17 cited in Kerr 2003, p2

15 Kerr 2003, p2

16 Kerr 2003, pp3-4

17 Kerr 2003, p3

18 Kerr 2003, p4

19 *Australian Dictionary of Biography*

20 Kerr 2003, p4

21 Kerr 2003, p6

22 NSW State Heritage Inventory: Conservatorium of Music

23 Kerr 2003, pp5&9

24 SOH website: Play, 'Revealing Archaeology', http://www.sydneyoperahouse.com/play/newvideos/newvideos.aspx?videoid=3691010840001

25 Kerr 2003, p7

26 State Records NSW, SR Item Map No. 5628, dated January 1845

27 Kerr 2003, p10; State Records NSW, AO Plan No. 1306, showing drill shed

28 Kerr 2003, p10

29 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1788_1953.aspx

30 Kerr 2003, p11

31 State Records NSW, AO Plan No. 608, dated c.1887

32 Jones 2006, p5

33 State Records NSW, AO Plan No. 1306, dated 7/10/1890

34 State Records NSW, AO Plan No. 1308, dated 1891

35 State Records NSW, AO Plan No. B1905/10192. Metropolitan Detail Survey M Ser 4 811.17/1 Sydney Sheet P4, 1894

36 Kerr 2003, p11; State Records NSW, AO Plan No. 521, dated 1899

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37 Kerr 2003, pp10-11; State Records NSW, AO Plan No. 61078, dated 1901

38 Royal Australian Historical Society plaque at Covered Concourse

39 Keenan 1991

40 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1788_1953.aspx

41 Obituary by Ted Farmer (NSW Government Architect, 1958-1973, who worked with Hall at the NSW Department of Public Works), *Sydney Morning Herald,* 13 August 1995; Drew 2000, p116

42 Jones 2006, pp122&319

43 *Australian Dictionary of Biography*

44 *Sydney Morning Herald*, 3 July 1947, p4

45 Kerr 2003, p13

46 Watson 2006, p40

47 Kerr 2003, p13

48 Watson 2006, p42

49 Kerr 2003, p13

50 Drew 2000, p40

51 Drew 2000, p40

52 Kerr 2003, pp13-14

53 Watson 2006, p46

54 Drew 2000, p41

55 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1954_1958.aspx

56 Kerr 2003, pp14-15

57 Drew 2000, p46

58 Drew 2000, p49

59 Drew 2000, pp49&130

60 Kerr 2003, pp18-19

61 Supplement to the Concise Guide to the State Archives, Vol. 9 No. 4: 307

62 Drew 2000, p52

63 Drew 2000, p52

64 State Records NSW, Archives in Brief No. 28: 'A brief history of the Sydney Opera House'

65 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1954_1958.aspx; Drew 2000, p55

66 Drew 2000, p55

67 Kerr 2003, p16

68 Watson 2006, p8

69 'The Opera House as finally contemplated', *Gold Book*

70 Drew 2000, p58

71 *Australian Dictionary of Biography*

72 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1959_1965.aspx

73 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1959_1965.aspx

74 Ove Arup's address to the Prestressed Concrete Development Group, London, on 14 January 1965, included as Appendix 1 in Baume 1967, p129. See also the bronze plaque at the Sydney Opera House podium, demonstrating the spherical solution.

75 Supplement to the Concise Guide to the State Archives, Vol. 9 No. 4: 307

76 Jack Zunz was head of the Sydney Opera House engineering team at Arup's head office in London from 1961 and Mick Lewis led the Arup team in Sydney from 1963 (Watson 2006, p85)

77 Drew 2000, p79; Kerr 2003, p16

78 Supplement to the Concise Guide to the State Archives, Vol. 9 No. 4: 308

79 Drew 2000, p83

80 Drew 2000, p83

81 Watson 2006, p8

82 Drew 2000, p162

83 Drew 2000, p95

84 Kerr 2003, p16

85 Drew 2000, 12/8/1965, 25/8/1965, 22/9/1965, 27/10/1965

86 Drew 2000, p102

87 Cited in Baume 1967, pp84-85

88 Kerr 2003, p19; State Records NSW, Kingswood 4/7901-25

89 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1966_1972.aspx

90 'Basis of Proposal' included as Appendix 8 in Baume 1967, p150

91 Letter and statement from Utzon to the Minister for Public Works, following the tabling of the latter's 'Basis of Proposal' of 7 March – included as Appendix 9 in Baume 1967, p151

92 Included as Appendix 10 in Baume 1967, p156

93 Included as Appendix 11 in Baume 1967, p157

94 Watson 2006, p162. Part of the petition was reproduced in a newspaper article which dates the original petition to 21 March 1966 ('Retraction' statements by some members of NSW Government Architect's Branch, 1966 - see http://www.powerhousemuseum.com/collection/database/?irn=364776). Signatories of the petition and retraction included Utzon's successor, Peter Hall.

95 Watson 2006, pp156-163. The names of international architects who had expressed support for Utzon were included in a poster designed and printed in 1967 by a group of architects and designers in the Government Architect's office (Watson 2006, pp160-161)

96 Kerr 2003, p20; Fromonot 2000, p167

97 Drew 2000, p117

98 Kerr 2003, p20

99 Drew 2000, p118

100 RIBA website, http://www.architecture.com/Awards/RoyalGoldMedal/175Exhibition/WinnersBiogs/1960s/1966.aspx

101 Drew 2000, p120

102 Drew 2000, p121

103 Kerr 2003, p22-23; Drew 2000, pp121-122

104 Supplement to the Concise Guide to the State Archives, Vol. 9 No. 4: 308

105 Watson 2013, p170

106 Kerr 2003, p23

107 Jones 2006, p321

108 Institution of Engineers Australia, 'Glass Walls: ACEA Engineering Excellence Award', 1972, The Chartered Engineer, Sydney Division, December 1972.

109 Drew 2000, p131

110 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1973_1981.aspx

111 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1973_1981.aspx

112 Kerr 2003, p24

113 Drew 2000, p131

114 Kerr 2003, pp24-25

115 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1973_1981.aspx

116 Drew 2000, p128

117 Jones 2006, p321

118 The Wolanski Foundation website, http://www.twf.org.au/

119 Drew 2000, p161

120 Biennale of Sydney website, http://esvc000946.wic004u.server-web.com/Biennale2002/bos_history.asp#2

121 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1973_1981.aspx

122 RIBA website, http://www.architecture.com/Awards/RoyalGoldMedal/175Exhibition/WinnersBiogs/1970s.aspx

123 Kerr 2003, p24

124 Domicelj, J. information provided to author 2014

125 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1982_1989.aspx

126 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1982_1989.aspx

127 Icehouse fanzine website ("Spellbound"), http://www.spellbound-icehouse.org/boxeslp.html

128 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1982_1989.aspx

129 Jones 2006, p301 & p322

130 Drew 2000, p161

131 Drew 2000, p161

132 Kerr 2003, pp26-27; SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1982_1989.aspx; http://www.sydneyoperahouse.com/about/house_history/1990_1997.aspx

133 Drew 2000, pp138-139

134 Metcalf 1997, pp126-127

135 Drew 2000, p139

136 Kerr 2003, p27

137 Drew 2000, p140

138 Drew 2000, p116

139 'The Sydney Opera House Story', The Wolanski Foundation website, http://www.twf.org.au/search/sohstory5.html

140 SOHT, Annual Report, 1996, p24

141 Kerr 2003, p28

142 Domicelj, J. information provided to author 2014

143 Drew 2000, p143

144 'The Sydney Opera House Story', The Wolanski Foundation website, http://www.twf.org.au/search/sohstory5.html

145 Kerr 2003, pp30-31

146 About NSW website, http://about.nsw.gov.au/collections/doc/presentation-folder-festival-of-the-dreaming/#app=ded5&c797-selectedIndex=0

147 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1998_2003.aspx

148 Drew 2000, pp149&152

149 Kerr 2003, pp30-31

150 Drew 2000, p153

151 Drew 2000, p154

152 SOHT Chairman, Joseph Skrzynski in SOHT Annual Report 1999

153 Domicelj, J. information provided to author 2014

154 Kerr 2003, p73

155 Watson 2006, p7

156 http://www.austlii.edu.au/au/orgs/car/m2000/1.htm

157 Drew 2000, p159

158 SOHT Annual Report 2002

159 SOHT Annual Report 2002

160 The Pritzker Architecture Prize website: Jørn Utzon 2003 Laureate, http://www.pritzkerprize.com /laureates/2003/index.html

161 Jury citation for 25 Year Award (2003), Royal Australian Institute of Architects

162 *Sydney Morning Herald,* 4 October 2003

163 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/1998_2003.aspx

164 NSW State Heritage Register: Sydney Opera House

165 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/2004_2008.aspx

166 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/2004_2008.aspx

167 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/2004_2008.aspx

168 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/2004_2008.aspx Commonwealth of Australia Gazette No S132, Tuesday 12 July 2005

169 SOH website: Media Releases, http://www.sydneyoperahouse.com/About/2006_MRC_Ministerial_Release.aspx

170 SOH website: House History, http://www.sydneyoperahouse.com/about/house_history/2004_2008.aspx

171 Jury citation for NSW 25 Year Award (2006), Royal Australian Institute of Architects (NSW chapter).

172 SOH website: Building Program, http://www.sydneyoperahouse.com/About/Western_Foyers.aspx

173 SOH website: Building Program, http://www.sydneyoperahouse.com/About/Western_Foyers.aspx

174 Lisa Taylor, SOH Manager Strategic Planning, Building Development & Maintenance

175 UNESCO World Heritage List, http://www.whc.unesco.org/en/list/166

176 SOH website: Jørn Utzon, http://jornutzon.sydneyoperahouse.com/memorial.html

177 SOH website: Construction Projects, VAPS Project Information http://www.sydneyoperahouse.com/about/corporate_information/vehicle_access_pedestrian_saftety_project_overview.aspx

178 SOH website: Media Releases, http://www.sydneyoperahouse.com/about_us/community/reconciliation_action_plan.aspx

179 SOH website: Media Releases, http://www.sydneyoperahouse.com/About/12CorporateMediaRelease_DigitalEducation.aspx

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180 SOH website: Media Releases, http://sydneyoperahouse.com/About/12CorporateMediaRelease_ScottishTen.aspx

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