



Architectural Design Statement

2466

SYDNEY OPERA HOUSE LOWER CONCOURSE IMPROVEMENTS

LOWER CONCOURSE, SYDNEY OPERA HOUSE,
BENNELONG POINT, SYDNEY

SYDNEY OPERA HOUSE TRUST

31.07.2019

REVISION 03

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Amendments

This document has been revised and amended as follows. Amendments made as part of the current revision will generally be shown **high-lighted**. Text deleted as part of the current revision will generally be shown ~~red and struck through~~:

REV	DATE	BY	DESCRIPTION
01	26.06.2019	GC	Preliminary DA
02	24.07.2019	GC	Preliminary DA
03	31.07.2019	GC	Preliminary DA: Various images updated to correct minor inaccuracies

Contents

Introduction.....	5
Preamble.....	5
Methodology.....	5
Site and location	7
Glazing Line Amendments	10
Overview of the proposal	10
Consideration of Alternatives	13
Summary of key design aspects of the proposal	14
Response to relevant provisions of the CMP	17
Response to the Utzon Design Principles.....	23
Conclusion	25
Shade Structures	26
Overview of the proposal	26
Consideration of Alternatives	28
Summary of key design aspects of the proposal	39
Response to relevant provisions of the CMP	45
Response to the Utzon Design Principles.....	53
Conclusion	57
Response to 2016 DA Submissions.....	59
Glazing Line Amendments (Response to DA Submissions).....	59
Shade Structures (Response to DA Submissions).....	61

List of Figures

Figure 1: Site Location Plan (SIX Viewer, with annotations by the Author)	8
Figure 2: View of the Sydney Opera House from near the base of the northern Sydney Harbour Bridge Pylon. ..	8
Figure 3: View of the Sydney Opera House from across Circular Quay.....	9
Figure 4: Analysis of existing and proposed areas	10
Figure 5: Existing glazing line and internal dining area configuration.....	11
Figure 6: Proposed glazing line and internal dining area configuration	11
Figure 7: Existing glazing alignment viewed heading north towards the Opera House along the Lower Concourse pedestrian access from Circular Quay and Opera House Car Park.....	12
Figure 8: Proposed glazing alignment viewed heading north towards the Opera House along the Lower Concourse pedestrian access from Circular Quay and Opera House Car Park.....	12
Figure 9: Existing configuration of the glazing line, fire escape and stair to Forecourt.....	13
Figure 10: Proposed configuration of the glazing line, fire escape and stair to Forecourt.....	13
Figure 11: Existing and Proposed Shade Cover configurations with comparative coverage indicated.....	26
Figure 12: Indicative cross sections showing existing umbrellas and proposed shade structure configurations in three different locations: Opera Kitchen (Top), Opera Bar Upper (Middle) and Opera Bar Lower (Bottom)	27
Figure 13: Design alternative Option A as presented to the Design Advisory Panel 19th March 2019.....	29
Figure 14: Design alternative Option B as presented to the Design Advisory Panel 19th March 2019.....	29
Figure 15: Design alternative Option C as presented to the Design Advisory Panel 19th March 2019.....	30
Figure 16: Design alternative Option D as presented to the Design Advisory Panel 19th March 2019.....	30
Figure 17: View to the Sydney Opera House EXISTING.....	31
Figure 18: View to the Sydney Opera House PROPOSED	31
Figure 19: View on approach to the Opera House along the Sea Wall Promenade EXISTING	32
Figure 20: View on approach to the Opera House along the Sea Wall Promenade PROPOSED	32
Figure 21: View to the Sydney Harbour Bridge EXISTING.....	33
Figure 22: View to the Sydney Harbour Bridge PROPOSED	33
Figure 23: View to Circular Quay EXISTING	34
Figure 24: View to Circular Quay PROPOSED	34
Figure 25: Long view to Circular Quay EXISTING.....	35
Figure 26: Long view to Circular Quay PROPOSED	35
Figure 27: View across Circular Quay to Opera House precinct EXISTING	36
Figure 28: View across Circular Quay to Opera House precinct PROPOSED.....	36
Figure 29: View from Circular Quay to the Opera House Lower Concourse EXISTING	37
Figure 30: View from Circular Quay to the Opera House Lower Concourse PROPOSED.....	37
Figure 31: Typical cross section through the proposed shade structures	38
Figure 32: Typical detail at the head of each mast to integrate services (wifi, table GPS, speakers, lighting, heating & security)	38
Figure 33: Existing umbrella gusset detail	63
Figure 34: The Outdoor Bar showing the existing retractable shade blinds behind	65
Figure 35: Underside of an existing umbrella indicating the effect of up-lighting on the membrane fabric which is used to generate a low glare ambient glow	68
Figure 36: Photograph of Opera Bar at night illustrating that the effect of lighting the existing umbrellas does not distract from the presence of the Opera House	68

Introduction

Preamble

This Design Statement has been prepared to support and Environmental Impact Statement (EIS) and Heritage Impact Statement (HIS) in relation to a Development Application for proposed improvements to the Lower Concourse of the Sydney Opera House (SOH).

“Urban design and visual impacts” were identified as a principle issues of consideration in relation to this application. This Design Statement has been prepared to outline the proposals consideration of and response to these issues.

This statement has been prepared on behalf of the Sydney Opera House Trust, in consultation with the stakeholder tenants, commonly known as “Opera Bar” and “Opera Kitchen”.

This statement reflects the current architectural design and associated consultant coordination undertaken at the time of the preparation of this statement.

The improvements proposed can be broadly summarised as:

1. Amalgamation of uses on the Lower Concourse into a single DA. This aspect of the application has no material impact on the built form and related urban design and visual impact. Accordingly, this aspect of the DA is not discussed further in this Statement;
2. Glazing Line Amendments; and
3. Shade structures.

Items 2 and 3 impact materially on the Lower Concourse but are fundamentally separate packages of work that are unrelated in their urban design and visual impact. Accordingly, they are addressed in separate sections of the following statement.

Also, of note is that this development application supersedes two previous applications lodged in 2016.

These former applications were:

- SSD 7430 which related to “Shade Structures”; and
- SSD 7431 which related to “Glazing Line Amendments”.

These previous applications had similar functional and design objectives as this application. Various design issues were raised following statutory referrals, namely by The Department of Planning, The Heritage Council and The City of Sydney. These development applications were subsequently withdrawn to provide an opportunity for the issues to be properly considered and an amended design response prepared. This application reflects that “amended” design response. This statement includes commentary in response to the issues previously raised by these departments.

This statement has been prepared by Glenn Cunnington, Director of H&E Architects, Registered Architect # 6415.

Methodology

Reference is made to the following relevant documents:

- The Architectural DA Drawing Package (Refer to the Drawing Schedule below)
- The Visual Impact Study (VIS), Revision 2.0, dated 23.07.2019, prepared by H&E Architects
- Alan Coker, Respecting the Vision, Sydney Opera House – A Conservations Management Plan, Fourth Edition, July 2017, As endorsed by the NSW Heritage Council (referred to throughout this statement as the “CMP”)
- Sydney Opera House, Utzon Design Principles, May 2002 (referred to throughout this statement as the “UDP”)

This proposal recognises the core objectives of the Sydney Opera House Trust being to:

- Safeguard the cultural significance of the SOH and precinct for future generations and
- Maximise the functional performance of the SOH as a performing arts centre

This proposal has been developed in close consultation with:

- Representatives of the Sydney Opera House,
- Design 5 Architects as Heritage Consultants and specifically Alan Croker (author of the current CMP); and
- Keylan Urban Design and Planning Consultants.

Advice in relation to compliance, structure and services has been sought and coordinated with:

- Group DLA;
- Arup (Sydney); and
- Steensen Varming.

The proposal has been developed in consultation with the Design Advisory Panel and Heritage Council with presentations made on:

- 18th March 2019
- 11th April 2019
- 3rd June 2019

Advice and feedback from these presentations has been considered by the design team and directed subsequent design development.

Unless otherwise stated photography included in this report was taken by Ben Guthrie Photography and all graphics, architectural drawing and details have been prepared by H&E Architects.

Architectural Development Application Drawings

The following Development Application Drawings are to be read in conjunction with this Statement.

SHEET NUMBER	SHEET NAME	REVISION	DATE
49HE001-0001	Title Sheet and Drawing List	E	30/07/19
49HE001-0502	Site Plan - Existing	E	30/07/19
49HE001-1100	General Arrangement Plan - Lower Concourse - Existing & Demo	D	26/06/19
49HE001-1101	General Arrangement Plan - Lower Concourse - Proposed	E	30/07/19
49HE001-1102	General Arrangement Plan - Upper Concourse - Existing	D	26/06/19
49HE001-1103	General Arrangement Plan - Upper Concourse - Proposed	E	30/07/19
49HE001-3100	General Arrangement Elevation	E	30/07/19
49HE001-3200	Detail Plan - Opera Bar Glazing Line - Existing & Demo	D	26/06/19
49HE001-3202	Detail Plan - Opera Bar Glazing Line - Proposed	D	26/06/19
49HE001-3205	Detail Elevation - Opera Bar Glazing	D	26/06/19
49HE001-3220	Detail Plan - Shade Structure	E	30/07/19
49HE001-3221	Shade Structure - Reflected Ceiling Plan	E	30/07/19
49HE001-3225	Detail Section - Shade Structure	D	26/06/19

SHEET NUMBER	SHEET NAME	REVISION	DATE
49HE001-3230	Detail Elevation - Shade Structure	C	26/06/19
49HE001-3231	Detail Section - Shade Structure Services	C	26/06/19

Site and location

The Sydney Opera House is an icon of Australia that is recognised globally. It provides a world class perforating arts venue and is considered a masterpiece of late modern architecture.

The Sydney Opera House is located at the norther end of the Sydney CBD, on the tip of Bennelong Point.

Bennelong Point rests between Sydney Cove to the west and Farm Cove to the east.

Figure 1 indicates the relative location of the site in the greater context of Sydney, circular Quay and the Opera House precinct.

The Lower Concourse is located to the south-west of the main Opera House, below the Opera House Forecourt and immediately adjacent Circular Quay. *Figure 2* and *Figure 3* show the Lower Concourse in context when viewed from Circular Quay.

In combination the Lower and Upper Concourses provide the main pedestrian access to the site from Circular Quay.

The Lower Concourse also provides undercover access between the Opera House and the Opera House underground car park.

The Lower Concourse includes undercroft areas which house food and beverage operators, the Visitors Centre and Cloak Room.

The area is well known as a hospitality venue and is widely identified as an integral part of the Opera House precinct.

The Lower Concourse is accessed from the Underground Car Park and a number of flights of stairs, and escalators, that connect to the Forecourt and Circular Quay.

The concourse itself was laid in solid sawn Calca granite slabs. Linear and radial geometries combine and are ever-present in the paving pattern. This pattern establishes a grid across this part of the site that coordinates with the principal structural grid of columns and is reflected in the existing paving and cladding patterns. The geometry was arranged “to respond to the powerful horizontal element of the [Opera House podium] steps” (Hall, SOH, 65) and to compliment the composition of arcs and lineal elements which symbolise the general design of the Opera House.

Significant material elements include:

- Large sawn Calca granite pavers
- Granite cladding and internal flooring
- Precast concrete
- Concrete mushroom columns that support the upper concourse over
- Faceted full height semi-frameless glazed walls
- Bronze doors, louvres, balustrades, hardware and the like



Figure 1: Site Location Plan (SIX Viewer, with annotations by the Author)



Figure 2: View of the Sydney Opera House from near the base of the northern Sydney Harbour Bridge Pylon.

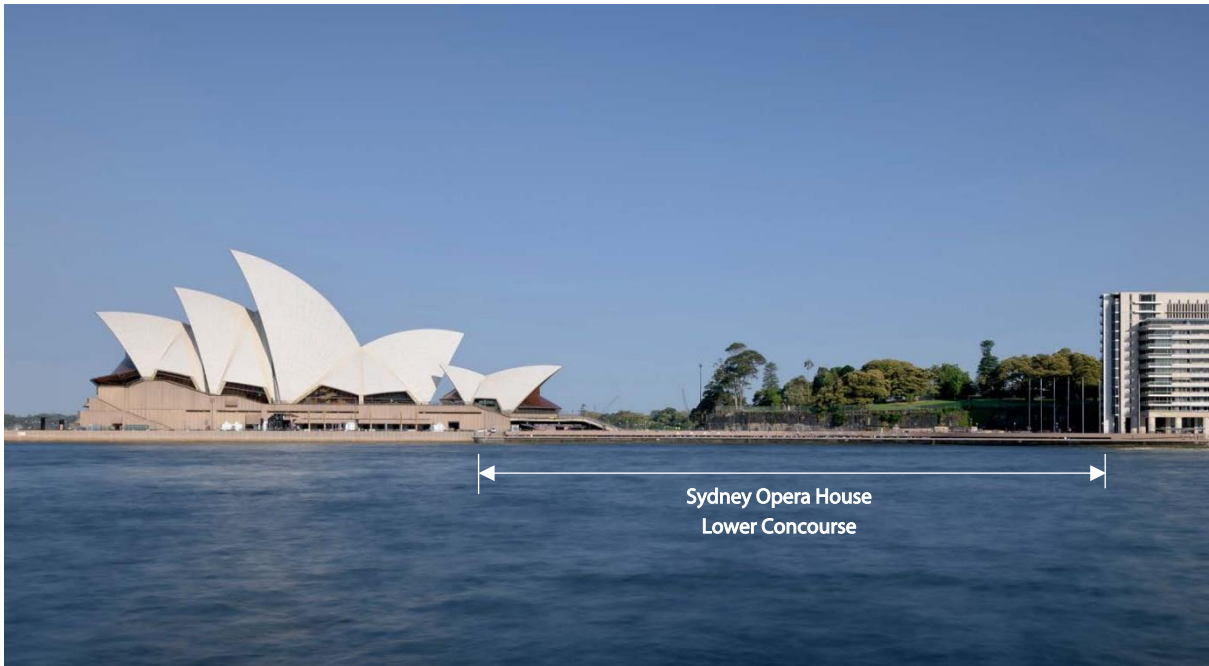


Figure 3: View of the Sydney Opera House from across Circular Quay.

Glazing Line Amendments

Overview of the proposal

The hospitality precinct that is housed in the lower concourse supports the functions of the SOH. This precinct provides essential hospitality facilities for patrons of the Sydney Opera House and the public in general. These venues are renowned for the quality of their offer and the experience they facilitate. The SOH and their operators are committed to improving the experience for their visitors whilst maintaining its cultural significance of the site.

As part of this ongoing commitment to improve facilities it is proposed to:

- Relocate the existing Fire Escape which presently divides the Meat and Cheese area from the internal dining area of the Opera Bar;
- Reconstruct the glazing line principally concentric with the major arc of the Lower Concourse. This will remove the existing pinch point along the pedestrian flow path between the existing glazing line and the outer ring of mushroom columns; and
- Reclaim the redundant external area outside of the existing Fire Escape and redeploy it as part of the Opera Bar internal dining area.

The aesthetic impact of the proposal when viewed externally will be practically imperceptible. And the proposal has no impact on significant views to and from the Opera House and its precinct other than from within the extended dining area itself.

Importantly the proposal improves pedestrian flow by removing the existing pinch point between the existing glazing line and the outer ring of mushroom columns. This is achieved whilst maintaining sufficient clearance at the bottom of the existing adjacent stair to the Upper Concourse and Forecourt and will result in restriction to pedestrian flow via this stair.

This will result in a more effective and balanced Opera Bar dining area allowing Opera Bar to greatly improve its internal dining offer. The proposal also provides additional back of house area also to the benefit of the Opera Bar tenancy.

The proposed design is of a complimentary design in regard to alignment and detail.

A complete assessment of the proposal is provided following with a comparative commentary of the differences between the existing and proposed structures.

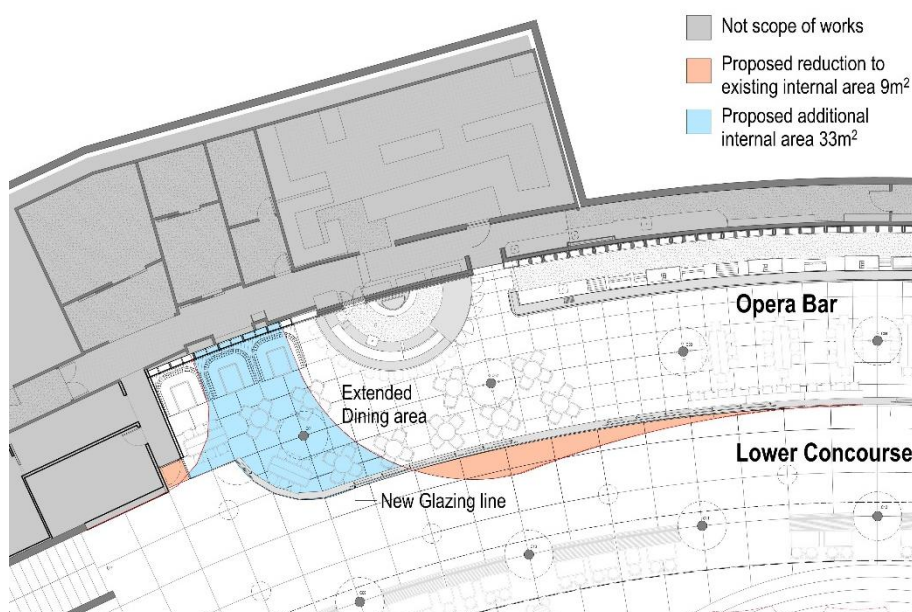


Figure 4: Analysis of existing and proposed areas

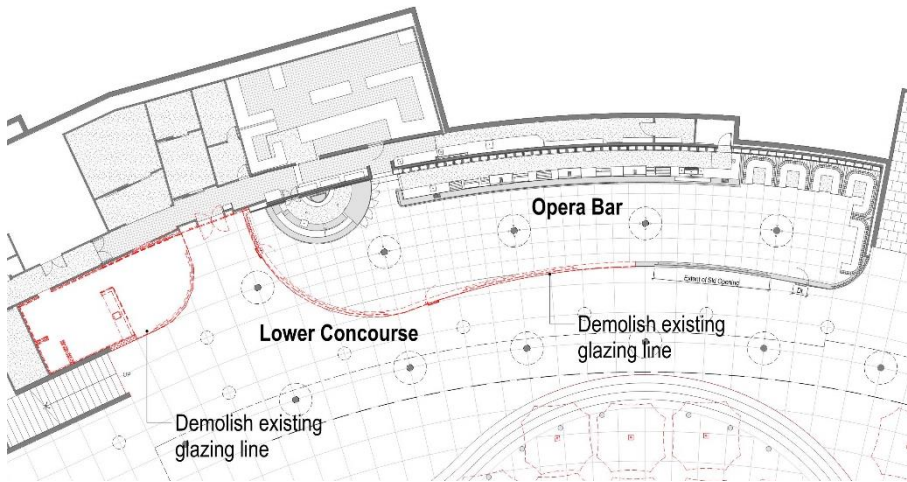


Figure 5: Existing glazing line and internal dining area configuration

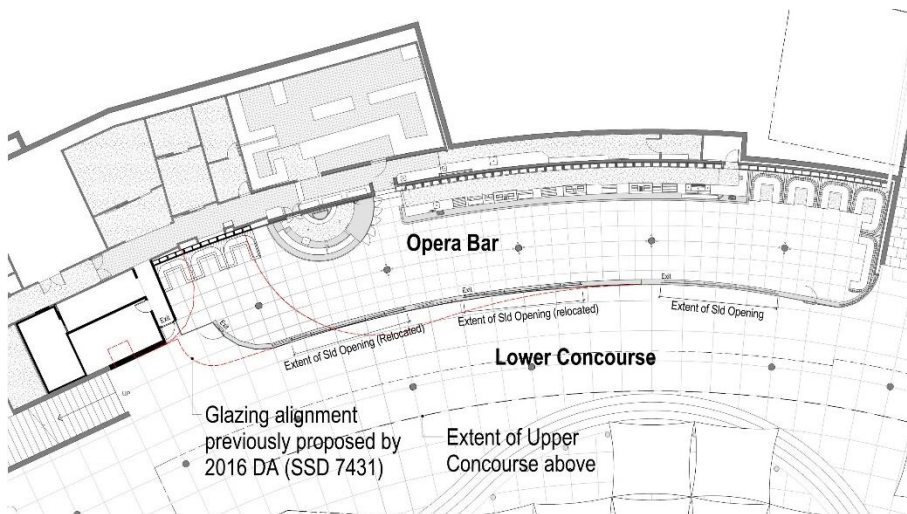


Figure 6: Proposed glazing line and internal dining area configuration



Figure 7: Existing glazing alignment viewed heading north towards the Opera House along the Lower Concourse pedestrian access from Circular Quay and Opera House Car Park



Figure 8: Proposed glazing alignment viewed heading north towards the Opera House along the Lower Concourse pedestrian access from Circular Quay and Opera House Car Park.



Figure 9: Existing configuration of the glazing line, fire escape and stair to Forecourt.



Figure 10: Proposed configuration of the glazing line, fire escape and stair to Forecourt.

Consideration of Alternatives

As part of the development of the proposed amendments to the Lower Concourse a variety of potential alternative glazing alignments were explored in order to determine the alignment with the least impact on pedestrian flow and the best aesthetic balance.

The view on approach from the pedestrian circulation area is where this modification is experienced most prevalently. *Figure 7* (existing) and *Figure 8* (proposed) illustrate the impact of the proposed modification. It is clear on review that the proposal compliments the existing geometry and strengthens the clarity of the pedestrian circulation route under the concourse and along the glazing line.

Various combinations of concentric and tangential arcs were considered as options. All of which varied only slightly. But the proposal adopted presented was ultimately considered the most appropriate arrangement.

This proposal also gave consideration to the issues raised in relation to the 2016 proposal. By comparison with the 2016 proposal this design significantly increases the space at the bottom of the stair to the Forecourt and provides a better relationship between the proposed glazing line and existing mushroom columns and light fittings. A summary of these issues and our approach to resolve them is included later in this statement.

Summary of key design aspects of the proposal

The following table provides a summary of the key design aspects of the proposal with, where applicable, a comparison with the existing:

DESIGN CONSIDERATION	EXISTING	PROPOSED
Materials and finishes	<p>The key elements of the building fabric associated with this part of the building include:</p> <ul style="list-style-type: none"> Granite paving Granite cladding Frameless glazing Timber joinery fitout (from the Stage 1 internal refurbishment) including the curved timber dowel bulkhead, joinery back wall and upholstered banquette seating. 	<p>Detail and material finish will be of a high standard commensurate with that expected of a World Heritage listed site.</p> <p>The proposal will utilise identical finishes to those existing.</p> <p>From a material and finishes point of view the completed amendments will be practically imperceptible from the existing.</p> <p>The internal dining area fitout will be almost a mirror image of the fitout, completed in 2015, at the southern end of the internal dining area (completed as part of Stage 1 of the Opera Bar refurbishment).</p>
Air-conditioning and mechanical services	Existing air conditioning services are reticulated through the curved timber dowel bulkhead.	The air-conditioning service will be extended to serve the new internal area through the curved timber dowel bulkhead in the same manner as existing.
Lighting	<p>The existing internal lighting environment is established utilising a variety of methods, which are scene controlled to establish various lighting moods to suit operational circumstances throughout the day.</p> <p>The internal lighting was upgraded as part of the Stage 1 interior refurbishment.</p> <p>The existing external lighting under the concourse is comprised of original</p>	<p>The proposed internal lighting design is intended to reflect that of the existing.</p> <p>The (external) original custom fixtures will be retained.</p> <p>Accordingly, the proposal will not produce any issues related to glare or light spill.</p>

DESIGN CONSIDERATION	EXISTING	PROPOSED
	<p>custom fixtures mounted to the surface of the Upper Concourse slab soffit.</p> <p>The existing lighting configuration does not present any glare or light spill issues.</p>	
Acoustic performance	<p>The existing bulkhead, new joinery elements and banquettes are designed to be acoustically absorptive.</p> <p>The internal acoustic environment is appropriate for the operational use.</p> <p>Internal noise levels do not contribute to acoustic spill.</p>	<p>The proposed acoustic design will be identical to the existing and is expected to perform similarly.</p>
Context	<p>The context is established by the flowing modern form of the existing structure, the proximity to the harbour and the greater development that defines Circular Quay which includes, most notably, the Ferry Terminal, Cahill Expressway, the Harbour Bridge and Sydney Opera House.</p> <p>The existing glazing line has no impact on the greater context and little on the finer context.</p>	<p>Despite the modified alignment and increased internal dining area the proposed glazing line has no impact on the greater context and a similarly insignificant impact on the finer established context.</p>
Scale	<p>The existing internal dining area is disproportionately limited to about 330m² of a venue of 1,830m² in total.</p>	<p>By reference to <i>Figure 4</i> it can be seen that the proposal will extend the internal dining area by approximately 33m² but reduce it by approximately 9m². The net result is an overall increase in GFA and usable internal area of 24m². This will assist to improve dining options for patrons particularly cold during winter months and in inclement weather conditions.</p>
Form	<p>Refer to <i>Figure 5</i> and <i>Figure 6</i> where the existing and proposed glazing alignments can be compared.</p> <p>The existing glazing line establishes complimentary curves and arcs essentially focused around an existing Fire Escape.</p> <p>The existing glazing alignment also constrains the width of the pedestrian passage, creating a bottleneck at one point along the Opera Bar glazing frontage.</p>	<p>The proposal relocates the Fire Escape a short distance to the north of its existing location. The existing glazing alignment is characterised by sweeping arcs which flank the existing Fire Escape and essentially draw attention to it.</p> <p>The relocated Fire Escape will be much less prominent in its proposed location and configuration and more consistent with other utilitarian doors, grilles and the like that are located around the Lower Concourse.</p>

DESIGN CONSIDERATION	EXISTING	PROPOSED
		<p>The new glazing line is concentric with the great arc of the concourse maintaining pedestrian passage width throughout and eliminating the existing bottleneck.</p> <p>The aesthetic impact of the proposal when viewed externally will be practically imperceptible. And the proposal has no impact on significant views to and from the Opera House and its precinct other than from within the extended dining area itself.</p> <p>Importantly the proposal improves pedestrian flow by removing the existing pinch point between the existing glazing line and mushroom columns. This is achieved without restriction of the the pedestrian flow via the existing adjacent stair to the Upper Concourse.</p>
Resource, energy and water efficiency		<p>The approach to resource, energy and water efficiency will remain largely as existing.</p> <p>There will be a marginal impact on building services due to a slight increase in conditioned space, however such impact will be insignificant in the grand scheme of the operation of the Opera House.</p>
Safety and security	No detrimental impact.	No detrimental impact.
Aesthetics	Refer to "Form" above	Refer to "Form" above
Visual impact		<p>The view on approach from the pedestrian circulation area is where this modification is experienced most prevalently. <i>Figure 9</i> and <i>Figure 10</i> illustrate the impact of this modification. It is clear on review that the proposal compliments the existing geometry and strengthens the clarity of the pedestrian circulation route under the concourse and along the glazing line.</p> <p>The aesthetic impact of the proposal when viewed external will be practically imperceptible. And the proposal has no impact on significant views to and from the Opera House and its precinct other</p>

DESIGN CONSIDERATION	EXISTING	PROPOSED
		than from within the extended dining area itself.

Response to relevant provisions of the CMP

The following section considers the provisions of the CMP relevant to the proposal and summarises the design response in each instance.

DESIGN CONSIDERATION	EXISTING	PROPOSED
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.	<p>The proposal has been prepared in accordance with the relevant policies of the CMP.</p> <p>This statement seeks to identify relevant policies of the CMP which apply to the proposal.</p> <p>Furthermore this statement outlines (in brief) how the proposal addresses and complies with the relevant policies.</p>
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:	Note
	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;	The proposed works associated with the glazing alignment are located below the Upper Concourse and have no impact on “the visually free-standing sculptural form of the building”.
	b. the geometry and configuration of the three groups of shell roof structures and their tiled cladding;	Similar to item “a” above the proposed works associated with the glazing alignment are located below the Upper Concourse and have no impact on “...shell roof structures...”.
	c. the orientation and relationship between the three shell roof groupings, the Podium and platform below;	Similar to items “a” and “b” above the proposed glazing alignment modifications do not impact on the prominence of the “three shell roof groupings”.
	d. the open and uncluttered relationship between the Forecourt, Monumental Steps, Podium and Broadwalks;	Similar to items “a-c” proposed glazing alignment modifications do not impact on the “...uncluttered relationship

DESIGN CONSIDERATION	EXISTING	PROPOSED
		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;	Similar to items "a-d" above the proposed glazing alignment does not impact on the "visually open relationship between the Podium and its setting".
	f. the sequence and intended qualities of approach and arrival spaces and experiences;	<p>The proposed works The new glazing line is concentric with the great arc of the concourse maintaining pedestrian passage width throughout and eliminating the existing bottleneck.</p> <p>The aesthetic impact of the proposal when viewed externally will be practically imperceptible. And the proposal has no impact on significant views to and from the Opera House and its precinct other than from within the extended dining area itself.</p> <p>Importantly the proposal improves pedestrian flow by removing the existing pinch point between the existing glazing line and mushroom columns. This is achieved without restriction of the pedestrian flow via the existing adjacent stair to the Upper Concourse.</p>
	g. the natural palette of materials for exterior and related interior spaces;	Material and finish will be identical to the exiting materials and finishes including colour and texture.
	h. the building's architecture, both externally and internally, formed by the honest expression of structure and materials;	The proposed modification of the glazing line will utilise the same materials and finishes and is generated by existing design cues. In this regard that proposed works will be consistent with the existing.
	i. the supporting structural systems throughout the building and their integrity as a reinforced concrete structure;	The proposal has no impact on this criterion.
	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;	The proposed modification of the glazing line will utilise the same materials and finishes and is generated by existing design cues. In this regard that proposed works will be consistent with the existing.

DESIGN CONSIDERATION	EXISTING	PROPOSED
	k. harmony and uniformity resulting from application of a strict geometrical order and consistent forms;	Similar to item “j” above.
	l. containing all the processes of theatre and performance preparation out of public sight and within the Podium;	The proposal has no impact on this criterion.
	m. the interdependence of structure, form and fabric with function, all focused on enhancing the intellectual and emotional response of patrons, performers and visitors;	The proposed amendment to the glazing alignment in no way diminishes the “intellectual and emotional response of patrons, performers and visitors” to the Opera House. On the contrary this modification improves pedestrian flow and interior utility and will only assist to enhance the human experience of the place.
	n. the primary function of the Sydney Opera House as a cultural venue that inspires and presents work of the highest quality in the performing arts.	The proposal has no impact on this criterion.
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.	The proposal has no impact on this criterion.
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;	Refer to the relevant comments made in relation to each of these policies herein.
	— avoid the introduction of their own design language and preconceptions, and defer to the original design regimes of Utzon and Hall, in that order;	The proposed amendments to the glazing line have been designed to complement the existing form and materiality of the concourse.

DESIGN CONSIDERATION	EXISTING	PROPOSED
	<p>— design new work to read as a subtle, respectful and sympathetic addition to the existing; and</p>	As above.
	<p>— not alter or remove original design regimes or components based solely on contemporary changes in aesthetic taste and fashion.</p>	The proposal is essentially a modification of what is existing and has no impact on “original design regimes”.
	<p>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.</p>	The proposal is minor in nature, is related to a relatively small specific area, and does not significantly impact on any existing and/or original fabric.
Policy 4.4 – Minor change	<p>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.</p>	The proposal is minor in nature, is related to a relatively small specific area, and does not significantly impact on any existing and/or original fabric. It accords with the relevant policies of the CMP and will “not fragment or diminish the authenticity or integrity of both the Utzon and Hall design regimes”.
Policy 4.6 – Approach to change – Utzon elements	<p>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.</p>	Regardless that the Lower Concourse was not part of the original Utzon design, the proposal is minor in nature, is related to a relatively small specific area, and does not significantly impact on any existing and/or original fabric. The proposal imbues the relevant aspects of the UDPs and CMP.
Policy 4.7 – Approach to change – hybrid Utzon / Hall spaces	<p>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.</p> <p>Any modification must retain the Utzon elements and qualities in accordance with Policies 1.1 and 1.2.</p>	Regardless that the Lower Concourse was not part of the original Utzon design, the proposal is minor in nature, is related to a relatively small specific area, and does not significantly impact on any existing and/or original fabric. The proposal imbues the relevant aspects of the UDPs and CMP.
Policy 4.8 – Approach to change – Hall elements	<p>Any adaptation or modest functional improvement, as described in Policy 4.4,</p>	The proposal minor in nature, is related to a relatively small specific area, and

DESIGN CONSIDERATION	EXISTING	PROPOSED
	to elements or interiors designed by Hall must retain or recover the character of his original design regimes with their coordinated detailing.	does not significantly impact on any existing and/or original fabric. The proposal imbues the relevant aspects of the UDPs and CMP.
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.	The proposed amendments to the glazing line have been designed to complement the existing form and materiality of the concourse. The proposal has been designed to maintain the high standards of design quality for which it is renowned.
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.	Not applicable.
	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.	Not applicable.
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	Not applicable.
Policy 7.17 – Fitouts in Lower Concourse	Individual tenancy fitouts and associated furniture and other objects in this area must: -- 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;	Refer to comments made herein in regard to Policy 4.8. The proposal will not detrimentally impact on the “open outdoor character of the space” with any more significance than existing. The proposal will result in negligible impact on views to and/or from any

DESIGN CONSIDERATION	EXISTING	PROPOSED
		publicly accessible vantage point within or on approach to the Opera House precinct.
	-- not enclose in any way the open space and colonnaded area outside the line of existing enclosure defined by the continuous fronts;	The proposal intends to modify the existing shop front alignment. The new works are modest in scale, confined to a small section of the shopfront and will appear integrated on completion. Whilst the proposal does enclose a small section of area outside the line of the existing glazing, it does so to improve pedestrian flow and patron amenity.
	-- not attach to or obscure the unpainted mushroom columns;	The proposal has no impact on the "mushroom" columns.
	-- not attach to, obscure or visually interrupt the continuous sweep of the parapet spandrel to the Forecourt above;	The proposal has no impact on the "continuous sweep of the parapet spandrel".
	-- not compete with or visually fragment the consistent and unified regime of finishes and lighting;	The materials, finishes and approach to lighting are substantially similar to the existing and will "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	Principal materials and finishes do not utilize white, off white, black nor any highly reflective surfaces.
	-- not encroach on or otherwise restrict the pedestrian walkway area between the mushroom columns and the east wall, or along the seawall.	By modification of the glazing alignment the proposed works will improve pedestrian flow by removal of an existing bottleneck between the glazing alignment and mushroom columns. The proposal will have no impact on the seawall.
	-- accord with the Utzon Design Principles and sit comfortably with the hierarchy and palette of natural exterior materials used in the public spaces adjacent;	Material and finish will be identical to the existing materials and finishes including colour and texture.

Response to the Utzon Design Principles

The following section discusses the relevant Utzon Principal Objectives and Fundamental Design Principles.

Principle Objectives

The following section explores the proposal's consideration of relevant Utzon Principal Design Objectives.

Keep the approach, the openness and fluidity of movement

The proposed works effectively replace an existing glazing alignment that exhibits "openness and fluidity of movement" with a new glazing line which responds similarly with "openness and fluidity of movement". The new glazing alignment provides the added benefits of establishing an improved internal dining experience whilst removing a bottleneck in the pedestrian flow around the Lower Concourse.

New structures close to Sydney Opera House diminish its role as icon/ landmark

This requirement primarily relates to obscuring views to and from the Sydney Opera House itself. In this instance the glazing line proposal does not obscure any views to and or across the site from any public vantage point and the Sydney Opera House and as such does not impact on the prominence of the Opera House nor its role as an icon/landmark.

Solidity of base is important

The proposed works effectively replace an existing element of very minimal impact with another of similarly minimal impact but improved functional performance. The proposed glazing alignment will not detract from the solidity of the base and, in this regard, is substantially similar to the existing.

Need to adjust to changing standards

The proposal recognises the opportunity to improve the amenity of the internal dining experience for patrons.

Modifications made progressively

The proposal is relatively minor in scope and is part of a larger project of progressive improvement of the hospitality facilities to improve patron experience.

Fundamental Design Principles

Inspiration from nature

The Utzon Design Principles identify a variety of key concepts. Those that could be considered relevant to this aspect of the proposal include:

- Organic beauty
- Natures colours

The form of the glazing line relates to the established geometry of this part of the site and is concentric with the major arc which characterises the form of the Lower Concourse. In this regard the "organic beauty" of the original design is maintained.

Material and finish will be identical to the exiting materials and finishes including colour and texture. Accordingly, the proposed works will remain true to the concept of "natures colours".

Human Experience

The Utzon Design Principles identify a variety of key concepts that relate to the "human experience". Those that could be considered relevant to this aspect of the proposal include:

- Emotional response, functionalism and human expression
- Beautiful experience/oriented

- Being in another world
- Consideration of details like doors
- Harbour
- Festive mood

These characteristics are referenced by Utzon to describe aspects of the “human experience” which are identified as being fundamental to the experience of the place and enhanced through the design of the Opera House.

Subsequent development is expected to respect this consideration of the “human experience” achieved by the design of the Opera House.

The proposed alterations to the glazing line in no way diminish the “human experience” of the Opera House but moreover sustain the relevance of these characteristics.

The building as sculpture

The Utzon Design Principles identify a variety of key concepts in regard to the building being considered as a “sculpture”. Those that could be considered relevant to this aspect of the proposal include:

- Iconic presence
- Free in Sydney Harbour
- Large sculptural building seen from all sides
- Sculpture of dynamic forms
- Experience
- Shell forms to suit functions
- Acoustic shape determined by sound and how audience would see it

The proposed works are relatively minor in nature and will have no detrimental impact on the ability to interpret the Opera House as a free-standing sculpture standing apart from other buildings and structures that surround it.

The existing glazing alignment is located on the Lower Concourse and delineates the under-cover approach from Circular Quay and the Opera House Car Park. The proposed modifications have no detrimental impact on the experience of the Opera House on approach via the Lower concourse and do not deter from the experience of the Opera House as “sculpture”.

Orientation and movement

The Utzon Design Principles identify a variety of key concepts in relation to “orientation and movement”. Those that could be considered relevant to this aspect of the proposal include:

- Oriented in harbour setting
- Simple, easily understood tour
- Podium headland influence
- Walk in open up to entering auditoria

The proposal respects these principals and does not compete with the Opera House in its approach to these criteria. In fact, the proposal improves pedestrian flow around the Lower Concourse by removing a bottle neck along the glazing line.

Accordingly, the proposed works will have no detrimental impact in this regard.

Additive architectural elements

The Utzon Design Principles identify a variety of key concepts in relation to “additive architectural elements”. Those that could be considered relevant to this proposal include:

Those that could be considered relevant to this proposal include:

- Expression of elements, produced industrially

“The exteriors of the building stand as an expression for something basic in the concept - the idea of dividing the various parts up into equal components, which can be produced industrially and afterwards put together to form a structure of the desired form.” (3)

- Reference to nature

"Or you see it in various cross sections of nature's elements - if you cut across an onion you see the different layers." (2)

- Geometry

"The wall cladding elements are nominally 4' wide and of varying lengths to 30'... over doors, windows and ventilation openings, there are special elements forming hoods for sun and weather protection. There are other variations of the basic element type forming sills, jambs, parapets, and stair balustrades."

The proposal reflects Utzon's principal of "additive architectural elements" which is evidenced by the response to structure, form, geometry, etc outlined elsewhere in this statement.

Additive architectural elements: Geometry

The Utzon Design Principles identify a variety of key concepts in relation to "additive architectural elements" and specifically in regard to "geometry". Those that could be considered relevant to this proposal include:

- Common geometric determinant
- Under control by strict geometry
- Surfaces comprehended because of geometric order
- Simple living geometric forms

The area is of a radial geometric arrangement characterised by large sweeping curves. The geometric arrangement is reflected in the paving, cladding and exiting glazing alignment.

The proposed glazing alignment is substantially similar to the exiting and responds to the established geometry.

In essence the proposed alignment is more consistent with the established geometry, echoing the established major arc and eliminating an existing pinch-point in the pedestrian flow between the glazing line and the outer ring of mushroom columns.

Conclusion

The design response is the result of considerable effort to maximise the potential of the project whilst maintaining the integrity of the site and the experience of the Opera House.

The proposed works are minor in scope and insignificant in impact.

Accordingly, the proposed glazing realignment does not compete with nor contradict Utzon's grand vision in any way. On the contrary the proposed modification of the glazing alignment improves pedestrian flow and the quality of the internal dining experience at Opera Bar. This is considered to be more consistent with the standard of design associated with the Sydney Opera House and precinct.

This proposal is presented as a welcome and appropriate improvement.

Shade Structures

Overview of the proposal

The hospitality precinct that is housed in the lower concourse supports the functions of the SOH. This precinct provides essential hospitality facilities for patrons of the Sydney Opera House and the public in general. These venues are renowned for the quality of their offer and the experience they facilitate. The SOH and their operators are committed to improving the experience for their visitors whilst maintaining the cultural significance of the site.

As part of this ongoing commitment to improve facilities it is proposed to replace the existing umbrellas in the Outdoor Seating areas of the Opera Bar and Opera Kitchen with larger, more functional and aesthetically integrated shade and weather protective structures.

This concept and design development of this proposal has been undertaken in recognition of the design principles established by Utzon and the policies of the CMP.

A complete assessment of the new structures is provided following with a comparative commentary of the differences between the existing and proposed structures.

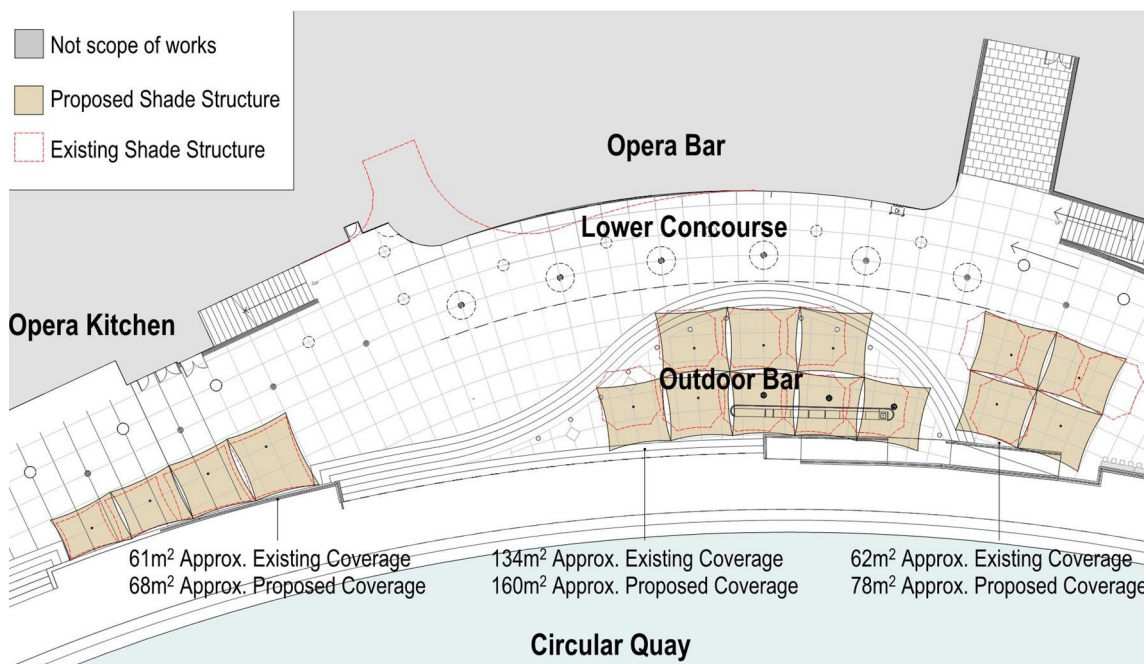


Figure 11: Existing and Proposed Shade Cover configurations with comparative coverage indicated.

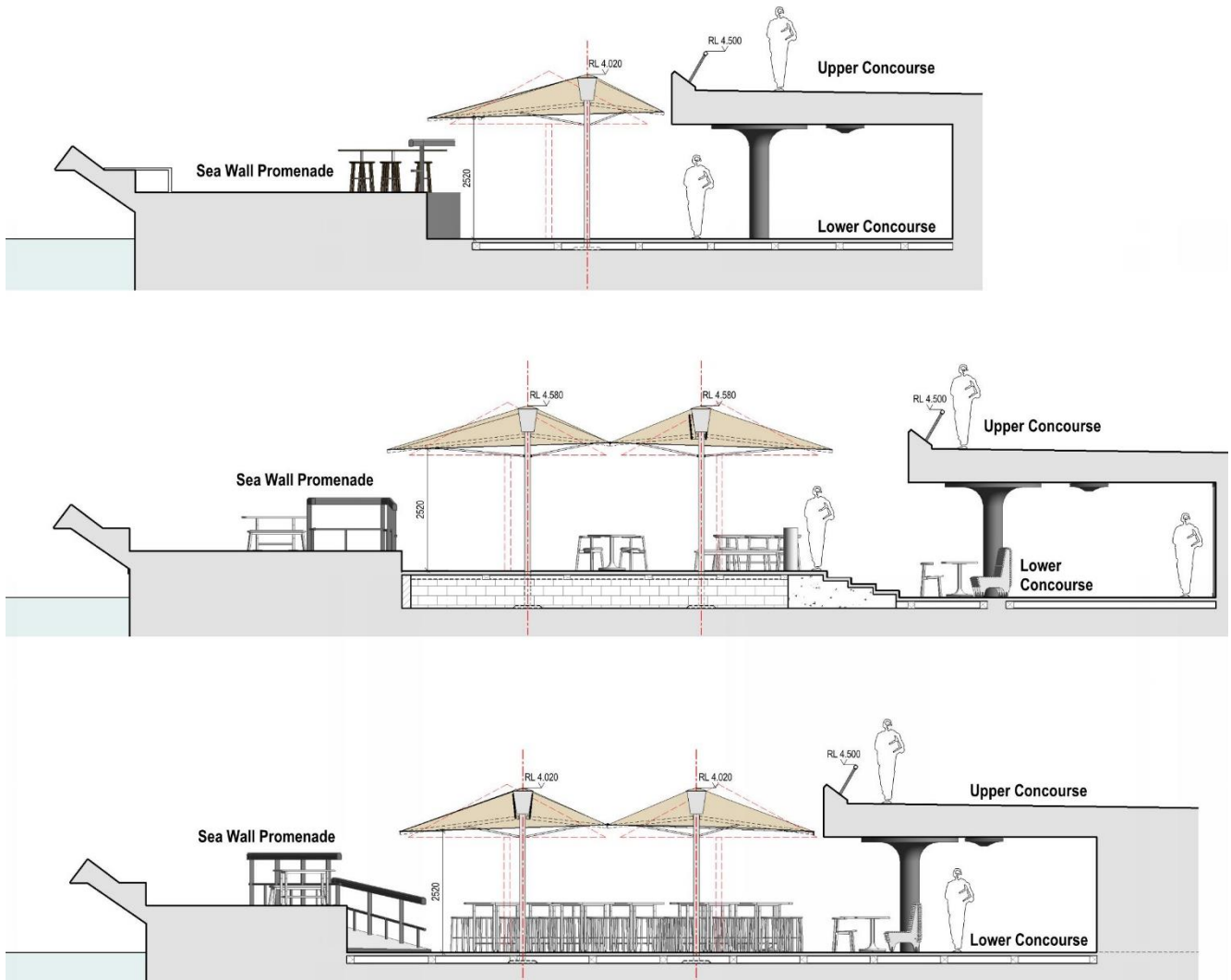


Figure 12: Indicative cross sections showing existing umbrellas and proposed shade structure configurations in three different locations: Opera Kitchen (Top), Opera Bar Upper (Middle) and Opera Bar Lower (Bottom)

Consideration of Alternatives

As part of the development of the proposed shade cover improvement design a number of potential alternative solutions were explored in order to determine the most integrated strategy that would meet the intended performance criteria with the least aesthetic impact.

Impact on views to, from and across the structures was a fundamental consideration.

Additionally, it was sought to arrive at a dynamic yet restrained form.

Structural efficiency was an important consideration as this factor would impact on the size of the structural members and the design team was determined to ensure that the resultant structure was as light as practical.

A multitude of options were considered by the design team and included other fixed structures of various shapes and proportions and also fold up “umbrella” style structures were also initially considered.

A short list of options were presented to the Design Advisory Panel on 19th March 2019. *Figure 13, Figure 14, Figure 15 and Figure 16* provide extracts of the options presented. With the benefit of the advice from the panel the design team selected and developed the preferred option.

The option selected was deemed to achieve the best balance of design criteria.

This proposal also gave consideration to the issues raised in relation to the 2016 proposal. By comparison with the 2016 proposal this design achieves a simpler approach to the design whilst managing the various urban design considerations. A summary of these issues and our approach to resolve them is included later in this statement.

Design Alternatives

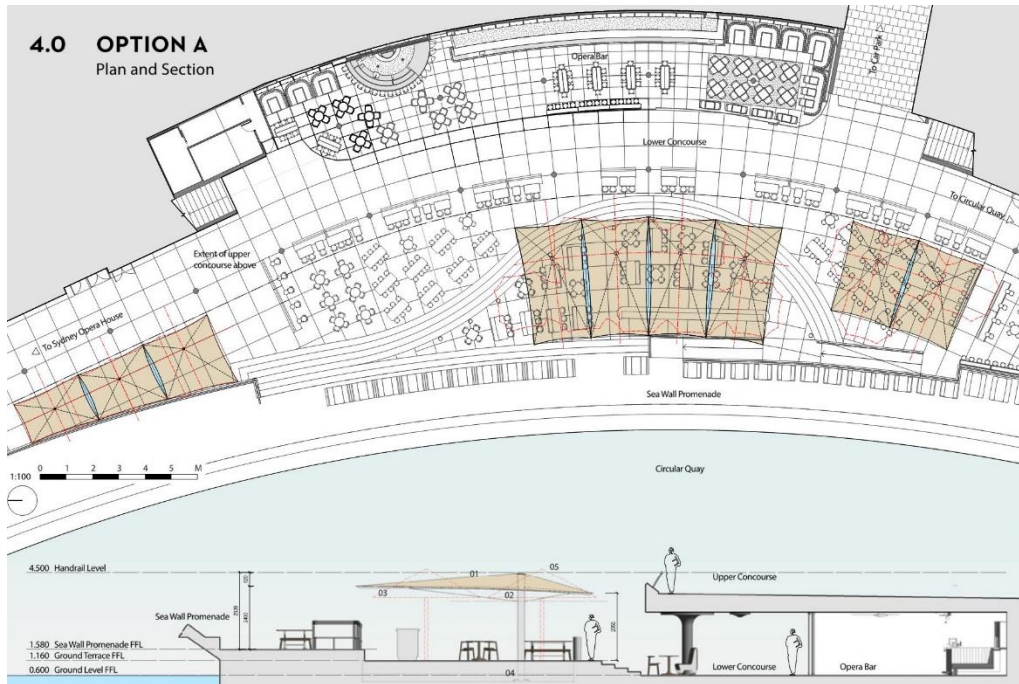


Figure 13: Design alternative Option A as presented to the Design Advisory Panel 19th March 2019

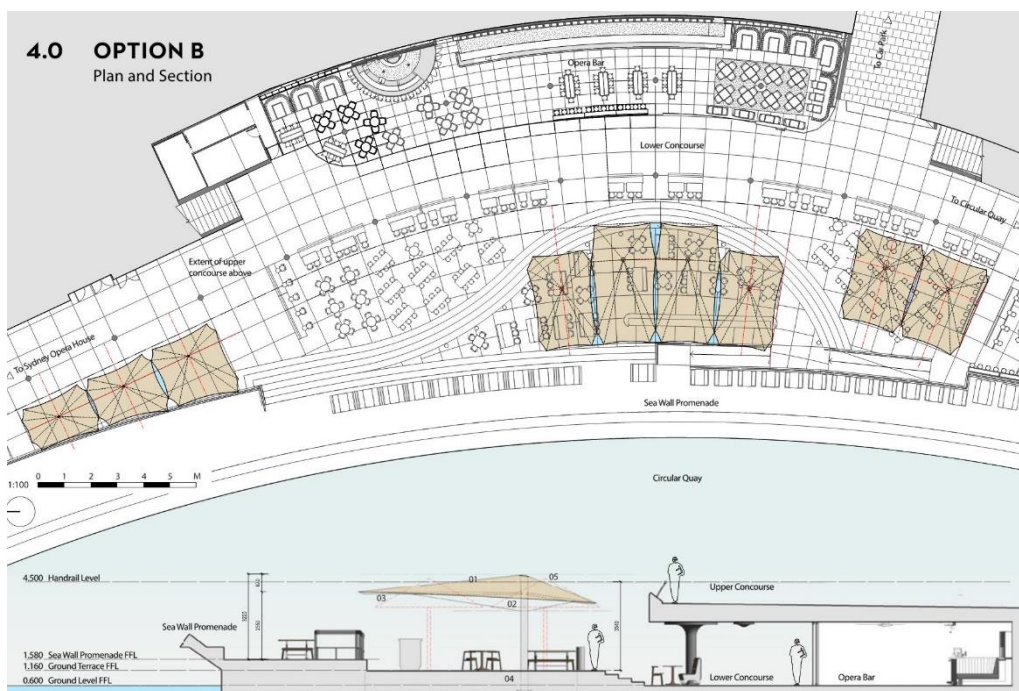


Figure 14: Design alternative Option B as presented to the Design Advisory Panel 19th March 2019

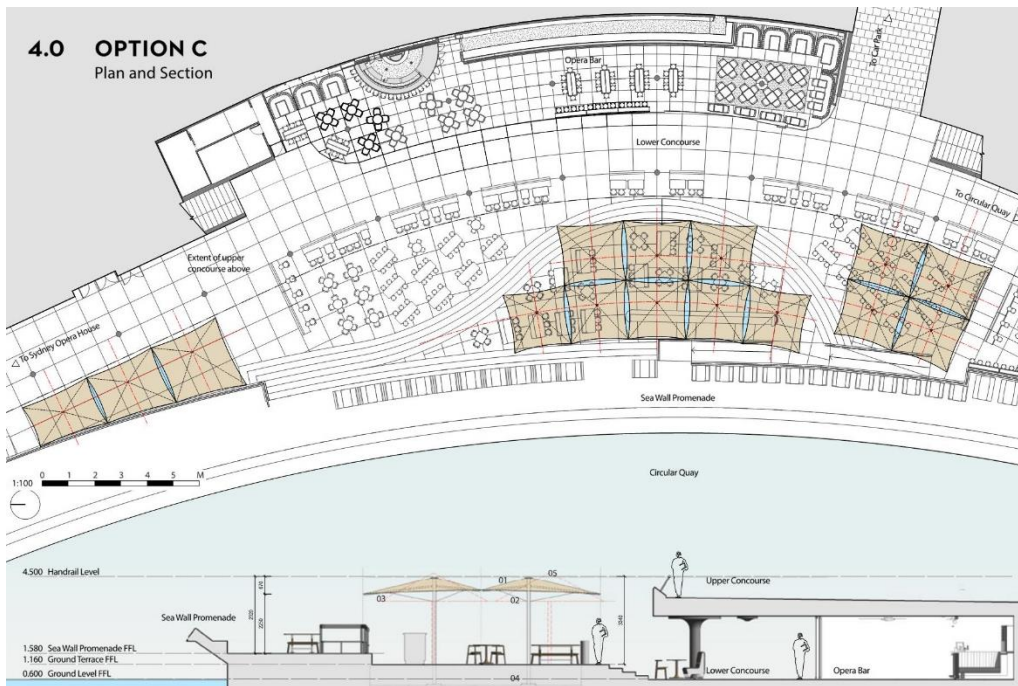


Figure 15: Design alternative Option C as presented to the Design Advisory Panel 19th March 2019

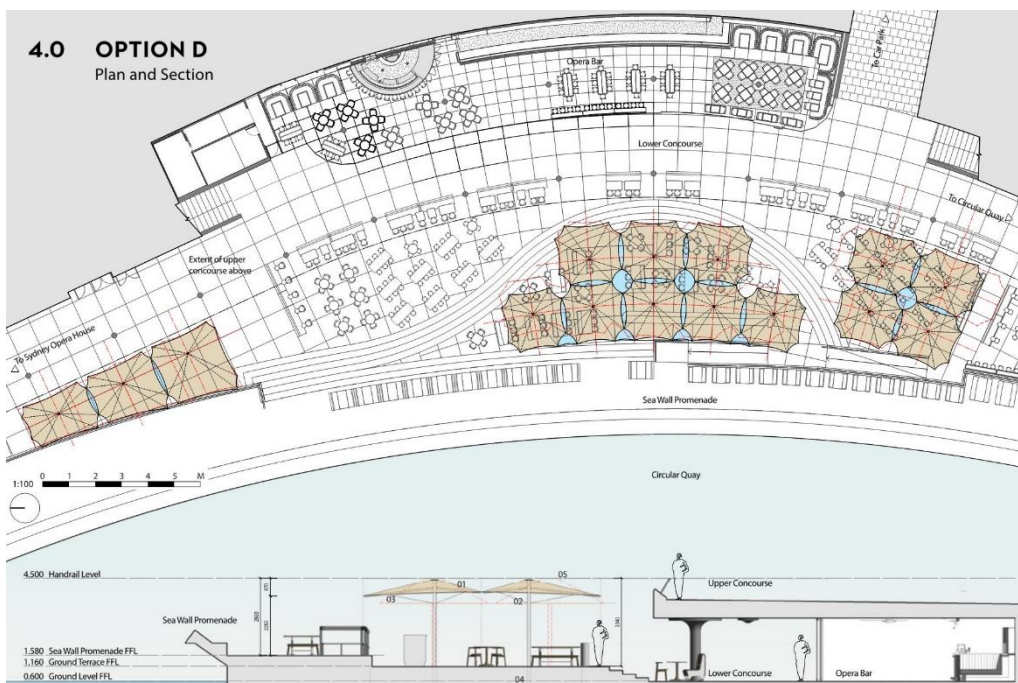


Figure 16: Design alternative Option D as presented to the Design Advisory Panel 19th March 2019

Views on approach to the Opera House



Figure 17: View to the Sydney Opera House EXISTING



Figure 18: View to the Sydney Opera House PROPOSED

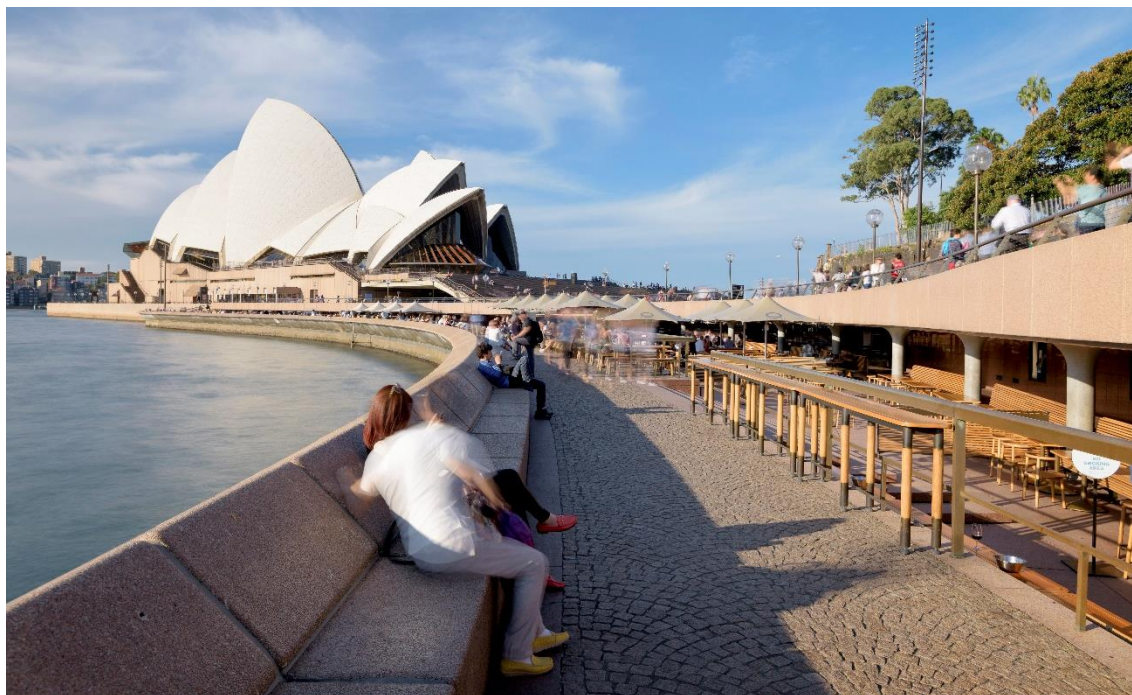


Figure 19: View on approach to the Opera House along the Sea Wall Promenade EXISTING



Figure 20: View on approach to the Opera House along the Sea Wall Promenade PROPOSED

Views across Circular Quay from the Opera House Forecourt



Figure 21: View to the Sydney Harbour Bridge EXISTING



Figure 22: View to the Sydney Harbour Bridge PROPOSED



Figure 23: View to Circular Quay EXISTING



Figure 24: View to Circular Quay PROPOSED



Figure 25: Long view to Circular Quay EXISTING



Figure 26: Long view to Circular Quay PROPOSED

Views across Circular Quay towards the Opera House precinct



*Figure 27: View across Circular Quay to Opera House precinct
EXISTING*



*Figure 28: View across Circular Quay to Opera House precinct
PROPOSED*



Figure 29: View from Circular Quay to the Opera House Lower Concourse EXISTING



Figure 30: View from Circular Quay to the Opera House Lower Concourse PROPOSED

Proposed shade structure details

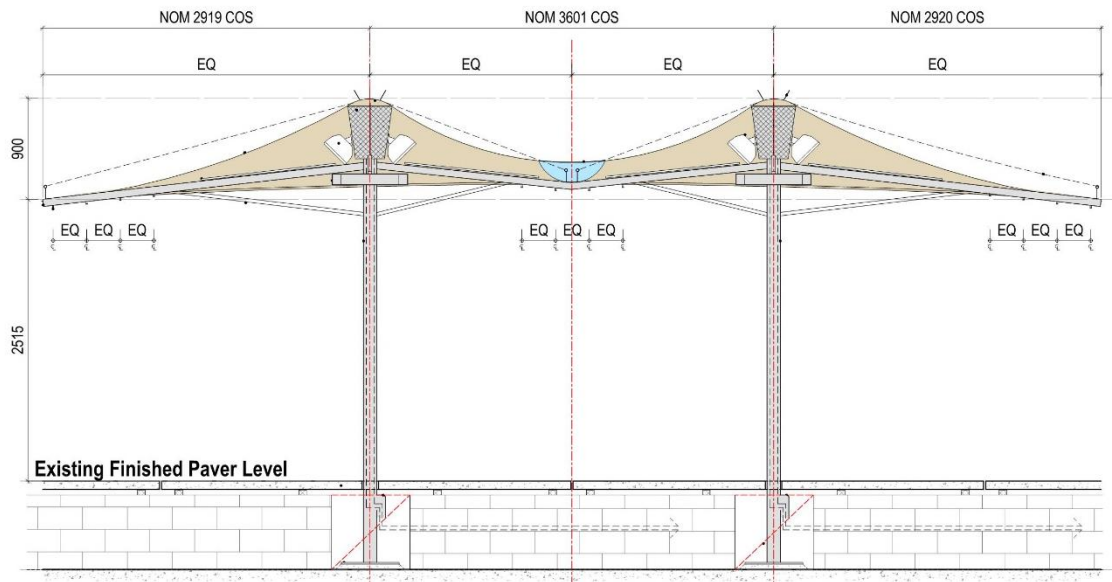


Figure 31: Typical cross section through the proposed shade structures

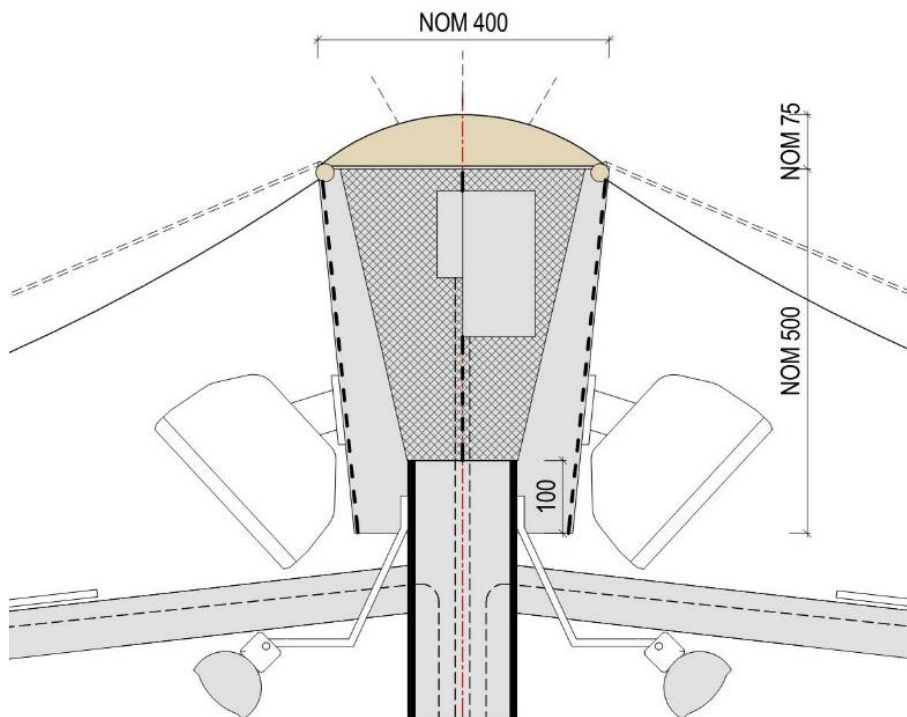


Figure 32: Typical detail at the head of each mast to integrate services (wifi, table GPS, speakers, lighting, heating & security)

Summary of key design aspects of the proposal

The following table provides a summary of the key design aspects of the proposal with, where applicable, a comparison with the existing:

DESIGN CONSIDERATION	EXISTING	PROPOSED
Materials and finishes	<p>The existing mast and structure is satin stainless steel.</p> <p>The existing membrane fabric is PVDF in a colour selected to closely match Dulux Coconut Husk.</p> <p>Exposed services, fixtures and fittings are in a variety of finishes.</p>	<p>Mast and structural steel members are to be finished in satin stainless steel. This finish provides the best balance of strength and durability considering the exposure and environment. Alternative finishes and coatings were considered however they were not considered appropriate due to cost-benefit and or maintenance limitations (as existing).</p> <p>Membrane Fabric: PVDF Colour to closely match Dulux Coconut Husk (as existing).</p> <p>Services will be generally concealed in an enclosure at the top of the mast of perforated aluminium with a powdercoat finish to closely match "Dulux Coconut Husk".</p> <p>The speaker system selected is available in all RAL colours and will be specified to be finished to closely match "Dulux Coconut Husk".</p> <p>Heaters will be finished in stainless steel to generally match the structure.</p> <p>Uplight fitting on the outriggers will be finished in anodized aluminium to match the stainless steel structure.</p> <p>In accordance with the Utzon Design Principles the shade cover fabric will be non-reflective and in a sympathetic natural tone as noted to closely match Dulux Coconut Husk.</p> <p>Detail and material finish will be of a high standard commensurate with that expected of a World Heritage listed site.</p> <p>Note the Dulux colour "Coconut Husk" was previously determined, in consultation with, at the time, the Eminent Architects Panel, to be the most visually consistent when viewed against the background of the concourse superstructure.</p>

DESIGN CONSIDERATION	EXISTING	PROPOSED
Heating	Radiant electric heating panels fixed to the underside of framing members.	Infra-red radiant electric heaters fixed at high level around the mast and designed to maximise performance in the least visually obtrusive manner. Note newer heating technology is less obtrusive, smaller in dimension and more efficient for the same performance than the existing system.
Lighting	<p>The existing umbrellas are up lit from the existing outriggers with 2700K (warm white + RGB external grade, fully dimmable, LED fittings.</p> <p>The up lit umbrellas generate a low glare gentle ambient light.</p>	<p>The proposed shade structure will utilise the same lighting principle up-lighting the underside of the fabric to generate a low glare gentle ambient light.</p> <p>The up-lighting will be installed to eliminate light spill.</p>
Acoustic performance	The existing umbrella fabric contributes to some noise attenuation however the shade structures only have a minimal impact on acoustic performance in general.	The proposed acoustic performance should improve as the fabric will cover additional area.
Context	<p>The context is established by the flowing modern form of the existing structure, the proximity to the harbour and the greater development that defines Circular Quay which includes most notably the Ferry Terminal, Cahill Expressway, Harbour Bridge and Opera House.</p> <p>The existing umbrella structures, being relatively small in footprint and low in height, are relatively insignificant in the greater context of the Opera House Concourses and Forecourt.</p> <p>However, the form and arrangement of the existing umbrellas is not complimentary to the finer context established by the Opera House forecourt, cascading concourses and adjacent sea wall. And they do not reflect the form of these principal elements nor the radial grid which establishes the set out of existing structural elements, paving and cladding.</p>	<p>Despite the increased size the proposed form remains modest in scale.</p> <p>Accordingly, the proposed shade structures remain insignificant in the greater context.</p> <p>The proposed shade structures are designed to be more in harmony, in terms of form, detail and materiality with the finer established context than the existing umbrellas.</p> <p>They a proposed shade structures are designed to respond to radial grid which establishes the set out of existing structural elements, paving and cladding.</p>
Scale (Coverage)	Refer to the Comparison of Existing and Proposed Shade Structures table following.	Refer to the Comparison of Existing and Proposed Shade Structures table following.

DESIGN CONSIDERATION	EXISTING	PROPOSED
		In summary the proposed shade structures denote a 43.2m ² (16.9%) increase in “actual” covered area and 40.9m ² (16.1%) increase in “useable” covered area.*
Scale (Height to top of apex)	Approximately 3500mm above the Intermediate Terrace Level to the apex of the Shade Cover	Approximately 3415mm above the Intermediate Terrace Level to the apex of the Shade Cover (i.e. a reduction in overall height of 85mm)
Scale (Clearance to lowest point of the shade cover)	Approximately 2400mm above the Intermediate Terrace Level	<p>Approximately 2690mm above the Intermediate Terrace Level (i.e. a general increase in clearance to the underside of 290mm)</p> <p>Approximately 2470mm above the Sea Wall Terrace Level (Note this is only for a relatively small portion of the cover at the leading, western, edge of shade cover).</p> <p>The new structures, despite increasing the covered area, are shallower in overall depth.</p> <p>They are, in fact, shallower than the depth of the adjacent balustrade parapet. This assists to ensure that the proposed structures are visually unobtrusive.</p>
Form	<p>The existing shade cover (umbrellas) are of a generic design and “umbrella like” in form.</p> <p>The form of the individual generic umbrellas is symmetrically balanced and lacks the dynamics reflected in the form of the Opera House and its details.</p> <p>The arrangement of the individual umbrellas limits the covered area and results in joints between the umbrellas that lack design finesse and ineffective to weatherproof.</p> <p>The umbrella masts are just bolted to the top of the granite pavers. This has caused damage and cracking to some pavers.</p>	<p>The proposed shade covers are of a custom design and profile.</p> <p>The arrangement responds to the geometry of the paving both in plan profile, which reflects the radial paving setout and in location which bears a more considered approach to locating of the masts.</p> <p>The proportion of the structural members relatively light weight in appearance and is in harmony with the form.</p> <p>The new masts will be fixed through the pavers and into the structural substrate slab below.</p>

DESIGN CONSIDERATION	EXISTING	PROPOSED
	<p>The masts are not positioned strategically to respond to the characteristic geometry of the paving.</p> <p>Multiple masts are required which obstructs views from the lower forecourt.</p>	<p>The proposal reduces the number of masts and thereby reducing visual obstruction.</p> <p>The overall design is more architecturally responsive and consistent with the design quality of the Opera House and precinct in general. However the design and detailing is also simplistic and restrained so as not to compete in prominence with the architecture of the Opera House.</p>
Resource, energy and water efficiency		<p>New lighting will incorporate the latest LED technology to maximise energy efficiency.</p> <p>Similarly, new heating is more efficient and will assist to reduce energy consumption.</p> <p>The structures are designed so as to minimise</p>
Safety and security	No detrimental impact.	No detrimental impact.
Aesthetics	Refer to "Form" above	Refer to "Form" above
Visual impact		<p>Whilst it is acknowledged that the proposed shade cover represents an increase in covered area...</p> <p>Approximately 30%. The overall height is about the same and the north-south dimension increases minimally.</p> <p>Accordingly in the context of the site, and particularly in respect of long views to the Opera House and surrounds this increase is insignificant.</p> <p>This is evidenced by <i>Figure 2</i> and <i>Figure 3</i> herein.</p> <p>It is clear that due to the relative size of the Opera House, other neighbouring buildings and geographic features that the impact of the new Shade Cover is insignificant and has no detrimental impact of the visual setting of the Opera House.</p> <p>The proposed form reflects the horizontality of the concourses in general. It is designed such that the form</p>

DESIGN CONSIDERATION	EXISTING	PROPOSED
		<p>of the new structure will have no detrimental impact on views from to or from the Opera House and surrounding precinct.</p> <p>The new shade structure references the established geometry of the existing concourses including the radial grid but is an otherwise independent structure. Accordingly, that new structure does not interfere with the form and continuity of curvature of the existing concourses.</p> <p>The visual connection between the forecourt and lower concourse will not be obscured. In fact, despite the increase in size the new forms are expected to appear to be simpler, less distracting than the existing umbrellas in more harmonious with the existing super structure.</p> <p>Please refer to the Visual Impact Study prepared in support of this application by Humphrey & Edwards for a detailed assessment of the visual impact of the proposal on key public vantage points to The Sydney Opera House and surrounds.</p>

Comparison of existing and proposed shade structures

DESIGN CONSIDERATION	EXISTING UMBRELLAS	PROPOSED SHADE STRUCTURES	COMMENTS
Minimise visual clutter	<ul style="list-style-type: none"> Have poorly integrated and cluttered services. The connection detail between individual umbrellas is functionally and aesthetically poor. 	<ul style="list-style-type: none"> Exhibit a more streamlined structure. Provide better integrated services (lighting, AV, heating, data, security, etc.). Provide a seamless connection between individual umbrellas facilitating better weather protection and a more efficient structure. 	<ul style="list-style-type: none"> The exiting umbrella structures are of little architectural merit and have been positioned without consideration to the UDPs. The proposal intends to replace the existing umbrellas with new, similar, but more architecturally resolved umbrellas with better integrations of services, sited to respond to the UDP criteria whilst

DESIGN CONSIDERATION	EXISTING UMBRELLAS	PROPOSED SHADE STRUCTURES	COMMENTS
			improving weather protection in the most appropriate locations.
Integration with SOH architecture	<ul style="list-style-type: none"> Are prosaic and temporal in appearance. Are temporary and unconsidered in appearance. Are reversible with minimal impact on existing fabric. 	<ul style="list-style-type: none"> Relate to the radial grid and established geometry of the Lower Concourse. Are more considered in design from both functional and aesthetic aspects. Remain relatively "prosaic" and temporal in appearance. Are reversible with minimal impact on existing fabric. 	<ul style="list-style-type: none"> Note that the Opera Kitchen shade structures geometrically resolve between the geometry of the upper concourse parapet and the Sea Wall Promenade and are therefore non-symmetrical.
Impact on views to SOH	<ul style="list-style-type: none"> Negligible impact on views to and/or across the Lower Concourse or Forecourt from any readily accessible public vantage point. 	<ul style="list-style-type: none"> Negligible impact on views to and/or across the Lower Concourse or Forecourt from any readily accessible public vantage point. 	
Perception of continuous roof (marquee)	<ul style="list-style-type: none"> Do not appear "roof-like". Appear as umbrellas within the Lower Concourse space. 	<ul style="list-style-type: none"> Do not appear "roof-like". Appear similarly as umbrellas within the Lower Concourse space. 	
Maximise weather protection and patron comfort	<ul style="list-style-type: none"> Poor connection detail results in ineffective coverage between individual umbrellas significantly reducing the overall effectiveness of the umbrellas in most circumstances. 	<ul style="list-style-type: none"> Provides improved overall coverage in the most appropriate areas. Improved connection detail provides significantly improved weather protection between individual umbrellas. 	
Shade Structure Coverage (m2)	257.2	306.1	<ul style="list-style-type: none"> The proposed shade structures denote a 48.9m2 increase in "actual" covered area.*
% Increase	0.0%	16.6%	<ul style="list-style-type: none"> Note that the connection between the existing umbrellas is not seamless, thereby reducing their

DESIGN CONSIDERATION	EXISTING UMBRELLAS	PROPOSED SHADE STRUCTURES	COMMENTS
			effective coverage in wet weather.
Shade Structure Coverage ADJUSTED TO REFLECT USABLE AREA* ONLY (m2)	247.4	292.8	<ul style="list-style-type: none"> The proposed shade structures denote a 45.4m2 increase in "useable" covered area.*
% Increase ADJUSTED TO REFLECT USABLE AREA* ONLY	0.0%	18.3%	<ul style="list-style-type: none"> Note that the connection between the existing umbrellas is not seamless, thereby reducing their effective coverage in wet weather.

* Note, usable area refers to the undercover area that is not above stairs or a principal access route and thereby readily usable for seated and/or standing patrons.

Response to relevant provisions of the CMP

The following section considers the provisions of the CMP relevant to the proposal and summarises the design response in each instance.

DESIGN CONSIDERATION	EXISTING	PROPOSED
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.	<p>The proposal has been prepared in accordance with the relevant policies of the CMP.</p> <p>This statement seeks to identify relevant policies of the CMP which apply to the proposal.</p> <p>Furthermore, this statement outlines (in brief) how the proposal addresses and complies with the relevant policies.</p>
Policy 1.2 – Utzon concepts	<p>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:</p> <p>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;</p>	<p>Note</p> <p><i>Figure 28 and Figure 30</i> illustrate the shade structures when viewed in context with the Opera House precinct, the built form of Circular Quay, the city beyond and the natural form of the Botanic Gardens behind.</p>

DESIGN CONSIDERATION	EXISTING	PROPOSED
		<p>The proposed shade structures have been designed to complement the existing form and materiality of the concourse and are lower in height than the Upper Concourse parapet.</p> <p>The proposed shade structures are so insignificant in scale, by comparison to Opera House the established context, that neither the proposed shade structures nor the existing umbrellas could be considered in any way in "competition" with the "free-standing sculptural form of the building in its setting".</p>
	b. the geometry and configuration of the three groups of shell roof structures and their tiled cladding;	<p>Similar to item "a" above the proposed shade structures are so insignificant in scale, by comparison to the Opera House and its established context, that neither the proposed shade structures nor the existing umbrellas could be considered in any way in "competition" with the "free-standing sculptural form of the building in its setting".</p>
	c. the orientation and relationship between the three shell roof groupings, the Podium and platform below;	<p>Similar to items "a" and "b" above the proposed shade structures do not impact on the prominence of the "three shell roof groupings".</p>
	d. the open and uncluttered relationship between the Forecourt, Monumental Steps, Podium and Broadwalks;	<p>With reference to the Visual Impact Study submitted with this application, and <i>Figure 21</i> and <i>Figure 22</i> herein it is clear that there is negligible obstruction to views of Circular Quay from the public domain of the Upper Concourse.</p> <p>There is really only one vantage point where there is any impact on the view of the sea wall and that is represented by <i>Figure 21</i> and <i>Figure 22</i>. Even in this instance the tops of the existing umbrellas present greater impact on the view of the water than does the proposed structure.</p> <p>The proposal will not detrimentally impact on the "open and uncluttered relationship between the Forecourt, Monumental Steps, Podium and</p>

DESIGN CONSIDERATION	EXISTING	PROPOSED
		Broadwalks" with any more significance than the existing umbrellas.
	e. the visually open relationship between the Podium and its setting, including the Bennelong Restaurant and foyers encircling the auditoria;	Similar to items "a-d" above the proposed shade structures do not impact on the "visually open relationship between the Podium and its setting".
	f. the sequence and intended qualities of approach and arrival spaces and experiences;	<p>The proposed works effectively replace an existing structure of minimal impact, the existing umbrellas, with another of even less impact but improved architectural merit... The proposed shade structures.</p> <p>The proposal does not appreciably alter the experience of the Opera House from any approach. The proposal maintains the openness and fluidity of movement.</p> <p>The proposal is more considered and less cluttered in form and detail. The proposal responds to the established geometry of the Lower Concourse. Accordingly, it is less distracting and more consistent with the design integrity imbued in the Opera House precinct.</p>
	g. the natural palette of materials for exterior and related interior spaces;	Material and finish will be identical to the exiting materials and finishes including colour and texture. Accordingly, the proposed works will remain true to the concept of "natures colours".
	h. the building's architecture, both externally and internally, formed by the honest expression of structure and materials;	<p>The existing umbrella structures are proprietary, non-place specific, utilitarian objects.</p> <p>The proposed shade structures, by contrast, have been designed to respond to the established geometry of the concourses.</p> <p>The forms remain simple (umbrella like) and largely subservient to the principal building elements but sit in harmony with them.</p> <p>The structure, whilst simple, is expressed in the form of the shade structures and their detailing.</p> <p>In this regard the proposal addresses Utzon's intent in regard to "structural</p>

DESIGN CONSIDERATION	EXISTING	PROPOSED
		expression" whilst respecting the established hierarchy of form.
	i. the supporting structural systems throughout the building and their integrity as a reinforced concrete structure;	The proposal has no impact on this criterion.
	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;	<p>The shade structures are constructed generally of "uniform" components. The shade structure elements are well defined in form and assembled from discreet elements despite their being variations in the parameters of individual members. This is consistent with the intent of the UDP;</p> <p>The structure is of custom design but will be manufactured from components that are "machine made" and produced "industrially". The proposed structure will be manufactured from steel. It is designed to be manufactured from standard sections that will be fabricated to form the structural elements of the canopy. There is no fundamental difference between the manner in which the proposed shade structure will be manufactured and much of the existing metalwork that presently exists within the Opera House precinct;</p> <p>The forms reference nature in so far as the structure is a direct an expression of the desired form;</p> <p>The form is tailored to fit comfortably within the existing built form of the concourse. The forms are set out from a common geometric determinator that is consistent with the established geometry of the concourses. The area is of a radial geometric arrangement characterised by large sweeping curves. The geometric arrangement is reflected in the paving and cladding patterns. The resultant surfaces are defined by the established geometric order extrapolated into a new form fashioned to suit the purpose of providing shade and weather protection.</p>

DESIGN CONSIDERATION	EXISTING	PROPOSED
		The forms are “under control” by the geometry established in so far as the established geometry is reflected in the forms of the proposed structures. There is elemental hierarchy and no superfluous detail. The arrangement responds to the geometry of the paving both in plan profile, which reflects the radial paving set-out and in location which bears a more considered approach to locating of the masts.
	k. harmony and uniformity resulting from application of a strict geometrical order and consistent forms;	Similar to item “j” above.
	l. containing all the processes of theatre and performance preparation out of public sight and within the Podium;	The proposal has no impact on this criterion.
	m. the interdependence of structure, form and fabric with function, all focused on enhancing the intellectual and emotional response of patrons, performers and visitors;	The proposed replacement of the existing umbrellas in no way diminishes the “intellectual and emotional response of patrons, performers and visitors” to the Opera House. On the contrary the provision of shade structures that respond to the established geometry of the lower concourse and which are more elegant in detail will only assist to enhance the human experience of the place.
	n. the primary function of the Sydney Opera House as a cultural venue that inspires and presents work of the highest quality in the performing arts.	The proposal effectively seeks to replace an existing structure with another of similar bulk and scale but which is more refined in design, more functional, adopts a relationship with the established geometry of the Lower Concourse, better integrates structure and services and generally will be more consistent with the standard of design accustomed with the Opera House and its precinct. Accordingly, the proposed shade structures present and improved response to this criterion in comparison to the existing umbrellas.
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,	The shade structure proposal does not obscure any views to and or across the site from any public vantage point and the Sydney Opera House and as such

DESIGN CONSIDERATION	EXISTING	PROPOSED
	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.	does not impact on the prominence of the Opera House nor its role as an icon/landmark.
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;	Refer to the relevant comments made in relation to each of these policies herein.
	— avoid the introduction of their own design language and preconceptions, and defer to the original design regimes of Utzon and Hall, in that order;	The proposed shade structures have been designed to complement the existing form and materiality of the concourse. The proposed form is similar to the existing umbrellas but more considered and refined in detail. The proposed design reduces “clutter” as the proposed form is simpler in geometry, simpler in structure and designed to respond to the established geometry of the existing concourses. The form is diminutive by comparison to the principal structure.
	— design new work to read as a subtle, respectful and sympathetic addition to the existing; and	As above.
	— not alter or remove original design regimes or components based solely on contemporary changes in aesthetic taste and fashion.	The proposal is essentially a modification of what is existing and has no impact on “original design regimes”.
	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.	The proposal is minor in nature and does not involve the removal of nor significantly impact on any existing and/or original fabric.
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	The proposal is minor in nature, of negligible impact and is reversible. It accords with the relevant policies of the CMP and will “not fragment or diminish the authenticity or integrity of both the Utzon and Hall design regimes”.

DESIGN CONSIDERATION	EXISTING	PROPOSED
	Policies 4.7 and 4.8, except where such proposal accords with Policy 4.6. Proposals must be developed and executed in accordance with Policy 20.5 Continuity of advice, Policy 20.7 Heritage advice, and Policy 20.18 Statutory approvals.	
Policy 4.6 – 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.	Regardless that the Lower Concourse was not part of the original Utzon design, the proposal is minor in nature, of negligible impact and is reversible. The proposal imbues the relevant aspects of the UDPs and CMP.
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.	Regardless that the Lower Concourse was not part of the original Utzon design, the proposal is minor in nature, of negligible impact and is reversible. The proposal imbues the relevant aspects of the UDPs and CMP.
Policy 4.8 – Approach to change – Hall elements	Any adaptation or modest functional improvement, as described in Policy 4.4, to elements or interiors designed by Hall must retain or recover the character of his original design regimes with their coordinated detailing.	The proposal is minor in nature, of negligible impact and is reversible. The proposal imbues the relevant aspects of the UDPs and CMP.
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.	The proposal effectively seeks to replace an existing structure with another of similar bulk and scale but which is more refined in design, more functional, adopts a relationship with the established geometry of the Lower Concourse, better integrates structure and services and generally will be more consistent with the standard of design accustomed with the Opera House and its precinct and that expected of the World Heritage listed site.
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	Not applicable.

DESIGN CONSIDERATION	EXISTING	PROPOSED
	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.	Not applicable.
Policy 6.6 – Shelter on Podium and Lower Concourse	<p>No umbrellas or other forms of shelter or tall objects, either temporary or permanent, should be placed on:</p> <ul style="list-style-type: none"> -- any external areas of the Podium platform itself; -- the roof of the Colonnade; -- any areas of the raised waterside walkway on the Lower Concourse 	<p>The proposed shade structures are located in the same location as similar existing structures and will be of a similar bulk and scale.</p> <p>There are no structures proposed in any of the areas that this policy advocates should remain free of “umbrellas or other forms of shelter...”.</p>
Policy 7.17 – Fitouts in Lower Concourse	Individual tenancy fitouts and associated furniture and other objects in this area must:	
	-- retain and respect the Hall regime in accordance with Policy 4.8;	Refer to comments made herein in regard to 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;	<p>The proposal will not detrimentally impact on the “open outdoor character of the space” with any more significance than the existing umbrellas.</p> <p>The proposal will result in negligible impact on views to and/or from any publicly accessible vantage point within or on approach to the Opera House precinct.</p>
	-- not enclose in any way the open space and colonnaded area outside the line of existing enclosure defined by the continuous fronts;	The proposal has no impact on “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;	The proposal has no impact on the “mushroom” columns.
	-- not attach to, obscure or visually interrupt the continuous sweep of the parapet spandrel to the Forecourt above;	The proposed shade structures do not attach to nor interfere in any way with

DESIGN CONSIDERATION	EXISTING	PROPOSED
		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;	The materials, finishes and approach to lighting are substantially similar to the existing and will “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	Principal materials and finishes do not utilize white, off white, black nor any highly reflective surfaces.
	— not encroach on or otherwise restrict the pedestrian walkway area between the mushroom columns and the east wall, or along the seawall.	The proposal will have no impact on the pedestrian walkway area between the mushroom columns and the east wall, or along the seawall.
	— accord with the Utzon Design Principles and sit comfortably with the hierarchy and palette of natural exterior materials used in the public spaces adjacent;	Material and finish will be identical to the exiting materials and finishes including colour and texture.

Response to the Utzon Design Principles

The following section discusses the relevant Utzon Principal Objectives and Fundamental Design Principles.

Principle Objectives

The following section explores the proposal's consideration of relevant Utzon Principal Design Objectives.

Keep the approach, the openness and fluidity of movement

The proposed works effectively replace an existing structure of minimal impact, the existing umbrellas, with another of even less impact but improved architectural merit... The proposed shade structures.

The proposal does not appreciably alter the experience of the Opera House from any approach. The proposal maintains the openness and fluidity of movement.

The proposal is more considered and less cluttered in form and detail. The proposal responds to the established geometry of the Lower Concourse. Accordingly, it is less distracting and more consistent with the design integrity imbued in the Opera House precinct.

New structures close to Sydney Opera House diminish its role as icon/ landmark

This primarily relates to obscuring views to and from the Sydney Opera House. In this instance the shade structure proposal does not obscure any views to and or across the site from any public vantage point and the Sydney Opera House and as such does not impact on the prominence of the Opera House nor its role as an icon/landmark.

Forecourt should not be cluttered

The proposed structure will have no material impact on the Forecourt and will not be seen from most of the Forecourt.

Solidity of base is important

The proposed works effectively replace an existing structure of minimal impact in the context of the bulk and scale of the Opera House base with another of even less impact but improved architectural merit. The proposed shade structures are relatively lightweight utilising minimal structure. In material and finish they will recede and blend with the background context. They are simpler in form and detail and will not detract from the solidity of the base.

Need to adjust to changing standards

The proposal recognises and embraces the opportunity to improve the amenity of the outdoor area for patrons, providing improved weather and solar protection in a more considered and integrated manner than that which is existing.

Modifications made progressively

The proposal is relatively minor in scope and is part of a larger project of progressive improvement of the hospitality facilities. The proposed are relatively un-intrusive and reversible with minimal impact on existing (original) fabric.

Fundamental Design Principles

Inspiration from nature

The Utzon Design Principles identify a variety of key concepts. Those that could be considered relevant to this proposal include:

- Organic beauty
- Natures colours
- Reflection of sunlight

The form of the proposed shade structures relates but does not compete with the established geometry of the existing structures. The design of the proposed structures relates to the curved form of the concourses and the radial geometry established by the principal structural elements and paving pattern. The existing umbrellas do not address these established design cues and in this regard the proposal offers an improvement over the existing. Accordingly, the “organic beauty” of the original design is maintained.

Material and finish will be identical to the exiting materials and finishes including colour and texture. Accordingly, the proposed works will remain true to the concept of “natures colours”.

The fabric of the new structures will closely match Dulux “Coconut Husk” being the previously approved colour determined to best blend the shade structures with the background structure of the concourses. This will essentially match the existing umbrella skins which were replaced previously as part of the Stage 1 works. Accordingly, the proposal will not detract from the reflection of light off the sail forms of the Opera House itself.

Human Experience

The Utzon Design Principles identify a variety of key concepts that relate to the “human experience”. Those that could be considered relevant to this proposal include:

- Emotional response, functionalism and human expression
- Beautiful experience/oriented
- Being in another world
- Consideration of details like doors
- Harbour
- Festive mood

These characteristics are referenced by Utzon to describe aspects of the “human experience” which are identified as being fundamental to the experience of the place and enhanced through the design of the Opera House.

Subsequent development is expected to respect this consideration of the “human experience” achieved by the design of the Opera House.

The proposed replacement of the existing umbrellas in no way diminishes the “human experience” of the Opera House. On the contrary the provision of shade structures that respond to the established geometry of the lower concourse and which are more elegant in detail only assists to enhance the “human experience”.

The building as sculpture

The Utzon Design Principles identify a variety of key concepts in regard to the building being considered as a "sculpture". Those that could be considered relevant to this proposal include:

- Iconic presence
- Free in Sydney Harbour
- Large sculptural building seen from all sides
- Sculpture of dynamic forms
- Experience
- Shell forms to suit functions
- Acoustic shape determined by sound and how the audience would see it

The proposed works are relatively minor in nature and will have no detrimental impact on the ability to interpret the Opera House as a free-standing sculpture standing apart from other buildings and structures that surround it.

The existing and proposed shade structures are located on the Lower Concourse and the maximum height of the structures is effectively below the Upper Concourse parapet.

The proposed shade structures have negligible and no additional visual impact over and above the existing umbrellas from any of the primary means of approach to the Opera House.

They have been designed to be relatively recessive elements and do not feature prominently in any view towards the Opera House nor do they particularly impact on significant aspects of views from the Opera House nor its Forecourt.

The proposed shade structures are simple yet dynamic in form and neutral in colour.

The proposed new shade structures will improve amenity and also improve the aesthetic experience on approach to the Opera House via the Lower Concourse through the application of a simplified, more homogenous design utilising less obtrusive structure than the existing umbrellas.

There will be no perceivable impact upon the manner in which the white shells of the Opera House mirror the Harbour and sky.

Similarly, there will be no detrimental impact on the ascent of the main staircase on the southern side of the Opera House.

The proposal will not deter from the experience of the Opera House as "sculpture".

Orientation and movement

The Utzon Design Principles identify a variety of key concepts in relation to "orientation and movement". Those that could be considered relevant to this proposal include:

- Oriented in harbour setting
- Simple, easily understood tour
- Podium headland influence
- Walk in open up to entering auditoria

The proposal respects these principals and does not compete with the Opera House in its approach to these criteria. Accordingly, the proposed works will have no detrimental impact in this regard.

Additive architectural elements

The Utzon Design Principles identify a variety of key concepts in relation to "additive architectural elements".

Those that could be considered relevant to this proposal include:

- Expression of elements, produced industrially

"The exteriors of the building stand as an expression for something basic in the concept - the idea of dividing the various parts up into equal components, which can be produced industrially and afterwards put together to form a structure of the desired form." (3)

- Reference to nature

"Or you see it in various cross sections of nature's elements - if you cut across an onion you see the different layers." (2)

- Geometry

"The wall cladding elements are nominally 4' wide and of varying lengths to 30'... over doors, windows and ventilation openings, there are special elements forming hoods for sun and weather protection. There are other variations of the basic element type forming sills, jambs, parapets, and stair balustrades."

The proposal reflects Utzon's principal of "additive architectural elements" which is evidenced by the response to structure, form, geometry, etc outlined elsewhere in this statement.

Furthermore, the proposed structure is a simple expression of it's form, elegant in execution and structurally efficient.

The proposed form and arrangement of the shade structure responds to the radial structural grid and the modular nature in which structure, paving and cladding fit within the established grid.

Ultimately the shade structures are, relatively light-weight, additive elements, the provision of which is reversible with no real long term detrimental impact on the original building fabric.

Additive architectural elements: Geometry

The Utzon Design Principles identify a variety of key concepts in relation to "additive architectural elements" and specifically in regard to "geometry". Those that could be considered relevant to this proposal include:

- Common geometric determinator
- Under control by strict geometry
- Surfaces comprehended because of geometric order
- Simple living geometric forms

The Lower Concourse is set out on a radial geometric arrangement characterised by large sweeping curves. The geometric arrangement is reflected in the paving and cladding patterns.

The proposed shade structure form is of a dynamic, but simple design and profile developed to respond to the established geometry.

The arrangement responds to the geometry of the paving both in plan profile, which reflects the radial paving setout and the structures are located to bear a more considered approach to the set out of the masts and principal structure by comparison with the exiting umbrellas.

In this regard the overall design is more architecturally responsive and consistent with the design principles the Opera House and precinct in general yet simplistic and restrained so as not to compete in prominence with the architecture of the Opera House.

Structural expression

The Utzon Design Principles identify a variety of key concepts in regard to "structural expression". Those that could be considered relevant to this proposal include:

- Structural expression and architecture
- Sculptural effect
- Spans expressed by ribs and folds
- Exposing materials
- Simplicity in materials

The existing umbrella structures are proprietary, non-place specific, utilitarian objects. Whilst they are functional and relatively unobtrusive in the grand context of the Opera House and its precinct they are also contradictory to some of Utzon's design principals.

The proposed shade structures, by contrast, have been designed to respond to the established geometry of the concourses.

The forms remain simple (umbrella like) and largely subservient to the principal building elements but sit in harmony with them.

The structure, whilst simple, is expressed in the form of the shade structures and their detailing. Materials and finishes are simple and complimentary essentially matching existing.

In this regard the proposal addresses Utzon's intent in regard to "structural expression" whilst respecting the established hierarchy of form.

Colour

The Utzon Design Principles identify a variety of key concepts in regard to “colour”. Those that could be considered relevant to this proposal include:

- White shell as contrast
- Colour reinforcing human spatial experience, movement
- Practical glare

“I agree (white outdoor furniture is wrong because only the sails should be white). Because white is no good for outdoor furniture as my eyes can’t tolerate white when I eat.” (4)

In accordance with the Utzon Design Principles the shade cover fabric will be non-reflective and in a sympathetic natural tone as noted to closely match Dulux Coconut Husk. The Dulux colour “Coconut Husk” was previously determined to be the most visually consistent when viewed against the background of the concourse superstructure. In this regard the proposed structures are intended to be recessive and not compete with the monumental grandeur of the “white sculpture” of the sail like forms of the Opera House itself.

The selected colour whilst presenting as recessive against the existing form of the concourses also assists to reduce glare and ensure that secondary structures do not compete with the principal forms of the Opera House sails and the podium.

The selected colour will provide a comfortable dining, and visitor experience generally, without excessive glare.

Light

The Utzon Design Principles identify a variety of key concepts in respect of “light”. Those that could be considered relevant to this proposal include:

- White sculpture - catches the sky’s varied light

“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.” (2)

- Light to flatter human form of skin and hair

“To give life to the skin and hair on the human form in much the same way as the light from candles.” (3)

- Generally indirect with custom designed fittings

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.” (3)

In accordance with the Utzon Design Principles the shade cover fabric will be non-reflective and in a sympathetic natural tone as noted to closely match Dulux Coconut Husk. The Dulux colour “Coconut Husk” was previously determined to be the most visually consistent when viewed against the background of the concourse superstructure. In this regard the proposed structures are intended to be recessive and not compete with the monumental grandeur of the “white sculpture” of the sail like forms of the Opera House itself.

The shade structures themselves, in the selected colour (to match Dulux Coconut Husk) will reflect a warm natural tone of light consistent with the intent to “flatter human form”.

In the evening the shade structures will be gently up lit from fittings integrated with the structure to produce a warm natural ambient light without glare, with the intent to “flatter human form”.

The proposal is considered to embrace Utzon’s relevant design characteristics in regard to light.

Conclusion

The design response is the result of considerable effort to maximise the potential of the project whilst maintaining the integrity of the site and the experience of the Opera House.

The proposed works are minor in scope and insignificant in impact.

Accordingly, the proposed shade structures do not compete with nor contradict Utzon's grand vision in any way. On the contrary they provide an improved approach to the provision of shade and weather protection, compared with the existing umbrellas, that is more consistent with the standard of design associated with the Sydney Opera House and precinct.

This proposal is presented as a welcome and appropriate improvement.

Response to 2016 DA Submissions

Glazing Line Amendments (Response to DA Submissions)

The following section summarises the approach of this application to address issues raised in submissions received by the Department of Planning, on referral, in relation to a Development Application (SSD 7431) previously lodged in 2016. Submissions were received from the **Department of Planning**, the **New South Wales Heritage Council** and the **City of Sydney**.

Great care has been taken in the preparation of this application by the Sydney Opera House and their consultant team and the application has been prepared and reviewed in consultation with the appointed Design Advisory Panel and the Sydney Opera House Conservation Council.

Each issue is summarised separately and a comment in relation to the design approach adopted for this application to resolve each issue is provided for reference.

1. Demonstrate that new alignment will maintain sightlines especially to stairs to forecourt

The proposal's impact on existing sightlines around the lower concourse in both directions is negligible. This is evidenced by **Error! Reference source not found.** where it can be seen that the amended glazing alignment has little impact on sightlines and no impact on views on approach around the Lower Concourse towards the existing stair connection with the Upper Concourse and Opera House Forecourt.

This figure illustrates the notional view corridor on approach to the Forecourt Stair from the south. It indicates that the real visual obstruction, as illustrated by the red hatched area, is negligible by comparison to the "blue" area which represents the bulk of the view towards the Forecourt Stair.

The effective obstruction is even less as some transparency is expected through the glazed façade and the façade.

Figure 7 and *Figure 8* provide a before and after representation of the view corridor in perspective format. It can be seen that the Forecourt Stair remain clearly discernible. It should also be noted that the view to the Forecourt Stair location sign, adjacent to the stair and suspended from the ceiling, also remains clearly discernible.

The new arrangement assists to control pedestrian flow around the concourse in this location eliminating the pocket of ill-defined space at the bottom of the stair. This can be seen, in particular, by inspection of *Figure 9* and *Figure 10*. Efforts have been made to activate this space as part of the Stage 1 refurbishment works, complete in December 2014. These works established the "Wine and Cheese" area in the former Office/Storage space. But the space remains ill-defined and still somewhat disconnected from the Opera Bar itself. This proposal will rectify this issue.

The proposed alignment was the subject of lengthy consideration which resulted in the mocking up of various options on site. The then Sydney Opera House Eminent Architects Panel and representatives from the SOH Trust were in attendance when the preferred alignment was selected.

Concern was raised that the previous DA proposal resulted in insufficient space at the bottom of the stair to the Upper Concourse and Forecourt.

It was the view of the design team, at the time, that the landing at the bottom of the stair was sufficiently generous in proportion and considered to be more than adequate in dimension to service the anticipated pedestrian flow without obstruction.

The peak pedestrian flow demands were considered by Olsen Fire, in relation to the 2016 DA, and determined to have no detrimental impact on pedestrian safety or amenity.

Irrespective it was decided to increase the space at the bottom of the stair as much as is practical. Accordingly, this proposal significantly increases the space between the relocated glazing line and the bottom of the stair.

The proposal improves pedestrian flow around the concourse by removing the existing pinch point between the existing glazing line and mushroom columns. Refer to *Figure 6*. At the pinch point the existing clear dimension between the glazing and the inside face of the mushroom column opposite is 3.13m.

It is the pedestrian flow around the lower concourse which generates the greatest foot traffic in this location.

The existing “pinch-point” is also located near an entry to the internal Opera Bar creating further congestion during peak periods in this location.

The proposed glazing alignment will increase the width of carriage at the pinch point to a consistent 3.985m clear between glazing line and inside edge of the mushroom columns opposite. This provides an additional 0.855m in clear carriageway and represents a 27% improvement.

The increased width of carriage created by removal of this “pinch-point” will be of benefit in reducing foot traffic congestion in this location.

The flow of pedestrian traffic is rationalised via the existing adjacent stair to the Upper Concourse. Whilst the proposal does suggest a reduction in area at the bottom of the stair the allocation of space remains significant. And critical dimensions remain more than generous enough to cope with anticipated peak pedestrian flows.

The proposed glazing alignment will result in a more effective and balanced Opera Bar Dining area allowing Opera Bar to greatly improve its internal dining offer producing a better experience for patrons and visitors.

2. Reduces line of sight to stairs to forecourt

Refer to the commentary provided in relation to Item 1 above.

3. Reduces ease of access to these stairs

Refer to the commentary provided in relation to Item 1 above.

4. Privatises additional space on the LC

This area is presently underutilised being essentially clear space in front of a fire exit that serves the Back of House area of the Opera Bar and Opera Kitchen only. By comparison with the dimensions of the exit currently provided, alternative paths of egress exist which more than adequately serve the relatively small population of Back of House personnel.

Whilst the space is utilised for commercial purposes it provides dining facilities adjunct to the Opera House which are in high demand. Patronage of these facilities contribute significantly to the economic sustainability of the Opera House precinct.

The Sydney Opera House and its precinct is a “world class” destination. And the Opera Bar is renowned in its own right as a complimentary experience associated with the Opera House precinct. It provides an essential hospitality service which is aligned with and commensurate in quality to the expectations of visitors to the precinct.

The proposed realignment will assist Opera Bar to provide an improved internal Dining Area in conjunction, and balanced, with the internal Dining area to the south. This will benefit visitors to the precinct and is in high demand.

The provision of comfortable, internal dining area is currently disproportionate with the scale of the venue restricting choice for patrons and making it impossible to service demand in inclement weather.

The proposed alignment does not disrupt the flow of pedestrians. The primary peak pedestrian flow in this location occurs around the public access way, under the Upper Concourse, between the glazing line and colonnade.

The proposal, in fact, removes a constriction between the existing glazing line and the colonnade opposite which presently occurs directly in front of the Opera Bar glazing line. The existing path of travel reduces to 3.13m in width at its most constricted. The proposed alignment will return the passage width to 3.985m in the same location. This provides an additional 0.855m in clear carriageway and represents a 27% improvement.

The existing constriction also occurs adjacent to an entry to the internal Opera Bar area resulting in a concentration of pedestrian movement at the most constricted point.

The proposal maximises pedestrian flow at this restricted point. Furthermore, by consolidating the landing space at the bottom of the stair adjacent to the north of the Opera Bar Entry additional pedestrian conflict is further reduced.

5. Contrary to CMP

The proposal does not intrude upon the open, uncluttered character of the place. Conversely it replaces a large area of poorly lit, underutilised space with a contiguous, productive use that integrates with the existing glazing design.

The safety of visitors in no way compromised. Rather, by removal of the constriction along the primary pedestrian flow path it would be improved.

6. Contrary to SREP to increase, maintain, improve access to foreshore

The Planning Principles outlined within Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005, specifically, Clauses 13(g) and 14(b), call for the number of publicly accessible vantage points and public access to the Sydney Harbour foreshore to be increased, maintained and improved.

The proposal maintains an existing public access to the harbour foreshore. Accordingly, it is not “inconsistent” with the Sydney REP.

7. Recommendation 1 - as above

Refer to commentary made in relation to Item 8 below.

8. Recommendation 2- redesign glazing line as shown

The submission proposed an alternative glazing alignment. The alignment proposed relatively tight complimentary curves. There is no precedent for such an approach in the Lower Concourse area. Accordingly the design team did not adopt this approach, but have provided significantly more space between the bottom stair landing and amended glazing line.

With the new DA proposal the glazing alignment is more consistent with the existing glazing alignment in the manner in which the glazing radiuses tangentially back to meet the vertical granite cladding.

The proposed alignment will also retain a more appropriately proportioned and more functional Dining area.

Sight lines to and from the stair are sufficiently maintained and pedestrian access is not restricted.

As discussed previously, refer to commentary in relation to Item 1, the proposed glazing alignment has been the subject of significant consideration and we contend that it remains an appropriate option in this instance.

9. Office and cool room easily reversible

The new back of house area is all non-structural. Walls will be of partition construction and all materials, finishes, fittings and finishes will be designed to be Food Code compliant. All works will be reversible.

10. No evacuation for Office and cool room

There is no excavation required nor will there be any impact of the existing hydrostatic slab in the region of the works associated with this application.

New drainage works required will be constructed within the depth of the existing finishing slab in the same manner as they were recently achieved in relation to the construction of the Wine and Cheese area fitout in December 2014.

Shade Structures (Response to DA Submissions)

The following section summarises the approach of this application to address issues raised in submissions received by the Department of Planning, on referral, in relation to a Development Application (SSD 7430) previously lodged in 2016. Submissions were received from the **Department of Planning**, the **New South Wales Heritage Council** and the **City of Sydney**.

Great care has been taken in the preparation of this application by the Sydney Opera House and their consultant team and the application has been prepared and reviewed in consultation with the appointed Design Advisory Panel and the Sydney Opera House Conservation Council.

Each issue is summarised separately and a comment in relation to the design approach adopted for this application to resolve each issue is provided for reference.

Department of Planning

1. How the design of the shade structures achieves consistency with the UDP & CMP

Great care, extensive consultation and coordination between the Sydney Opera House, Opera Bar, Opera Kitchen and the team of specialist consultants has been undertaken to arrive at the scheme proposed.

The proposal has been developed with the intent of the Conservation Management Plan and UDP at heart.

Details of the design approach to relevant aspects of the CMP and UDP are covered in the relevant sections of this statement.

Sydney Opera House, Utzon Design Principles, May 2002

It is important to note that the UDP is not a prescriptive standard it is conceptual guide intended to provide the framework to establish a conceptual approach to future maintenance and development in the Opera House precinct that is consistent with Utzon's vision for the site.

The UDP acknowledges that:

"modifications can be made as the questions and needs arise" (p.53)

The following aspects of the UDP, considered most relevant to this application, in regard to *Principal Objectives* and *Fundamental Design Principles* that relate to our proposal have been considered.

Principle Objective: Keep the approach, the openness and fluidity of movement

Refer to commentary made in relation to this objective in the previous section, *Response to Utzon Design Principles*.

Principle Objective: New structures close to Sydney Opera House diminish its role as icon/ landmark

Refer to commentary made in relation to this objective in the previous section, *Response to Utzon Design Principles*.

Principle Objective: Forecourt should not be cluttered

Refer to commentary made in relation to this objective in the previous section, *Response to Utzon Design Principles*.

Principle Objective: Solidity of base is important

Refer to commentary made in relation to this objective in the previous section, *Response to Utzon Design Principles*.

Principle Objective: Need to adjust to changing standards

Refer to commentary made in relation to this objective in the previous section, *Response to Utzon Design Principles*.

Principle Objective: Modifications made progressively

The proposal is relatively minor in scope and is part of a larger project of progressive improvement of the hospitality facilities.

Fundamental Design Principles: Inspiration from nature

The proposal is relatively minor in scope and is part of a larger project of progressive improvement of the hospitality facilities.

Fundamental Design Principles: Human Experience

The proposal is relatively minor in scope and is part of a larger project of progressive improvement of the hospitality facilities.

Fundamental Design Principles: The building as sculpture

The proposal is relatively minor in scope and is part of a larger project of progressive improvement of the hospitality facilities.

Fundamental Design Principles: Orientation and movement

The proposal is relatively minor in scope and is part of a larger project of progressive improvement of the hospitality facilities.

Fundamental Design Principles: Additive architectural elements

The proposal is relatively minor in scope and is part of a larger project of progressive improvement of the hospitality facilities.

Fundamental Design Principles: Additive architectural elements: Geometry

The proposal is relatively minor in scope and is part of a larger project of progressive improvement of the hospitality facilities.

Fundamental Design Principles: Structural expression

The proposal is relatively minor in scope and is part of a larger project of progressive improvement of the hospitality facilities.

Fundamental Design Principles: Colour

The proposal is relatively minor in scope and is part of a larger project of progressive improvement of the hospitality facilities.

Fundamental Design Principles: Light

The proposal is relatively minor in scope and is part of a larger project of progressive improvement of the hospitality facilities.

2. Design - connecting cover between umbrellas

One of the submissions raised concern in regard to the perceived connection proposed between adjacent sections of new shade structure.

The connecting cover is necessary to provide continuity of weather protection which is a fundamental objective of the project.

It is accepted that outdoor area is "outdoor" by virtue that it is exposed to the sky and consequently the weather. Consequently by virtue of that fact the enjoyment of the area is somewhat weather dependant. However, in order to provide a safe and comfortable environment it is only logical that some level of weather protection to a proportion of the outdoor area be established.

The existing umbrellas provide some level of protection. But their effectiveness is compromised by the manner in which they are connected by unsightly and largely ineffective gussets required to shed water during wet weather.

The existing umbrellas incorporate gussets and gutters that are effectively stitched in between the main umbrellas. Refer to *Figure 33*. These perform poorly from a functional perspective and are unsightly aesthetically.

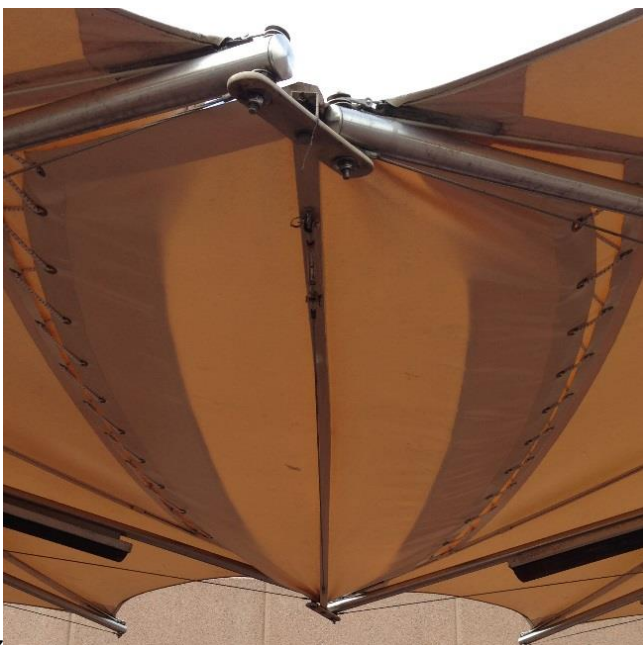


Figure 33: Existing umbrella gusset detail

In response the proposed design incorporates integrated gussets that are proposed to be cut from translucent fabric. By comparison the proposed connection detail is refined and integral with the design of the proposed shade structures.

The effect is intended to break down the apparent expanse of the shade structures and promote that appearance that the structure is made up from a collection of smaller, “umbrella like”, structures.

Additionally, the structural continuity provided by the fabric assists to reduce the member sizes of the entire assembly.

The segmental geometry of the shade structures is designed in response to the radial geometry of the concourse structure and envelope. In turn the connecting cover has been designed in a manner to express the segmental geometry of the proposed shade structures. In this regard the connecting cover contributes to the integrity of the design and responds to the context established by the existing structure and envelope thereby respecting the precedence of the form and detail of the existing structure and envelope.

The connecting cover is made of translucent material. Tensioned cables have been employed to restrain the desired curved form whilst promoting the appearance that the shade structures comprise of individual canopies.

The structure is detailed in a manner to express the connection between each primary structural element in a recessive way. The detailing is intended to present the design approach as an assembly of parts. This is not only consistent with the design approach to the assembly of the Opera House itself, as reiterated by the “Utzon Design Principles”, but makes structural sense in that an economy in the performance of the structure is achieved through the connection of individual elements which would not otherwise be possible if they were not connected.

3. Design- Visual impact of the 100mm deep frame along the edge of each structure

The proposed design has eliminated the edge beams detailed on the 2016 DA. The edge of the proposed shade structures will be taught fabric reinforced with tension cables in a manner similar to the existing umbrellas.

4. Design- setbacks from the raised seating area

Refer to commentary made below in relation to Item 23.

5. Material of drop down screen (visual representation)

Retractable acoustic screen

The retractable acoustic screen proposed by the 2016 DA has, subsequent to further development of the approach to the management of acoustic impacts, been deemed redundant. Accordingly, this element has been removed from this application.

Retractable sun screens behind the Outdoor Bar.

In order to maintain safety and comfort for the patrons and staff of Opera Bar it is necessary to utilise glare and UV reduction blinds behind the Outdoor at certain times. These screens are only located directly behind the Outdoor Bar and only utilised when required. They are only required to be deployed at certain times of the year in the late afternoon to ameliorate the impacts of glare for patrons at the bar and solar exposure for staff working behind the bar. Refer to Figure 34 below.

It is proposed that blinds which presently drop down from the edge of the existing umbrellas be removed and replaced with blinds which rise up from behind the Outdoor Bar back bar. These new blinds would retract into the back-bar joinery. It is intended that these blinds would only be deployed when necessary. The joinery will be designed and detailed such that the blinds are virtually imperceivable when retracted.

The glare and UV reduction fabric will be similar to that presently in use. This fabric is almost transparent as can be seen in Figure 34. It is sufficiently transparent to retain views of Circular Quay and the Harbour Bridge beyond even when the blinds are in use.



Figure 34: The Outdoor Bar showing the existing retractable shade blinds behind

The proposal intends to fit the blinds from behind the bar such that the blind spindle is not connected to the shade structure. This is unlike the existing umbrellas where the open blind can still be seen, rolled up, but hanging from the outside edge of the umbrella. In

6. Branding on structures

The proposed branding has been removed from the proposal.

This is reflected in the Visual Impact Study that accompanies this application.

7. Lighting details

Refer to commentary made below in relation to Item 13.

8. View analysis showing view loss from within LC

With reference to *Figure 12* it can be seen that the proposed shade structures, whilst similar in footprint, provide a slightly increased clearance from the finished paving level to the lower edge of the structure and fabric.

This will result in no detrimental impact, but slightly improved sight lines from the Lower Concourse generally.

Furthermore, the proposed structure, despite being nominally larger in surface area, is simpler in form, less cluttered in detail, complementary to the generative geometry of the existing building structure and paving grid and accordingly less visually distracting than the existing umbrella forms.

9. Design - The design displays a competing roof form to the sails of the Sydney Opera House is not consistent with the Utzon Design Principles

Figure 28 and *Figure 30* illustrate the shade structures when viewed in context with the Opera House precinct, the built form of Circular Quay, the city beyond and the natural form of the Botanic Gardens behind.

When viewed from any distant vantage point any structure designed to complement the existing form and materiality of the Opera House Concourse and that is essentially lower in height than the Upper Concourse parapet will have practically no impact on the visual setting of the Opera House.

The proposed shade structures have been designed to complement the existing form and materiality of the concourse and are lower in height than the Upper Concourse parapet.

The proposed shade structures are so insignificant in scale, by comparison to the Opera House and its established context, that neither the proposed shade structures nor the existing umbrellas could be considered in any way in “competition” with the sail like form of the Opera House.

The UDP notes that “new structures close to Sydney Opera House diminish its role as icon/landmark” (UDP, p. 49). The subtext to this principle refers to the placing of “large new structures closer and closer to the Opera House” (emphasis added, UDP, p. 49).

The proposal in this instance is not considered “large” in the established context. It is lower than the Upper Concourse parapet and complementary in material and finish.

The proposal is not “closer” to the Opera House than the existing umbrellas.

The proposal does cover more area, but in the context of the scale of the concourses and forecourt this increase in area is negligible and of no impact on the intent of the UDP.

The proposal is not higher than the existing umbrellas.

The subtext of this principal continues to refer to “clutter” and the detrimental impacts of clutter on the visual setting of the Opera House particularly when views to the Opera House are obstructed.

In this regard the proposal reduces “clutter” as the proposed form is simpler in geometry, simpler in structure and designed to respond to the established geometry of the existing concourses.

The proposal does not obstruct views to the Opera House from any principal public vantage point.

The UDP speaks of the Opera House “being free in Sydney Harbour” (UDP, p. 49) as a “chief characteristic” (UDP, p. 49). The proposal does not impact on this attribute of the visual setting.

A fundamental objective of this project is to replace the existing umbrellas with a more sympathetic response to the brief of providing improved shade and weather protection to the Lower Concourse Opera Bar & Opera Kitchen areas.

The design strategy has been employed to produce a shade structure that is considered in form and respectful of its established context. A further objective of the brief for this project is to replace the existing haphazard spattering of umbrellas which are considered to be more visually obtrusive.

The proposal is not considered to “depart” from the free form of the sails. The proposal is not considered to visually impact on the free form of the sails. The proposed shade structure is diminutive by comparison with the concourse in general and most certainly the structure of the Opera House sails. The design intentionally references the geometric arrangement of the lower concourse and reflects the curvilinear nature of the lower concourse structure. But the utilisation of this generative reference only assists to ensure that the proposed form rests more comfortably in the context and is less visually obtrusive in comparison with the form of the Opera House sails.

Ultimately, the proposal presents a net improvement to the visual setting through its reductions in clutter, simplification of form and complementary geometric arrangement.

10. Design – The linear canopy edge dominates the Lower Concourse seawall when viewed from the water.

The proposed form differs to the 2016 DA and adopts a more “umbrella like” form with a significantly more articulated edge.

Figure 28 and *Figure 30* illustrate the proposed shade structures relationship with the sea wall and the proposed structures respond to the established form of the concourse. The “articulated” edge adopts a complementary curve and does not evoke a “dominant horizontal plane”. The dominant geometry remains established by the significant structure of the sea wall and concourse.

The existing umbrellas are clumsy and distract from the robust elegance of the concourse and sea wall. By contrast the proposed shade structures present an opportunity to replace the existing umbrellas with a shade structure that is more consistent with the quality of experience expected of the Opera House precinct.

11. Custom modules used i.e. not reproducible, mass produced etc.- contravenes UDP

It would appear that this contention is drawn from the UDP section titled “Additive Architecture – Prefabrication”. Refer also to commentary made in relation to Item 1 above.

It should be noted that the broad principal of “Additive Architecture” espoused by the UDP includes a number of other sub sections relating to “elements” and “geometry”. It is the broad concept of “Additive Architecture” which is important in relation to design integrity of the Opera House and precinct in the whole.

In this regard the proposed shade structures:

- Are “basic” in form;
- The form is expressed and evident in the design and detailing;
- They are constructed generally of “uniform” components. The shade structure elements are well defined in form and assembled from discreet elements despite their being variations in the parameters of individual members. This is consistent with the intent of the UDP;
- The structure is of custom design but will be manufactured from components that are “machine made” and produced “industrially”. The proposed structure will be manufactured from steel. It is designed to be manufactured from standard sections that will be fabricated to form the structural elements of the canopy. There is no fundamental difference between the manner in which the proposed shade structure will be manufactured and much of the existing metalwork that presently exists within the Opera House precinct;
- The forms reference nature in so far as the structure is a direct an expression of the desired form;
- The form is tailored to fit comfortably within the existing built form of the concourse. The forms are set out from a common geometric determinator that is consistent with the established geometry of the concourses. The area is of a radial geometric arrangement characterised by large sweeping curves. The geometric arrangement is reflected in the paving and cladding patterns. The resultant surfaces are defined by the established geometric order extrapolated into a new form fashioned to suit the purpose of providing shade and weather protection.
- The forms are “under control” by the geometry established in so far as the established geometry is reflected in the forms of the proposed structures. There is elemental hierarchy and no superfluous detail. The arrangement responds to the geometry of the paving both in plan profile, which reflects the radial paving set-out and in location which bears a more considered approach to locating of the masts.
- The proposed shade structure form is of a dynamic, custom design and profile developed to respond to the established geometry. There is harmony evident in the structural simplicity and dynamic form proposed and the manner in which it is designed to integrate with the built form of the existing concourse.
- The form of the shade structures is relatively simple structurally. It is generated from a geometry from which relates to the underlying organisation of the existing sweeping curves of the concourse and the geometric grid established by the existing structure, paving and cladding arrangement.
- The proposed shade structure is simpler than the existing umbrella structures.

In this regard the overall design is more architecturally responsive and consistent with the UDP yet simplistic and restrained so as not to compete in prominence with the architecture of the Opera House.

12. Drop down screens contribute to privatisation of the public space

As discussed in relation to the commentary with respect of previous issues, the drop-down screens included in the 2016 DA have been removed from this application.

13. LED lighting will emphasize the larger roof form

The existing umbrellas are up lit from 2700K (warm white + RGB) external grade, fully dimmable, LED fittings.

The proposed shade structure will utilise the same lighting principle with light source mounted off the new shade structure outriggers to direct light on to the underside of the fabric without spill. Refer to *Figure 35*. The new fittings will be graduated such that the intensity of illumination can be varied along the length of the outrigger. This will assist to provide an even distribution of light to the underside of the shade structure fabric.

The effect of the existing lighting can be seen at *Figure 36* below. It can be seen that the up lit umbrellas generate a low glare gentle ambient light. The proposed effect is expected to be similar.



Figure 35: Underside of an existing umbrella indicating the effect of up-lighting on the membrane fabric which is used to generate a low glare ambient glow



Figure 36: Photograph of Opera Bar at night illustrating that the effect of lighting the existing umbrellas does not distract from the presence of the Opera House

14. Inclusion of signage and branding not appropriate

Refer to commentary made previously in relation to Item 6.

15. Lighting details

Refer to commentary made previously in relation to Item 13.

16. Floor of LC observed from forecourt, making the structures seem bigger from FC

Refer also to commentary made in relation to Item 17 following.

Views from the Forecourt to the Lower Concourse and reference with the Lower Concourse remain clearly established.

By comparison with the existing umbrellas views of the waters edge are enhanced by the proposed form.

The proposed structural form is low in profile, integrated with the form of the concourses and sits comfortably in the established context.

The proposed shade structures do not appear any bulkier than the existing umbrellas and do not detrimentally impact on views to and from the adjacent public domain.

17. Obstructs view from forecourt, especially the water's edge

With reference to the Visual Impact Study submitted with this application, and *Figure 21* and *Figure 22* herein it is clear that there is negligible obstruction to views of Circular Quay from the public domain of the Upper Concourse.

There is really only one vantage point where there is any impact on the view of the sea wall and that is represented by *Figure 21* and *Figure 22*. Even in this instance the tops of the existing umbrellas present greater impact on the view of the water than does the proposed structure.

The proposed shade structure design is "different" to the existing umbrella form and it covers additional area. The proposed shade structures are bigger in surface area. And by virtue of such "difference" it follows that there must be some impact on an impact on views from the public domain of the Upper Concourse. However, the design goes to great effort to minimise any detrimental impact and, in fact, provides a clearer, less visually cluttered, more consistent and considered foreground to views of the harbour, Opera House and Harbour Bridge.

In this regard the proposal presents a significant improvement over the existing arrangement of umbrellas.

18. Extend over seawall walkway - obstructing views

The extents of this proposal differ to the 2016 DA. The western edge of the new shade structures generally follows the curvature of the transition between the Lower Concourse and Sea Wall Promenade. Accordingly, there is no longer any point where the proposed shade structure extends over the Sea Wall Promenade.

19. 2.3m clearance on seawall walkway insufficient as obstructs views

The clearances to the underside of the proposed structures and the existing umbrellas can be seen by review of the cross-sectional diagrams included at *Figure 12*.

The minimum clearance to the underside for the fabric is now 2.52m.

As outlined in relation to Item 18 above there is no longer any point where the proposed shade structure extends over the Sea Wall Promenade, and subsequently no point where clearance is compromised due to a change in paving level below any point with a new shade structure above.

Furthermore, the proposed structure rake gently upwards from this clearance such that the average clearance is further increased.

20. Undesirable edge condition adjacent to parapet - potential for dirt and debris accumulation over time

By review of the cross-sectional diagrams included at *Figure 12* it is evident that there is no point where the shade structure actually comes into contact with the Upper Concourse Parapet.

Furthermore, the shade structures including the membrane fabric will be regularly cleaned and maintained as the existing umbrellas presently are.

21. Recommendation 1 - retain existing umbrellas & add 1 or 2 more

A fundamental objective of the brief for this project is to replace the umbrellas with a new structure that is functionally and contextually more appropriate.

The DA submission read in conjunction with this statement provides ample justification to the effect that the proposed shade structure presents a vast improvement over the existing umbrellas in all facets of consideration.

22. Recommendation 2 - develop modular canopy. Retractable structures to be used to manage afternoon sun and inclement weather

The proposal is modular in essence. And the modules respond to the established geometry characteristic of the existing concourse arrangement.

Initial investigations considered the use of more modular and also retractable structures. However, the concept proved unfeasible for the following reasons:

- The structural requirements that need to be satisfied to accommodate the design wind loads proved, from a practical perspective, prohibitive.
- To effectively meet the brief requirements the resulting proposals actually required more individual structures than there are presently umbrellas. Such an approach was considered unsatisfactory as it would inevitably contribute to excess visual clutter.
- The structures and mechanisms, particularly in regard to retractable options, are more complex than the existing umbrellas.
- Public safety must remain paramount and operable structures present OHS issues.
- On closer consideration of the characteristics of the site and the requirements of the operators it was determined that the weather and solar protection required would be for the vast majority of the time. From a practical perspective it is unlikely that a retractable structure would be often retracted.

23. Recommendation 3- Seawall curvature to be mirrored not the forecourt one

This proposal adopts this recommendation and differs from the original 2016 DA. Accordingly, the new shade structures follow the curvature of the Sea Wall Promenade.