Architectural Design Statement

Proposal

Sydney Opera House Opera Bar Refurbishment Stage 2 & Opera Kitchen – Shade Cover Improvements

Location

Opera Bar & Opera Kitchen on the Lower Concourse, Sydney Opera House, Bennelong Point, Sydney, New South Wales

		Sydney (Applicant Dpera House
		Departmen	Consent Authority
Project # 2268	File	Revision 03	Date 25/01/16

2268_160125_GC_Opera Bar Design Statement_Shade Cover Improvements_Rev 03.docx



2 OXFORD STREET, PADDINGTON NSW 2021 AUSTRALIA T +612 9357 2288 F +612 9357 2899 E email@h-e.com.au www.h-e.com.au HUMPHREY&EDWARDS PTY ITD ARN 88056638227



Contents

Preamble	3
Methodology	3
Site and location	3
Overview of the proposal	5
Consideration of Alternatives	10
Summary of key design aspects of the proposal	10
Response to the Utzon Design Principles	14
Principle Objectives	14
Fundamental Design Principles	15
The building as sculpture	16
Conclusion	19

List of figures

Figure 1: Site Location Plan (SIX Viewer, with annotations by the Author)	4
Figure 2: View of the Sydney Opera House from near the base of the northern Sydney Harbour Bridg	
Pylon.	
Figure 3: View of the Sydney Opera House from across Circular Quay	5
Figure 4: Existing and Proposed Shade Cover configurations	6
Figure 5: Indicative cross section showing existing umbrellas and proposed shade structure	
configuration	6
Figure 6: View to the Sydney Opera House EXISTING	7
Figure 7: View to the Sydney Opera House PROPOSED	7
Figure 8: View to the Sydney Harbour Bridge EXISTING	
Figure 9: View to the Sydney Harbour Bridge PROPOSED	
Figure 10: View to Circular Quay EXISTING	
Figure 11: View to Circular Quay PROPOSED	

Copyright

The copyright in this work remains the property of Humphrey & Edwards. This document is issued in confidence to be used only by the Client who commissioned the work, for the purpose for which it is created. This document may not be reproduced in whole, or in part without the consent of Humphrey & Edwards.

Accuracy of information

Information incorporated in this advice and its supporting documentation has been compiled by the author from resources available at the time of this document's preparation. The accuracy of this statement is limited to the accuracy of the resources used in its compilation.

Where a matter is deemed to be of significant importance to the assessment of this application and doubt exists in regard to the information contained herein it may be necessary to conduct further analysis or assessment.

History of revision and amendment

This SOEE has been revised and amended as follows:

Rev	Date	Description	Ву
01	11/01/16	Preliminary DRAFT Issue for information, comment & coordination	GC

Rev	Date	Description	Ву
02	17/01/16	Preliminary DRAFT Issue for information, comment & coordination	GC
03	25/01/16	Development Application Issue: Incorporating various amendments following review of the previous DRAFT issue.	GC

Preamble

This Design Statement has been prepared to support an Environmental Impact Statement (EIS) in relation to the provision of new shade covers to external areas of the existing areas commonly known as "Opera Bar" and "Opera Kitchen" on the Lower Concourse of the Sydney Opera House.

"Urban design and visual impacts" where identified as a principle issue 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, in consultation with the stakeholder tenants (Opera Bar & Opera Kitchen), and reflects the current architectural design and all associated consultant coordination at the time of the preparation of this statement.

This statement has been prepared by Glenn Cunnington, Director of Humphrey & Edwards, Registered Architect # 6415.

Methodology

Reference is made to the following relevant documents:

- Kerr, James Semple, *Sydney Opera House, A Revised Plan for the conservations of the Sydney Opera House and its Site*, 2003 (3rd Edition). As endorsed by the NSW Heritage Council.
- Sydney Opera House, Utzon Design Principles, May 2002

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

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 Humphrey & Edwards.

Site and location

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.

The Opera Bar & Opera Kitchen sites specifically are located on the Lower Concourse to the southwest of the main Opera House.

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

Lower Concourse, is located below and to the western side of the Upper Concourse.

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

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

The Lower Concourse includes under croft areas which house food and beverage operators and this area is well known as a hospitality venue and identified with the Opera House and its precinct.

There are adjacent walkways and internal and external seating areas.

The Lower Concourse is accessed from the Underground Car Park and a number of flights of stairs that connect to the Upper Concourse.

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

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.

Overview of the proposal

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 hospitality precinct that is housed in the lower concourse supports the function of the SOH. This precinct provides essential hospitality facilities for patrons of the Sydney Opera House and the public in general. Venues such as the Opera Bar & Opera Kitchen 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 to the site whilst maintaining its cultural significance.

As part of this on gonging commitment to improve facilities it is proposed to replace the existing shade cover and weather protection 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.

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

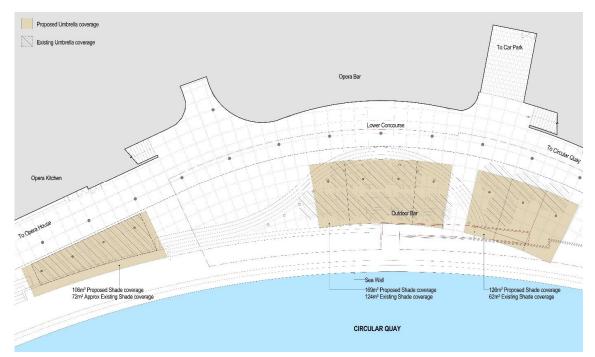


Figure 4: Existing and Proposed Shade Cover configurations



Figure 5: Indicative cross section showing existing umbrellas and proposed shade structure configuration



Figure 6: View to the Sydney Opera House EXISTING



Figure 7: View to the Sydney Opera House PROPOSED



Figure 8: View to the Sydney Harbour Bridge EXISTING



Figure 9: View to the Sydney Harbour Bridge PROPOSED



Figure 10: View to Circular Quay EXISTING



Figure 11: View to Circular Quay PROPOSED

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 with the least aesthetic impact that met the intended performance criteria.

Impact on views to, from and across the structures were all considered.

Additionally it was sought to arrive at a dynamic yet restrained form of reasonable structural efficiency.

Options considered included other fixed structures of various shapes and proportions and also fold up "umbrella" style structures.

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

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	Materials and finishes The existing mast and structure is stainless steel. The existing membrane fabric is PVDF in a colour selected to closely match Dulux Coconut Husk	Mast and structural steel members, epoxy painted steel. Colour to match Dulux Coconut Husk.
		Membrane Fabric: PVDF Colour to closely match Dulux Coconut Husk.
		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.
		Detail and material finish will be of a high standard commensurate with that expected of a World Heritage listed site.
		Note the Dulux colour "Coconut Husk" was previously determined to be the most visually consistent when viewed against the background of the concourse superstructure.
Heating	Radiant electric heating panels fixed to the underside of framing members.	Similar radiant electric heating panels fixed to the underside of the structural framing. Note newer technology is less obtrusive, smaller in dimension for the same performance and more efficient.

Design consideration	Existing	Proposed
Lighting	The existing umbrellas are up lit from 2700K (warm white) external grade, fully dimmable, LED fittings.	The proposed shade structure will utlise the same lighting principle on a larger scale.
	The up lit umbrellas generate a low glare gentle ambient light.	The membrane fabric will be up lit to generate a low glare gentle ambient light.
		The up-lighting will be installed to eliminate light spill.
Acoustic performance	The existing umbrella fabric contributes to some noise attenuation.	The proposed acoustic performance should improve as the fabric will cover additional area.
		Furthermore an acoustic drop down blind will be provided behind the designated stage area.
Context	The context is established by the flowing modern form of the existing structure, the proximity	Despite the increased size the proposed form is modest in scale.
	to the harbour and the greater development that defines Circular Quay which includes most notably the Ferry	The proposed shade structures remain insignificant in the greater context.
	Terminal, Cahill Expressway, Harbour Bridge and Opera House.	The proposed shade structures are designed to be more in harmony, in terms of form,
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.	detail and materiality with the finer established context then the existing umbrellas.	
	Furthermore 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 structural and cladding radial gradation.	
Scale (Coverage)	Approximate Plan Area Comparison Existing	Approximate Plan Area Comparison Proposed
	Opera Bar South 62m2 Opera Bar North 124m2	Opera Bar South 126m2 (I.e. an additional 64m2)
	Opera Kitchen 72m2 Total 258m2	Opera Bar North 169m2 (I.e. an additional 45m2)

Architectural Design Statement Opera Bar Refurb Stage 2 & Opera Kitchen – Shade Cover Improvements

Design consideration	Existing	Proposed
		Opera Kitchen 106m2 (I.e. an additional 34m2)
		Total 401m2 (I.e. an additional 143m2)
Scale (Height to top of apex)	Approximately 3500mm above the Intermediate Terrace Level to the apex of the Shade Cover	Approximately 3340mm above the Intermediate Terrace Level to the apex of the Shade Cover (I.e. a reduction in overall height of 160mm)
Scale (Clearance to lowest point of the shade cover)	Approximately 2400mm above the Intermediate Terrace Level	Approximately 2690mm above the Intermediate Terrace Level (I.e. a general increase in clearance to the underside of 290mm)
		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).
		The new structures, despite increasing the covered area, are shallower in overall depth.
		They are, in fact, shallower than the depth of the adjacent balustrade parapet. This assists to ensure that the proposed structures are visually unobtrusive.
Form	The existing shade cover (umbrellas) are of a generic design and "umbrella like" in	The proposed shade covers are of a custom design and profile.
	form. 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. 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. The umbrella masts are just bolted to the top of the granite pavers. This has caused damage and cracking to some pavers.	The proposed form is dynamic and features an offset cantilever.
		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.
		The new masts are slightly heavier in diameter and gauge than the existing. However the
		proportion of the structural members is in harmony with the form.
		The new masts will be fixed through the pavers and into the structural substrate slab below.

Design consideration	Existing	Proposed
	The masts are not positioned strategically to respond to the characteristic geometry of the paving.	The proposal reduces the number of masts and thereby reducing visual obstruction.
	Multiple masts are required which obstructs views from the lower forecourt.	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.
Resource, energy and water efficiency		New lighting will incorporate the latest LED technology to maximise energy efficiency.
		Similarly new heating is more efficient and will assist to reduce energy consumption.
		The structures are designed so as to minimise
Safety and security	No detrimental impact.	No detrimental impact.
Aesthetics	Refer to "Form" above	Refer to "Form" above
Visual impact		Whilst it is acknowledged that the proposed shade cover represents a significant increase in covered area Approximately 55%. The overall height is about the same and the north-south dimension increases minimally.
		Accordingly in the context of the site, and particularly in respect of long views to the Opera House and surrounds this increase is insignificant.
		This is evidenced by Figure 2 and Figure 3 herein.
		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.
		The proposed form reflects the horizontality of the concourses in general. It is designed such that the form of the new

Architectural Design Statement Opera Bar Refurb Stage 2 & Opera Kitchen – Shade Cover Improvements

Design consideration	Existing	Proposed
		structure will have no detrimental impact on views from to or from the Opera House and surrounding precinct.
		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.
		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.
		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.

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.

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 itself. In this instance the 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 this criteria.

Forecourt should not be cluttered

The proposed structure will have no impact on 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 receded and blend with the background context. They will not detract from the solidity of the base.

Need to adjust to changing standards

The proposal recognises the opportunity to improve the amenity of the outdoor area for patrons, providing improved weather and solar protection.

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 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 structural and paving patterns. The existing umbrellas do not address the 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 shade structure in no way diminishes the "human experience" of the Opera House. On the contrary the provision of shade structures more closely aligned to form of the concourses 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 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 and Main Concourse parapet.

They do not impact on the primary means of approach.

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 and its Forecourt.

The proposed shade structures are simple yet dynamic in form and neutral 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 no perceivable impact upon the manner in which the white shells of the Opera House mirror the Harbour and sky. There will be no detrimental impact on the ascent of the main staircase on the southern side.

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 assessment.

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 area is of 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, custom 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 in location which bears a more considered approach to locating of the masts.

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 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"... being 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 base.

The selected colour will provide a comfortable dining experience 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"... being 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 into the structure to produce a warm natural ambient light without glare, again 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 that is more consistent with the design standard associated with the Sydney Opera House and precinct.

This proposal is presented as a welcome and appropriate improvement.