

C1898a – Cathedral of St Michael & St John, Bathurst Lighting Concepts Revision A 28 February 2019

1.0 SUMMARY

This executive summary is intended to highlight the key components of the lighting concepts as presented and which concepts have been selected.

1.1 COMMENTARY

The Electrical Design Group was engaged to produce concept designs for the external and internal lighting for Cathedral of St Michael & St John, Bathurst. This involved an initial inspection and briefing meeting on 09 April 2018 and a presentation of the following concepts on 19 February 2019.

1.2 LIMITATIONS

This report is limited to lighting concepts and does not include specific design or detail to allow tendering or construction.

The layout of the Cathedral and design of the entry structure are yet to be finalised and the lighting concepts will need to be adjusted to suit the final layout / design.

1.3 OUTCOMES

1.3.1 INTERNAL LIGHTING

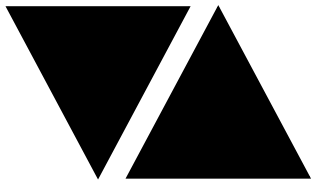
The low visual impact lighting solutions of can downlights and small up / down lights has been accepted. This will be a combination of the Option A and Option E. Additional adjustable spotlight lights will be added behind the main column to illuminate the high altar and on the side walls of the nave to illuminate the altar.

The auxiliary areas will be illuminated with downlights being recessed where possible.

All internal lighting will be coloured to match the background colour.

1.3.2 LIGHTING CONTROL

A Philips Dynalite control system will be provided to control all of the internal lights with each fitting being individually addressable and dimmable via DALI. Manual switch panels with scene pre-sets will be provided internally. The scenes will be determined and programmed during commissioning in consultation with the Cathedral users.



1.3.3 CARPARK LIGHTING

Smaller heritage style pole lights will be provided to illuminate the carpark and driveway as per Option H. The carpark lighting will be the same as that used throughout the landscape with some fittings potentially illuminating both areas.

The carpark lighting will be configured to operate automatically from dusk with 80% turning off at a predefined time and the remainder remaining on until dawn as security lighting. An override will be provided to allow all of the external lighting to be turned on for special late-night events.

1.3.4 LANDSCAPE LIGHTING

Smaller heritage style pole lights will be provided to illuminate the landscape focusing on pathways as per Option J. The carpark lighting will be the same as that used throughout the carpark with some fittings potentially illuminating both areas.

Along with the carpark lighting, the landscape lighting will be configured to operate automatically from dusk with 80% turning off at a predefined time and the remainder remaining on until dawn as security lighting. An override will be provided to allow all of the external lighting to be turned on for special late-night events.

Heritage style wall lights will be located externally above the entry doors.

The new entry structure will be illuminated.

No specific illumination will be provided to the Mary Mackillop statue or the decorative entry gate.

1.3.5 FACADE LIGHTING

The façade will not be illuminated beyond flood lighting the bell tower. The flood lights will be located on top of the lower roofs.

1.3.6 LIGHT SOURCES

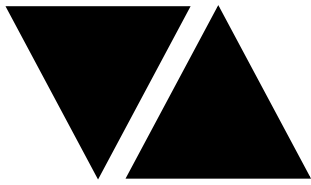
All light sources will be solid state LED with a five-year warranty to reduce ongoing energy and maintenance costs.

The internal wall lights and downlights will be 4000k (cool white) and the internal feature spotlight lights will be 3000k (warm white).

Externally the light source colour temperatures will be 4000k (cool white)

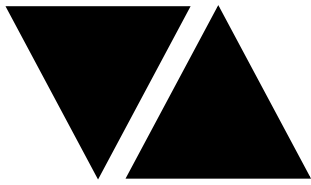
1.3.7 CABLE ACCESS

All cable access is to be concealed with the solutions in the following order of preference:



- Utilise existing concealed conduits.
- Ducting fabricated to look as if it is part of the original structure.
- Exposed cable painted to match the timber colour in high positions such as the roof trusses.

All external cabling is to be run in underground conduits including the consumers mains which are currently run as aerial conductor.



2.0 INTERNAL LIGHTING

2.1 OPTIONS

The following options were presented with each being possible in its own right or it could be used in combination with another option:

- Option A Can Downlights
- Option B Large Pendants
- Option C Small Pendants
- Option D Decorative Wall Lights
- Option E Small Wall Lights
- Option F Extrusion

2.2 DIRECTION

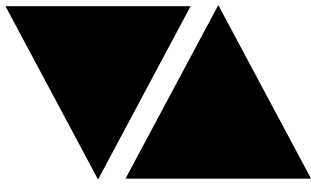
The low visual impact lighting solutions of can downlights and small up / down lights has been accepted. This will be a combination of the Option A and Option E. Additional adjustable spotlights will be added behind the main column to illuminate the high altar and on the side walls of the nave to illuminate the altar.

The auxiliary areas will be illuminated with downlights being recessed where possible.

All internal lighting will be coloured to match the background colour.



The preferred concept is detailed on the attached drawings C1898a-P01(A).dwg and C1898a-P02(A).dwg.



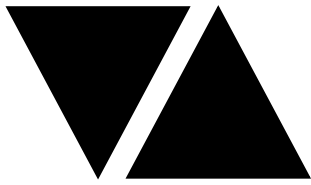
2.3 OPTION A CAN DOWNLIGHTS



Can downlights mounted at high level. This will provide relatively uniform illumination on the working plane with some scalloping on the verticals below the fittings. The higher verticals will not be directly illuminated with the timbered ceiling reading as dark. Adjustable wall mounted spotlights will be provided to illuminate features including the altars and baptistry font.



Option A is detailed on the attached drawings C1898a-A01(A).dwg and C1898a-A02(A).dwg.



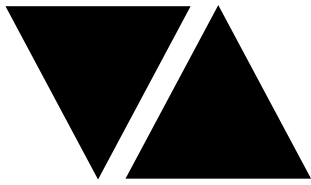
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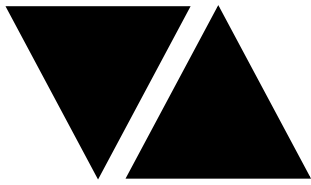


2.4 OPTION B LARGE PENDANTS

Large pendants centrally located over the nave with smaller pendants over the aisles and auxiliary areas including the baptistry and tabernacle. This solution will provide relatively uniform illumination on the working plane with good illumination on the verticals and roof due to the omnidirectional performance of the pendants. Accordingly, the pendants will be a visual feature due to their inherent brightness. There are numerous pendant fitting options available ranging from industrial and technical modern solutions through to traditional chandeliers. Adjustable wall mounted spotlight lights will be provided to illuminate features including the altars and baptistry font.



Option B is detailed on the attached drawings C1898a-B01(A).dwg and C1898a-B02(A).dwg.

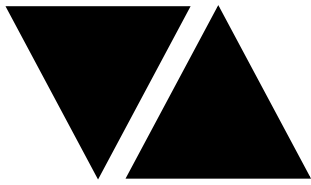


2.5 OPTION C SMALL PENDANTS

Medium pendants located on each side of the nave with smaller pendants over the aisles and auxiliary areas including the baptistry and tabernacle. This solution will provide relatively uniform illumination on the working plane with good illumination on the verticals and roof due to the omnidirectional performance of the pendants. Accordingly, the pendants will be a visual feature due to their inherent brightness. There are numerous pendant fitting options available ranging from industrial and technical modern solutions through to traditional chandeliers. Adjustable wall mounted spotlights will be provided to illuminate features including the altars and baptistry font.



Option C is detailed on the attached drawings C1898a-C01(A).dwg and C1898a-C02(A).dwg.

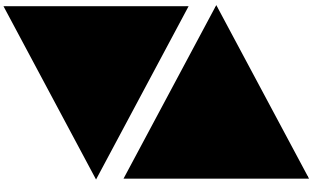


2.6 OPTION D DECORATIVE WALL LIGHTS.

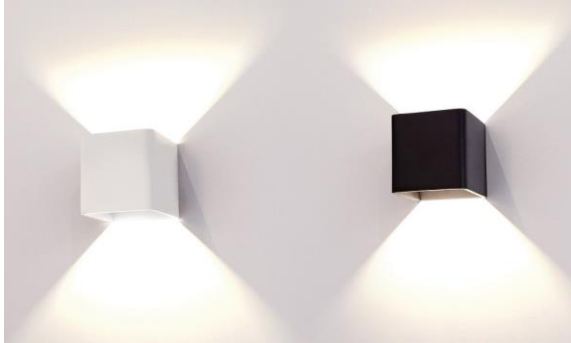
Large custom decorative wall lights mounted above the sandstone columns on each side of the nave with similar fittings mounted on the aisle side and on the walls of the auxiliary areas including the baptistry and tabernacle. This solution will provide less uniformity on the working plane compared to the downlight and pendant solutions. Decorative wall lights will provide the opportunity for good illumination on the verticals and roof if an omnidirectional fitting is adopted. Accordingly, the decorative wall lights will be a visual feature due to their position and inherent brightness. There are numerous decorative wall light options available ranging from industrial and technical modern fittings through to traditional gothic styles. If it is the preferred outcome, the decorative wall light could become a key visual feature of the Cathedral. Adjustable wall mounted spotlight lights will be provided to illuminate features including the altars and baptistry font.



Option D is detailed on the attached drawings C1898a-D01(A).dwg and C1898a-D02(A).dwg.



2.7 OPTION E SMALL WALL LIGHTS



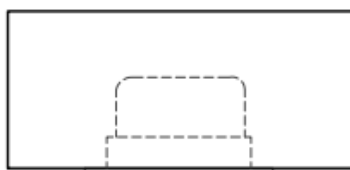
Low visual impact up / down lights wall mounted above the sandstone columns on each side of the nave with similar fittings mounted on both sides of the aisle and on the walls of the auxiliary areas including the baptistry and tabernacle. This solution will provide the least uniformity on the working plane with moderate illumination on the higher verticals and roof. Substantial scalloping will result from this solution however the fittings will have the least

visual impact due to their position and small size. Adjustable wall mounted spotlight lights will be provided to illuminate features including the altars and baptistry font.

Option E is detailed on the attached drawings C1898a-E01(A).dwg and C1898a-E02(A).dwg

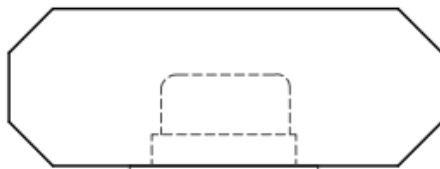
2.8 OPTION F EXTRUSION

A multi-function extrusion / duct can be bracketed off the sandstone columns on each side of the nave. A similar extrusion / duct suspended centrally over the aisles and through the auxiliary areas including the baptistry and tabernacle. This solution will provide the good uniformity on the working plane and on the higher verticals and roof. The multi-functional nature of the extrusion / duct will allow a wide range of solutions including:



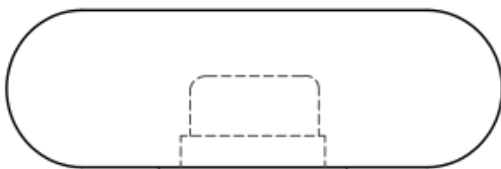
PROFILE 1

- Downlights.
- Up Lights.
- Adjustable Spotlights.
- Integral Heaters.
- Speakers.
- Emergency Lighting.

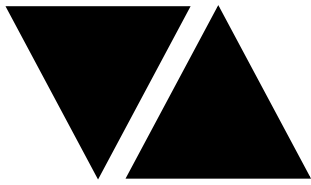


PROFILE 2

The shape and colour of the extrusion / duct can be provided to draw attention to the solution or to blend in with the existing finishes.

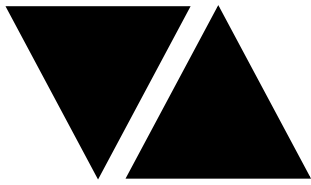


PROFILE 3



Adjustable wall mounted spotlight lights will be provided behind the main columns to illuminate the high altar and surrounding area.

Option F is detailed on the attached drawings C1898a-F01(A).dwg and C1898a-F02(A).dwg.



3.0 LIGHTING CONTROL

3.1 OPTION

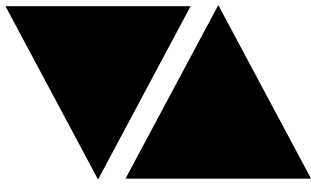
A Philips Dynalite control system was proposed be provided to control all of the internal lights with each fitting being individually addressable and dimmable via DALI. Manual switch panels with scene pre-sets will be provided internally. The scenes will be determined and programmed during commissioning in consultation with the Cathedral users.

Phase dimming and the ability for the users to reprogramed the lighting was advised against.

3.2 DIRECTION

A Philips Dynalite control system is to be provided to control all of the internal lights with each fitting being individually addressable and dimmable via DALI. Manual switch panels with scene pre-sets will be provided internally. The scenes will be determined and programmed during commissioning in consultation with the Cathedral users.

Attached are Philips Dynalite brochures explaining the Dynalite system and detailing the Dynalite products.



4.0 CARPARK LIGHTING

4.1 OPTIONS

The following options were presented with each being possible in its own right or it could be used in combination with another option:

- Option G Traditional Pole Lights
- Option H Decorative Pole Lights

4.2 DIRECTION

Smaller heritage style pole lights will be provided to illuminate the carpark and driveway as per Option H. The carpark lighting will be the same as that used throughout the landscape with some fittings potentially illuminating both areas.

The carpark lighting will be configured to operate automatically from dusk with 80% turning off at a predefined time and the remainder remaining on until dawn as security lighting. An override will be provided to allow all of the external lighting to be turned on for special late-night events.

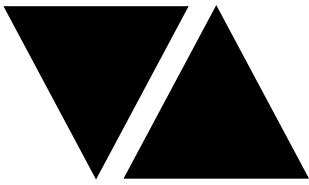
The preferred concept is detailed on the attached drawing C1898a-P03(A).dwg.

4.3 OPTION G TRADITIONAL POLE LIGHTS

7.5m high poles with traditional area light fittings will efficiently illuminate the carpark. The poles and fittings can be black or grey.



Option G is detailed on the attached drawing C1898a-G01(A).dwg.

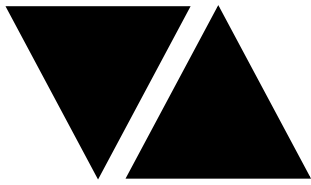


4.4 OPTION H DECORATIVE POLE LIGHTS

Lower height poles in the order of 4m with decorative fittings that can be used to illuminate the carpark. There are numerous decorative options available ranging from heritage style to modern technical styles.



Option H is detailed on the attached drawing C1898a-H01(A).dwg.



5.0 LANDSCAPE LIGHTING

5.1 OPTIONS

The following options were presented with each being possible in its own right or it could be used in combination with another option:

- Option I Bollard Lightings
- Option J Decorative Pole Lights
- Option K Decorative Bud Lighting

5.2 DIRECTION

Smaller heritage style pole lights will be provided to illuminate the landscape focusing on pathways as per Option J. The carpark lighting will be the same as that used throughout the carpark with some fittings potentially illuminating both areas.

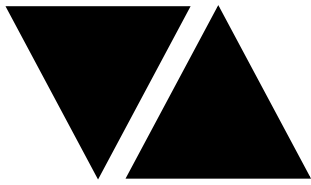
Along with the carpark lighting the landscape lighting will be configured to operate automatically from dusk with 80% turning off at a predefined time and the remainder remaining on until dawn as security lighting. An override will be provided to allow all of the external lighting to be turned on for special late-night events.

Heritage style wall lights will be located externally above the entry doors.

The new entry structure will be illuminated.

No specific illumination will be provided to the Mary Mackillop statue or the decorative entry gate.

The preferred concept is detailed on the attached drawing C1898a-P03(A).dwg.



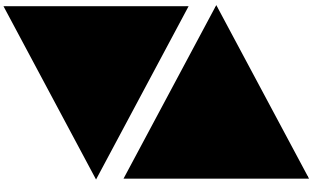
5.3 OPTION I BOLLARD LIGHTING

Low glare bollard lights will be provided to illuminate the pedestrian walkways. Inground uplights will be used to illuminate the two existing larger trees along Keppel Street as well as the six avenue trees. The Mary Mackillop statue will be illuminated by adjustable spotlight lights mounted on a 2.4 m pole or inground uplights. There is an opportunity to provide concealed lighting under the seating along the western side of the alfresco dining area.



The pedestrian entry feature gate will be illuminated with the lighting solution pending resolution of the design of the entry feature gate. The new covered entry will be illuminated to identify it as the Cathedral entry. The lighting solution is pending resolution of the design of the new covered entry. The hardscape around the Cathedral will be addressed as part of the facade lighting under Options L, M and N. Conduit access will be provided to facilitate the future installation of lighting to the proposed future sculptures / features.

Option I is detailed on the attached drawing C1898a-I01(A).dwg.

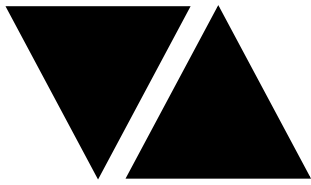


5.4 OPTION J DECORATIVE POLE LIGHTS

Lower height poles in the order of 4m with decorative fittings that can be used to illuminate the key pedestrian components of the landscape. The poles and fittings can be black or silver / grey. The new covered entry will be illuminated to identify it as the Cathedral entry. The lighting solution is pending resolution of the design of the new covered entry. The hardscape around the Cathedral will be addressed as part of the facade lighting under Options I, M and N. Conduit access will be provided to facilitate the future installation of lighting to the proposed future sculptures / features.



Option J is detailed on the attached drawing C1898a-J01(A).dwg.

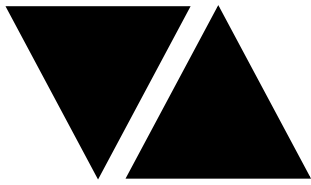


5.5 OPTION K DECORATIVE BUD LIGHTS

Low level decorative garden lights will be provided to illuminate the garden edges and pedestrian walkways adjacent to the gardens. Bollard lights will be provided to illuminate the pedestrian walkway along the carpark. Inground uplights will be used to illuminate the two existing larger trees along Keppel Street. Bud lights will be provided in the six avenue trees. The Mary Mackillop statue will be illuminated by adjustable spotlights mounted on a 2.4 m pole or inground uplights. Concealed lighting under the seating along the western side of the alfresco dining area, the garden and fire pit court. The concealed lighting could be provided as coloured to enhance the interest in the space. The pedestrian entry feature gate will be illuminated with the lighting solution pending resolution of the design of the entry feature gate. The new covered entry will be illuminated to identify it as the Cathedral entry. The lighting solution is pending resolution of the design of the new covered entry. The hardscape around the Cathedral will be addressed as part of the facade lighting under Options L, M and N. Conduit access will be provided to facilitate the future installation of lighting to the proposed future sculptures / features.



Option K is detailed on the attached drawing C1898a-K01(A).dwg.



6.0 FACADE LIGHTING

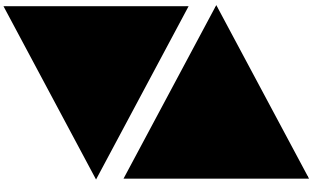
6.1 OPTIONS

The following options were presented with each being possible in its own right or it could be used in combination with another option:

- Option L Façade Post Flood Lights
- Option M Façade Feature Lights
- Option N Façade Wash Lights

6.2 DIRECTION

The façade will not be illuminated beyond flood lighting the bell tower. The flood lights will be located on top of the lower roofs.



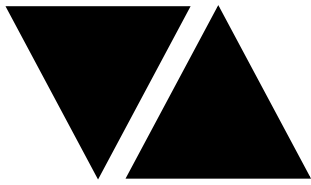
6.3 OPTION L FAÇADE POST FLOOD LIGHTS

Multiple adjustable flood light fittings can be mounted on small 5m high pole to flood light the facade. Given the minimal distance between the building and the boundary ground mounted fittings is not a feasible solution. The poles could be provided as simple as practical with a low visual impact or they can be provided as decorative to enhance the visual amenity of the Cathedral. Providing poles that facilitate banners being attached is also possible.



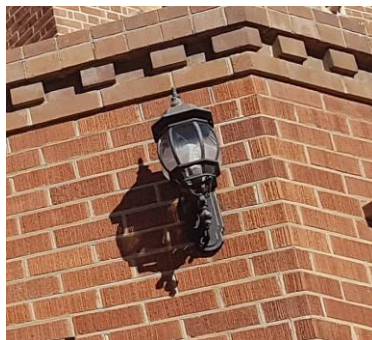
The number of light fittings on each pole will vary dependant on what the pole is illuminating and its distance from the target.

Option L is detailed on the attached drawing C1898a-L01(A).dwg.

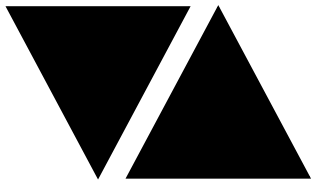


6.4 OPTION M FAÇADE FEATURE LIGHTS

Adjustable inground up lights with a variety of optics and outputs will be provided to illuminate key features of the facade. The western and eastern faces of the tower will be illuminated by adjustable flood lights mounted on the lower level roofs. The existing entry wall lights will be relocated above the northern and western doorways.



Option M is detailed on the attached drawings C1898a-M01(A).dwg, C1898a-M02(A).dwg and C1898a-M03(A).dwg.

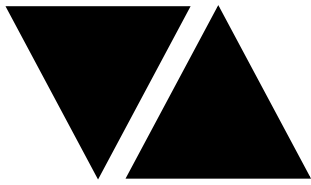


6.5 OPTION N FAÇADE WASH LIGHTS

15mm x 15mm linear led tube lighting fixed to the underside of the building eaves to wash down the wall.



Option N is detailed on the attached drawings C1898a-N01(A).dwg, C1898a-N02(A).dwg and C1898a-N03(A).dwg.



7.0 ATTACHMENTS

- The preferred internal lighting concept drawing C1898a-P01(A).dwg
- The preferred internal lighting concept drawing C1898a-P02(A).dwg
- The preferred external lighting concept drawing C1898a-P03(A).dwg

- Option A drawing C1898a-A01(A).dwg.
- Option B drawing C1898a-A02(A).dwg.
- Option C drawing C1898a-B01(A).dwg.
- Option D drawing C1898a-B02(A).dwg.
- Option E drawing C1898a-C01(A).dwg.
- Option F drawing C1898a-C02(A).dwg.
- Option A drawing C1898a-D01(A).dwg.
- Option B drawing C1898a-D02(A).dwg.
- Option C drawing C1898a-E01(A).dwg.
- Option D drawing C1898a-E02(A).dwg.
- Option E drawing C1898a-F01(A).dwg.
- Option F drawing C1898a-F02(A).dwg.
- Option G drawing C1898a-G01(A).dwg.
- Option H drawing C1898a-H01(A).dwg.
- Option I drawing C1898a-I01(A).dwg.
- Option J drawing C1898a-J01(A).dwg.
- Option K drawing C1898a-K01(A).dwg.
- Option L drawing C1898a-L01(A).dwg.
- Option L drawing C1898a-L02(A).dwg.
- Option M drawing C1898a-M01(A).dwg.
- Option M drawing C1898a-M02(A).dwg.
- Option M drawing C1898a-M03(A).dwg.
- Option M drawing C1898a-N01(A).dwg.
- Option M drawing C1898a-N02(A).dwg.
- Option M drawing C1898a-N03(A).dwg.

- Philips Dynalite brochure Explaining the Dynalite System.
- Philips Dynalite brochure Dynalite Products.