

08212
21 April 2011

Mr Sam Haddad
Director-General
Department of Planning
GPO Box 39
SYDNEY NSW 2000

Attention: Michael Woodland

Dear Mr Haddad

**MODIFICATION TO MAJOR PROJECT MP08_0057
LIGHTING OF WESTERN FACADE**

We refer to the abovementioned Project Application for the construction of two nine storey buildings at Darling Quarter (formerly Darling Walk), Darling Harbour.

On behalf of our client, Lend Lease Development, we write to request the Minister (or his delegate) modify the Project Approval 08_0057 under Section 75W of the *Environmental Planning and Assessment Act 1979* as described below. The modification relates to lighting changes to the western facade of the building to create a public artwork display.

This modification application is supported by the following documentation:

- Illuminated Facade Technical Aspects prepared by Lend Lease (**Attachment A**);
- Technical and Artistic Capability Statement prepared by Ramus Illumination (**Attachment B**);
- Lighting Management Plan prepared by Ramus Illumination (**Attachment C**); and
- Visual Impact Study prepared by Aspect Studios (**Attachment D**).

In accordance with Section 245k of the *Environmental Planning and Assessment Regulation 2000*, please find enclosed the fee of \$750 for the assessment of the request.

1.0 BACKGROUND

The Darling Quarter Concept Plan (MP06-0054) was approved on 9 July 2008 and provides for a mixed use commercial, retail, cultural, recreational and entertainment development with a maximum 68,000m² Gross Floor Area (GFA) comprising:

- a maximum 5,000m² retail GFA;
- a minimum 1000m² cultural, recreational and entertainment GFA; and
- a child care centre use may be included with the commercial GFA.

Subsequently, Project Application (MP 08-0057) was approved on 2 January 2009. The approved project included the construction of the buildings comprising:

- * approximately 64,235m² GFA of commercial floorspace;
- * approximately 2,592m² GFA of retail floorspace; and
- * approximately 1,000m² GFA for a children's theatre.

The site is owned by SHFA, with a Lend Lease entity, Lend Lease Funds Management Limited, having the right to acquire a 99 year lease over the site. Construction of the above works is now nearing completion.

2.0 PROPOSED MODIFICATION

This modification application seeks to enable the western facade to be used as a large scale public artwork and proposes lighting be installed to the western facades of the buildings facing Tumbalong Park.

The proposed lighting is an LED strip located on the interior of the building facade bays between the exterior glass and internal timber blinds (refer to **Figure 1**). The LED lights are a 10 degree distribution linear light source with a varied output depending on which colour is displayed, with a differential of 25lm/watt to 100lm/watt (refer to **Attachment A** for technical specifications).

The LED strips use a Red, Green, Blue and White (RGBW) lighting concept with the LED baton positioned at floor level facing upwards such that the light fitting is not visible from outside the building. Each window bay will in effect be a pixel and therefore the light projection will only be capable of forming a low resolution image on the facade.

Each individual LED strip will be controlled by a computer program which controls the timing of display, colour and lighting intensity of each LED strip to generate a range of patterns. The arrangement of the lighting creates a series of low resolution 'lighting pixels' in each window bay which can be designed to create patterns and artistic form. The effect created is an animated wash of lighting.

The proposed hours of operation of the facade lighting artwork are:

- * Sunday to Thursday – dusk – 11.00pm
- * Friday and Saturday – dusk to 12.00am

In addition it is proposed to operate to 1.00am during special events and school holiday periods. Special events may include Christmas Eve, Christmas Day, New Years Eve, Australia Day, festival days or one-off or special events during the year.

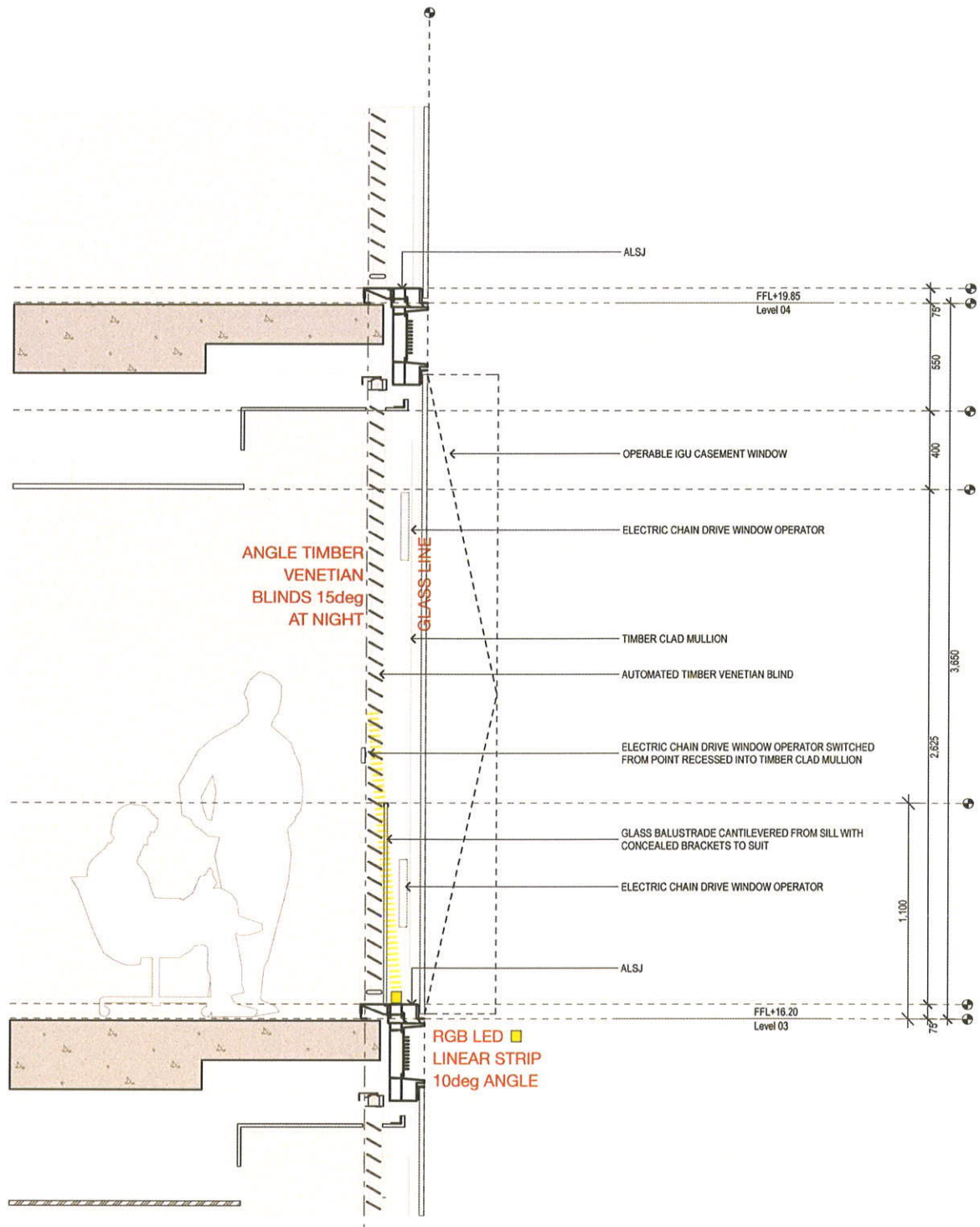


Figure 1 – Proposed facade lighting (Source: FJMT)

Facade Lighting Management

To manage the facade lighting Lend Lease are proposing to establish a Digital Facade Management Committee. The Management Committee will be responsible for the overall management of the public lighting artwork on the facade. The Management Committee is proposed to comprise of the following representatives:

- ✧ Sydney Harbour Foreshore Authority (Darling Harbour Precinct Manager and landowner);
- ✧ Independent Curator;
- ✧ Lend Lease (Darling Quarter Developer) and the building owner; and
- ✧ Major commercial tenant representative.

The Management Committee will be responsible the preparation and implementation of the Lighting Management Plan (refer to **Attachment C**), which has been prepared to guide the format, content and operational management of the facade lighting. The Management Committee will also be responsible for the appointment a skilled/competent facade manager who will oversee the day to day management of the facade displays.

The Lighting Management Plan sets the management strategy for the content and nature of the lighting artwork. The management plan includes:

- ✧ Content Management;
- ✧ Operational Program;
- ✧ Interaction Program;
- ✧ Curatorial Plan; and
- ✧ Opening Strategy.

The Operational Plan of Management proposed an initial three year strategy for content management which includes:

- ✧ Artistic displays prepared by the facade manager (Ramus Illumination) under the guidance of the Management Committee.
- ✧ Artistic works that are commissioned from local and international artists.
- ✧ Artistic works generated through the general public.
- ✧ Artistic works generated through engagement of community groups and by associated Darling Harbour events.

The artwork displays will vary during the week and from week-to-week. On Monday-Thursday it is intended is to provide generally monochromatic displays with warm light and movement. On Friday-Sunday the facade lighting will be full colour, dynamic, with potential for interactive programs. It is intended to have one day a week with no illumination.

A key element of the public art lighting will be public interaction to ensure its ongoing relevance and success. It is therefore proposed that two touchscreen monitors will be installed in the Darling Quarter precinct which will allow users to actively engage in the facade lighting designs. Other secondary interactive elements will include a website, mobile phone applications and the use of cameras and infra red projectors to capture images and movement which can then be displayed on the facade (refer to the Lighting Management Plan at Attachment C. The extent and nature of the interactive elements will be determined by the Management Committee.

3.0 AMENDMENT TO CONSENT

It is proposed to modify Schedule 2 of the Conditions of Approval by inserting a new condition in Part F of the consent, as set out below.

Words proposed to be inserted are shown in *bold italics*.

PART F – POST OCCUPATION AND ONGOING OPERATIONAL CONDITIONS

Insert new condition F5

F5 Western Facade Lighting

The lighting of the western facade for the purposes of public lighting artwork is to be undertaken in accordance with the following documents:

- * Technical and Artistic Capability Statement prepared by Ramus Illumination***
- * Lighting Management Plan prepared by Ramus Illumination***

The hours of operation of the public lighting artwork are limited to:

- * Sunday to Thursday – dusk – 11.00pm***
- * Friday and Saturday – dusk to 12.00am***

In addition the public lighting artwork may operate to 1.00am on special events days, public holidays and during school holiday periods. Special events may include Christmas Eve, Christmas Day, New Years Eve, Australia Day, festival days or one-off or special events during the year.

The display of commercial or corporate imagery or third party advertising is not permitted.

4.0 ENVIRONMENTAL ASSESSMENT

4.1 Environmental Planning Instruments

The Project Application assessed the construction of the building against the relevant environmental planning instruments including the Darling Harbour Development Plan and Sydney Regional Environmental Plan (Sydney Harbour Catchment) (SREP 2005). The development, as proposed to be modified remains consistent with the aims and objectives of these planning instruments.

SREP 2005 sets out matters for consideration in the assessment of development relating to (amongst other things) views and scenic quality. The proposed modification does not change the height, bulk or scale, or proposed land uses. The proposal does not also result in any view loss. The proposed facade lighting artwork will contribute to the enlivenment of the public domain of Darling Quarter and Tumbalong Park in particular.

4.2 Visual Impact

As the proposed facade lighting artwork is visible from the public domain within the southern area of Darling Harbour, a visual impact assessment has been prepared by Aspect Studios and is included at **Attachment D**.

In assessing the visual impact of the proposal, a 500m view shed zone has been analysed to review any potential impacts on adjacent buildings and public domain (refer Image 4 in **Attachment D**). A 500m view shed zone was selected as it encompasses an area from the buildings across the valley floor of Darling Harbour up to the ridge of Harris Street. It should be noted that the majority of views from surrounding buildings and context beyond 500m are substantially blocked from the elevated freeway structure (to the north) and the Exhibition Centre on the western edge of Darling Harbour. A visual analysis from Harbour Street has not been undertaken as the western facade is not visible from Harbour Street.

The immediate built form context of the surrounding area and viewshed of the artwork is;

- » the existing public domain of Darling Harbour, in particular Tumbalong Park;
- » road infrastructure;
- » commercial or special use buildings (such as the Exhibition and Convention Centre, Ian Thorpe Aquatic Centre, Global Switch data centre, Powerhouse Museum, Novotel Hotel (Pier Street), Entertainment Centre and car park; and
- » medium density residential buildings (on Harris Street).

Public Domain

The immediate context of the proposed artwork consists of the urban parkland of Darling Harbour and the Chinese Gardens and the new public domain and Children's Playground associated with the Darling Quarter upgrades.

The facade lighting artwork, as a public artwork is designed to be visible from the adjoining public domain, which will help enliven and activate the southern Darling Harbour precinct. It is anticipated that the public artwork will be a highly contributory layer to cultural experience at Darling Harbour and it is considered that the facade lighting will be a positive visual experience and will not have negative visual impacts. No commercial or corporate imagery or third party advertising is proposed to be displayed.

Roads

The Darling Quarter buildings front Harbour Street and are in close proximity to the Western Distributor. However motorists travelling along the Western Distributor at the closest point to the Darling Quarter buildings are travelling in a west bound direction and the western facade is not visible.

Vehicles travelling east bound on the Western Distributor have distant and momentary views of the western facade, which is also obstructed by the road structures of the west bound lanes (refer to Figure M in **Attachment D**). Similarly when travelling eastbound on Pier Street there are only momentary and indirect views to the Darling Quarter buildings. These views are also obstructed by the Exhibition and Convention Centre and the Chinese Garden.

It is considered that there will be negligible adverse impacts to motorists due to light spill or glare due to the nature of the proposed lighting and distance from the roads.

Commercial Special Use Buildings

The visual impact study has assessed views from the west towards the Darling Quarter buildings as detailed in Image 4 of the Visual Impact Assessment. The majority of buildings that frame the western and southern edges of Darling Harbour are commercial use buildings including the Exhibition and Convention Centre, Ian Thorpe Aquatic Centre and Global Switch data centre, the Powerhouse Museum, Novotel Hotel (Pier Street) and Entertainment Centre and public carpark. Due to the nature of uses within these buildings it is considered the proposed art work will not

result in any negative visual impacts, but rather provide a positive visual experience to the workers and visitors by providing a cultural experience which adds to the night time life of the city.

Residential

The nearest residential buildings with a view to the western facade are between 380m and 510m from the Darling Quarter building and situated to the west and north of the Exhibition and Convention Centre. The view towards the Darling Quarter buildings is obstructed by the Western Distributor road infrastructure and the Exhibition and Convention Centre. Given the distance, limited views and non directional nature of the facade lighting, it is considered that the facade lighting artwork will be similar in intensity to that of an illuminated city building and form part of the city's night time illuminated landscape.

5.0 CONCLUSION

The project as amended by this modification will be substantially the same as the approved project. The western facade lighting is proposed to be modified to deliver a unique display of public art through innovative facade lighting techniques. The proposed amendment has no additional environmental impact beyond those issues considered and assessed in this modification application and in the approval of the original project.

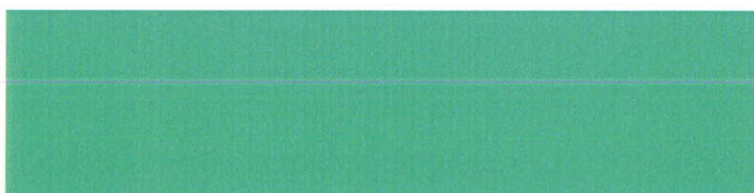
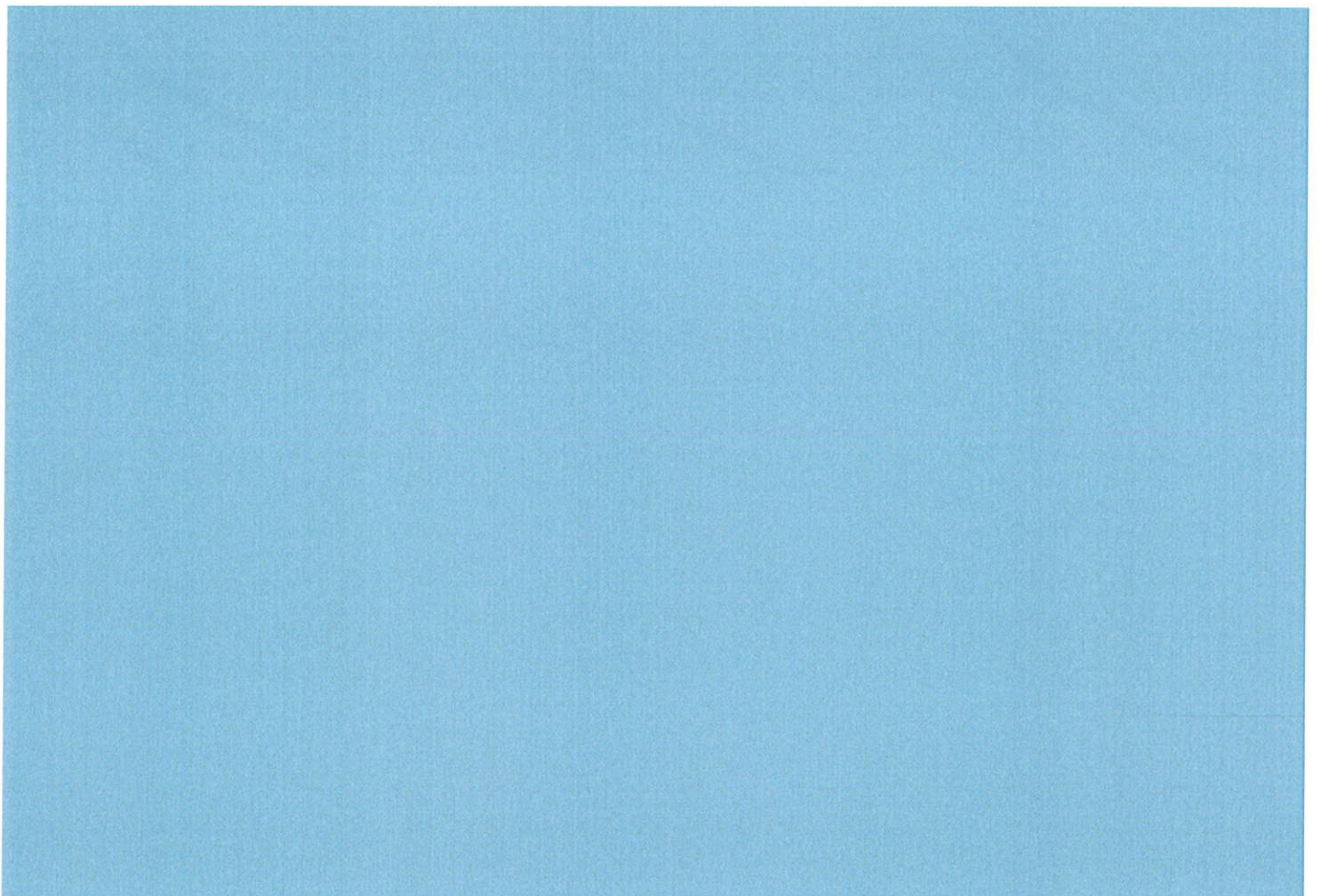
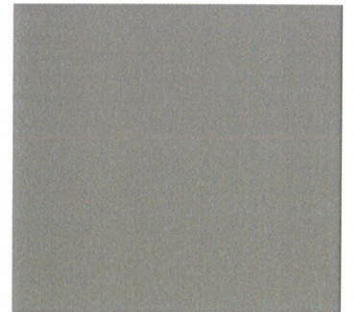
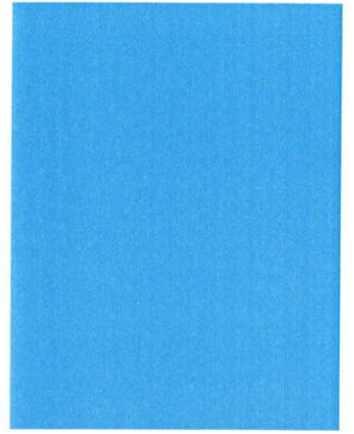
Should you have any queries about this matter, please do not hesitate to contact me on 9956 6962 or kosborne@jbaplanning.com.au.

Yours faithfully



Kirk Osborne
Principal Planner

Illuminated Façade Technical Aspects



ILLUMINATED FACADE, TECHNICAL ASPECTS

Design Aspects

The western facade, of the two commercial buildings located within the Darling Quarter, will be illuminated in the following way.

Each window will have a LED linear luminaire located on the window sill, internally positioned between the glass and the timber louvers aimed upwards. The LED is a R/G/B/W single chip arrangement with a 10 deg distribution, a spreader lens shall distribute the light along the length of the window compartment.

The windows are arranged in two sizes, large and small, the small window contains one 'pixel' zone and the large window contains two 'pixels'. This enables the facade to display a low resolution images, the maximum possible resolution is 194 x 4 pixels and the minimum is 134 x 4 pixels.

The LED lights are a 10 deg. distribution linear light source with a varied output depending on which colour is displayed with a differential of 25lm/watt to 100lm/watt.

All lights are contained behind the building glass line for the colour effect scheme.

The timber louvers will be angled at night to reflect the light from the LED fittings, the technical aspects and energy aspects are as follows;

- The energy consumed by the LED fitting would be approx 20watts for the large window and 10 watts for the small window, which equates to 8280 watts, assuming an average of 5 hours usage per day throughout the year the energy consumption associated with the facade lighting would be approx 1% of the buildings energy usage.
- Light pollution, Green Star credit EM17, for v2 the credit applies as the LED lights are within the facade line.
- Light trespass and encroachment, (Internal), the light 'spill' internally has minimal impact to the tenancy due to the 10 deg cut off the luminaire and the angle timber blind, a sample bay was used as a mock up, this was tested and witnessed to ensure performance and cut-off. (External), the west facing illuminated facade does not encroach onto neighbouring properties and is compliant with AS4282 – 'Control of the obtrusive effects of outdoor lighting'. The up facing LED lights illuminates the timber window louvers this provides an indirect light source to the viewer external to the building.
- Driver distraction is minimal, glimpses from the Western Distributor Freeway heading east towards the city, drivers view the top level of the Darling Quarter building for a couple of seconds. The faced lighting blends into the palette of vista's, which is the city skyline, and is visually recognised and accepted. The illuminated facade is not a distraction to passing cars.
- Operating times, the illuminated faced will be switched off at night, via a timed function, by the building automation system. The light values will be way below the technical parameters of AS4282 for curfew and pre-curfew hours.

- OHS, there is no risk to the public or staff members by this lighting system, maintenance of the fittings will be carried out from within the building, as the lights are located at floor level.
- The light will have no impact on local fauna.
- The facade will be programmed so that the images do not affect any member of the public who suffers from epilepsy.
- The facade will be visible to the public from a wide area, so a congregating crowd is not envisaged, the illuminated faced will have more visual impact from a distance.
- There is no noise pollution from the illuminated faced however, the lights could/may be sequenced with a concert within Tumbalong Park.

Light fitting description

There are two light fitting sizes to suit the two different window sizes, one being approx 1000mm long and the other 400mm long.

The larger shall contain 10 x 10 degree reflector lens with a spreader lens, the fitting shall be split into two PIXEL zones. The LED shall be run at 24V 350mA or 500mA using a RGBW multi chip GREE X-lamp MC-E LED with 2 x 24V constant current transformers and 2 DMX controllers with RDM and heat regulated current control system.

The fitting shall have a 240V input and output female socket integrated with a through current rating of 16 amps. 2 x RJ45 Cat5e input/output sockets integrated at both ends of the fitting. The fitting shall be finished in a powder coat paint to match the window sill.

The fitting shall have cover plates to hide the cable connection at each end from view.

The small fitting shall contain 4 x 10 degree reflector lens arranged for one PIXEL zone, all else will be the same as the larger fitting.

Operating System (Head end)

The control system shall contain but, not limited to, the following equipment.

- 2 x CLXPAN054 – Coolux Media Server LT 2DVI -8/4 Pandora's Box.
- 1 x CLXPAN020 – Coolux Media Manager STD Product Pandora's Box.
- 1 x CLXPAN100 – CooluxWidget Designers PRO.
- 2 x YMEDSRV024 – ShowMedia – Media Server 2 x DVI (Pro 17 version) with Redundant PSU, Raid Drives.
- 4 x ELO 22 inch Touch Monitor.
- 1 x Cyberpower UPS 3000VA 2250w.
- 8 x Cyberpower UPS 1000w 670va.

CONTENT

- **Design Aspects**
- **Light Fitting Description**
- **Operating System (Head End)**
- **Compliance Letter**

- 9 x SNMP Module for UPS.
- 12 x ELCSWT110 – ELC Lighting DMXLAN Switch 8 (100mbit) 2 Fibre & 6 PoE Ports.
- 10 x ELCNODO11 – ELC Lighting DMXLAN Node 1 – 1 Xxlr5 1 Male.
- 19 inch Equipment rack.



20 April 2011

Jeremy Tompson
Project Manager
Lend Lease Project Management & Construction
30 The Bond
30 Hickson Road
Millers Point NSW 2000

Dear Jeremy,

Darling Quarter Facade Lighting

The illuminated western facade for the above project was designed to provide visual interest to the Darling Quarter precinct at night, in particular on the week-ends. During week days the illumination in the evening shall be subdued, a warm white light will wash the timber window louvers. On Friday, Saturday and Sunday evenings, and during special events, the indirect light source shall animate with colour and movement, the illumination on the facade will operate from dusk until approx 10.30pm. or longer on special events.

The indirect lighting system uses low energy R/G/B/W LED's located inside the building, where the light source is directed at the timber louvers.

The facade lighting system was designed to comply with Greenstar V2 and to the design intent of AS4282 'Control of the obtrusive effects of outdoor lighting'.

The illumination system was designed by a qualified professional specialist lighting designer who is also a member of the 'Dark Sky Association'.

Yours faithfully

A handwritten signature in black ink, appearing to read "Michael Sparrow", written over a circular stamp or seal.

Michael Sparrow MIES RLP IALD PLDA
Senior Design Engineer - Lighting | Project Management & Construction
Lend Lease

Ramus Illumination Pty. Ltd.
94 Queensville street
Kingsville, Victoria 3012
ABN - 35861697525

Date : 08.03.2011

Client: Lend Lease Development - Stephen Brookes

Project : Darling Quarter West Facade Specialty Lighting - Capability

Pages: 3

Dear Jeremy,

As requested, I have outlined below the broad technical and artistic capability of the Darling Quarter Western Façade Lighting System.

If you have any questions, or require further clarifications, please don't hesitate to contact me.

Sincerely,



Bruce Ramus
Ramus Illumination
t - 0416-388711

Technical Capability

The two buildings have two types of windows - small (3.2m x .75m) and large (3.2m x 1.5m), for a total of 555 lighted windows, according to the model we have been given.

In each, a linear RGB-W LED 4-channel light fixture illuminates the blonde timber Venetian blind present in each window.

These will be cabled via a Cat5e network to a Comms room on each floor, then fed via Fibre Optic cable to the central control room.

The control system is as specified in the 'Control System Design Intent' document.

The maximum possible resolution is;
1924 x 4 Pixels.

The minimum resolution is;
134 x 4 Pixels.

Fixture Recommendation

It is my recommendation to specify the brightest possible fixture with the small fixture as a single channel/pixel, and the large fixture as two channels/pixels.

Fixtures;

Small - A 400mm extrusion, all one pixel, RDM capable

Large - A 1000mm extrusion, two pixels, RDM capable.

Control System

It is my recommendation that a control system capable of integrating not only the hundreds of multi-channel fixtures present, but also a complete interactive system that can grow as technology develops over the life of the façade.