



29 November 2016

CPP Project 8504

Lend Lease

Level 14, Tower Three, International Towers Sydney
Exchange Place, 300 Barangaroo Avenue
Barangaroo NSW 2000

Attn: Ms. Nishi Patel

Project: The Darling Exchange North Plot and Square

Ref: (1) CPP Report 'CPP8504_The Darling Exchange_REP_PW_R02', dated February 2016
(2) CPP Report 'CPP8253_Darling Harbour Live Reduced Scheme_REP_PW_R01',
dated February 2016.

Dear Ms. Patel,

Please find herein a response to submissions and assessment of the proposed amended development in relation to the State Significant Development (SSD) Development Application (DA) for the development of the North Plot and Square in Darling Square (SSD 7021), to respond to the key issues raised by the Department of Planning and City of Sydney:

The Department of Planning

"Suggest additional mitigation to improve the wind environment around the North Plot"

City of Sydney

"The City requests that the Applicant confirm whether the findings and recommendations of the wind assessments for the North Plot are capable of being incorporated:

For example, negative effects not compatible with outdoor dining are predicted along Little Hay Street; and

Significant wind effects are predicted at the outdoor space in the North Plot building. In the case of the North Plot, the wind assessment recommends enclosing the affected outdoor space."

Introduction

This letter should be read in conjunction with the original assessments prepared by CPP, reference documents (1) and (2) dated February 2016, to support the development of the North Plot and Square (SSD 7021). This letter should also be read in conjunction with a concurrent s96 modification application to the North-East Plot (SSD 6626), with consequential amendments to this approval proposed in order to accommodate servicing and functions generated by the North Plot.

This letter provides a brief review of the expected wind conditions and comments regarding the potential impact of the proposed amendments to the North Plot and Square development, and the proposed mitigation measures.

Proposed Amended Development

Since public exhibition of the proposal, generally minor amendments and improvements

have been made to the proposed development. The final project design includes amendments made by Lendlease pursuant to Clause 55 of the Environmental Planning & Assessment Regulation, including changes to address matters raised in the submissions.

The following key amendments have been made to the proposal:

- minor increase in overall site area;
- minor increase in Gross Floor Area;
- changes to the external building design including a revision of the external stair, shifting of floor plates and resultant changes of revised internal planning;
- slight adjustment to the site boundary, increasing to accommodate the revised Darling Exchange building and public domain interface enhancements;
- revisions and enhancements to the proposed public domain treatments;
- revised loading and servicing strategy; and
- inclusion of fitout and operation of the child care facility.

The final proposal seeks approval for the following key development:

- Construction and use of a six (6) storey building (known as The Darling Exchange) containing the following uses:
 - Retail tenancies/market hall (such as market stalls, food and beverage premises and bar/restaurant operations);
 - Community uses (such as a library including IQ Hub and child care); and
 - Fitout and operation of the ground level and mezzanine market hall, the child care facility, and the food and beverage offering (bar/restaurant) within The Darling Exchange.
- Public domain improvements, including:
 - Creation of a new publically accessible square (The Square) with space for markets, outdoor events, passive and active recreation;
 - Provision of a timber canopy extending from The Darling Exchange along the western edge of The Square;
 - Provision of two kiosk-style retail pods below the canopy;
 - Creation of Little Hay Street, a new pedestrian only laneway between the North-East Plot and South-East Plot; and
 - Completion of general interface works to connect areas of new public domain with the existing public domain.
- Remediation as may be required; and
- Extension and augmentation of physical infrastructure/utilities as required.

North Plot – Ground Level Improvements

Wind tunnel test results reported in 'CPP8504_The Darling Exchange_REP_PW_R02' show the wind environment around the development was found to be suitable for pedestrian standing and sitting activities at most locations, under the Lawson comfort criteria; with all locations passing the Lawson distress criteria, Figure 1.

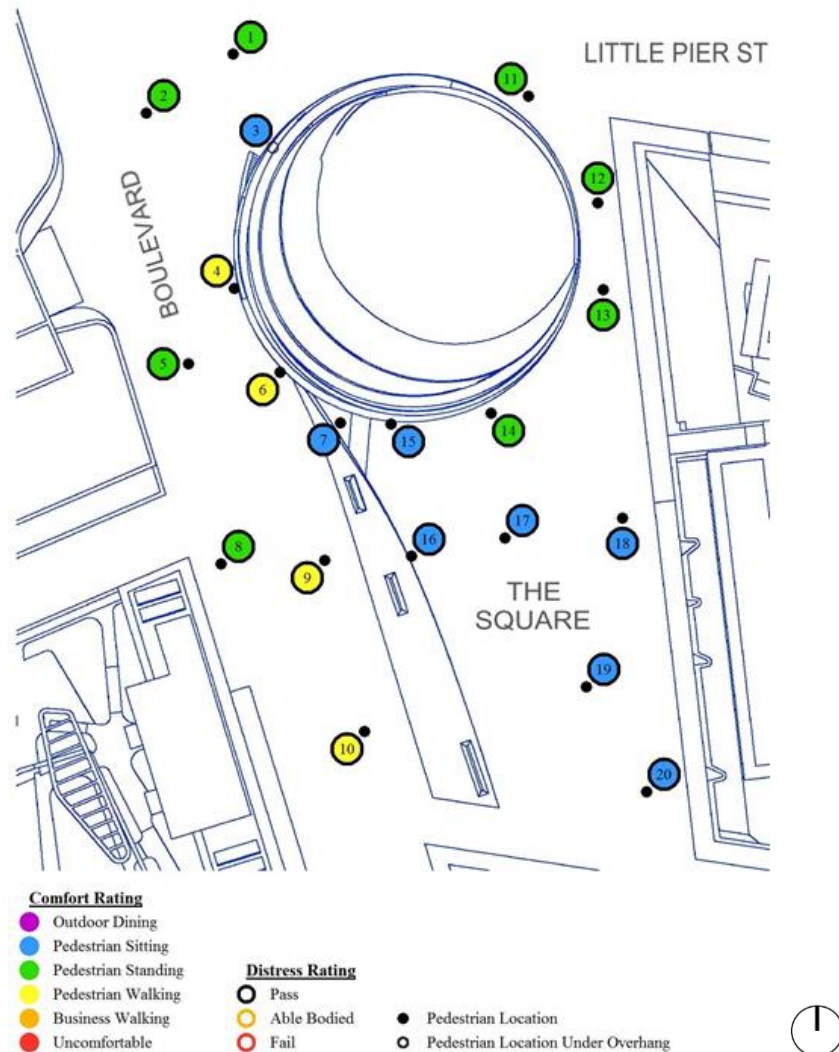


Figure 1: Pedestrian wind speed measurement locations with comfort/distress ratings
Ground Level

To improve wind conditions around the North Plot, the following mitigation measures are proposed for the ground level, shown in Figure 2 and **Error! Reference source not found..** These measures were not included in the original modelling, and include:

- the addition of an awning at the north-west entrance;
- the addition of fixed umbrellas on the northern terraces;
- the addition of an awning at the lobby entry of the building;
- the addition of an awning at the south-east entrance; and
- Exaggeration of the shifting plates.

➤ **North Quadrant [Locations 1 to 3, in Figure 1]**

The pedestrian area to the north, shown in Figure 2, is expected to be used by people lingering, walking and standing with some short term/informal sitting on the bleachers, chairs and tables provided in the public domain.

The additional awning to the north-west entry, exaggeration of the shifting plates and the addition of umbrellas on the northern steps, are expected to provide improved wind conditions in this area around the North Plot. Enclosing this area is not required.

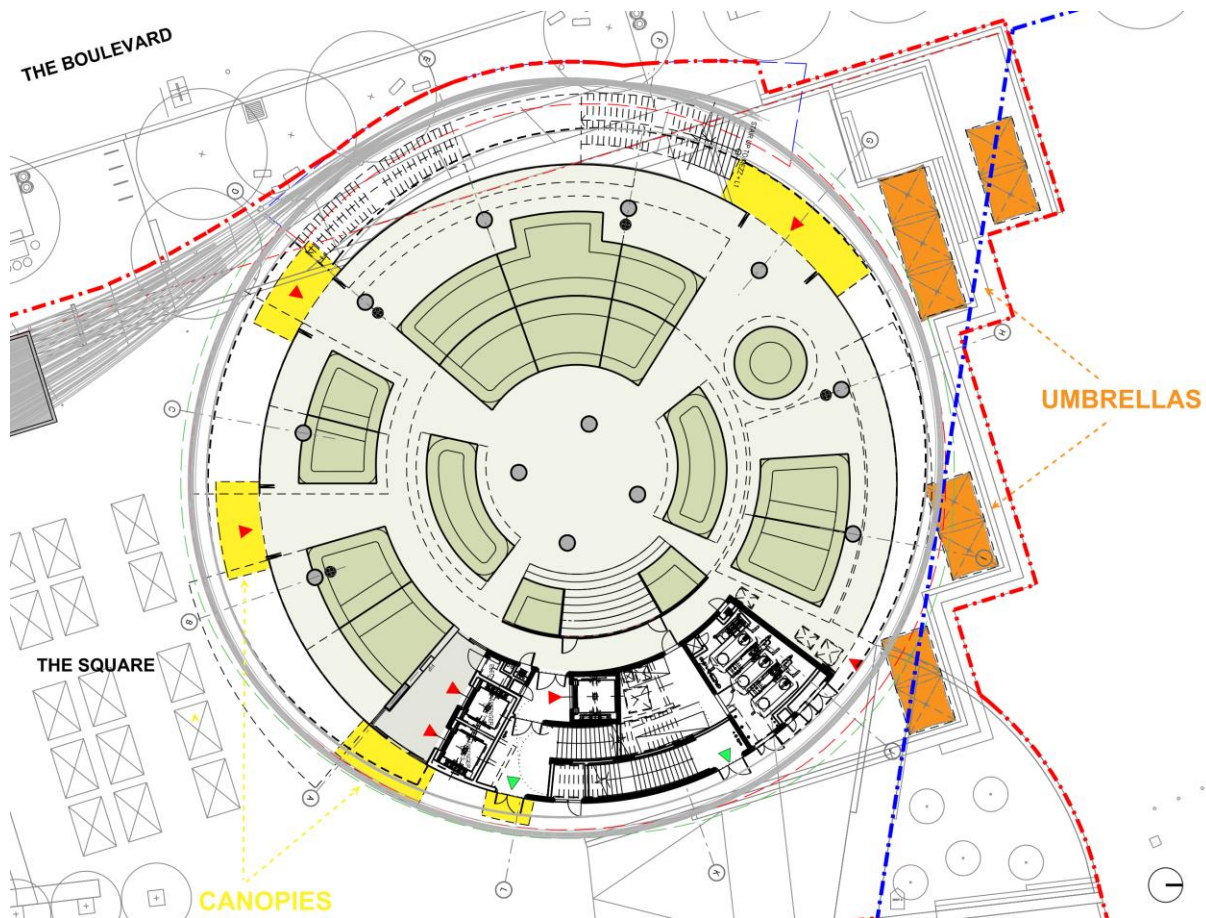


Figure 2: Proposed mitigation measures – North-west entrance

➤ **South Quadrant [Locations 6, 7, 14 and 15, in Figure 1]**

To the south, the addition of awnings at the key lobby and south-east entries will provide shielding from downwash wind conditions, Figure 2. The awnings are expected to provide improved wind conditions in this area around the North Plot.

➤ **Boulevard [Locations 4 to 10, in Figure 1]**

Wind tunnel test results reported in 'CPP8504_The Darling Exchange_REP_PW_R02' show wind conditions on the Boulevard, Figure 1, are generally suitable for pedestrian walking and standing activities. Landscaping on the eastern side of the Boulevard, Figure 3, is expected to provide protection to seating zones.

Similarly, the retail pods and canopy at the intersection of the Boulevard and the Square are expected to provide additional shelter to pedestrians.

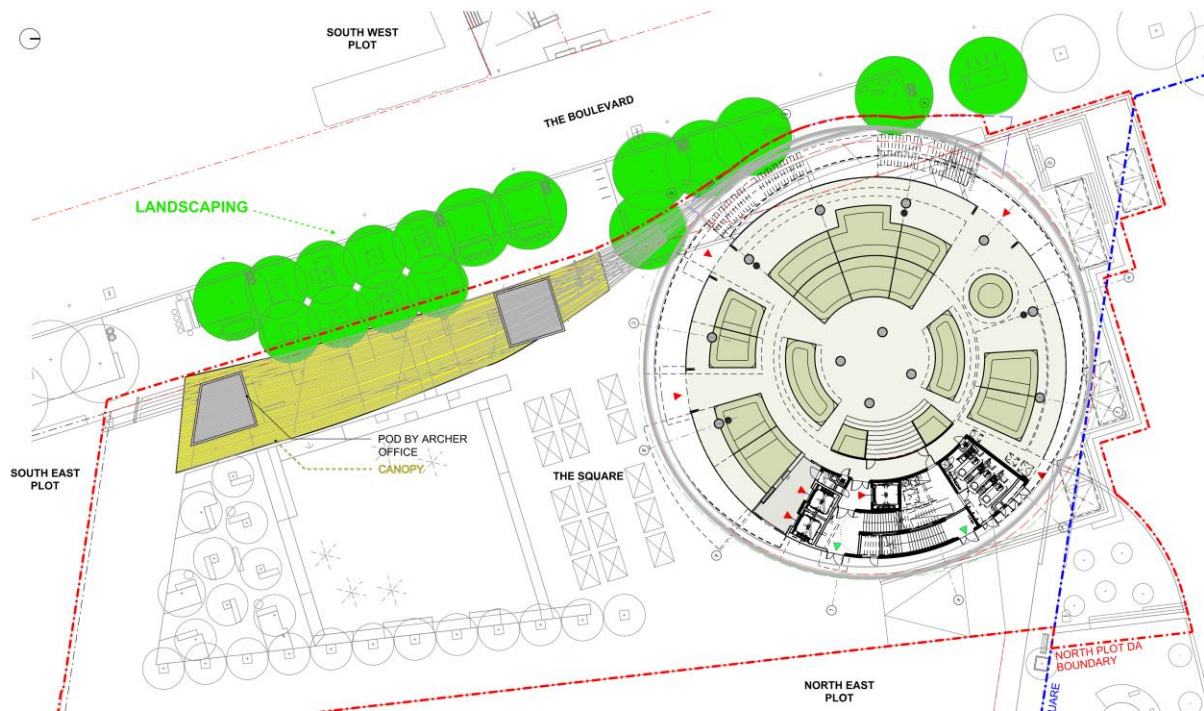


Figure 3: Proposed mitigation measures – The Boulevard and Square

➤ **The Square [Locations 11 to 20, in Figure 1]**

The path connecting Memorial Park to the Square will be mainly used as a thoroughfare for pedestrian walking. Wind tunnel test results reported in 'CPP8504_The Darling Exchange_REP_PW_R02' show wind conditions in this area rated for pedestrian standing activities and are suitable for the intended use of the space, Figure 1.

It is understood the southern side of the North Plot will be mainly used by people walking past or sitting in the external seating area that looks out onto the Square, Figure 3. The Square area is proposed as a flexi space that could be left as an open plaza or when in event mode could be set as a market.

Wind tunnel test results reported in 'CPP8504_The Darling Exchange_REP_PW_R02' show the wind environment, around the Square area, generally rated for pedestrian sitting activities, making it suitable for the intended use of space, Figure 1.

➤ Little Hay Street

Wind tunnel test results reported in 'CPP8253_Darling Harbour Live Reduced Scheme_REP_PW_R01' show wind conditions along Little Hay Street, classified as suitable for pedestrian standing and sitting activities, with all locations passing the Lawson distress criterion, Figure 4.



Figure 4: Pedestrian wind speed measurement locations with comfort/distress ratings
Little Hay Street

Part of Little Hay Street is expected to be used for stationary outdoor seating activities such as restaurant dining and bar/café style eating. These locations are primarily affected by north-west and south-east winds channelling through the lane. Little Hay Street is expected to meet the wind speed associated with the outdoor dining criterion for 60% of the time. To improve the outdoor dining criterion, additional localized downwash wind protection will be provided through awnings and canopies to the shop fronts.

North Plot – Level 5

Wind tunnel test results reported in 'CPP8504_The Darling Exchange_REP_PW_R02' show wind conditions at the roof and terraces rated for pedestrian walking and standing activities with all locations passing the distress criterion, under the Lawson criteria, Figure 5.

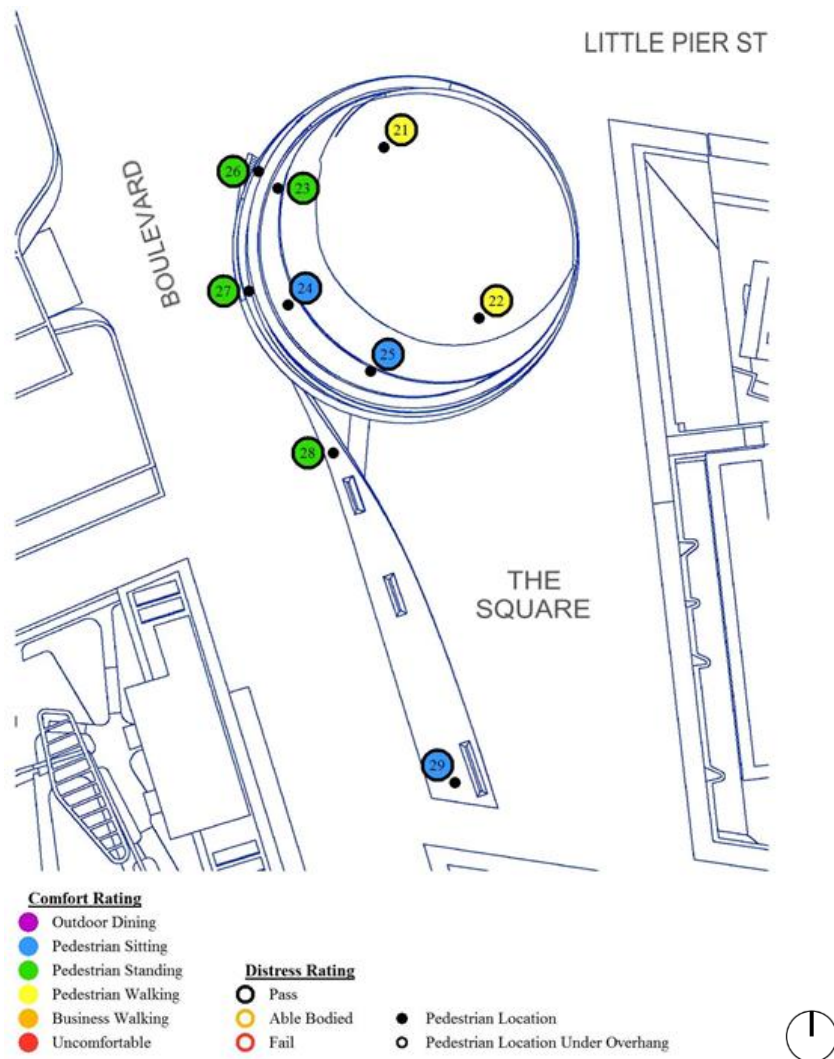


Figure 5: Pedestrian wind speed measurement locations with comfort/distress ratings
Roof and Terraces

Architectural drawings, dated November 2016, show the Level 5 Terrace has undergone a change in form and is now open to the north-east side, Figure 6.

Additional mitigation measures are being implemented to create wind conditions suitable for long-term sitting activities associated with a bar/restaurant.

Mitigation measures to block prevailing northerly or southerly winds from accelerating through the dining areas are illustrated in Figure 6, and include:

- A full height screen on the north-east corner of the terrace.
- A dividing folding glass wall on the west side of the terrace, which can be retracted during very calm/still wind conditions.
- Perimeter fencing with a minimum 1800mm height balustrade.

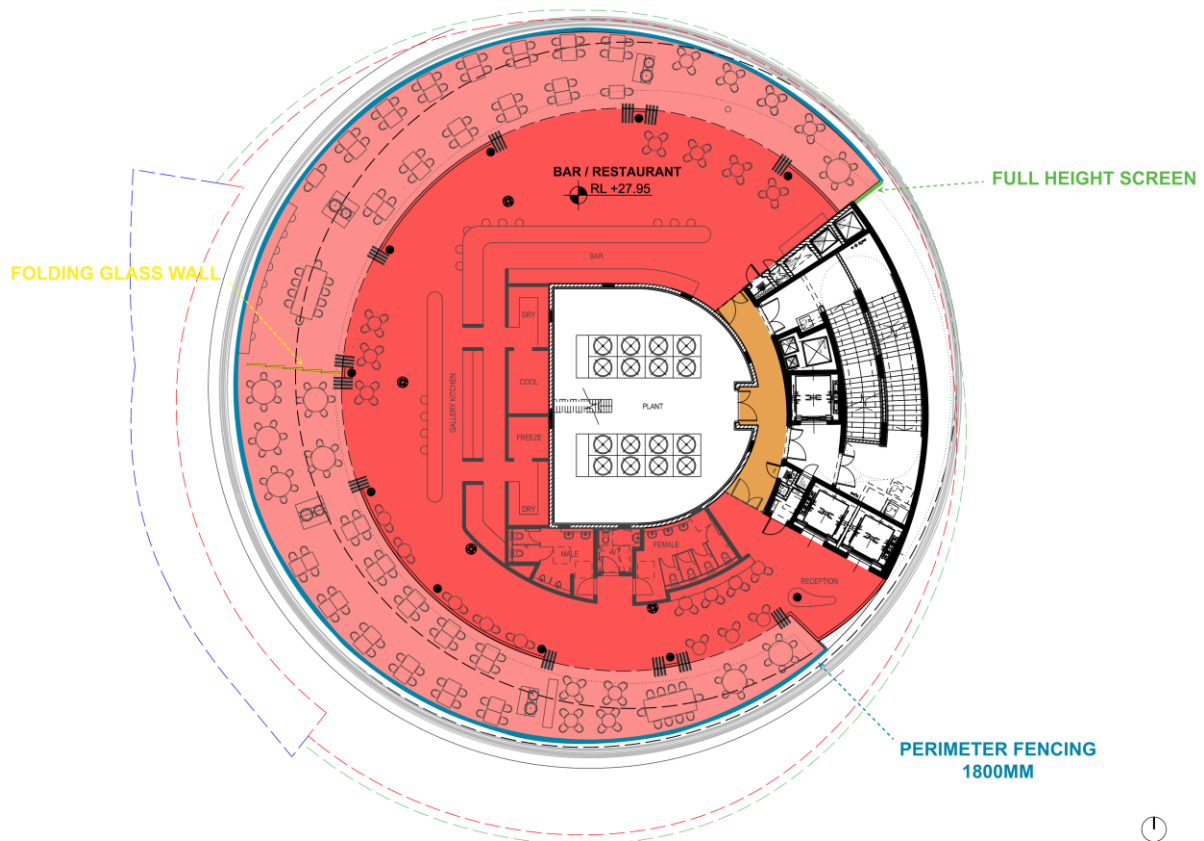


Figure 6: Proposed mitigation measures – Level 5 Terrace

In conclusion CPP have been (and continue) to work closely with Lend Lease to further mitigate wind conditions on the North Plot. Further wind-tunnel testing would be required to quantify the proposed amelioration measures and qualitative advice in this letter.

I trust this is of assistance, please do not hesitate to contact me if you have any questions regarding any aspect of this report.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Michelle', followed by a stylized flourish.

Michelle Noguez Ceron
Engineering Manager

cc: Matt Glanville, CPP Director
Peter Bourke, CPP Operations Manager