

29 July 2021

Ms Annie Leung  
Acting Director Key Sites Assessments  
Key Sites Assessments  
Department of Planning, Industry and Environment  
4 Parramatta Square, 12 Darcy Street  
Parramatta 2150 NSW

Dear Annie,

## **CENTRAL PRECINCT DETAILED DESIGN SSDA (SSD-10439) - RESPONSE TO REQUEST FOR INFORMATION #2**

This letter provides further response to items 2 and 3 of the Request for Information (RFI) letter prepared by the Department of Planning, Industry, and Environment (DPIE) dated 13 April 2021. This letter provides revised solar amenity information and is supplementary to the first RFI package issued to DPIE on 23 April 2021 for the assessment of SSD 10439, relating to the Waterloo Central Precinct Over Station Development (OSD).

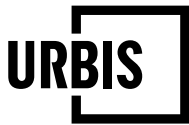
As a result of the options considered as part of the RFI, the applicant proposes to amend the proposed Architectural Plans submitted with the Response to Submissions Report. Revised Architectural Plans prepared by Hassell are annexed at **Attachment A**. The revised plans notably optimise the number of apartments proposed that achieve a minimum 2 hours of direct solar access to both the living rooms and private open space between 9:00am and 3:00pm in mid-winter.

This RFI package is being submitted following a meeting with DPIE to present the general content on 27 July 2021. The material presented at the meeting is attached at **Attachment D**.

### **1. ORIGINAL APPLICATION**

As discussed in the Response to Submission Report (RtS) and the first RFI package, the site is constrained in its ability to achieve full compliant solar access in mid-winter because of the following factors:

- An approved commercial building envelope (as part of Concept SSD 9393) to the north of the site, which overshadows the Central Precinct.
- Orientation of the building to align with the public realm (street orientation, footpath etc).
- The alignment of Central Precinct envelope results in the building orientation being approximately 17.04 degrees off north, where the mid-winter sun at 1.00pm is at 16.82 degrees. This means that solar access to western apartments is only available in the afternoon after 1pm.



Throughout the design development of the Central Precinct and the overall Waterloo Metro Quarter (WMQ) OSD, multiple design options were considered to maximise solar access to apartments while responding to these site constraints.

## 2. CONSIDERATION OF ALTERNATIVES

Following the review of the first RFI package, DPIE has asked the design team to consider additional design options with the objective of increasing the number of apartments with a northern aspect or improved solar amenity. This notably has included:

1. the review of a potential revised floor plate layout which maximises north facing apartments, as suggested by the DPIE's independent consultant Walsh Analysis dated 12/04/2021; and
2. the review of alternative apartment layout options to optimise solar amenity to the greatest number of apartments.

The review and comparative analysis of these options is detailed in the Revised Supplementary Architectural Design Report prepared by Hassell and attached at **Attachment B**. As outlined in the design report, some of the options explored were not considered to optimise apartment amenity due to the following reasons:

- The northern scheme proposed by Walsh Analysis was explored (as shown on pages 17-20 of the Design Report at **Attachment B**) and was discounted. Although this option may result in a few additional fully compliant apartments, noting that we have not modelled this in detail and expect under scrutiny that the North Scheme may not have a better solar access result as Walsh anticipates, this option does not provide a better overall development outcome, when taking into consideration privacy, view, activation and building expression.
- The alternative options resulted in a detrimental impact to apartment amenity and layout, internal functionality and/or architectural expression. More specifically, the alternatives may have resulted in:
  - reducing private open space depth and size to below ADG minimum.
  - poor outlook to the commercial building (Building 1) on the WMQ site.
  - no allowance for building articulation on the northern façade.
- The alternative options resulted in a detrimental impact to public domain amenity and overall urban experience and outcome. More specifically, the alternatives may have resulted in:
  - additional shadow impact to Alexandria Park.
  - reduced number of apartments and balconies facing Cope Street Plaza which will reduce the level of activation and vibrancy of the public domain.

In considering these options, the design team further explored and adopted additional design refinements to the Central Precinct building, to maximise solar access to apartments while balancing residential and public domain amenity.

As part of this design refinement process several changes are now proposed to the architectural plans within SSD-10439, which results in improved solar amenity and compliance outcome compared to both the previously proposed scheme and the alternative options considered. The proposed changes are outlined in Table 1 below.

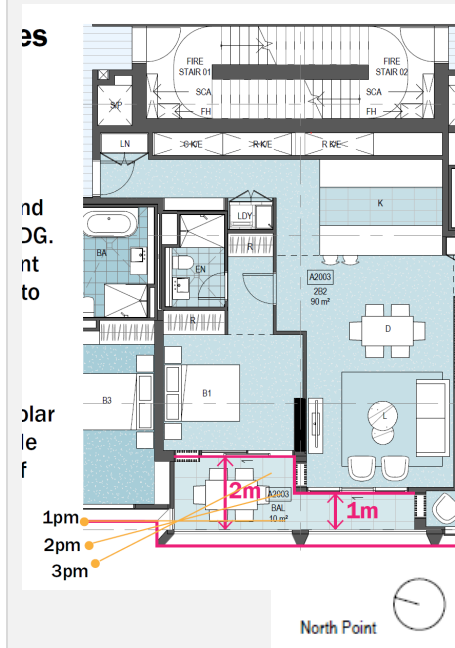
Solar improvement stated in the Table below is measured based on the scenario that the ADG is interpreted to require assessment for a minimum 1sqm area for the duration of the 2 hour assessment period, which is the interpretation adopted by Walsh Analysis. As justified in the Technical Note prepared by RWDI and dated 23 April 2021, this interpretation is not in line with the ADG requirements. The ADG does not specify a minimum area for direct sunlight for this period of assessment. The reference to 1sqm is noted in the Design Guidance of Objective 4A-1, which states *“To maximise the benefit to residents of direct sunlight within living rooms and private open spaces, a minimum of 1m2 of direct sunlight, measured at 1m above floor level, is achieved for at least 15 minutes”*. This design guidance states that the 1sqm of direct sunlight is required for at least 15 minutes, not the entire 2 hour period. Accordingly, this guidance should only be used when considering the requirement of 15% apartments that don’t achieve any access to sunlight. Nevertheless, the 1sqm requirement is included in the solar access assessment to respond to peer review comments provided by Walsh Analysis.

Table 1 - Proposed Changes

Revised Typical Floor Plate	Proposed Design Change	Solar Improvement compared to the original SSDA scheme
<p><b>SOUTH EAST APARTMENT</b></p>	<p>The living room glazing and balustrade line of the south eastern apartments is moved east by 240mm.</p> <p>Reshape and relocate south eastern column to be within the apartment.</p>	<p>Improved solar access to more than 1sqm of the living room by an additional 10 minutes between 9:00am and 11am in mid winter.</p> <p>Overall, solar amenity is improved for <b>19 additional</b> south east apartments between level 3 and level 21, which all receive 1 hour and 40 minutes of solar access.</p>

WEST APARTMENTS		
	<p>Adjustment to the west facing 1 bedroom apartment façade (shifted east by 700mm) to create north facing frontage to the adjacent private open space.</p>	<p>Both the living room and private open space of the 1 bedroom apartments between level 6 and level 19 achieve more than 1 sqm of solar access for 1 hour and 50mins between 1:10pm and 3:00pm mid winter. This was a balance between solar access to both areas.</p> <p>The private open space will also now receive direct sunlight for more than 2hrs, while solar access was only achieved in the original SSDA scheme for 1 hour and 15min.</p> <p>Overall, solar amenity is improved for <b>14 additional west apartments</b> between level 6 and level 19, now receiving at least 1 hour and 50 mins of solar access.</p>
EAST HIGH RISE APARTMENTS - LEVEL 20 AND 21		
	<p>East facing 2 bedroom apartments living room glazing shifted to the east by 1m.</p>	<p>Both the living room and private open space of the 2 bedroom apartments on level 20 and 21 receive more than 1sqm of solar access for 2 hours between 9:00am and 11:00am mid winter</p> <p>Overall, this design change enabled <b>two additional east facing apartments</b> to be fully compliant with ADG solar requirement, and will receive 2 hours of solar access to both living room and private open space between 9:00am and 3:00pm mid winter.</p>

**WEST HIGH RISE APARTMENTS - LEVEL 20 AND 21**



The living room glazing is shifted east by 1m. The bedroom of adjacent apartment to shift east 700mm to allow north facing frontage for the private open space.

Solar is received to the living room from 1.55pm to 3pm, this is an improvement of 20min of solar compared to the original SSDA scheme.

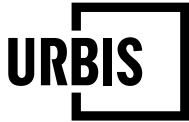
Solar is received to private open space for the full two hours between 1pm to 3pm, this is an improvement of 15min of solar compared to original SSDA scheme.

Living room and private open space both receive 1sqm of solar access for 50min between 2.10pm to 3pm.

In comparison to the alternative options considered, the proposal presents a well-balanced design outcome that is able to:

- Improve overall solar amenity to apartments within the Central Precinct.
- Maintain minimal shadow impacts to Alexandria Park by ensuring the building does not protrude any further east or south.
- Retain internal apartment amenity by providing logical apartment layouts that are consistent with the ADG.
- Retain and achieve design excellence as previously supported by the Design Review Panel.
- Maximise outlook from apartments to parkland views.
- Ensure privacy and cross ventilation amenity to proposed apartments.
- Provide all apartments within the Central Precinct with dual aspects.

In consideration of each of these factors, the revised residential floorplate represents the highest amenity outcome of all options contemplated.



### 3. REVISED SOLAR COMPLIANCE FIGURES

The adopted design changes have resulted in the following solar amenity improvements:

	Peer Review Scheme		DA Scheme		Proposed Scheme (RWDI Expert Assessment)			
	Maximising north facing apartments		Peer view assessment of submitted DA (Base)		Peer view assessment of submitted DA (Base) plus design changes to L20/21 east apartments		Peer view assessment of submitted DA (Base) plus design changes to L20/21 east apartments, west apartments and south east apartments	
	No. of compliant apartments	% of compliant apartments	No. of compliant apartments	% of compliant apartments	No. of compliant apartments	% of compliant apartments	No. of consistent apartments	% of consistent apartments
POS	82	55%	86	57%	86	57%	105	70%
Living	83	55%	78	52%	80	53%	101	67%
Living or POS	85	57%	88	59%	88	59%	105	70%
<b>Both Living &amp; POS</b>	<b>73</b>	<b>48%</b>	<b>66</b>	<b>44%</b>	<b>68</b>	<b>45%</b>	<b>101</b>	<b>67%</b>

Walsh Analysis method adopted for above measurement

**Additional 33 apartments** are consistent with the intent of ADG by maximising solar access to both living room and POS, where a minimum of 2 hours solar access is achieved between 9:00am and 3:00pm in mid winter.

Source: Hassell

#### Additional strictly compliant apartments

Based on the ADG interpretation of Walsh Analysis, that requires solar assessment for a minimum 1sqm area for the entire duration of the 2 hour assessment period, **45% (68/150 units)** of the proposed apartments within the Central Precinct can achieve 2 hours direct solar access to more than 1sqm of the private open space area and living areas between 9.00am to 3.00pm mid-winter. Compared to the original SSDA scheme, this is an improvement of 2 additional apartments that are strictly compliant with the ADG, on the basis of the Walsh Analysis assessment of such.

#### Improved solar amenity to additional apartments

In addition to the two additional strictly complaint apartments, the design changes also improved solar amenity to a further 33 apartments when compared to the original SSDA scheme, based on the Walsh Assessment of such.

Solar improvement is evident for the south eastern corner apartment. When compared to the original SSDA scheme, the revised scheme results in an improvement by an additional 10 minutes of direct solar access to more than 1sqm of the living room of the affected south eastern corner apartments. Improvement is also achieved for the western apartment. When compared to the original SSDA scheme, the revised scheme results in an improvement by an additional 50 minutes of direct solar access to more than 1sqm of the private open space of the affected western apartments.

Based on our interpretation of the ADG solar access requirement, overall, **67% (101/150 units)** of the proposed apartments within the Central Precinct are compliant, as they can achieve direct solar access to private open space and the façade of the living room for a minimum of 2 hours between 9:00am and 3:00pm in mid-winter (without adopting the 1sqm rule adopted by Walsh Analysis).

67% (101 units) of the apartments are consistent with the objective of the Objective 4A-1 of the ADG. It is noted that Objective 4A-1 states that development is *“To optimise the number of apartments receiving sunlight to habitable rooms, primary windows and private open space.”*

The ADG also clarifies on page 11 of the document stating that:

*“The design criteria set a clear measurable benchmark for how the objective can be practically achieved. If it is not possible to satisfy the design criteria, applications must demonstrate what other design responses are used to achieve the objective and the design guidance can be used to assist in this.”*

DPIE’s Practice Note for Solar access requirements further explains:

*“Purpose of the guidance on measuring direct sunlight*

*This guidance is provided as the amount and location of sunlight will vary during the 2 or 3 hour time period that applies. It quantifies an amount of sunlight that will be useable and provide real benefits to residents within the 2 or 3 hour period. It means that this amount of sunlight will be provided **at a point within the 2 or 3 hour period** so that a resident can for instance pull up a chair and read a book in the sunlight in their living room/private open space.”*

As such, while the design criteria for solar access to 70% of units is not met in this instance, the following ADG design guidance are adopted to achieve ADG Objective 4A-1:

- As discussed in Section 1, alternative apartment layouts and building refinements were explored and adopted in order to improve and maximise solar access.
- No single aspect south facing apartment are proposed.
- Where possible, living areas are located to the north and service areas to the south and west of apartments.
- To optimise the direct sunlight to habitable rooms and balconies, the following design features are used:
  - Dual aspect apartments
  - Shallow apartment layouts
- Design drawings have demonstrated how site constraints and orientation preclude meeting the design criteria and how the development meets the objective of 4A-1.

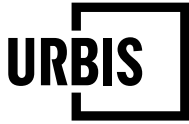
The RWDI Solar Access Memo provided at **Attachment C** also recognises that the design of the proposed development has maximised solar exposure to private open space and living areas through further design refinements.

Overall, the proposed development achieves ADG Objective 4A-1 and provide useable sunlight within the 2 hours period, including optimising sunlight to habitable rooms, primary windows and private open space within the context of the site. This will provide real benefit to residents in their living and private open space areas. The proposed development is also a balanced approach, without undermining the ability to achieve high amenity in other aspects including natural ventilation, minimising overshadowing, outlook, views, and design excellence.

### **3.1. RESPONSE TO PEER REVIEW COMMENTS**

The Revised Solar Assessment prepared by RWDI and provided at **Attachment C** assesses the revised design and confirms the figures provided in the Hassell solar compliance analysis.

The clarification on adopted assessment methodology was discussed in RWDI’s previous Technical Note dated 23 April 2021 and submitted to DPIE on the 23 April 2021.



The Revised Solar Assessment at **Attachment C** assesses and confirms the time period and area in sqm of solar access, which aligns with the solar amenity outcomes noted in the Architectural Report.

Should the assessment be issued for Peer Review by Walsh Analysis, with the clarification and the noted model alignment commentary, it is expected that the peer reviewers' results would align closely with the presented results in RWDI revised assessment.

We trust that the information contained within this letter addresses items 2 and 3 of DPIE RFI letter dated 13 April 2021 and provides clarify on solar amenity and calculation.

Should you require any further detail or confirmation, please do not hesitate to contact Anna Wang at [awang@urbis.com.au](mailto:awang@urbis.com.au) or the undersigned.

Yours sincerely,

A handwritten signature in black ink, appearing to read "A. Ryan". The signature is fluid and cursive, with a horizontal line extending to the right.

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[aryan@urbis.com.au](mailto:aryan@urbis.com.au)

**Attachment A** – Revised Architectural Plans

**Attachment B** – Revised Supplementary Architectural Design Report (RFI #2)

**Attachment C** – Revised RWDI Solar Assessment

**Attachment D** – Presentation Package to DPIE on 27/07/21