

Waterloo Integrated Station Development
c/- Perry Milledge
by email: perry.milledge@mirvac.com

25 May 2021

Job number 078/025

Waterloo Metro Quarter Development

WMQD Northern Precinct 1 | City of Sydney Response to RtS

Dear Perry,

Please see clarification regarding items 7 & 8 from the response to RtS issued by City of Sydney.

“7. External sun shading – City staff refer to the Amended Design Integrity Report at page 20, which says “The panel notes that whilst thermal comfort levels may be achieved with the reduced facade projection, it is disappointing to rely wholly on glazing specifications, which may result in darker and more reflective glass than would have been the case if a brise soleil with greater depth had been pursued”.

The design of the tower facades has targeted a greater area of solid than typically previously adopted for high performance facades. This is aligned with the general tightening of Section J of the NCC and specifically seeks – amongst other objectives – to remove reliance on dark or excessively reflective glass.

The proposed tower vision glass performance for the WMQ Northern Precinct (Building 1) has transparency and solar control consistent with many buildings similar to its type, including but not limited to:

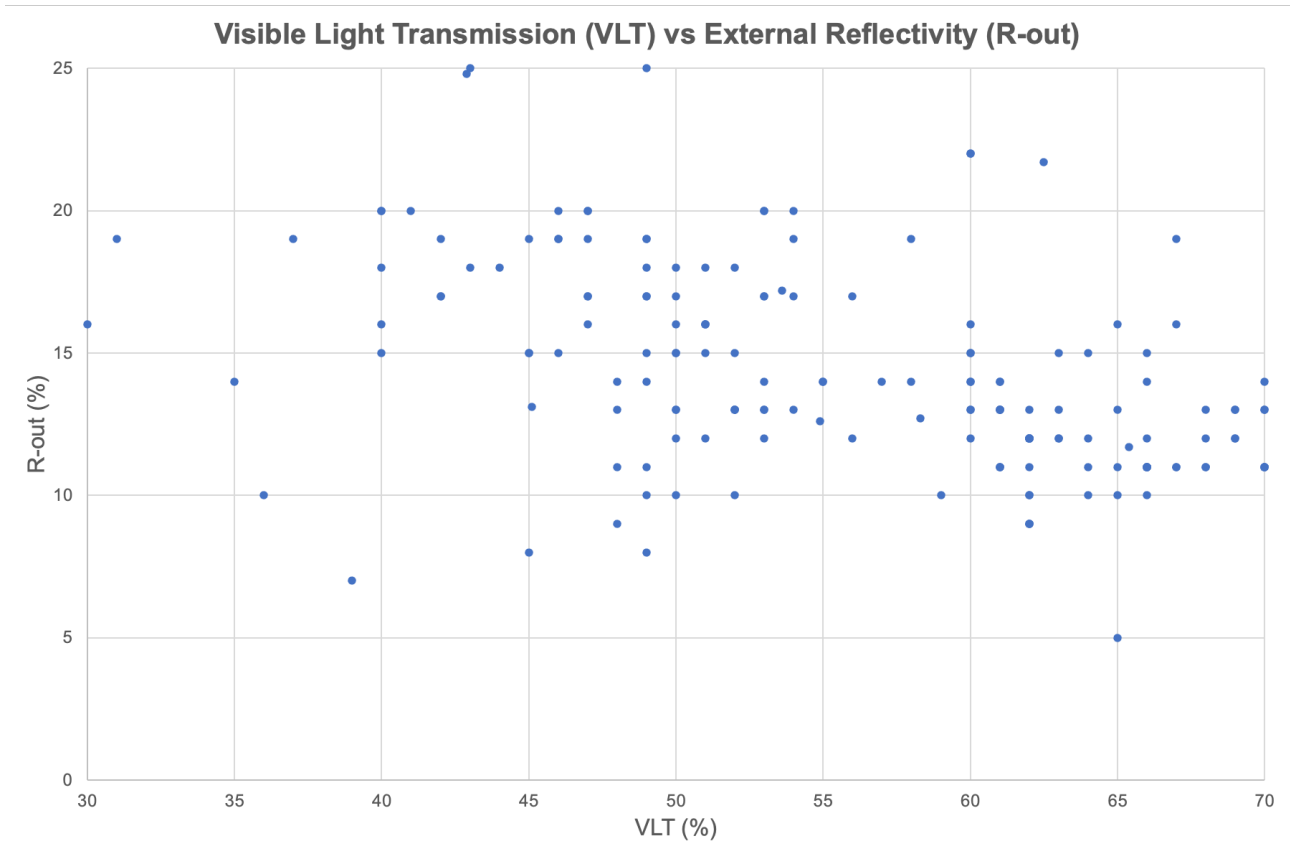
- 5 Martin Place Sydney
- Barangaroo Towers 1,2 & 3 Sydney
- Quay Quarter Tower Sydney

Architectural, ESD and glass selection exercises have strived to maintain visual clarity and reflectivity on-par with these reference projects, despite the additional challenges that have swept the industry following the changes of NCC 2019 Section J. We note that glass performance parameters have been tuned to maximise transparency / visible light transmission (VLT) while delivering solar control (SHGC) as required for performance of the envelope. This has led to specification of an intended glass product targeting:

- VLT 50%;
- SHGC = 0.23;
- External reflectivity < 20%

Apex also note the that in assessment of visual clarity and reflectivity:


- View angle is extremely important. When looking upwards, even clear uncoated glass (85% VLT) will appear reflective, similar to lower VLT glass.
- Glass external reflectivity and transparency values for low-e glass products are weakly correlated at best. External reflectivity is quite specific to the product / coating itself – please refer to the scatter plot of VLT vs. external reflectivity. This includes low-e products from ten reputable coating suppliers across the range of external reflectivity and VLT used in Sydney residential and commercial construction. There is no discernible relationship between external reflectivity and transparency with many possible reflectivity values at each range.



“8. As noted in our submission to the EIS, externally mounted operable sun shading devices must be designed to mitigate summer sun affected facades accordingly. The City recommends that an appropriate condition be imposed accordingly subject to consultation with the Design Review Panel. “

Use of operable sun shading spread across the building facades has not been adopted for a number of strategic considerations.

In general, these systems are not suitable for high levels of building facades as they typically require extensive maintenance and replacement of components to keep them functional. From a safety and tenant amenity perspective, it is desirable to minimise the amount of time maintenance operatives need to spend accessing the tower facades. Even with a good maintenance regime, failures do occur which can create local losses in performance and aesthetic concerns in addition to the impact on amenity.



Furthermore, given the significant areas of solid on the façade, the performance gains to be had by operable façade elements are not nearly significant enough to justify the increased embodied carbon and hence costs attributable to the operability and controls of such systems.

We trust the above is clear and appropriately responds to the concerns raised by Council. Should you have any queries, please contact the undersigned at your convenience.

Yours sincerely,



Pete Hartigan
Managing Director