

22 January 2018

10051

Ms Carolyn McNally
Secretary
Department of Planning and Environment
320 Pitt Street
SYDNEY NSW 2000

Attn: Ben Lusher (Director – Key Site Assessments)

Dear Ben,

Response to Submissions

Barangaroo Public Domain (SSD 16_7944): Hickson Park, Watermans Quay, Barangaroo Avenue, Wulugul Walk, Watermans Cove and the Public Pier

This letter, prepared by Ethos Urban on behalf of the proponent, Lend Lease (Millers Point) Pty Ltd, sets out a response to the submissions received to SSD 16_7944, being the proposed public domain works at Barangaroo for all of Hickson Park, Watermans Quay, the remaining section of Barangaroo Avenue in Barangaroo South, Wulugul Walk (including the expanded boardwalk required by condition of Concept Plan MOD 8), Watermans Cove and the Public Pier. This letter and accompanying documentation also responds directly to the issues raised in the correspondence received from the Department of Planning and Environment dated 21 July 2017 and 2 August 2017 relating to SSD 16_7944.

The key issues raised in submissions and in correspondence from agencies are addressed below, with a detailed response to all submissions included in **Appendix A**. Where appropriate, the plans and supporting technical reports have been updated in response to the submissions. This Response to Submissions (RTS) letter is accordingly accompanied by:

- Appendix A: Record and response to submissions (Ethos Urban)
- Appendix B: Revised Public Domain Drawings (Grant Associates)
- Appendix C: Revised Public Domain Design Report (Grant Associates)
- Appendix D: Revised SEPP 55 Letter (AECOM)
- Appendix E: Revised Site Auditor's Review of SEPP 55 Letter (Ramboll Environ)
- Appendix F: Navigation and Safety Response Letter (Royal Haskoning DHV)
- Appendix G: Supplementary Wind Letter (Windtech)
- Appendix H: Revised CPTED Report (Ethos Urban)
- Appendix I: Stage 1B Early Works Stormwater Details (Cardno)
- Appendix J: Transport Assessment and Construction Traffic Management Strategy (Arup)
- Appendix K: View Study from Building R8 (Grant Associates)

- Appendix L: Proposed Exclusion Zones (Grant Associates)
- Appendix M: Deep Soil Zone Plans (Grant Associates)
- Appendix N: Hickson Park View Study (Grant Associates)
- Appendix O: Community Uses Correspondence from the DPE
- Appendix P: Addendum to the Declaration Area RAP for Offsite Treatment/Transport of Contaminated Material (AECOM)
- Appendix Q: Addendum to the Stage 1B Waterfront Public Domain RAP, Barangaroo South (AECOM)
- Appendix R: Review Letter for Waterfront Public Domain RAP Addendum (NSW EPA Accredited Site Auditor)
- Appendix S: Updated Marine Ecology Assessment (Royal Haskoning DHV)

Amended Proposal

The revised SDD DA package has been prepared to include design refinements that respond to a consolidated list of comments received during public exhibition, including commentary from the Barangaroo Delivery Authority. The refinements are quite varied but generally revolve around further investigation with respect to the security and maintenance/management of certain parts of the public domain as well as refinements arising from more detailed consideration of certain design propositions or materiality. This has resulted in further studies and proposals for various bollard locations (refer to the new bollard section in the updated design report in **Appendix C**).

Other, more detailed refinements to the drawings and report include the following:

- Pontoon: The design of the extended boardwalk floating pontoon has been refined.
- Materiality of the former Spirit of Tasmania Loading Dock: The flush sandstone edge has replaced the precast concrete around the perimeter of Pope's Landing.
- Additional trees in Watermans Cove Allee: Two trees have been added to the southern end of the curved allee of trees.
- Watermans Quay crossing: The Watermans Quay pedestrian crossing has been widened.
- Watermans Cove paving extent: The cove paving has been extended up to the western edge of Barangaroo Avenue and the interface with the Crown basement driveway.
- Tree Species: Refinements to the tree species in the Cove planters and the park.
- Public Art: Structural provision has been made within the public domain to support a future artwork at Watermans Cove and/or at Hickson Park.
- Universal access: Inclusion of a universally accessible ramp to the lower section of boardwalk in Watermans Cove and the revision of the ramp to Hickson Park.

The proposed amendments are shown in red clouding in the updated drawings in **Appendix B**.

1.0 Staging

1.1 Issue

The Department has requested that further justification be provided on how the proposal would be consistent with the terms of Condition B12 of the Barangaroo Concept Plan, with further consideration and information which outlines the extent and timing of the proposed exclusion zones around the public domain areas.

1.2 Proponent's response

The proponent is seeking approval through this public domain SSD DA for the staged construction of Hickson Park and the public domain in order to provide exclusion zones surrounding the sites of the future residential buildings R4A, R4B and R5 (see **Appendix L**). The staged delivery is in recognition that these three buildings will remain under construction for some time beyond the completion of the Crown Hotel Resort and there will be a consequent requirement to provide separation from the towers for both public safety and construction logistics. In this light, it is considered both inefficient and unnecessary to construct those areas of the Park that would be within a tower construction exclusion zone until the time the towers have been completed.

Accordingly, the proponent is seeking a condition as part of the development consent which would permit the staged delivery of Hickson Park and the public domain, in order to ensure the majority of Hickson Park and the public domain (aside from land within the exclusion zones) is constructed, landscaped and publicly accessible. The staged delivery of the park would allow an interim Occupation Certificate (OC) for that portion of the public domain to be delivered prior to the land within the exclusion zones, which would be delivered at a later stage (once the residential buildings are complete), and would be subject to a final OC. The condition could read as follows:

(XX) Hickson Park may be constructed and occupied in stages to provide for temporary exclusion zones required for the construction of residential buildings R4A, R4B and R5. The area of Hickson Park and public domain adjacent to each building must be completed prior to the issue of the final Occupation Certificate for each respective building and prior to the issue of the final Occupation Certificate for the public domain.

Approval of a staged delivery of the Park would also allow for Condition F2 of the Crown Hotel Resort Development Approval to be subsequently amended to provide for an Occupation Certificate to be granted for the Crown Sydney Hotel Resort, to be aligned with the first stage of Park completion, rather than the current entirety, which as outlined above is not a safe or efficient outcome. Condition F2 of the Crown Hotel Resort Development Approval states:

Public Domain Works

F2. The works to the public domain are to be completed in accordance with the approved plans prior to the issue of any Occupation Certificate or before their use commences, whichever is sooner. In Particular, prior to the issue of any Occupation Certificate:

- a) Hickson Park (other than the temporary construction road corridor on the alignment of the former Barton St) must be completed, landscaped and publicly accessible;*

- b) *the 30m wide publicly accessible foreshore promenade must be completed (in accordance with the requirements of the Concept Plan), landscaped and publicly accessible; and*
- c) *the associated 9m wide licenced terrace areas shall also be landscaped; and*
- d) *a public domain maintenance plan approved by the Secretary, setting out:*
 - i. *the schedule maintenance works for Hickson Park and the foreshore promenade;*
 - ii. *the parties responsible for the maintenance of these spaces, both in relation to the funding and delivery of the works;*
 - iii. *the contingencies in place, including the timeframes for replacement or repair of damaged structures and plantings.*

The timing for the replacement of Barton St, in accordance with Concept Plan Modification B3(5), is to be agreed with the Secretary.

Schedule 6 cl 3B(2)(d) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) requires that a consent authority must not grant consent under Part 4 of the Act for the development unless it is satisfied that the development is generally consistent with the terms of the approval of the Concept Plan. The consent authority must therefore be satisfied that granting consent for the exclusion zones is generally consistent with the terms of the approval of the Concept Plan, specifically Condition B12, which states:

B12. Staging

Prior to the issue of any occupation certificate within Block 4A, 4B or Y, the foreshore promenade (to the full extent mapped in the SEPP Amendment), pier, Watermans Cove and Hickson Park (other than the temporary construction road corridor on the alignment of the former Barton St) shall be constructed, landscaped and publicly accessible.

The timing for the replacement of Barton St, in accordance with B3(5), is to be agreed with the Secretary.

In order to determine if something is generally consistent, it is important to evaluate whether the intent of the condition is being achieved. It is understood that the intent of Condition B12 was to ensure that the public domain in Stage 1B is delivered before the buildings in Stage 1B and 1C (Crown Integrated Resort and Hotel) are occupied.

Condition B12 also contemplates a temporary construction road corridor in the form of Barton Street (16m wide) that dissects the approved Hickson Park. It is proposed to relocate the temporary construction road (i.e.: proposed exclusion zone) of 12-16 metres adjacent to R4A, R4B and R5 in accordance with the attached plan (see **Appendix L**). In effect, the exclusion zones required for construction of the towers proposed above would absorb the construction access currently approved in the Park, thereby delivering a larger and consolidated component of public domain for the first OC on Block Y. The completed park area would be of a size suitable for events and for a wide range of passive recreation activities and would therefore result in improved public amenity. The exclusion zone area would be finished and integrated into the Hickson Park public domain with the occupation of the residential towers, therefore meeting the intent of Condition B12. The

proposal will deliver 85% (17,827m²) of the total public domain including 100% of the foreshore promenade, public pier, and Watermans Cove prior to the first OC for Block Y.

Therefore, despite not explicitly contemplating the exclusion zone around the buildings, provision for the Barton Street temporary construction road corridor in Condition B12 does illustrate that the condition specifically contemplates the potential for temporary construction work zones and the potential that a similar percentage of the Park would not be available at the time of the first OC.

In light of the majority of the public domain being provided consistent with the intent of condition B12 of the Concept Plan, and that it specifically contemplates that not all of the public domain may be available at the time of the first OC (in respect of Barton Street), it is our view that the consent authority can be satisfied that the proposed request for an exclusion zone to protect public safety is generally consistent with Condition B12. **Figure 1** below demonstrates the extent of the proposed exclusion zones, as currently contemplated.



Figure 1 – Proposed exclusion zones (not to scale)

Source: Lendlease

2.0 Deep soil zones and mature trees

2.1 Issue

The Department has requested that the following further information be provided, relating to the proposed deep soil zones and mature trees within Hickson Park:

- Further information shall be provided regarding the final location and volume of the deep soil zone proposed in Hickson Park when considering the construction methodology for the Stage 1B basement.
- Engage an arborist to undertake a post-detailed design review of the public domain plans to confirm adequate soil depth and volume would be provided for each tree species proposed in each area (particularly large fig trees proposed in raised planter boxes).
- Provide a plan (for construction) overlaying the proposed tree planting strategy plan with the proposed deep soil zone to illustrate the correlation between large trees and the deep soil zone.

2.2 Proponent's response

Hickson park deep soil zone

The proposed 3m deep soil zone measures 2,050m² in area and is located within a ground slab set down of 2,500m² (see **Figure 2** and **Appendix M**) and has been proposed in response to Condition B3 of the Barangaroo Concept Plan, which states:

(1) *Hickson Park is:*

...

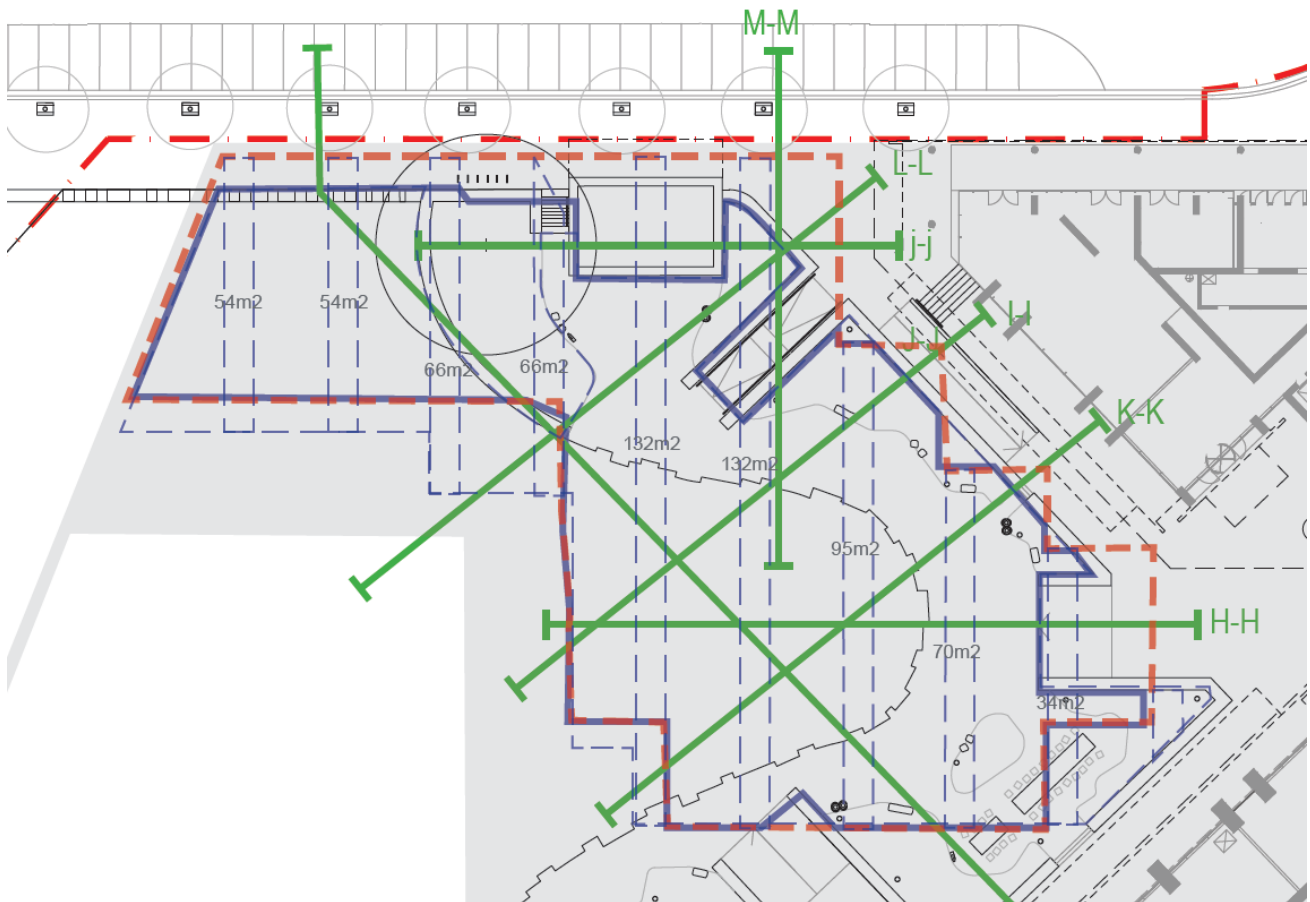
c) *to support large mature trees, including with the provision of at least 2,000sqm of deep soil with a depth of at least 3m;*

...

In order to grant consent for the proposed public domain works, the consent authority must be satisfied that the proposed deep soil zone is not inconsistent with the terms of the Barangaroo Concept Plan. This means in practice that the proposal must be generally consistent with the Barangaroo Concept Plan condition. Additionally, the condition must be read and understood in its context, including the objective of the condition, in assessing general consistency.

The key objective of the condition is to ensure that Hickson Park supports the growth of large mature trees, with the 3m deep soil zone added as a further inclusion within the overall condition, rather than simply prescribing the only way that it should be achieved.

The following information has been prepared to assist the Department in forming a view that the proposed deep soil zone's form and location is consistent with Condition B3 of the Barangaroo Concept Plan, the intent of which is to ensure that Hickson Park is able to support the growth of large mature trees, including through the provision of an appropriate deep soil zone.



- Upstand Beam
- Slab Setout for Deep Soil - 2500m²
- Deep Soil under planted area - 2050m²
- Stage 1B Basement

Figure 2 – Proposed deep soil area

Source: Grant Associates

*Note: All sections have been included in Appendix M of this RTS

Arboriculture requirements

The proponent, through the Environmental Impact Statement (EIS) prepared for the proposal, has previously provided expert arborist and soil scientist advice which confirms that only a 1.5m soil depth (with suitable soil volume) is required for the growth of significant trees (see Appendix M of the EIS as submitted in May 2017). This advice also identified that the lack of oxygen in deeper profiles actively discourages root access, concluding that deeper zones are therefore not required for healthy tree growth.

This information is instructive for the Department’s assessment of consistency with the Concept Plan condition in that it provides substantiation that the site can provide for healthy and mature tree growth with substantially less soil depth than contemplated by the Concept Plan. In so doing,

this may also provide comfort that where proposed soil depths are less than the 3m contemplated by Condition B3, it is unlikely that a failure to achieve large mature tree growth will be the result.

Location of deep soil zone

It is clear within the drawings (**Appendix M**) that the proposed 3m deep soil zone (as shown in **Figure 2**) does not exactly match the location of trees proposed within Hickson Park. The location of the slab set down and consequent deep soil zone has been selected as a response to a number of constraints which, whilst not directly related to all of the proposed trees in the proposed park, effectively render it the only location within which the deep soil zone can be located. These constraints are defined as follows:

- *Approval of the Crown basement (SSD 15_6957)*: The Crown basement was approved by the Planning Assessment Commission (PAC) on 28 June 2016. The consent includes the RLs of the various basement slabs and does not require a 3m deep soil zone to be positioned above the Crown basement. In effect, the Crown basement area is excluded from the area required to accommodate the deep soil zone.
- *Approval of Stage 1B Basement (SSD 15_6960)*: The Stage 1B basement was approved by the PAC on 7 March 2017, albeit with a requirement to define the way the deep soil zone associated with the Future Hickson Park will be accommodated. In essence, the approval sets the location of the basement structure, including slabs, with the exception of changes to accommodate a deep soil zone, and also accepts the location of the high clearance loading area relative to the future tower cores and the access ramp from street level associated with future buildings R4A, R4B and R5.

Condition A3 of the approval requires, prior to CC, that the proponent provide amended basement plans which provide a reduced basement slab level to facilitate a deep soil zone with an area of at least 2,000m² with a depth of at least 3m to support large mature trees in Hickson Park, with the location of the deep soil zone generally reflecting the final location of mature trees in Hickson Park as determined by the subject Public Domain Works application (SSD 7944). These amended plans must be submitted with the final plans determined for this Public Domain DA and must be approved by the Secretary prior to the issue of any CC for the basement structure associated with SSD 15_6960.

- *Approval and status of Block 4 Excavation and Remediation (SSD 5897, formally MP10_0026)*: The excavation and remediation development consent provides for the construction of a diaphragm and cut off walls to allow dewatering and remediation activities to occur within Block 4. The walls are designed with specific levels in mind (both bottom and intermediate basement levels). The wall installation is now complete and is based on a design that incorporates coupling points for the approved future basement slabs, in both Crown and Lendlease areas, as well as the base hydrostatic slab. Given this situation, the relationship of basement levels and diaphragm walls is now fixed and additional excavation to lower the entire structure cannot be contemplated.
- *Structural stability of Crown and Lendlease basements*: The entire Stage 1B basement has been designed as a single integrated structure. Therefore, to maintain the basement's structural stability, there must be a connection from one side wall of the basement, directly across to the other opposite, passing along the slabs for each level. If these slabs are not aligned, the

basement is at risk of collapse. The implication of this situation is that changes to the basement levels that might arise from simply increasing the excavation depth in part of the site (to allow a greater zone of deep soil above) are not possible, as this would result in the misalignment of structural slabs and compromise the structural integrity of the basement.

The trees proposed in the 3m deep soil zone represent 64% of all of those located above the One Sydney Harbour basement. These trees span over an area of 1,106m², representing 55% of the total deep soil zone available. Simply increasing the area of tree planting over the deep soil zone is not recommended however due to the negative impacts that would result:

- Condition B3(1) b) and e) of the Concept Plan require that views are maintained from Hickson Road through to the waterfront and that Hickson Park be comprised predominantly of lawn. To locate trees in any other area available within the proposed set down area or along the remainder of the Hickson Road frontage would in effect diminish the desired outcomes for Hickson Park in this regard.
- The proposed arrangement of trees serves to maximise the lawn area, provide a strong canopied backdrop to the lawn and transition to the form of the future towers, and provide a close visual and physical relationship between the lawn and hard paved areas between the residential towers, and on to the Watermans Quay pedestrian crossing and T1 Lobby. Increasing tree planting in this area would diminish the clarity of this relationship and would serve to undermine the fundamental principles on which the design of the public domain has been based.

Depth of deep soil zone

Condition B3 of the Concept Plan requires 2,000m² of deep soil to be provided within Hickson Park, with a depth of at least 3m. Whilst this would logically result in a total soil volume of 6,000m³, the volume of soil resulting from the proposed set down area and ground plane proposals has been nominally calculated at 7,500m³, which exceeds this minimum volume by 25%.

The slab set down proposed is the deepest which can be accommodated whilst still maintaining clearances in the basement levels below (noting that these need to be maintained for structural integrity reasons-see above). In order to maximise soil depth, the basement ground slab construction detail in the set down area requires the use of upstand beams within parts of the deep soil area. The indicative location of these upstand beams is shown in **Figure 2** (and **Appendix M**).

Specifically, in the location of these beams, the slab RL is increased from RL 0.7 to RL 1.1 (400mm), and consequently the depth is decreased by an equivalent dimension. This is not however considered significant for the following reasons:

- The trees proposed are unlikely to utilise the soil profile at these depths.
- Should the roots of any trees above extend into the upstand beam zone, they are unconstrained and may simply extend over the beams and then down to the lower spaces in between.
- The volume occupied by the upstand beams is 281m³, representing a loss of only 3.7% of the total soil volume. This results in a net soil volume of 7,219m³, which is still over 20% greater than the minimum 6,000m³ resulting from the Condition B3 requirement.

The drawings in **Appendix M** have been prepared to demonstrate why simply increasing the proposed ground plane by 400mm in order to achieve a 3m clear depth over the beams would be unacceptable. The key issues illustrated by these drawings are:

- A resultant need for increased ramp lengths and extension of hard paved areas on the southern edge of the park;
- A consequent reduction in the lawn area available in Hickson Park;
- An increase in the height of the retaining wall feature, resulting in:
 - A significant loss in casual seating opportunities on the southern edge of the park, which is directly adjacent to the retail zones and principal east-west pedestrian circulation spaces.
 - A loss of views into the park from the building lobbies and retail tenancies. A key principle for the design of the park is to provide clear views through the tree belt to the lawn beyond, which will be lost through the increase in ground plane level.
 - Planter walls to both Barangaroo Avenue and Hickson Road become 1,000mm high and will require handrails, which in combination, will have a significant impact on the openness of the park on these edges.
 - Grading of the lawn down to existing levels at Hickson Road and interface levels at Barangaroo Avenue and the northern boundary becomes excessive and not compliant with accessibility standards.

Summary

As demonstrated above, the location and depth of the deep soil zone has been proposed in order to respond to the requirement and underlying objective of Condition B3 of the Barangaroo Concept Plan, which is to accommodate the growth of mature trees in Hickson Park. The proposed location and depth of the deep soil zone may be constrained by a variety of factors, yet the nature of the proposal is such that the overarching object of the Concept Plan conditions are appropriately satisfied and the consent authority can be satisfied that the proposal is generally consistent with Condition B3.

3.0 View corridors across Hickson Park

3.1 Issue

The Department has requested that further analysis and discussion of how view corridors from Hickson Road to Sydney Harbour would be provided across Hickson Park with the proposed final levels and grading.

3.2 Proponent's response

A number of studies have been prepared to capture the view corridors from Hickson Road to the harbour, reflective of the levels proposed for Hickson Park and the public domain generally. The views which have been generated from these studies are included in the figures below (and in **Appendix N**).

Three view corridors have been selected, with view lines captured at eye height (1500mm). Two views have been selected looking from Hickson Road north-west and west towards the harbour across the easternmost portion of Hickson Park, and one view looking north-west from across Hickson Park towards the harbour from immediately south of the proposed amenities building. In each of the views, the future envelopes of the Crown Resort and the residential buildings are included, as well as the proposed landscaping scheme associated with the subject public domain proposal.

The views also provide clear and unimpeded visual access to the future continuation of Barangaroo Avenue through to Central Barangaroo, north of the Crown Sydney Hotel Resort, and anticipate a landscaping concept continuation along Barangaroo Avenue consistent with that proposed within this public domain proposal.

As can be seen from the figures, the public domain works, including the landscaping concept for trees along Barangaroo Avenue, and the proposed levels of Hickson Park relative to Hickson Road, provide for and maintain views from Hickson Road to the waterfront, consistent with the requirement of Condition B3(1)(b) of the Barangaroo Concept Plan.

In addition, the proposed levels allow for suitable drainage and cross falls throughout the park. It is noted that the lowering of proposed levels would result in numerous drainage pits through the central area of Hickson Park, which would reduce amenity for future users and result in an overall reduction in the amount of lawn area available.



Figure 3 – Location of tested view corridors across Hickson Park

Source: Grant Associates



Figure 4 – View 1, looking north-west across Hickson Park

Source: Grant Associates

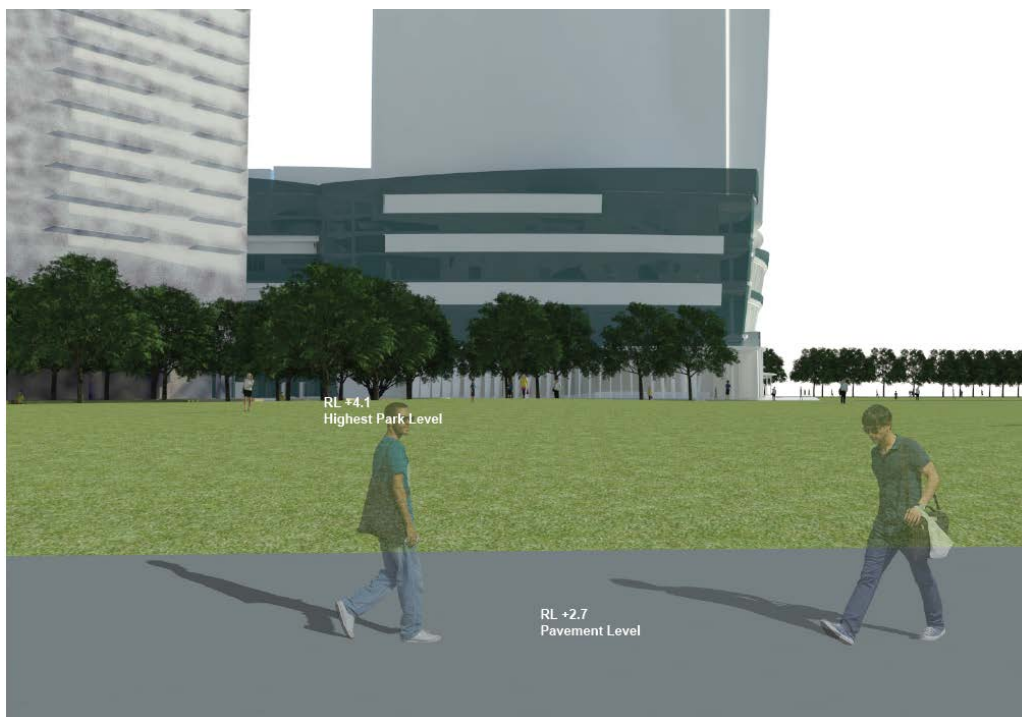


Figure 5 – View 2, looking west across Hickson Park

Source: Grant Associates



Figure 6 – View 3, looking north-west across Hickson Park

Source: Grant Associates

4.0 Community Building and Community uses

4.1 Issue

The Department have requested that further information regarding the future design process for the community building and the proposed staging/timing of its construction in relation to the other public domain works. Likewise, The City of Sydney's submission has highlighted the need for clarity on the use of the Pier and has highlighted a need for further analysis in respect of a Community Facility that may be located on the Pier.

4.2 Proponent's response

Use of the Public Pier

The SSD DA does not seek approval for a building on the public pier. However, rather than accommodating a relatively large Community Facility, the use of the Pier is likely to be much more closely oriented to a "public domain outcome" and an integrated element in the broader collection and sequence of spaces. In this respect, the current design provides a baseline "canvas" upon which a variety of potential uses and activities can be easily and flexibly located. The proposed baseline design supports its use as a gathering space or location for events, with the detail of its potential embellishment (including a potential lightweight structure) to be defined through a future proposal.

Further to the Concept Plan requirement for a design excellence process (Condition C2), and in the absence of a proposed community facility, it is intended that the design of a potential future structure may be procured through a competitive design process. It is envisaged that the design and detailing of the space will be the subject of a future Secretary's approval following consultation with key stakeholders. Accordingly, this SSD DA application seeks approval for the proposed public Pier as currently proposed, with appropriate conditions to allow its design development and construction without an additional and separate Development Application.

Community facilities GFA

Condition B7(1) of the Barangaroo Concept Plan (as modified) requires that:

"at least 3,000sqm of approved community uses shall be located within Barangaroo South, of which up to a maximum of 2,000 sqm of community facilities GFA may be located on a public pier in a central location that engages with the public domain, subject to compliance with the future environmental assessment requirement C10 below. All community uses GFA is to be constructed prior to the final occupation of any building in Stage 1B".

The Community Facility Building is not a strict requirement of the Concept Plan, and therefore the pier may be constructed without such facility provided upon it.

The use of the wording 'up to' and 'may' in this condition suggests that there is flexibility in the provision of community facilities GFA on the pier and ultimately that this is an optional element.

Furthermore, Condition C10 utilises wording such as 'any future' in reference to the structure/building, suggesting that the final outcome for a building on the pier is flexible and specifically a 'building' is not required.

Similar to other buildings illustrated indicatively across Barangaroo South under the Concept Plan (as modified), there is no strict requirement the building be progressed.

Approved Community Uses

Separate from the potential for a Community Facility, Condition B7 also requires the provision of at least 3,000m² of approved Community Uses on the Barangaroo South site (of which a Pier Community Facility *may* comprise part). It is noted that the community use¹ requirements of this condition are already satisfied, and in fact well exceeded, with 4,264m² of community uses located and operating within Stage 1A of Barangaroo South. This requirement was satisfied prior to the approval of MOD 8 to the Barangaroo Concept Plan, and has been acknowledged by the Department of Planning and Environment in correspondence dated 18 August 2016 (included in **Appendix O**). **Table 1** below provides a breakdown of all community uses provided in Barangaroo South relevant to the 18 August Department correspondence and the current GFA provision.

Based on the current provision of community facilities and the wording of Condition B7 of the Concept Plan, there is neither a requirement to provide additional community uses nor develop a community facility on the public pier to satisfy Condition B7.

Table 1 – Community uses GFA, Barangaroo South

Community use	Approved as at 18 August 2016	Currently Approved	Comment
Child care centres	1,410m ²	1,410m ²	Approved in T1
Community facilities	75m ²	245m ²	Public Amenities approved in R7, R8, R9 and proposed in RE1 Zone
Educational establishments		-	-
Entertainment facilities		-	-
Information and educational facilities		-	-
Landside ferry facilities	296m ²	337m ²	Approved in R7
Places of public worship		-	-
Public administration buildings		-	-
Public halls		-	-
Recreation facilities	1,527m ²	2,054m ²	Approved in T1 and R7

¹ Community Uses are defined in the Approved Concept Plan as: *Community uses* include child care centres, community facilities, educational establishments, entertainment facilities (other than cinemas and amusement centres), information and education facilities, landside ferry facilities, places of public worship, public administration buildings, public halls, recreation areas, recreation facilities (major, outdoor and indoor) and health services facility.

Community use	Approved as at 18 August 2016	Currently Approved	Comment
Health services facilities	1,326m ²	1,522m ²	Approved in T3 and R7
Total	4,634m²	5,568m²	

5.0 Wind

5.1 Issue

The City of Sydney in their submission to the SSD DA commented on the desired criteria to be applied for the assessment of future wind conditions in the public domain (Hickson Park specifically), in-line with the criteria within the Draft Sydney DCP 2012 (4m/s), and the desired probability of exceedance for all areas of no more than 5%, in line with the Draft Sydney DCP 2012.

5.2 Proponent's response

Neither the City of Sydney DCP nor the Draft Sydney DCP 2012 – Central Sydney controls apply to the site. A number of criteria have been used to determine pedestrian comfort as provided in the Pedestrian Wind Environment Study prepared for the application and which accompanied the EIS in Appendix M. This study applied a 7.5m/s GEM criteria to Hickson Park ('comfortable walking') which complies with the current Sydney DCP, and identifies that the 7.5m/s criterion is an acceptable wind criterion for Hickson Park within the circumstances of the site and the existing conditions. Under this criterion, the probability of exceedance in all locations was no greater than 5% (approximately once per week).

In any case, in order to address concerns raised in the City's submission, a lower wind comfort criterion was examined for Hickson Park, being a 5.5m/s ('short exposure'), in a supplementary letter prepared by Windtech (**Appendix G** of this RTS). The purpose of this examination was to determine and compare the probability of exceedance should the 'short exposure' (5.5m/s) criteria be adopted instead of a 7.5m/s 'comfortable walking' criterion.

The supplementary letter identified that the probability of exceedance will increase to around 12 to 15% for Hickson Park under the 5.5m/s criteria. However, it also identified that the following measures would, if taken, likely result in a lowering of the probability exceedance under the 5.5m/s criteria for much of the public domain area to approximately 5%:

- The continuation of the street tree planting along Barangaroo Avenue further north into Central Barangaroo;
- The development of a landscaped concept for Central Barangaroo more generally;
- The development of a final design scheme and the inclusion of built form in for Barangaroo Central, in particular a built form which encourages the north-easterly wind to push up and over Hickson Park.

As such, it is considered that whilst the proposed 7.5m/s wind criterion is acceptable for the intended use of Hickson Park, the wind conditions in the Barangaroo Public Domain more generally are expected to improve with the development of Central Barangaroo in the future, both in the waterfront and Block 5 areas, with a 5.5m/s criterion able to be achieved the majority of the time.

6.0 Traffic and transport (pedestrian flows)

6.1 Issue

The Department in its correspondence has identified that further analysis of forecast pedestrian flows presented in Table 3 of the Transport Report (Appendix S of the EIS) should be prepared, and that the proponent should outline how the public domain has been designed to minimise the potential for vehicular and pedestrian conflict and appropriately treated to ensure road and pedestrian safety (particularly on Barangaroo Avenue and Watermans Quay, in high pedestrian flow areas of the site, on footpaths, driveway crossovers etc).

6.2 Proponent's response

An updated Transport Assessment and Construction Traffic Management Strategy has been prepared by Arup (**Appendix J** of this RTS) which provides further analysis of forecast pedestrian flows and outlines how the public domain has been designed to minimise the potential for vehicular and pedestrian conflict. The updated transport assessment provides forecast pedestrian flows across the AM, lunchtime and PM peak hours, as well as across the full day and consider the full build out (~2025) of the Barangaroo Precinct, including the Crown Sydney Hotel Resort and Barangaroo Central sites.

The primary pedestrian routes that run across the Barangaroo South site from east to west are along City Walk, connecting to Napoleon Bridge for access to Wynyard Walk, and Transport Place which is on the Margaret Street alignment and also connects directly to Wynyard Walk bridge and tunnel.

The Stage 1B precinct also involves a number of vehicular cross-over points, specifically on Barangaroo Avenue, to service the porte-cochere and basement car park entrance for the hotel, and on Watermans Quay to serve the Stage 1B residential towers. In order to identify key issues associated with the vehicle cross over points and address pedestrian/vehicle interaction and driveway design, surveys were conducted during the PM peak hour (5pm-6pm) of other (similar) CBD locations, to understand the existing level of pedestrian and vehicles activity.

In addition to examples in Sydney, Arup studied surveillance footage of pedestrian movements across the porte-cochere entry and exit points to Crown Metropol on Whiteman Street and western porte-cochere on Clarendon Street in Melbourne. All locations studied involved uncontrolled driveway style entrances. The number of pedestrians and vehicles recorded these locations is outlined in the table below.

The anticipated level of vehicular activity on Barangaroo Avenue and Watermans Quay is comparable to the observed sites. These locations are both busy CBD environments which accommodate significant foot traffic throughout the day. The footpaths in these areas provide links to public transport nodes, as well as retail and commercial buildings.

Table 2 – Comparison peak hour traffic and pedestrian flows

Peak Hour Traffic and Pedestrian Flows			
Location	Vehicles (V)	Pedestrians (P)	V * P
Pitt Street opposite Hilton Hotel	204	3,800	775,200
Kent Street opposite Westpac Building	145	890	129,050
Whiteman Street Melbourne (Crown Metropol)	136	250	34,000
Clarendon Street Melbourne (Crown western porte-cochere)	103	270	27,810
<i>Barangaroo Avenue (Crown hotel driveway)*</i>	132	1,109	146,388
<i>Watermans Quay (Stage 1B driveway)*</i>	109	81	8,829
<i>Barangaroo Avenue (R4A Porte Cochere)*</i>	20	296	5,920

**denotes forecast pedestrian / vehicle flows*

Source: Arup

Mitigation measures

To emphasise pedestrian priority along these streets, driveway style entrances which are fully integrated with the adjoining footpath are to be provided. The footpath is to be at one continuous level. The treatment will therefore be an area which is designed for pedestrians, across which vehicles can pass slowly. Drivers of vehicles will be guided and encouraged to give way to pedestrians on the footpath as required by law. The crossings would also be designed with consistent pavement material, including a delineation of vehicle paths. Improved lighting and signage indicating the rights of pedestrians will further emphasise pedestrian priority in these areas.

7.0 Public Art

7.1 Issue

The City of Sydney raised in its correspondence that public art should be considered as early as possible in the process of the design of the public domain and that concept designs for public art should be included in the public domain application for review ensuring the public art is embedded in the design thinking for the public space.

7.2 Proponent's response

Public art interpretation strategies that are embedded in the design of the public domain spaces include The Barangaroo Bench, which is an opportunity to include an exploration of the stories of the site (refer to **Appendix A** for further discussion). Section 7.5 of the Barangaroo Public Art and Cultural Plan (see Appendix G of the exhibited EIS) also identifies that major public art works would be provided within Barangaroo South, with Watermans Cove and Hickson Park as possible locations.

The amended application includes structural provision in the design of the public domain in order to accommodate any potential future artwork and to ensure that it is embedded in the design of this Public Domain DA. The landscape architects have worked to ensure any artwork is integrated ensuring that the strength of the public domain design is not affected negatively.

Given the SSDA and Public Art Strategy make provision for any artwork in the future at Watermans Cove and/or Hickson Park, assessments of the impact of future artworks in these locations are provided below as relevant matters for consideration as part of the Public Domain SSDA.

7.2.1 Assessment (Future Watermans Cove Public Art)

The *Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005* ('Sydney Harbour REP') applies to the proposal as it applies to land within the Sydney Harbour Catchment. Division 2 of the Sydney Harbour REP contains a number of Clauses which are to be taken into consideration by consent authorities before granting consent to development under Part 4 of the EP&A Act. Clauses 25 and 26 of the Sydney Harbour REP are most relevant to the assessment of a future artwork in Watermans Cove, as they relate to the protection of the foreshore's scenic quality and waterways of Sydney Harbour, and the maintenance, protection and enhancement of views in the catchment.

Table 3 below provides an assessment of a future artwork in Watermans Cove against Clauses 22, 23, 25 and 26 of the Sydney Harbour REP, which the Public Domain SSDA envisages and provides structural provision for in the design of the public domain.

Table 3 – Assessment of proposal against the Sydney Harbour REP Matters for Consideration

Division 2 Matters for Consideration	Comment
Clause 22 Public access to, and use of, foreshores and waterways	Any artwork at the Watermans Cove location will not impact on public access to and along the foreshore, given it has been integrated into the public domain design and given its location within the cove.

Division 2 Matters for Consideration	Comment
Clause 23 Maintenance of a working harbour	Any artwork will be located in a non-trafficable part of the cove and therefore, the artwork is unlikely to result in any navigational impacts. Any artwork will be compatible with the maritime activities of the harbour which will be unimpeded.
<p>Clause 25 Foreshore and waterways <i>The matters to be taken into consideration in relation to the maintenance, protection and enhancement of the scenic quality of foreshores and waterways are as follows:</i></p>	
<p>(a) <i>the scale, form, design and siting of any building should be based on an analysis of:</i></p> <ul style="list-style-type: none"> (i) <i>the land on which it is to be erected, and</i> (ii) <i>the adjoining land, and</i> (iii) <i>the likely future character of the locality</i> 	<p>Any future artwork for Watermans Cove would be developed in a coordinated manner with the design of the public domain so that they can be delivered in an integrated manner in the future. To this end, the scale, form, design and siting of the artwork will be relevantly based on an analysis of the future character of the public domain and Watermans Cove envisaged through this SSDA, and having regard to the aims of the Barangaroo Public Art and Cultural Plan.</p> <p>Section 5.8 of the Public Domain Design Report (Appendix C) identifies that the key principle which underpinned the development of Watermans Cove was to define a special place along the waterfront, one that is easily identifiable in the context of the public realm for Barangaroo and is also equally as identifiable in views from the western streets and parks in Pyrmont and Balmain. Accordingly, a future major artwork in Watermans Cove will be of a scale and design which reflects this desired character of the cove.</p>
<p>(b) <i>development should maintain, protect and enhance the unique visual qualities of Sydney Harbour and its islands, foreshores and tributaries</i></p>	<p>Any future artwork will be developed to maintain, protect and enhance the unique visual qualities of the foreshore, in line with the protection of key views to the harbour and the vision for Watermans Cove as part of the SSDA. Any artwork at Watermans Cove will only enhance the unique qualities of the harbour, which form a key consideration in its development given the foreshore's prominence and relationship to the public domain (as well as the need to protect views).</p>
<p>(c) <i>the cumulative impact of water-based development should not detract from the character of the waterways and adjoining foreshores</i></p>	<p>A list of works which constitute 'water-based development' is provided in the Dictionary to the Sydney Harbour REP. Public art does not constitute water-based development.</p> <p>In any event, the proposal will not detract from the character of the foreshore having regard to potential cumulative impacts, given the relationship of the public domain to the foreshore has formed a key consideration in design of the public domain strategy (refer to Section 1.3 of the Public Domain Design Report in Appendix C). This report outlines that one of the key principles for the design of Watermans Cove is "to promote continuation of a linear foreshore promenade but also provide a variety of opportunities to sit and appreciate exception views across the Harbour". The future artwork will be designed to be consistent with and continue this ambition.</p>

Division 2 Matters for Consideration	Comment
<p>Clause 26 Maintenance, protection and enhancement of views <i>The matters to be taken into consideration in relation to the maintenance, protection and enhancement of views are as follows:</i></p>	
<p><i>(a) development should maintain, protect and enhance views (including night views) to and from Sydney Harbour</i></p>	<p>The development of any artwork for Watermans Cove, in line with the aims and objectives of the Barangaroo Public Art and Cultural Plan, will enhance views to and from the harbour from the public domain, including night views. Enhancing views from the public domain to the foreshore is a key consideration of the design of the public domain which envisages the future major artwork as a key component. The artwork will contribute to the achievement of the design principles for Watermans Cove, whilst enhancing views to the harbour, in that it will:</p> <ul style="list-style-type: none"> • “Distinguish it as a key place within the development where the city embraces the harbour” • “Promote continuation of a linear foreshore promenade but also provide a variety of opportunities to sit and appreciate exception views across the Harbour” • “Facilitate clear views out over the Harbour below the tree canopies” • “Provide a variety of flexible spaces that can be used to showcase temporary events and major celebrations throughout all times of the year”
<p><i>(b) development should minimise any adverse impacts on views and vistas to and from public places, landmarks and heritage items</i></p>	<p>As discussed in Section 3.0 of this RTS Response, a further analysis and discussion of how view corridors from Hickson Road to Sydney Harbour would be provided across Hickson Park with the proposed final levels and grading has been undertaken. A number of studies have been prepared to capture the view corridors from Hickson Road to the harbour, reflective of the levels proposed for Hickson Park and the public domain generally. The views which have been generated from these studies are included in Appendix N.</p> <p>As can be seen from the figures, the public domain works, including the landscaping concept for trees along Barangaroo Avenue, and the proposed levels of Hickson Park relative to Hickson Road, provide for and maintain views from Hickson Road to the waterfront, consistent with the requirement of Condition B3(1)(b) of the Barangaroo Concept Plan. It is considered that any future artwork will require consistency with the concept plan with regard to the provision of views as a key element of the public domain, and therefore, will not result in adverse impacts to views and vistas from any public places.</p>
<p><i>(c) the cumulative impact of development on views should be minimised</i></p>	<p>Any artwork will be designed to achieve the aims of the Barangaroo Public Art and Cultural Plan, in particular, to enliven the precinct with iconic works of public art that will contribute to the character and design of memorable public spaces. To this end, any artwork will be designed to ensure there will not be an adverse cumulative impact on views.</p>

7.2.2 Assessment (Future Hickson Park Public Art)

A potential future major artwork in Hickson Park would be sited in such a manner as to ensure that the various functions of and the general useability of the park would not be impeded, to ensure that pedestrian movement remains free flowing and to ensure no unacceptable impacts ensue on views to and from the foreshore or surrounding streets across the park.

The sheer size of Hickson Park at approximately 11,000m² and the integration of spaces that constitute it (a large lawn component, active edges and a tree belt) provides a number of opportunities for the location of a major artwork or series of artworks, and which will not impede on the objectives set out for the park as part of the Concept Plan and subsequent public domain design. For instance, the following key objectives for the park will still be achieved:

- The provision of excellent visual and legible connections with all of the surrounding streetscapes
- Park edges providing for flexible pedestrian access and connections to the other key spaces within Barangaroo
- The provision of an informal belt of trees arranged to mitigate down draft of wind produced by the towers but also to provide a variety of areas to sit in the shade
- A large lawn area providing a canvas for a wide range of active activities

The provision of an artwork/s in this location will contribute to ensuring that Hickson Park is a destination in its own right, providing visual interest and a cultural reference point within the park setting.

Any future artwork in Hickson Park would be developed in a coordinated manner with the design of the public domain so that they can be delivered in an integrated manner in the future. To this end, the scale, form, design and siting of the artwork will be relevantly based on an analysis of the future character of the public domain and Hickson Park envisaged through this SSDA, and having regard to the aims of the Barangaroo Public Art and Cultural Plan.

The future design of an artwork in this location will need to take into consideration the need to protect views across Hickson Park as identified in **Figures 4 to 6**. As can be seen from the figures, the public domain works, including the landscaping concept for trees along Barangaroo Avenue, and the proposed levels of Hickson Park relative to Hickson Road, provide for and maintain views from Hickson Road to the waterfront, consistent with the requirement of Condition B3(1)(b) of the Barangaroo Concept Plan. It is considered that any future artwork will require consistency with the Concept Plan with regard to the provision of views as a key element of the public domain, and therefore, will not result in adverse impacts to views and vistas from any public places.

8.0 Conclusion

The above information and appended documents directly address all further clarifications and information sought by the Department. Following this further review, we consider all outstanding issues to be addressed and the Department can be satisfied that the proposal comprises a high-quality development on a site earmarked for redevelopment.

In light of this, we trust the above information is sufficient to allow the finalisation of the assessment. Should you have any queries about this matter, please do not hesitate to contact me on 9956 6962 or cferreira@ethosurban.com.

Yours sincerely,



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