24 October 2024 211541 SAAE

Logic Projects Co.
Level 30 | Tower Two
200 Barangaroo Avenue
Barangaroo, NSW

Attention: Melissa Buchan

East Walker Street (173-179 Walker Street)

211541 173 EWS DA Submission Structural Statement

Dear Melissa,

TTW has been engaged by Cbus Property to provide structural engineering services for the above project.

The structural concept presented in this letter and associated SSDA stage drawings enclosed have been developed in coordination with the design team led by Rothelowman Architects.

1. Introduction

This letter relates to the proposed residential development at East Walker Street located at 173 – 179 Walker Street and 11-17 Hampden Street, North Sydney.

The State Significant Development Application (SSDA), SSD 67175465, was publicly exhibited from 5th of July 2024 until 1st of August 2024, with the subsequent request for response to submissions issued on 2 August 2024. The SSDA, as exhibited, sought approval for site establishment, enabling works, excavation, groundworks, construction of a 12-storey residential flat building comprising 67 affordable housing dwellings and 11 affordable housing dwellings required by the voluntary planning agreement that applies to the site (Building A), construction of a 30-storey residential flat building containing 161 build-to-sell dwellings (Building B1), construction of a 4-storey ancillary building serving Building B1 (Building B2), construction of a shared basement, port cochere and associated landscaping and streetscape improvements within the site.

Following Public Exhibition of the SSDA and in response to submissions received, the Applicant has further developed and refined the proposed development as outlined in Section 2.0.

In response to the submissions received and proposed design refinements, further assessment of the proposed development has been undertaken where it is relevant to the matters addressed in “EWS SSDA Submission Structural Statement” the prepared by TTW, dated 29 May 2024 and submitted as part of the SSDA.

2. Description of Proposed Design Changes

Building B1

1. Overall building footprint shifted to the north-west to allow for setback tolerances to the southern and eastern vertical height plane.
2. Updated winter garden façade design and increased operability of windows.
3. Adjustment of the façade glazing extent to Levels 26-30 to assist with thermal comfort compliance.
4. Increased floor-to-floor heights for Levels 25-28 to 3350mm to accommodate services and structural requirements.
5. Increased ceiling height for Level 29-30 to 3000mm and raised building height accordingly.

6. Updated facade glazing alignment at Levels 26-30 to ensure the building sits below the Solar Access Plane of Doris Fitton Park as a result of the increased building height.
7. Revised lower-level unit layouts and updated podium facade.
8. Updated materiality to spandrels to accommodate mechanical exhaust systems.
9. Lobby finished floor level (FFL) has been raised above the probable maximum flood (PMF) level. Re-grading of the external landscaping and hardscape areas to accommodate the change in levels required.
10. Lobby entry façade has been further set back to align the internal lobby FFL's as a result of the PMF level coordination.

Building B2

11. Increased building height and floor-to-floor heights to accommodate the lift overrun, pool, structure, acoustic and services requirements.
12. Plantroom amended to ensure passive protection to basement levels in the event of a PMF flooding event.
13. Primary access and egress to the plantroom is now located externally, with a secondary egress stair provided that terminates at the loading dock on the western side of the building.
14. Basement exhaust duct has been coordinated through the gym/wellness level on B1 as a result of the PMF level coordination.

Building A

15. Opaque spandrel glazing adopted to the eastern facade to assist with thermal comfort and increase visual privacy.
16. Building shifted by 400mm to the east to provide a commensurate increase in the podium and tower setback to Walker Street.
17. Updated common area and lobby layout to improve visibility of the building entry from the street and the addition of an outdoor communal area to the Walker Street frontage.
18. Updated facade design, including spandrel materiality to provide further cohesion and consistency between Buildings A and B1.

Basement

19. Basement 5 has been removed.
20. Residential carparking spaces reduced to the non-discretionary development standards car parking rates in the Housing Sepp, and visitor car parking removed.
21. Updated parking, storage, and bicycle rack provisions for all basement levels.
22. Façade openings including louvres amended to sit above governing flood levels and ensure passive protection to all basement levels.

External

23. Updated RLs and configuration of the porte-cochere and adjacent surfaces for alignment with the B1 entry.
24. Pedestrian path added to the perimeter of the porte cochere to improve pedestrian safety.
25. Updated alignment of the stormwater diversion to reticulate within a proposed new easement located on the northwest corner of the site.
26. Updated landscape design to coordinate with architectural changes at the ground plane.

3. Structural Design

Geotechnical

Douglas Partners Geotechnics have prepared a geotechnical investigation report (210305.02.R.002.Rev4) dated May 2024. The report indicates the presence of sandy clay fill to depths ranging from 0.1m -0.7m, underlaid by low to medium plasticity sandy and clayey residual soil extending to depths from 0.9m - 1.2m. Medium to high strength rock is present at depths of 11 - 12.2m. This overlays high to very high strength sandstone rock. Further collaboration with the geotechnical engineer is required throughout the project to assess shoring wall anchoring requirements, rock bolting required during excavation, and the performance of core foundations.

Structure

TTW has coordinated and conducted preliminary analyses to determine the structural systems for the vertical and lateral stability of the amended proposed development. Following review of the design changes adopted, the SSDA structural systems for each building are outlined below.

For Building A, the lateral stability system comprises a centrally located 250mm thick reinforced concrete lift/stair cores and 250mm thick shear walls on the north and south faces of the building. For Building B1 (main tower), the lateral stability system consists of a centrally located 250 to 400mm thick reinforced concrete lift/stair cores, along with two 400 thick shear walls from ground to Basement 4. Building B2 achieves lateral stability through 230mm thick stair and lift cores located on the west side of the four-story building. All three buildings have stability walls that run continuously from the foundation to the roof level, providing a continuous vertical load path for lateral seismic and wind loads. The use of precast walls are envisaged to the north and south end of Building A, and in the slotted zones of Building B1, these will form part of both buildings lateral support system.

Building A's vertical load-bearing system typically consists of reinforced concrete columns, several of which transfer at Ground Floor to accommodate basement carparking layouts. Building B1's system typically comprises perimeter blade columns of 1800mm long and mid-span columns of varying sizes at approximately 6m to 8m from the central core. Several columns transition slightly at ground floor to accommodate basement layouts, and several transfers are required from level 26 to roof to accommodate the stepping terraced balconies. The columns in Building B1 are arranged to provide a continuous load path through to the foundation, minimizing transfers within the tower footprint.

The floors will be post-tensioned slabs with a typical thickness of 230mm. Wet areas are expected to have a 30mm to 50mm set down, balconies have a 120mm step. Slab folds will be required for set downs greater than 5mm and are generally 1200mm wide to accommodate PT drapes.

The foundation system is expected to include raft footings under cores, strip footings under shear walls, and isolated pad footings under columns, all founded on the underlying bedrock. Validation will occur after additional onsite testing is completed.

The amended proposed development includes four basement floors. The shoring system is expected to consist of 450mm diameter soldier piles at 1800mm centres with two rows of anchors. This system will extend to the depth of medium to high strength rock. This ranges from RL 48.1m to 54.1m. Anchors will be positioned to avoid any services. Shoring piles will terminate at medium to high strength rock level, with the rock vertically cut below. Shotcrete with rock bolts will be provided based upon geotechnical advice, this can be omitted if no defects are found onsite.

4. Conclusion

The recent SSDA design changes have had a minor impact on the overall structural scheme and have all been addressed to date. Main points as follows:

1. Increased slab thickness at Level 25 to 31 to coordinate services and structure.
2. Removal of Basement 5
3. Overall building B1 footprint shifted to the north-west to allow for setback tolerances to the southern and eastern vertical height plane.
4. Building A shifted by 400mm to the east to provide a commensurate increase in the podium and tower setback to Walker Street.
5. Building B2 Plantroom amended to ensure passive protection to basement levels in the event of a PMF flooding event. This requires additional ultimate loading to be considered in this room in the event of a PMF flood.

Should you require anything further please contact the undersigned.

Yours faithfully,
TTW (NSW) PTY LTD

Brian Naughton
Senior Structural Engineer CPEng NER

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