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E25834.G20

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Geotechnical Opinion Letter on Groundwater Caddens Corner, 80 O'Connell Street, Kingswood NSW

1 Introduction

At the request of Caddens Estate Development Pty Ltd (the Client), EI Australia (EI) has prepared this letter in regards to the groundwater conditions at Caddens Corner, 80 O'Connell Street, Kingswood NSW (the Site). The purpose of this letter is to provide geotechnical recommendations on groundwater conditions and additional groundwater investigations in response to Council RFIs.

EI have previously completed the following report for this site:

- Geotechnical Investigation Report (GI), Referenced E25834.G03, dated 18 January 2023.

The following documents were used to assist in the preparation of this letter:

- Architectural drawings prepared by Turner – Project No. 20096, Drawing No. DA-110-006 Rev 10, DA-110-008 Rev 10, DA-112-005 Rev 09, DA-112-005 Rev 9, DA-113-005 Rev 9, DA-115-008 Rev 9, DA-116-008 Rev 9, DA-117-008 Rev 9, dated on 20 February 2024;

Based on the provided documents, EI understands that the proposed development involves the construction of five mixed-use residential and retail building blocks (2 to 8 storeys high) with park areas and local roads overlying one to two-level basements. EI understands that Building A has been removed from the site development.

A summary of the basement of each building's Finished Floor Level (FFL), Bulk Excavation Level (BEL) and closest groundwater measurement is shown in **Table 1** below. An overview if the site with building locations is shown in **Plate 1**.

Table 1 Summary of Proposed Basements and Groundwater level measurements.

Building	Finished Floor Level (m AHD)	Assumed Bulk Excavation Level (m AHD)	Groundwater level (m AHD)
D, E, F & G	48.1	47.8	47.9 (Well BHD4M)
B, C, H & J	51.7	51.4	53.3 (Well BHG1M)
K, L, M & N	56.7	56.4	58.5 (Well BHH7M)
P, Q, R, S, T & U	42.05-42.50	41.75-42.2	46.4 - 46.3 (Well BHA1M and BHA7M)

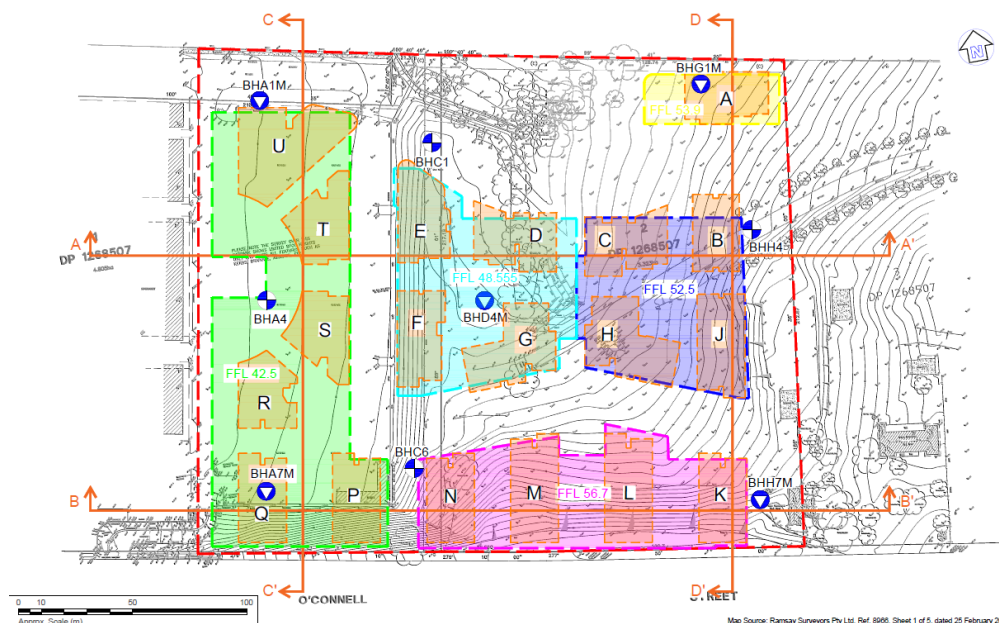


Plate 1: Site overview with building locations.

The subsoil conditions of the site are comprised of gravel, sand and clay fill/topsoil with thickness between 0.1m to 3.3m, overlying stiff to very stiff residual silty clays with thicknesses between 0.8m to 6.0m. Residual soils rest on distinctly weathered, very low strength, siltstone/sandstone bedrock encountered at depths between 0.2m to 9.3m BEGL, or between RL 44.0m to 53.1m AHD. Bedrock strength and degree of weathering improve with depth.

Groundwater monitoring wells were installed in five boreholes across the site. Groundwater within these wells was observed at depths between RL 58.5m AHD and RL 46.2m AHD, see **Table 1** above. .

As shown in **Table 1**, observed groundwater levels for a majority of the proposed buildings are below or just above the assumed bulk excavation level, with the exception of Buildings P, Q, R, S, T and U where bulk excavation is 4.2m below observed groundwater levels. We highlight the variability of the water levels fall from east to west following the sloping topography of the site.

Regardless, experience shows that due to the expected low permeability of the soil and rock profile, and the stiffness of the residual clays, it is likely that any groundwater inflows into the excavation will be slow and minor, and should not have an adverse impact on the proposed development or on the neighbouring sites. We expect minor groundwater inflows into the excavation along the soil/rock interface and through any defects within the siltstone/sandstone bedrock (such as jointing, and bending planes, etc.) particularly following a period of heavy rain. The initial flows into the excavation may be locally high, but would be expected to decrease considerably with time as the bedding seams/joints are drained, and should be able to be managed by a conventional drained basement design..

Groundwater levels fluctuate depending on rainfall, topography and season. The varying topography and size of this site makes a design groundwater level difficult to determine without long term measurements. Long term groundwater monitoring will likely allow for stage-specific groundwater design levels to be calculated and will give more detailed insight into the feasibility of drained basements for each block of buildings. EI recommends that the following additional groundwater investigations are performed in order to investigate drained basement feasibility for each building stage separately:

- Installation of additional monitoring wells
- Three months of continuous monitoring in the installed monitoring wells
- Seepage analysis
- Dewatering Management Plan

2 Closure

Please do not hesitate to contact the undersigned should you have any questions.

For and on behalf of
EI Australia

Author



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