



ENVIRONMENTAL - REMEDIATION - GEOTECHNICAL ENGINEERING - WORK HEALTH & SAFETY - LABORATORIES - DRILLING

ES8636-A

28th September 2022

Momentum Project Group
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Dear Andrew Xu

**RE: Supporting Letter re/ Impact of Lowering Basement on Dewatering Components
Site: 28 Lockwood Avenue Belrose, NSW 2085**

1. Introduction

Aargus Pty Ltd (Aargus) was requested to provide a geotechnical comment for the proposed development at 28 Lockwood Avenue Belrose, NSW (the site).

The purpose of this letter is to provide comments and recommendations regarding the lowering of the basement level for the proposed development.

2. Available Information

The following is the provided information that was thoroughly examined prior to issuing this letter, the subject of the proposed development:

- Geotechnical Investigation Report for the above-stated site, (prepared by: Atlas Geotechnical
- Request for confirmation letter, WaterNSW (modification S4.56)
- Services, Report No. G10132-1, dated: 16th/09/2021).
- Architectural drawings (prepared by: Nicholas Lycenko, Drawing No.: CC-203, Issue: 1, dated: July 2022),
- Architectural drawings (prepared by: Urbana Plan Pty Ltd, Drawing No.: DA-301, Issue: A, dated: 4 August 2022), and
- Council comments on the application for the proposed development, (prepared by: Northern Beaches Council, Application No.: Mod2022/0519 – PAN-261839, dated: 23 September 2022).
- Groundwater monitoring and inflow investigation report, (prepared by Aargus Pty Ltd, Preference No. GS8579-1A, Dated 24 August 2022).

3. Project Information

Following the review of the provided documents, it was clear that the proposed development will involve the demolition of the existing structures at the above-stated site. The demolished site will then be used for constructing a three-storey building that overlies a three-level basement.

The proposed lowest basement level of the new proposed development will be established at RL144.8m, which involved an excavation about 11.1m below the existing ground. A new proposal for the lowest basement level is at RL143.51m. The development will also require an excavation up to 12.4m below the existing ground.

It should be noted that the Northern Beaches Council may request an additional geotechnical report letter to support any changes.

4. Available Geotechnical Subsurface Conditions

Based on the geotechnical report issued by Atlas' (2021), the subsurface condition of the new development has demonstrated the following defined components:
comprise:

- Fill, consisting of well compacted gravelly clay of 0.2m thickness
- Topsoil, consists of Silty Sand, loose to very dense, below the undelaying fill material to depths of 0.5 to 0.8m,
- Residual soils, consisting of Silty Sand and Sandy Clay, loose to very dense, below the topsoil to the depths of 0.8m to 2.5m,
- Bedrock, consisting of very low to high strength Sandstone, Class V to III rock, below the residual soils to the depth of the investigation of 6.5-11.10m.
- Groundwater testing was carried out by Aargus where the average water surface level recorded a 4.12m in BH02.

5. Impact of lowering the basement level

Based on the available information and the nature of the foundation and the strength of the encountered subsurface material as stated in the Geotechnical Investigation Report that was issued by Atlas' (2021), the lowering of the basement by 1.3m below the original level will not impact negatively on the bearing status of the founded material.

This was evident from the maintained medium strength of the encountered material up to a depth of 9.4m below the ground level. This medium strength is characterized by a peak cohesive stress that may reach up to 4.0 MPa. In this context, the potential for water seepage can be minimized and hence water infiltration will also be lowered.

6. Recommendation

Based on the above-provided information and the associated minor change to the basement level, the following is recommended:

- The use of the pump sump as a dewatering technique is to be continued,
- Due to the lowering of the base to 1.3m and the subsequent change in the cohesiveness of the material, the flow of pumping out is to be partially upgraded to a higher rate compared to that prior to lowering the base.
- No changes to the dewatering components as per the application are required.
- No changes to the design criteria are required following the recommended minor increase in the dewatering flow rate.

7. Limitations

It is recommended that should ground conditions, including subsurface and groundwater conditions, encountered during construction and excavation vary substantially from those presented within this report, Aargus Pty Ltd be contacted immediately for further advice and any necessary review of recommendations. Aargus does not accept any liability for site conditions not observed or accessible during the time of the inspection.

This report and associated documentation and the information herein have been prepared solely for the use of **Momentum Project Group** and any reliance assumed by third parties on this report shall be at such parties' own risk. Any ensuing liability resulting from use of the report by third parties cannot be transferred to Aargus Pty Ltd, directors or employees.

The conclusions and recommendations of this report should be read in conjunction with the entire report.

Please do not hesitate to contact this office, should there be any further queries.

For and on behalf of:

Aargus Pty Ltd



Ezzat William
Senior Principal Geotechnical Engineer