



**Project Reference: J00828**

**30/11/2022**

Box Property Investments Ltd investments Limited  
25 Mapau Road  
Auckland

C/- Civix Limited

Attention: Ms L Croft

Dear Limin

## **FAST TRACK GEOTECHNICAL**

30 Sandspit Road, Auckland

### **1 INTRODUCTION**

Box Property Investments Limited ("Box Property") are seeking that the proposed development of a contiguous landholding at 30 Sandspit Road, Cockle Bay, Auckland ("the site") be consented via the COVID-19 Recovery Fast-Track process. To support the application for fast-track referral, this memo provides a high-level review of the geotechnical aspects of the proposal, including:

- Summary of the proposal and site description;
- Summary of geotechnical work completed to date;
- High level geotechnical assessment of proposal; and
- Conclusions.

### **2 SITE DESCRIPTION AND PROPOSAL**

The site encompasses 30 Sandspit Road (Lot 2 DP 334191), 40 Sandspit Road (Lot 67 DP 52881) and 2 and 4 Reydon Place (Lot 68 DP 52881) and has a total land area of approximately 5,417m<sup>2</sup>. It is bounded by Sandspit Road to the south-west, Trelawn Place to the north-west, Reydon Place to the south-east and residential properties to the north-east. Overall the site falls from around RL 54.5m at Sandspit Road in the south-west to around 48.0mRL along the north-east boundary. It contains an existing 2 Storey commercial building.

The proposal comprises a total of five buildings; Three main buildings fronting onto Sandspit Road and spanning the width of the site, and two smaller buildings along the rear boundary of 30 Sandspit Road. The three main buildings will be 4 storeys high the 1<sup>st</sup> storey (ground floor) level with Sandspit Road, with a single level basement some 3.8m below Sandspit Road (excavation level 50.7mRL, allowing for 0.5m basement floor slab build up). The two smaller buildings are to be two storeys in height and have no basement levels. It also includes the provision of pavements, a swimming pool and a common room, with vehicle access via a ramp from Trelawn Place.

Cuts for the proposal are up to 3.3m below existing ground level, located near Sandspit Road (i.e. the 'front' boundary of the site) to accommodate the basement for the main building, with cuts reducing to 0m at the rear boundary of 30 Sandspit Road. The edges of the cut will be permanently supported by the basement walls.

### 3 SUMMARY OF GEOTECHNICAL WORK AND FINDINGS

Fieldwork was conducted between 13 and 18 December 2017 and involved the drilling of four machine boreholes to depths of between 15.5m and 18.5m as well as four hand auger boreholes to depths of up to 5.0m in the positions shown on the site plan inset below. A basal penetration resistance test (scala) was undertaken to help assess the strength and consistency of the strata beyond the reach of hand auger borehole HA02. The machine boreholes each had a standpipe installed to permit groundwater monitoring to be undertaken approximately 1 to 2 months following the completion of the drilling.



The site is underlain by the East Coast Bays Formation of the Waitemata Group geology. The East Coast Bays Formation consists of alternating sandstone and siltstone beds with varying volcanic and volcanoclastic content. Surficially these deposits typically weather to orange, brown and grey clays, silts and sands.

However, significant depths of fill materials (comprising sands, gravels and broken concrete and steel near surface with silts and clays (with intermixed gravels) at depth) were encountered through the northern portions of the site (MH01, MH03, HA01 and HA02) which are likely associated with backfilling of an historic gully. East Coast Bays Formation Bedrock was found in all machine boreholes from depths between 8.8m and 10.3m to beyond the machine boreholes. Groundwater was measured in the standpipes at depths of between 3.3 and 7.6 m(bgl).

## 4 HIGH LEVEL GEOTECHNICAL ASSESSMENT

Compliance of the proposed basement excavations to the AUP E.7 groundwater guidelines, specifically relevant clauses E.7.6.1.6 and E.7.6.1.10, has been undertaken and is fully demonstrated / satisfied.

There are extensive deposits of non-engineered (pre-existing) fill that will preclude the use of shallow foundation systems, unless the fill is remediated via ground improvement. Unless such a remediation is done, the development will need to be founded on bored and concreted piles that fully penetrate the filling due to anticipated column loads. These piles are anticipated to be founded in bedrock materials identified beyond approximately 10m in the machine boreholes. This is a matter for detailed design.

During construction of the proposed cuts, temporary batters can be constructed within the boundaries of the site. Within the natural ground (i.e. at the south-western end of the basement), slope stability analyses demonstrate that a maximum temporary batter gradient of 1(v) in 1(h), or 45 degrees, is required to achieve an adequate short term factor of safety of 1.5. If these batters cannot be achieved within the property boundaries, or if temporary batters are not preferred, then specifically designed temporary support is recommended to maintain stability (e.g. soldier piles or sheet piles etc.). It may be that the construction methodology for the permanent wall can be adapted to provide temporary stability where batters cannot be created to the maximum safe angle (e.g. top down construction).

## 5 CONCLUSIONS

Long term stability of the site will not be adversely affected by the proposal, as the edges of excavations will be supported by engineer designed walls associated with the basement of the main building.

Short term stability of the site during basement excavation can be adequately managed by the formation of batters created at stable angles, or other type of temporary support measures (such as soldier piles or sheet piles).

The presence of pre-existing filling provides constraints to shallow foundation systems and will require further investigation as part of a detailed design phase for building consent, with a view to pile foundations and/ or ground improvement to facilitate shallow foundation systems.

## 6 LIMITATIONS

This report has been prepared exclusively for Box Property Investments Ltd in accordance with the brief given to us or the agreed scope and they will be deemed the exclusive owner on full and final payment of the invoice. Information, opinions, and recommendations contained within this report can only be used for the purposes with which it was intended. LDE accepts no liability or responsibility whatsoever for any use or reliance on the report by any party other than the owner or parties working for or on behalf of the owner, such as local authorities, and for purposes beyond those for which it was intended.

This report was prepared in general accordance with current standards, codes and best practice at the time of this report. These may be subject to change.

Opinions given in this report are based on visual methods and subsurface investigations at discrete locations designed to the constraints of the project scope to provide the best assessment of the environment. It must be appreciated that the nature and continuity of the subsurface materials between these locations are inferred and that actual conditions could vary from that described herein. We should be contacted immediately if the conditions are found to differ from those described in this report.

**For and on Behalf of Land Development and Engineering Ltd**



Shane Lander

*Principal Geotechnical Engineer*