

A Group of Wilberforce Ave Residents
c/- Daintry Associates

Attention: Mr Brett Daintry
Email: brett@daintry.com.au

**GEOTECHNICAL OPINION
PROPOSED DEVELOPMENT
23-31 DOVER ROAD, ROSE BAY, NSW**

1 INTRODUCTION

This letter has been prepared at the request of a Group of Wilberforce Avenue Residents in relation to a proposed development at 23-31 Dover Road, Rose Bay. I understand from the MHNDU Architectural Drawings (Revision A, dated 25 September 2025) that it is proposed to construct a residential development at 23-31 Dover Road. The proposed development will include two basement car parking levels, with the lowest car parking level at RL2.82m. Construction of the proposed basement will require excavation to depths ranging from about 3m to 7m below existing surface levels. I understand that the basement excavation is proposed to be supported by driven sheet pile shoring walls.

I have been requested to provide my geotechnical opinion on the potential impacts of sheet piling on adjoining properties.

2 EXISTING GEOTECHNICAL SUBSURFACE CONDITIONS

As part of my review I have been provided with a Geotechnical Investigation Report (Reference P3496_02 Rev 1, dated 17 September 2025) prepared by Morrow Geotechnics Pty Ltd. Based on the borehole logs within that geotechnical report, the subsurface conditions at the site comprise a surficial layer of granular fill, overlying very loose sands to depths ranging from 1.5m to 3m which is underlain by loose sands, with medium dense sands at depths ranging from 2.5m to 6m. In one of the boreholes (BH101), inferred residual sandy clays were encountered at a depth of 15m, with very low strength sandstone encountered at 15.9m depth. Groundwater was recorded at depths ranging from 2.74m to 6.4m below existing surface levels between 4 days and 5 days after drilling.

3 ADJOINING PROPERTIES

While I have not had an opportunity to inspect all the adjoining properties, it is clear from review of available aerial photographs that there are numerous residential properties adjoining the site, both on Wilberforce Avenue and on Dover Road. Many of these structures are single level (often brick) structures with swimming pools in their rear yards. In my experience such buildings are most likely to be supported on shallow footings founded within the very loose sands. This makes such structures quite sensitive to movements and very susceptible to vibration induced damage from the installation of sheet piling.

4 POTENTIAL IMPACTS OF SHEET PILING

As discussed above, I understand that a sheet pile shoring system is proposed to support the basement excavation on 23-31 Dover Road. This is despite the comment in Section 3.3 of the Morrow Geotechnical Report which states that anchored soldier pile walls are generally used in sands, which is completely false, as such walls are never used in sands because the sand would collapse from between the soldier piles.

Sheet piling is installed by either vibrating them into place or driving them into place. Therefore during installation, sheet piling produces vibrations into the surrounding soils. Sandy soils, particularly very loose and loose sandy soils (as proven by the Morrow Geotechnical Report) are prone to settlement when they are subjected to vibrations. Settlement of sandy soils below adjoining building footings will cause damage to structures and services.

We note that the Morrow Geotechnical Report recommends a limit on vibrations of 5mm/s for residential structures. This limit is often recommended to reduce the risk of damage to structures from vibrations. However, such a vibration limit is only relevant where a building or structure is supported on a foundation which is not subject to vibration induced settlement (such as rock) and the vibrations from any adjoining site activities (such as sheet piling) is transmitted directly through the rock foundation to the footings of the structure. This will not be the case here, since the founding soils have been shown in the Morrow Geotechnical Report to be very loose and loose sandy soils and therefore in my experience if such soils are subjected to vibrations (even if kept to 5mm/s) there is a high probability that settlement of the very loose and loose sands will occur, and such settlement may lead to damage of adjoining structures and or services.

Sheet pile shoring walls are also far less stiff than other forms of concrete shoring, which means they will generally deflect more during excavation. Therefore such walls will need additional lateral support to maintain stability. Lateral support could include soil anchors or internal propping. Installation of soil anchors can also cause settlement due to vibration effects during installation, or where poor anchoring techniques are adopted. Anchoring would need to extend below adjoining properties and permission from adjoining property owners would be required prior to their installation.

On the basis of the above, and considering the subsurface soil conditions, and the likely sensitive nature of adjoining structures, it is my strong opinion that sheet pile shoring walls should not be used on this site. In my view vibrations during sheet pile installation will pose a significant risk of settlement of the very loose and loose sandy soils, which will lead to damage to adjoining structures. There are numerous other shoring



wall systems (such as secant piled walls and CSM walls) which, provided they are well constructed by experienced contractors, will induce much lower vibrations during installation. I consider these alternative shoring systems would produce a lower (but not zero) risk of causing damage to adjoining structures and are more appropriate for use on this site.

Should you require any further information regarding the above, please do not hesitate to contact the undersigned.

Yours faithfully
For and on behalf of
JK GEOTECHNICS

A handwritten signature in black ink, appearing to read 'Linton Speechley'.

Linton Speechley
Principal Geotechnical Engineer