

QLD Property Developments Management Pty Ltd
PO Box 3114
Darra QLD 4076

Project 208869.00
15 August 2022
R.002.Rev0
LM/DQ

Attention: Mr Con Bassili

Email: con@qldpropertygroup.com.au

Geotechnical Assessment
Proposed Industrial Park
1 Chum Street, New Chum

1. Introduction

This letter summarises the results of a geotechnical assessment undertaken for a proposed industrial park at 1 Chum Street, New Chum. The summary was requested in an email dated 28 July 2022 by Mr Con Bassili of QLD Property Developments Management Pty Ltd.

The full results and a detailed assessment are included in Douglas Partners Pty Ltd (DP) Report No. 208869.00.R.001.Rev0 dated 28 July 2022. This report provides a brief summary of the assessment.

2. Proposed Development

It is understood that the site is proposed to be subdivided into three stages, as indicated on Drawing 1 attached. Land use for each of the stages is understood to likely comprise mainly warehousing along with associated infrastructure including internal industrial estate roads, car parking and heavy vehicle pavements.

3. Background

A detailed desktop assessment of available mining data was undertaken in conjunction with some targeted borehole drilling to further assess the site geology, quality of fill materials and depth to underground mine workings.

Full details of this work are included in the aforementioned report, however, in summary the following was assessed:

- six coal seams were mined at the site using both underground and open cut mining techniques;
- the underground mining extended across majority of the site;
- the open cut mining was limited to the southern site area (i.e. Stage 3, only);

- cover to the underground mine workings ranges between approximately 50 m depth and 150 m depth across the site, and was confirmed during the investigation;
- localised subsidence (or sinkhole) risk across the site was assessed to be unlikely;
- panel subsidence risk across the site due to the collapse of underground pillars was found to be varied across the site.
 - o majority of the site areas are considered stable and are highlighted in blue on the attached drawing;
 - o some localised areas where there are smaller pillars are considered unstable and are highlighted in yellow on the attached drawing;
- the fill encountered in the southern open cut site area was found to be variable in nature and creep settlements over time are likely to be ongoing;
- based on the available information a risk assessment was undertaken to assess the “direct commercial risk” to the development due to the above subsidence types and assuming no mitigation measures are undertaken.
 - o Majority of site areas are moderate to high risk (i.e. blue), noting this risk can be reduced where mitigation measures are undertaken;
 - o Remaining areas are high to very high risk (i.e. yellow);
- Options to reduce these risks are available and are presented in the detailed report (and summarised below).

4. Recommendations

The following table indicates the estimated subsidence, suitable structure types, remediation and risk reduction strategies are suitable/recommended for the site areas (and are summarised in the table on Drawing 1, attached).

Area	Estimated Subsidence/ Settlement (mm)	Development Options	Remediation/Risk Reduction Options
Stable/Lower Risk	30-90 (Panel Subsidence)	Warehousing, lightweight offices, hardstands, roads	Designed to withstand the estimated subsidence. Thick beams with adjustable support points, 'floating' slabs, with options to relevel should settlement occur*
Unstable/Higher Risk	330-1100 (Panel Subsidence)	Warehousing, lightweight offices, hardstands, roads	As above but designed to withstand the estimated higher subsidence. Additional allowance should be made for remediation over the design life should large scale subsidence occur.
Open Cut/Deep Uncontrolled Fill	100-200 (Creep Settlement)	Warehousing, lightweight offices, hardstands, roads	Designed to withstand the estimated long term settlements indicated. Options to remediate the fill (and reduce the likely settlements) during bulk earthworks include excavate and replace, impact rolling and construction of bridging platforms.

Note: *more details on these construction options are included in Section 7.7 of the detailed report.

Please contact the undersigned if you have any questions on this matter.

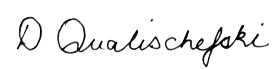
Yours faithfully

Douglas Partners Pty Ltd



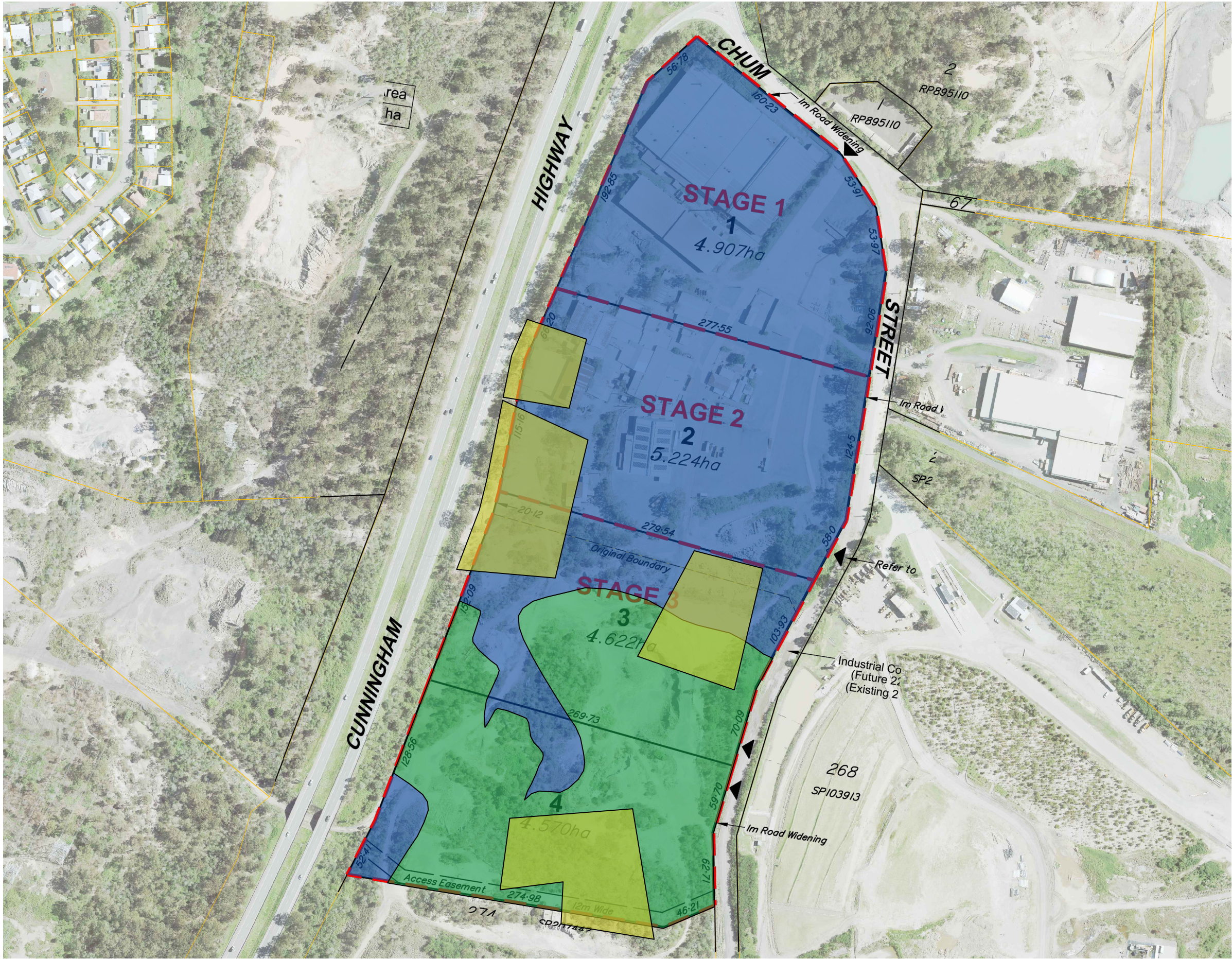
Lisa McLeish
Associate

Reviewed by

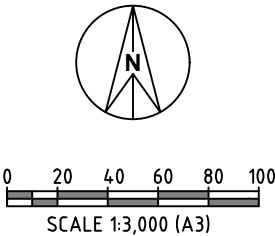


David Qualischefski
Principal

Attachments: Drawing 1 – Mining Constraints Summary Overview



Location Plan



Area	Estimated Subsidence/ Settlement (mm)	Development Options/ Constraints
Stable/ Lower Risk	29-88	Suitable for warehousing and hardstands designed to withstand the estimated subsidence
Unstable/ Higher Risk	330-1092	Suitable for warehousing and hardstands designed to withstand the estimated higher subsidence. Allowance should be made for remediation over the design life should subsidence occur.
Open Cut/ Deep Uncontrolled Fill	100-200	Suitable for warehousing and hardstands subject to remediation works taking place during bulk earthworks (i.e. excavate and replace, impact rolling, etc.) to reduce estimated settlements. Bridging platforms could be constructed to further reduce.

NOTE:-

1. Test locations are approximate only and are shown with reference to existing site features.
2. Image obtained from Metromap. Date of imagery 14-11-2021.