

Frasers Property Australia Pty Ltd
Level 2, 1C Homebush Bay Drive
RHODES NSW 2138

Project 201774.00
12 February 2021
L.002 - Stage 2.docx
GS:sj

Attention: Paul Solomon

Email: paul.solomon@fraserproperty.com.au

Geotechnical Compliance
Bulk Earthworks - Stage 2, Vantage Estate
Stapylton Jacobs Well Road, Stapylton

As requested by Gassman Development Perspectives (GDP) on behalf of Frasers Property Australia Pty Ltd (FPA), Douglas Partners Pty Ltd (DP) have reviewed provided information to assess if the batter slopes shown on bulk earthworks drawings supplied by GDP are in accordance with recommendations in a geotechnical report prepared by Morrison Geotechnics Pty Ltd (MG) referenced below. This review was required as a result of the request for information (RFI) from Council (Ref) com/2020/262 dated 24 December 2020 as follows:

"Geotechnical

49. Geotechnical report to be complied with

All future earthworks over the subject site must be designed following the advice and recommendations of the geotechnical report, being 'Broad Geotechnical Assessment Industrial Development, Lot 1 on RP6882 and Lot 240 on W31320, Stapylton Jacobs Christensen Road, Stapylton, prepared by Morrison Geotechnic Pty Ltd, Job No GE11/000 dated February 2011.'

This report must be read in conjunction with the attached notes about this report.

In order to provide comment, as well as reviewing the above Morrison report, GDP provided the following cross sectional drawings and bulk earthwork plans:

- Dwg No. – 5941 ENG BE2 001 – Rev A (Bulk Earthworks Layout Plan);
- Dwg No. – 5941 ENG BE2 050 - 058 – Rev A (Bulk Earthworks Plans); and
- Dwg No. - 5941 ENG BE2 150 – 162 – Rev 1 (Cross Sections).

Based on the MG report, the site generally comprise residual silty/clayey sands, stiff or stronger residual clays and weathered rock. The MG report recommended that long term batter angles in residual soils and controlled fill not exceed 1V:2H and 1V:1H in weathered rock.

Review of the above provided GDP plans indicates that the GDP plans referenced above comply with the recommendations made in the MG geotechnical report in respect of long term batter angles.

Limitations

Douglas Partners (DP) has prepared this report for the proposed bulk earthworks, Stage 2 Vantage Estate at Stapylton Jacobs Well Road, Stapylton in accordance with DP's proposal emailed on 11 February 2021 and acceptance received from Paul Solomon dated 11 February 2021. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Frasers Property Australia Pty Ltd for their consultants, as authorised for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are reliant on the accuracy of the MG report with regards to the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the subsurface conditions described in the MG report during their investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions not discussed by MG, across the site between and beyond the sampling and/or testing locations.

The assessment of atypical safety hazards arising from this advice is restricted to the geotechnical components set out in this report and based on known project conditions and stated design advice and assumptions.

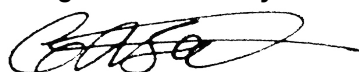
This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

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

Yours faithfully

Douglas Partners Pty Ltd



Gary Samuels per
Senior Associate/Branch Manager

Reviewed by:



Andrew Middleton
Principal/RPEQ 4366

Attachments: About this Report

About this Report

Douglas Partners



Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.