Dear Sirs

**Response to NSW Department of Primary Industries**

**Senior School Masterplan**

**Saint Ignatius’ College, Senior School, Riverview**

Douglas Partners Pty Ltd (DP) refers to the letter from Mr Mitchell Isaacs, Director, Planning Policy & Assessment Advice, NSW Department of Primary Industries (DPI) to Ms Megan Fu, Social and Infrastructure Assessments, NSW Department of Planning and Environment (DPE) dated 1 February 2016 (Ref: OUT16/3485). It is understood that DPI are concerned about the groundwater noted in borehole BH1 of our earlier geotechnical investigation (Ref: DP Report No. 85108.01.R.001.Rev0 dated 16 October 2015), in particular, the lack of information regarding inflow rate so as to permit a determination of whether there will be a reduction in the groundwater resource pool of less than three megalitres. It is further understood that DPI has “….recommended that a condition be applied to the project approval requiring the proponent to notify DPI Water if groundwater is encountered during construction, providing information regarding the calculated volume of water to be extracted either directly or indirectly”.

In respect of the groundwater at the site, it is noted in our report that “the permanent groundwater table is expected to be located many metres below existing ground levels but seepage will occur through filling and soils, [and] along the top of the bedrock, particularly following periods of heavy rainfall”. Further, the groundwater encountered in borehole BH1 was at the bottom of the filling above the natural sandy clay, which is qualitatively less permeable than the overlying filling. On the basis of the above, DP considers that the groundwater encountered during drilling of borehole BH1 was a temporary ‘perched’ groundwater source emanating from localised storage of ephemeral seepage in voids within the filling, rather than the regional groundwater table.

Due to the likely temporary ‘perched’ groundwater encountered, it is unlikely that reliable and constant inflow rates could be established. Nevertheless, as stated in our earlier report, “During construction and in the long term, it is anticipated that seepage into most excavations will be relatively minor”. This seepage is likely to be intermittent and easily controlled by standard site drainage provisions.
Limitations

Douglas Partners (DP) has prepared this letter for this project at Saint Ignatius' College, Senior School, Riverview. This letter is provided for the exclusive use of The Trustees of the Jesuit Fathers - St Ignatius College Riverview for this project only and for the purposes as described in the letter. 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 letter 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 letter DP has necessarily relied upon information provided by the client and/or their agents.

DP's advice is based upon the conditions encountered during the earlier geotechnical investigation (Ref: Report No. 85108.01.R.001.Rev0 dated 16 October 2015). The accuracy of the advice provided by DP in this letter may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations.

This letter must be read in conjunction with all of the attached notes 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 letter.

This letter should not be used as part of a specification for a project, without review and agreement by DP. This is because this letter 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

Attachments: About this Report

Reviewed by
Ray Blinman
Principal
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.

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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:

- 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.