Douglas Partners
Geotechnics · Environment · Groundwater

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JL:pc
Project 71500
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SALINITY MANAGEMENT – INDUSTRIAL PORTION, HOXTON PARK AIRPORT, WEST HOXTON

Dear Sir,

1. INTRODUCTION

This letter provides comments/advice on salinity management issues relevant to the captioned site. As detailed in the Douglas Partners (DP) report entitled "Targeted Phase 2 Contamination Assessment, Industrial Portion, Hoxton Park Airport, West Hoxton" (Project 71500, January 2010), "According to the Salinity Potential in Western Sydney (2002) Map (NSW Department of Infrastructure, Planning and Natural Resources) the site has a moderate to high salinity potential. Areas of high salinity potential are typically found along the eastern side of the site in proximity to Hinchinbrook Creek."

The Salinity Potential map is based on surface elevations, watercourse locations and general groundwater considerations but is not, in general, ground-truthed. Hence, it is not known if actual site salinities reach the mapped potentials. Given the possible impacts that development may have on the environment down-gradient from the site and the possible effects of saline soils on the development itself, it is proposed to develop a salinity management plan for the site works. The relevant site details and our approach to salinity management are set out below.

2. SHALLOW SITE GEOLOGY

In addition to the Contamination Assessment, DP has carried out a Geotechnical Investigation. The associated report (Project 71500.01, January 2010) indicates that (to depths in excess of potential development impacts), the site is underlain by grey and brown silty clay and shale filling to depths between 0.3 m and 0.9 m, in turn underlain by stiff to very stiff brown silty clay to depths between 3.5 m and 7.0 m. Free groundwater was encountered in the above materials, at depths from 2 m to 6 m.

3. THE DEVELOPMENT

It is understood that the proposed development will comprise the construction of two large warehouses with associated infrastructure, within an area of approximately 40 ha. In order to

construct the warehouses, the site levels will be raised by up to 2.5 m above existing levels to provide level platforms for each warehouse. The warehouses are proposed to be constructed on different pad levels of RL 41.1 and RL 39.4. There will be some minor cut (less than 1 m) in the north western corners of each platform. It is understood that there is a preference to use shallow pad footings as foundations for the proposed buildings.

To the south of the warehouse area, a residual lot will also be prepared by filling, for future industrial use.

To the south and the north of the warehouse area, detention basins (Basins 1 and 2, respectively) will be excavated into existing materials.

4. SALINITY MANAGEMENT FOCUS

The dominant impact of the development on the environment will be the raising of the existing ground levels by up to 2.5 m with imported filling material. Concrete ground slabs will be founded at shallow depths in this filling and services trenches will be excavated in this filling and possibly into underlying prior filling material or silty clay. There will be minor areas and depths of cutting into existing filling materials within the warehouse areas and excavation of Basins 1 and 2 to the south and north of the warehouse area.

In view of the dominant role of imported filling in the development and the limited impact of the development on the existing soils and groundwater, it is considered that salinity management should focus on investigation of the filling, both at its source (prior to import) and on completion of bulk earthworks.

Provided that the imported fill protocol (5. below) is followed, it is considered that development on this site should proceed with no salinity issues to the point of commencement of construction. At this point, salinity levels would be confirmed and salinity management strategies would be recommended as the result of a post-earthworks salinity investigation (6. below).

5. IMPORTED FILL PROTOCOL

A post-earthworks salinity investigation will only have a satisfactory outcome if the filling is derived from a non-saline to slightly saline source. Filling is likely to be won from stockpiles of soil in nearby development areas and it is proposed to incorporate salinity testing of stockpile material as part of the imported fill protocol for contamination testing. Stockpiles assessed as non-saline to slightly saline will be approved for import.

6. POST- EARTHWORKS SALINITY INVESTIGATION

Prior to commencement of bulk earthworks, advice would be given as to general management strategies to be applied, which would reduce the risks of increased site salinity resulting from the earthworks. Specific strategies would also be recommended for salinity management at the locations of Basins 1 and 2, resulting from specific soil testing.

On completion of bulk earthworks, a salinity investigation is proposed which will be in accordance with the guidelines for "Site Investigations for Urban Salinity" (DLWC 2002, now Dept. of Primary Industries).

The investigation will comprise soil sampling at a number of locations to depths of 0.2 m, 0.5 m and 0.5 m intervals to the maximum depths of impact of the development (e.g. to assumed foundation depths of up to 1 m and services depths of up to 2 m). The density of test locations would be within the guideline range but at the lower end (1 per ha) due to the salinity "screening" provided by the fill protocol.

All samples would be tested for soil texture, salinity and aggressivity to steel and concrete. Subsets would be tested for chloride and sulphate concentrations and for sodicity. Results would be assessed against accepted criteria and distributions of salinity, aggressivity and sodicity would be mapped if appropriate, in the depth ranges corresponding to foundations and services.

The resulting report would incorporate a Salinity Management Plan, which would provide site-specific strategies for completion of the earthworks (e.g. necessary surface treatment) and for subsequent construction.

Yours faithfully,

Douglas Partners Pty Ltd

John Lean
Principal

Reviewed:

Ronnie Tong
Principal