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REPORT
ON
PRELIMINARY CONTAMINATION ASSESSMENT

PROPOSED RESIDENTIAL AND COMMERCIAL DEVELOPMENT
PRINCES HIGHWAY AND ARNCLIFFE STREET
ARNCLIFFE

Prepared for
GREENCLIFF CTP PTY LTD

Project 43034
June 2005

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EXECUTIVE SUMMARY

This report details the results of a preliminary contamination assessment carried out for a proposed commercial and residential development between the Princes Highway and Arncliffe Street, Arncliffe. The work was requested by Greencliff CPL Pty Ltd, developers of the proposed project.

The construction of a nine storey residential and commercial development complex with an associated two storey basement car park is proposed. The proposed development complex covers the entire site and hence the surface of the site will be sealed with no access to soils. The preliminary contamination assessment was carried out in conjunction with a geotechnical investigation of the site to provide technical information for proposed development prior to the settlement of the property sale.

The contamination assessment comprised a site inspection, a brief review of limited site history information, environmental sampling from 10 locations and the installation of three piezometers for the sampling of groundwater. Field work was followed by the analysis and of selected soil and groundwater samples for potential contaminants together with acid sulphate soils, and reporting the investigation findings.

The subject site is an approximately L shaped land parcel and covers approximately 1.1 hectares. The site is bounded by Arncliffe Street to the north, the Princes Highway to the south, Brodie Spark Drive, a car yard and an auto wrecker's yard to the east and Suttons Holden Car dealership to the west. The site is currently occupied by a variety of commercial and industrial developments which include a cosmetics warehouse, two smash repair businesses, an undercover parking garage and a campervan rental business.

A review of aerial photographs over the site suggests that the site was rural or residential in nature prior to the 1950's at which point it began to be developed for a variety of commercial/industrial practices. A channel was present through the site until the 1980's at which time it was backfilled. Furthermore the former service station appears to have been established between 1951 and 1961.

Site levels are variable across the site, however there is a dip of approximately 3 m along the Arncliffe street frontage. There is also a slight dip of 0.5 m, from a levelled strip of land running in an east-west direction in the central part of the site, towards the Princes Highway. There is also a general slope in a north easterly direction towards the Cooks River.

Heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn), TRH, BTEX, PAH, PCB, OCP, phenol, Cyanide VOC's and asbestos were analysed in selected soil samples. The levels of chemical contaminants in the soil at the site were generally low, however substantially elevated levels of medium to long chain TRH (96,910 mg/kg) were detected in samples collected from the concrete sump pit in Lot 1 (Test Bore 110/110A). The detected TRH concentrations are well in excess of the assessment criteria (1000 mg/kg) and require remediation. Sample 110A/0.15 was reanalysed after undergoing a "silica gel clean-up" to determine the presence of petroleum hydrocarbons and returned similar results.

However, sample 110A/0.15 was collected from the sludge contained in a concrete lined pit and is therefore likely to be confined within the pit and does not impact the rest of the site. The contaminated sludge should be removed for off-site disposal, along with the structure of the pit. Upon removal of the pit and its contents the underlying excavation should be validated to endure all contaminated soils have been removed.

Asbestos was detected in the filling material in Bore 109 (Lot 2). Therefore, based on the analytical findings the material in Bore 109 is asbestos contaminated waste and as such should be disposed of at a licensed Solid Waste disposal facility. It should however be noted that the degree and extent of asbestos contamination is yet to be determined.

Three dip points were noted in Lot 9 and therefore it is assumed that 3 or more USTs are present in Lot 9, and further USTs may be present in Lot 2. The UST's and associated bowsers and fuel lines require removal and the resulting excavation should be validated to confirm that all contaminants of concern meet the site assessment criteria.

Levels of contamination detected in groundwater at the site were generally below the practical quantification levels with the exception of Bore 109 which exceeded the ANZECC Guidelines for the Protection of Aquatic Ecosystems for Zinc (680µg/kg, guideline level 15µg/kg). However, given the fact that this is an upgradient bore and that the levels of contamination in

both the soils and the groundwater of the downgradient bore are low, it is considered that the contamination is unlikely to be sourced from the subject site and there are no significant impacts on surface water and groundwater quality.

The potential for acid sulphate soils was determined using the suspension peroxide oxidation combined acidity and sulphate method (SPOCAS). The SPOCAS analysis indicated that the S_{POS} values in samples 103/2.8, 104/2.8-3 and 109/2.8 were over the action criteria, suggesting the potential presence of ASS. The sampled material of concern in relation to acid sulphate soils is Potential Acid Sulphate Soil (PASS). No Actual Acid Sulphate Soil (AASS) was detected on-site.

Based on the assessment results, all material below the low water mark or the water table (approximately 1.5 - 2.0 m below ground level), in particular, the dark grey (black) sandy clay, the light grey sandy clay and the dark grey silty clay should be assumed to be PASS. An Acid Sulphate Soil Management Plan is therefore considered to be required for the proposed development. The Plan would typically address material handling issues, and provide advice on neutralisation methods (e.g. dosing with lime), including neutralisation rates. Further advice in this regard can be provided as required by the client. It should be noted that for the purposes of off-site disposal the lowest waste classification available for PASS is Solid Waste.

Remedial management works will be required, with respect to both the chemical contamination detected in the concrete lined pit at the rear of Lot 1, the UST's and the asbestos contamination identified at the site, following further assessment. Given the proposed development includes a two level basement car park the remedial works would involve the removal of the asbestos contaminated filling, the removal of the material in the sump pit in Lot 1, removal of the UST's and management of any materials impacted as a result of the operation of the UST's. Furthermore, it should be ascertained if any further UST's are present on the site, particularly in the laneway in Lot 2 and if they are found they should be properly removed and the resulting tank pit validated.

It recommended that further sampling be conducted for contamination assessment and waste classification purposes. Ideally this would be conducted following the removal of the demolition of the existing buildings on-site and prior to the removal and disposal of soil and

filling materials to allow access to all of the site. A minimum of an additional 12 test locations are recommended to comply with the EPA *Sampling Design Guidelines* for a site of this size.

It should be noted that a Hazardous Building Materials Inspection was not conducted as part of this assessment and it is recommended that this should be completed prior to demolition of the existing building. Common materials found may include asbestos in a wide variety of materials, lead based paint and PCB's in old fluorescent lights.

It is further recommended that all UST's, bowser points, delivery lines and their contents be removed and the resulting excavations be validated.

Based on the site history, site observation and laboratory results and following adequate remediation/ removal of asbestos containing materials, removal of the contaminated material in the concrete lined pit, development of an Acid Sulphate Management Plan and appropriate UST removal and pit validation it is considered that the site can be rendered suitable for the proposed mixed commercial and residential development