GEOTECHNIQUE® PTY LTD

ABN 64 002 841 063

Job No: 13649/1
Our Ref: 13649/1-AA
3 March 2016

Transport Workers' Union of NSW
P O Box 649
PARRAMATTA NSW 2124
Email: wayne.forno@twunsw.org.au

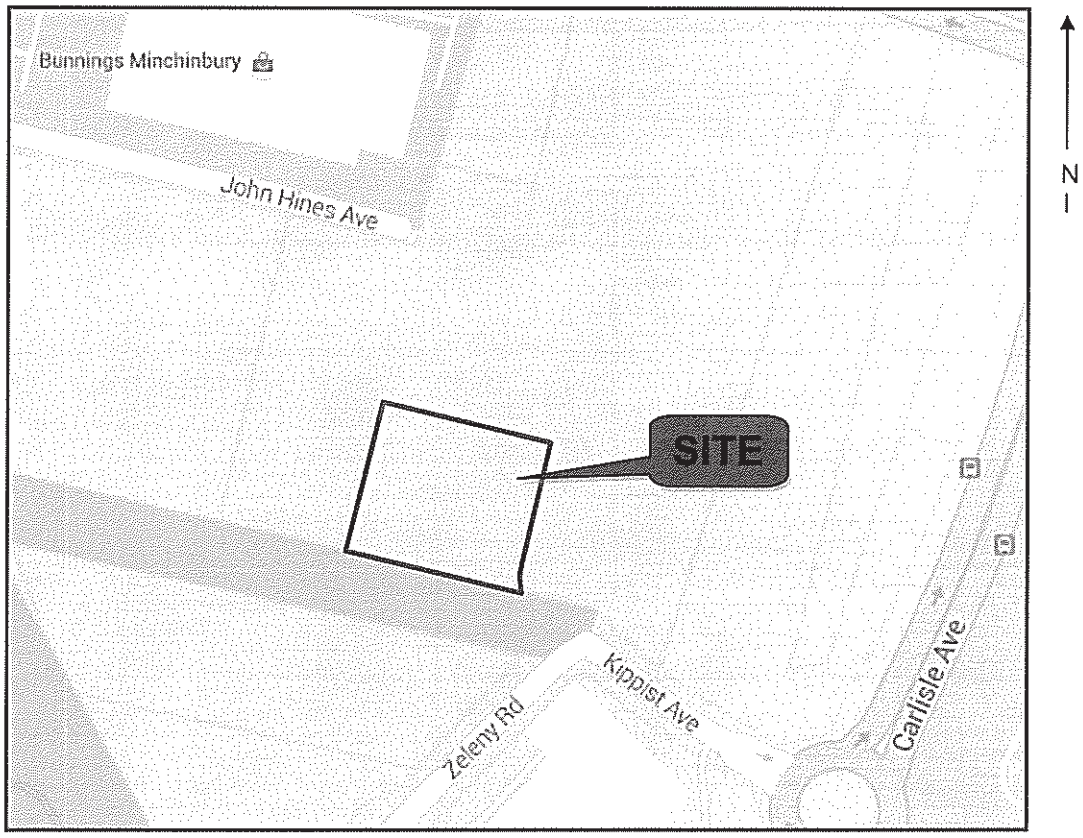
Attention: Mr W Forno

Dear Sir

re: **Proposed Commercial Development**
Lots 1 and 2 in DP1193931 - John Hines Avenue, Minchinbury
Contamination Assessment Update

Further to the *Contamination Assessment* Report (Ref: 12951/2-AA dated 29 January 2014) prepared by Geotechnique Pty Ltd (Geotechnique) and as requested, a contamination assessment update has been carried out at the site located at John Hines Avenue, Minchinbury (see Figure 1 below).

FIGURE 1



Map Data ©2015 Google

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Telephone (02) 4722 2700 Facsimile (02) 4722 2777
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INTRODUCTION

It is understood that the site is part of former Lot 111 in DP1193931 (refer to deposited plan in Attachment A of this report) and is proposed for commercial development.

Geotechnique was commissioned between September 2013 and January 2014 by Sargents Developments Pty Ltd through Mepstead & Associates Pty Ltd to conduct a contamination assessment for the land known as Lots 111, 112 and 113 in DP 1172907 including John Hines Avenue extension, located at the corner of the Great Western Highway and Carlisle Avenue, Minchinbury.

Based on the previous assessment presented in the above mentioned Report 12951/2-AA, it was concluded that the land including the site was suitable for the proposed commercial land use.

It is understood that from an email of Mr D Mepstead of Mepstead & Associates Pty Ltd dated 4 December 2015, that levelling of the site had occurred in June 2014 using the excavated material from the subdivision works such as trenching for services and road works. Some dirt was also taken from the areas previously validated by Geotechnique adjacent to the section of John Hines Avenue at the rear of the Bunnings extension. There was no imported dirt brought to the site.

Based on the recent fill plan (refer to Attachment B) provided, it is understood that additional fill has been placed over the site at thickness ranging from about 0.5m to 1.5m along the northern boundary towards the southern boundary of the site.

Subsequently, a contamination assessment update of the site was carried out by Geotechnique in order to ascertain the contamination status of the site and to determine the suitability of the site for the proposed commercial land use under current conditions.

SCOPE OF THE ASSESSMENT

In order to achieve the objectives of the contamination assessment update the following scope of work was conducted:

- Review and summary of Report 12951/2-AA.
- Site inspection by an Environmental Engineer from Geotechnique, to identify current site activities, site features, and any visible or olfactory indicators of potential contamination.
- Soil sampling by the Environmental Engineer, in accordance with a sampling, analysis and Quality Assurance (QA)/Quality Control (QC) plan.
- A calibrated Photo-Ionisation Detector (PID) was used to screen the recovered soil samples for the presence of any volatile organic compounds (VOC).
- Chemical analyses by National Association of Testing Authorities (NATA) accredited laboratories, in accordance with Chains of Custody (COC) prepared by Geotechnique.
- Assessment of the laboratory analytical results against current applicable guidelines.
- Assessment of field and laboratory QA and QC.
- Assessment of the suitability of the site for the proposed land use.

SITE INFORMATION

The site is located at John Hines Avenue, Minchinbury, in the local government area of Blacktown City. The site comprises a parcel of land registered as Lots 1 and 2 in DP1193931.

As shown on Drawing No 13649/1-AA1, the site is rectangular in shape, measuring about 70m along the John Hines Avenue frontage, with a depth of about 80m along the northern boundary and covering an area of 5,610 square meters (m^2).

The site is bound to the west by John Hines Avenue, to the north and east by vacant land, and to the south by vacant land then drainage channel.

SUMMARY OF PREVIOUS CONTAMINATION ASSESSMENT REPORT

Geotechnique carried out a contamination assessment for the land known as Lots 111, 112 and 113 in DP 1172907 including John Hines Avenue extension, which included the site between September 2013 and January 2014. The results were presented in Report 12951/2-AA.

The objectives of the assessment were to address Blacktown City Council Conditions of Consent 3.4, 5.6 and 7.12 regarding site contamination, as detailed in the Notice of Determination of a Development Application - Determination Number: 10-2765, dated 2 November 2011, to ascertain if the land was likely to present a risk of harm to human health and/or the environment and to determine the suitability of the land for the proposed commercial land use.

The scope of work included site reconnaissance, review of historical aerial photographs and documents associated with fill materials imported to the land, geological and hydrogeological information, as well as soil sampling and testing.

The laboratory test results satisfied the criteria for stating that the analytes selected were either not present (i.e. concentrations less than laboratory limits of reporting) or present in the sampled fill/soil at concentrations that did not pose a risk of hazard to human health or the environment for commercial land use.

Following removal of bonded asbestos pieces/asbestos containing material (ACM), testing of the remaining soil had shown no evidence of any asbestos fibres and it could therefore be assumed that there was no contaminant of concern within the land (subject to the limitations in Section 15.0 of the report).

Based on the assessment, it was concluded that the land including the site was suitable for the proposed commercial land use.

FIELD WORK & LABORATORY TESTING

Soil sampling for this contamination assessment update was carried out on 7 January 2016 by an Environmental Engineer from Geotechnique.

The Environmental Engineer made the following observations:

- The site was vacant with no specific usage noted and covered with grass.
- The site has been levelled with fill.
- There were no signs of soil staining, plant distress or other visible indicators of potential contamination.
- There were no olfactory indicators of potential contamination.
- There were no air emissions emanating from the site and adjoining properties.

In accordance with the NSW EPA "*Sampling Design Guidelines for Contaminated Sites*", for a site area of 5,610 m^2, fifteen sampling points are required. Sixteen boreholes (BH1 to BH16) as shown on Drawing No 13649/1-AA1 in Attachment C were systematically drilled to depths ranging from about 0.8m to 1.5m below the existing ground level across the site, which cover the layer of fill placed in June 2014. A number of representative fill samples were recovered.

Standard QA/QC samples including duplicate, split, trip spike and rinsate samples were also prepared.

All recovered fill samples were screened using a calibrated PID for the presence of volatile compounds. All the PID readings were equal to 0.0ppm (refer to borehole log in Attachment D). A copy of PID calibration sheet is presented in Attachment E.

Reference should be made to the borehole log for details of the soil profile encountered during field work. Based on information from all boreholes, the fill within the site generally comprises gravelly silty clay, grey and brown, with inclusion of sand and sandstone.

Observations by the Environmental Engineer indicated that there were no detectable odour and no obvious fibro/asbestos-cement pieces, staining/discolouration of the soil and ash materials on the bare surface of part of the site, at borehole locations and in the recovered fill samples that would indicate the potential for contamination.

Industry standard decontamination procedures were adopted during sampling.

The sampling location was drilled to a pre-determined depth and the sample was recovered from a stainless steel auger mounted on a bobcat. The soil sample was recovered directly from the auger using a stainless steel trowel. The stainless steel trowel was decontaminated prior to use in order to prevent cross contamination.

To prevent the potential loss of any volatile compounds the recovered soil sample for chemical analysis was immediately transferred into labelled, laboratory supplied 250ml glass jar and sealed with an airtight, Teflon screw top lid. The fully filled jar was then placed in a chilled container.

In addition, a soil sample for asbestos analysis was also collected and placed in the labelled plastic bag.

A rinsate water sample was collected on completion of field work and placed in a glass bottle and vial supplied by the laboratory. The rinsate water sample was labelled and placed in a chilled container.

In order to ensure the analytical performance of the primary laboratory, duplicate and split soil samples were prepared and kept in labelled, laboratory supplied glass jars (acid-washed and solvent-rinsed) sealed with airtight, Teflon screw top lids. The fully filled jars were placed in a chilled container.

At completion of field sampling the chilled container and plastic bags were transported to our Penrith office. The chilled container was then transferred to a refrigerator where the temperature was maintained below 4°C.

The primary samples and QA/QC samples in the chilled container and plastic bags were forwarded under COC conditions to the primary laboratory SGS Environmental Services (SGS), whilst the split samples in the chilled container were forwarded under COC conditions to the secondary laboratory Envirolab Services Pty Ltd (Envirolab). Both SGS and Envirolab are NATA accredited.

On receipt of the samples the laboratories returned the Sample Receipt Advice verifying the integrity of all the samples received.

The soil profile encountered did not reveal any visual staining, or olfactory indicators of potential contaminants. As a result and for screening purposes the following laboratory analysis plan was implemented:

- Twelve samples selected from different sample depths, as well as the corresponding duplicate and split samples, were analysed for metals {arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni) and zinc (Zn)}, Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX), Polycyclic Aromatic Hydrocarbons (PAH), Organochlorine Pesticides (OCP) and Polychlorinated Biphenyls (PCB).
- Thirty three fill samples were analysed for asbestos.
- One rinsate sample R1 for metals, TPH, BTEX and PAH.
- One trip spike sample (TS1) for BTEX.
- Three discrete samples were selected for testing of Cation Exchange Capacity (CEC) and pH.

Reference may be made to the following section and the section "*LABORATORY TEST RESULTS, ASSESSMENT & DISCUSSION*" for a summary and discussion of the laboratory test results.

FIELD QUALITY ASSURANCE (QA)/QUALITY CONTROL (QC)
The following field QA/QC procedures were implemented for the sampling and analytical program.

Rinsate Sample
One rinsate water sample (Rinsate R1) was recovered at completion of field work to identify possible cross contamination between the sampling locations.

Rinsate sample R1 was analysed for metals, TPH, BTEX and PAH. The test results for the rinsate water sample are summarised in Table F in Attachment C. A copy of the laboratory analytical report is kept in our office and is available upon request.

As indicated in Table A, concentrations of analytes in the rinsate water sample were less than laboratory limits of reporting (LOR), which indicates that adequate decontamination had been carried out in the field.

Trip Spike Sample
Trip spike samples are obtained from the laboratory on a regular basis, prior to conducting field sampling where volatile substances are suspected. The samples are held in Penrith office of Geotechnique at less than 4 degrees Celsius for a period of not more than seven days. During field work the trip spike samples are kept in the chilled container with soil samples recovered from the site. The trip spike sample is then forwarded to the primary laboratory together with the soil samples recovered from the site.

The trip spike is prepared by the laboratory by adding a known amount of a pure petrol standard to a clean sand sample. The sample is mixed thoroughly to ensure a relatively homogenous distribution of the spike throughout the sample. When the sample is submitted for analysis the same procedure is adopted for testing as the soil samples being analysed from the site.

The purpose of the trip spike is to detect any loss, or potential loss, of volatiles from the soil samples, during field work, transportation, sample extraction or testing.

One trip spike sample (TS1) was forwarded to the primary analytical laboratory with the samples collected from the site and tested for BTEX. The test results for the trip spike sample, reported as a percentage recovery of the applied and known spike concentrations, are shown in Table B in Attachment F. A copy of the laboratory analytical report is kept in our office and is available upon request.

As indicated in Table B the results show a good recovery of the spike concentrations. Furthermore, zero PID readings for the recovered fill samples were recorded in the field, BTEX results were less than laboratory LOR and there was no visible or olfactory indication of hydrocarbon contamination.

Based on the above, it is considered that any loss of volatiles from the recovered samples that might have occurred would not affect the outcome/conclusion of this report.

Duplicate Sample

A field duplicate sample is prepared in the field through the following processes:

- A larger than normal quantity of soil is recovered from the sample location selected for duplication.
- The sample is placed in a decontaminated stainless bowl and divided into two portions, using the decontaminated trowel.
- A portion of the sub-sample was immediately transferred using the decontaminated trowel into a labelled, laboratory supplied 250ml glass jar and sealed with an airtight, Teflon screw top lid. The fully filled jar was labelled as the duplicate sample and immediately placed in a chilled container.
- The remaining portion is stored in the same way and labelled as the original sample.

Duplicate samples are prepared on the basis of sample numbers recovered during the field work. The duplicate sample frequency was computed using the total number of samples analysed as part of this assessment.

The duplicate frequency adopted (8%) complies with Schedule B3 of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), which recommends a duplicate frequency of 5%.

The duplicate sample test results are summarised in Table C in Attachment F. A copy of the laboratory analytical report is kept in our office and is available upon request.

A comparison was made of the laboratory test results for the duplicate samples with the original samples and the Relative Percentage Differences (RPD) were computed to assess the accuracy of the laboratory test procedures. RPD within 30% are generally considered acceptable. However, this variation can be higher for organic analysis than for inorganics and for low concentrations of analytes or non-homogeneous samples.

As indicated in Tables C the comparisons between the duplicates and corresponding original samples indicated generally acceptable RPD, with the exception of the RPD of arsenic (67%) and nickel (46%), which were in excess of 30%. This is considered to be due to the low concentrations of arsenic and/or the heterogeneity of the fill sample.

All the concentrations with RPD in excess of 30% in the duplicate pair were both less than the relevant assessment criteria.

Based on the overall duplicate sample number and comparisons, the RPD are not considered crucial, therefore it is concluded that the test results provided by the primary laboratory SGS are of adequate accuracy and reliability for this assessment.

Split Sample

The split sample provides a check on the analytical performance of the primary laboratory. The split sample was prepared in the same manner as the duplicate sample.

The split sample frequency adopted (8%) complies with Schedule B3 of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), which recommends a frequency of 5%.

The split sample test results are summarised in Table D in Attachment F. A copy of the laboratory analytical report and certificate of analysis is kept in our office and is available upon request.

Based on Schedule B3 of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013) the difference in the results between the split samples should generally be within 30% of the mean concentration determined by both laboratories, i.e., RPD should be within 30%. However, higher variations can be expected for organic analyses compared to inorganic analyses and for samples with low analyte concentrations or non-homogeneous samples.

As shown in Tables D the comparisons between the splits and corresponding original samples indicated generally acceptable RPD, with the exception of the RPD of Nickel (40%) in excess of 30%, which was mainly due to the heterogeneity of the fill sample.

Based on the above, the variations are not considered critical. Based on the overall split sample number and comparisons, it is concluded that the test results provided by the primary laboratory can be relied upon for this assessment.

LABORATORY QA AND QC

Geotechnique uses only laboratories accredited by the NATA for chemical analyses. The laboratories must also incorporate quality laboratory management systems to ensure that trained analysts using validated methods and suitably calibrated equipment produce reliable results.

In addition to the quality control samples the laboratories must also ensure that all analysts receive certification as to their competence in carrying out the analysis and participate in national and international proficiency studies.

SGS and Envirolab, the laboratories used for this assessment and validation, are both accredited by NATA and operate Quality Systems designed to comply with ISO/IEC 17025.

The recovered samples were analysed within the allowable holding times, as detailed in Schedule B3 of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013).

The test methods and LOR/practical quantitation limits (PQL) adopted by the laboratories are indicated with the laboratory analytical reports/certificates of analysis. A copy of the laboratory analytical report and certificate of analysis is kept in the offices of Geotechnique and will be provided upon request.

As part of the analytical run for the project the laboratories included laboratory blanks, duplicate samples, laboratory control samples, matrix spikes and surrogate spikes.

The QA/QC procedures adopted by the laboratories and the results have been checked and considered to be generally complied with Schedule B3 of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013).

Overall, the quality control elements adopted by SGS and Envirolab indicate the analytical data to fall within acceptable levels of accuracy and precision for the analysis of soils. The analytical data provided is therefore considered to be reliable and useable for the assessment.

ASSESSMENT CRITERIA

Investigation levels and screening levels developed in the National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013) and the *Guidelines for the NSW Site Auditor Scheme* (NSW EPA/DEC, 2006); were used in this assessment, as follows:

- Risk-based Health Investigation Levels (HIL) for a broad range of metals and organic substances. The HIL are applicable for assessing human health risk via all relevant pathways of exposure. The HIL as listed in Table 1A (1) of Schedule B1 "*Guideline on Investigation Levels for Soil and Groundwater*" are provided for different land uses.

  It is understood that the site is proposed for commercial land use and as such the analytical results for this assessment are assessed against the available HIL for *commercial/industrial* (HIL D).

- Health Screening Levels (HSL) for selected petroleum hydrocarbon compounds, TPH fractions and Naphthalene are applicable for assessing human health risk via inhalation and direct contact pathways. The HSL depend on specific soil physicochemical properties, land use scenarios and the characteristics of building structures. The HSL listed in Table 1A(3) of Schedule B1 "*Guideline on Investigation Levels for Soil and Groundwater*" apply to different soil types and depths below surface to >4 m.

  For this assessment, the analytical results are assessed against the available HSL for *commercial/industrial* (HSL D) for clay to depth of 0m to <2m.

- Ecological Screening Levels (ESL) for selected petroleum hydrocarbon compounds, TPH fractions and Benzo(a)Pyrene are applicable for assessing the risk to terrestrial ecosystems. ESL listed in Table 1B(6) of Schedule B1 "*Guideline on Investigation Levels for Soil and Groundwater*" broadly apply to coarse and fine-grained soils and various land uses and are generally applicable to the top 2m of soil.

  The analytical result was assessed against the available ESL for *commercial/industrial* for fine-grained soil (clay).

- Ecological Investigation Levels (EIL), a specific type of Soil Quality Guidelines (SQG) for selected metals are applicable for assessing the risk to terrestrial ecosystems. EIL listed in Table 1B(1-5) of Schedule B1 "*Guideline on Investigation Levels for Soil and Groundwater*" depend on specific soil physicochemical properties and land use scenarios and generally apply to the top 2m of soil. The EIL are calculated using 30% effect concentration (EC30) or lowest observed effect concentrations (LOEC) toxicity data. EIL are the sum of the added contaminant limit (ACL) and the ambient background concentration (ABC).

  Where required, EIL are calculated directly by using the EIL calculator developed by CSIRO for NEPC.

  For this assessment the analytical results were assessed against the available EIL and available generic EIL for *commercial/industrial* land use for aged contamination in soil.

- Due to a lack of EIL for cadmium and mercury, the available Provisional Phytotoxicity Based Investigation Levels (PIL) published in the Guidelines for the NSW Site Auditor Scheme (NSW EPA, 2006) were used, with regard to protection of the environment and impact on plant growth.

The adopted assessment criteria are presented in the summarised Tables E to H in Attachment F.

For asbestos assessment the site must be free of asbestos pieces and no asbestos fibre detected in the soils.

The site/soil will be deemed contaminated if the above criteria are unfulfilled. Further investigation, remediation and/or management will be recommended if the site/soil is found to be contaminated.

LABORATORY TEST RESULTS, ASSESSMENT & DISCUSSION

The laboratory test results are summarised in Tables E to I in Attachment F. A copy of the laboratory analytical report is kept in the offices of Geotechnique and will be provided upon request. Discussion of the test results is presented in the following sub-sections.

Metals (As, Cd, Cr, Cu, Pb, Hg, Ni & Zn), CEC & pH

The lowest test results of the CEC and pH in Table E were adopted to calculate the relevant EIL.

As indicated in Table E, all concentrations of metals were below the relevant available HIL D, EIL and/or PIL.

TPH and BTEX

As indicated in Table F, the concentrations of F1 (TPH C6-C10 less BTEX), F2 (TPH >C10-C16 less Naphthalene and TPH>C10-C16), F3 (TPH >C16-C34), F4 (TPH >C34-C40) and BTEX were below the relevant available HSL D and/or ESL adopted. Moreover, the test results were below the laboratory LOR.

PAH

As summarised in Table G the concentrations of Benzo(a)pyrene (TEQ), Total PAH, Naphthalene and Benzo(a)pyrene were well below the relevant HIL D, HSL D, ESL and/or EIL adopted.

OCP

As shown in Table H, the concentrations of OCP were less than the laboratory LOR and well below the relevant HIL D. Concentrations of DDT were also below the EIL.

PCB
As presented in Table H, all PCB concentrations were below the HIL D adopted and less than the laboratory LOR.

Asbestos
As shown in Table I, no asbestos was detected in the soil samples analysed.

In summary, the laboratory test results satisfied the criteria for stating that the analytes selected are either not present (i.e. concentrations less than laboratory LOR), or present in the sampled soils at concentrations that do not pose a risk of hazard to human health or the environment, for the proposed commercial land use.

CONCLUSION AND RECOMMENDATIONS

Based on this contamination assessment update, it was assessed that the residual soils within the site do not present a risk of harm to human health and/or the environment.

It is therefore concluded that the site registered as Lots 1 and 2 in DP1193931, located at John Hines Avenue, Minchinbury, is suitable for the proposed commercial land use.

If suspect materials (identified by unusual staining, odour, discolouration or inclusions such as building rubble, asbestos sheets/pieces/pipes, ash material, imported fill (which are different to those encountered during this and previous assessments), etc.) are encountered during any stage of future site preparation/earthworks, we recommend that this office is contacted for assessment and to take all necessary action.

Any imported soil (fill) must be assessed by a qualified environmental consultant, prior to importation, to ensure suitability for the proposed use. In addition, the imported fill must not contain asbestos and ash, be free of unusual odour, not discoloured and not acid sulphate soil or potential acid sulphate soil. The imported fill should either be virgin excavated natural material (VENM) or excavated natural material (ENM).

For any materials to be excavated and removed from the site, it is recommended that waste classification of the materials, in accordance with the "Waste Classification Guidelines Part 1: Classifying Waste" NSW EPA 2014; NSW EPA resource recovery exemptions and orders under the Protection of the Environment Operations (Waste) Regulation 2014; or NSW EPA *Certification: Virgin excavated natural material* is undertaken prior to disposal at a facility that can lawfully accept the materials.

LIMITATIONS

The services performed by Geotechnique in preparing this report were conducted in a manner consistent with the level of quality and skill generally exercised by members of the profession and consulting practice.

This report has been prepared for the purposes stated within. Blacktown City Council may rely on the report for development and building application assessment processes. Any reliance on this report by other parties shall be at such parties' sole risk as the report might not contain sufficient information for other purposes.

This report shall only be presented in full and may not be used to support any objective other than those set out in the report, except where written approval is provided by Geotechnique.

The information in this report is considered accurate at the date of issue, in accordance with current site conditions observed at the date of site inspection and sampling (7 January 2016). Any variations to the site form or use beyond this date might nullify the conclusion stated.

No environmental site assessment can eliminate all risk; even a rigorous professional assessment might not detect all contamination within a site. Whilst the assessment conducted at the site was carried out in accordance with current NSW guidelines, the potential always exists for contaminants and contaminated soils to be present between sampled locations and in the grass covered areas.

Presented in Attachment G is a document entitled "Environmental Notes", which should be read in conjunction with this report.

If you have any questions, please do not hesitate to contact the undersigned.

Yours faithfully
GEOTECHNIQUE PTY LTD

LAN YE
Environmental Engineer
BE (Civil), MEng (Civil & Enviro)

Reviewed by

JOHN XU
Associate
BE, MEngSc, MIEAust

Attachment A	Deposited Plan - Lots 1-7 in DP 1193931
Attachment B	Recent Fill Plan
Attachment C	Drawing No 13649/1-AA1
Attachment D	Table 1 - Borehole Log
Attachment E	PID Calibration Sheet
Attachment F	Laboratory Analytical Results Summary Tables (Tables A to I)
Attachment G	Environmental Notes

LIST OF REFERENCES

Contaminated Land Management Act 1997

Contaminated Land Management Regulation 1998

Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (2nd Edition) – NSW DEC 2006

Contaminated Sites: Sampling Design Guidelines - NSW Environment Protection Authority 1995

Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land – Department of Urban Affairs and Planning / NSW Environment Protection Authority 1998

National Environment Protection (Assessment of Site Contamination) Measures, 1999 (April 2013) - National Environmental Protection Council

Protection of the Environment Operations Act 1997

ATTACHMENT A

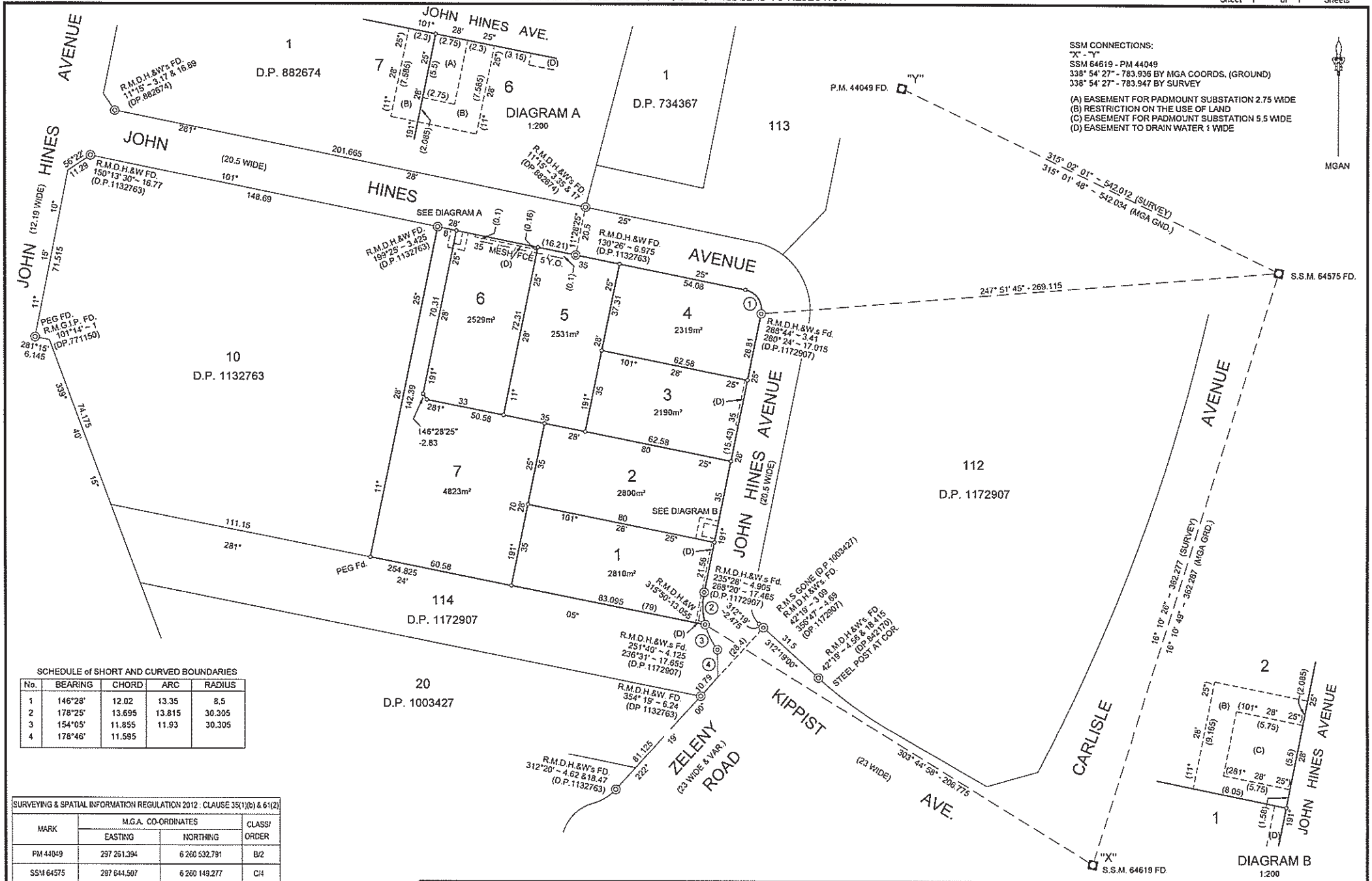
DEPOSITED PLAN

Lots 1-7 in DP 1193931

PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

Sheet 1 of 1 Sheets



SCHEDULE of SHORT AND CURVED BOUNDARIES

No.	BEARING	CHORD	ARC	RADIUS
1	146°28'	12.02	13.35	8.5
2	178°25'	13.695	13.815	30.305
3	154°05'	11.855	11.93	30.305
4	178°46'	11.595		

SURVEYING & SPATIAL INFORMATION REGULATION 2012 : CLAUSE 35(1)(b) & 61(2)

MARK	M.G.A. CO-ORDINATES		CLASS/ ORDER
	EASTING	NORTHING	
PM 44049	297 261.394	6 260 532.791	B/2
SSM 64575	297 644.507	6 260 149.277	C/4
SSM 64619	297 543.542	6 259 801.326	C/4

M.G.A. COORDINATES ADOPTED FROM SCIMS ON 23rd OCTOBER, 2014
COMBINED SEA LEVEL AND SCALE FACTOR 1.000099

Surveyor: DAVID A. MEPSTEAD Date of Survey: 23/10/2014 Surveyor's Ref: 1564/10	PLAN OF SUBDIVISION OF LOT 111 in DP 1172907	LGA: BLACKTOWN Locality: MINCHINBURY Subdivision No: Lengths are in metres Reduction Ratio 1 1000	Registered	DP 1193931

ATTACHMENT B

RECENT FILL PLAN

Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Colour
1	0.00	0.50	
2	0.50	1.00	
3	1.00	1.50	
4	1.50	2.00	
5	2.00	2.50	
6	2.50	3.00	
7	3.00	3.50	
8	3.50	4.00	
9	4.00	4.50	

Revised 8.12.15

mepstead & ASSOCIATES

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Prepared for SARGENTS DEVELOPMENTS PTY. LTD.

Project
PLAN SHOWING FILL DEPTHS OVER
PROPOSED LOTS 111 112 & 113
JOHN HINES AVENUE MINCHINBURY

Drawing No. 1564-4

ATTACHMENT C

DRAWING

13649/1-AA1 *Borehole Locations*

LEGEND

● Borehole

Imagery ©2015 NearMap.com

0 8 16 24 32 40m

Scale 1:800

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NOTES

1. Site features are indicative and are not to scale.
2. This drawing has been produced using a base plan provided by others to which additional information e.g test pits, borehole locations or notes have been added. Some or all of the plan may not be relevant at the time of producing this drawing

Transport Workers Union of NSW
Lots 1 & 2 in DP1193931
John Hines Avenue
Minchinbury

Borehole Locations

Drawing No: 13649/1-AA1
Job No: 13649/1
Drawn By: MH
Date: 11 January 2015
Checked By: JX

File No: 13649-1
Layers: 0, AA1

ATTACHMENT D

TABLE 1 - BOREHOLE LOG

GEOTECHNIQUE PTY LTD

Project	Proposed Commercial/Industrial Development	Job No	13649/1
Location	John Hines Avenue, Minchinbury	Refer to Drawing No	13649/1-AA1
		Logged & Sampled by	LY

TABLE 1 – Borehole Log

Borehole	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
BH1	0.0-1.5	0.0-0.1 0.5-0.7 1.0-1.2	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm PID=0.0ppm
BH2	0.0-1.5	0.0-0.1 0.5-0.7 1.0-1.2	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm PID=0.0ppm
BH3	0.0-1.5	0.0-0.1 0.5-0.7 1.0-1.2	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm PID=0.0ppm
BH4	0.0-1.5	0.0-0.1 0.5-0.7 1.0-1.2	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm PID=0.0ppm
BH5	0.0-1.0	0.0-0.1 0.5-0.7	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm
BH6	0.0-1.0	0.0-0.1 0.5-0.7	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm
BH7	0.0-1.0	0.0-0.1 0.5-0.7	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm
BH8	0.0-1.0	0.0-0.1 0.5-0.7	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm
BH9	0.0-1.0	0.0-0.1 0.5-0.7	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm
BH10	0.0-1.0	0.0-0.1 0.5-0.7	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm
BH11	0.0-1.0	0.0-0.1 0.5-0.7	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm
BH12	0.0-1.0	0.0-0.1 0.5-0.7	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

GEOTECHNIQUE PTY LTD

Project	Proposed Commercial/Industrial Development	Job No	13649/1
Location	John Hines Avenue, Minchinbury	Refer to Drawing No	13649/1-AA1
		Logged & Sampled by	LY

TABLE 1 – Borehole Log

Borehole	Depth (m)	Sample Depth (m)	Date	Time	Material Description	Remarks*
BH13	0.0-0.8	0.0-0.1 0.5-0.7	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm
BH14	0.0-0.8	0.0-0.1 0.5-0.7	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm
BH15	0.0-0.8	0.0-0.1 0.5-0.7	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm
BH16	0.0-0.8	0.0-0.1 0.5-0.7	07/01/2016		FILL: Gravelly Silty Clay, low plasticity, grey and brown, with inclusion of sand and sandstone	PID=0.0ppm PID=0.0ppm

NS = No Sample
*Odour (O), Discolouration (D), Petroleum Hydrocarbon Staining (PHS), Asbestos Containing Material (ACM), Ash Material (ASHM), Demolition Waste (DW), Groundwater (GW), Perched Water (PW) PID reading etc.

ATTACHMENT E

PID CALIBRATION SHEET

GEOTECHNIQUE
PTY LTD

PID CALIBRATION

CLIENT	Transport Workers' Union of NSW	JOB NO	13649/1
PROJECT	Proposed Commercial Land Use	DATE	7/1/2016
ADDRESS	John Hines Avenue, Minchinbury	CHECKED BY	LY
PID MODEL	**PID MODEL: PGM – 7600 MINIRAE 2000**	CALIBRATED BY	LY
SERIAL NO	**SERIAL NO: 110 – 005380**		

This performance of this PID has been checked and calibrated as follows:

☒ **Charged***

☒ **Calibrate** **0.0ppm** **Reading:** 0 **ppm**

100ppm **Isobutylene** **Reading:** 100 **ppm**

Gas Bottle Number 173 **Lot No** 51809

Signed & Approved

Date: 7/1/2016

Note: * Should be between 5.V and 6.2V

ATTACHMENT F

LABORATORY ANALYTICAL RESULTS SUMMARY TABLES (A TO I)

TABLE A
RINSATE SAMPLE
(Ref No: 13649/1-AA)

ANALYTES	Rinsate R1 07.01.2016
METALS	(mg/L)
Arsenic	<0.02
Cadmium	<0.001
Chromium	<0.005
Copper	<0.005
Lead	<0.02
Mercury	<0.0001
Nickel	<0.005
Zinc	<0.01
TOTAL PETROLEUM HYDROCARBONS (TPH)	(µg/L)
F1 (C6-C10 less BTEX)	<50
F2 (>C10-C16)	<60
F3 (>C16-C34)	<500
F4 (>C34-C40)	<500
BTEX	(µg/L)
Benzene	<0.5
Toluene	<0.5
Ethyl Benzene	<0.5
Xylenes	<1.5
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)	(µg/L)
Total PAH	<1.8
Naphthalene	<0.1
Benzo(a)Pyrene	<0.1

TABLE B
TRIP SPIKE SAMPLE
(Ref No: 13649/1-AA)

ANALYTES	Trip Spike TS1
BTEX	
Benzene	76%
Toluene	78%
Ethyl Benzene	88%
Xylenes	80%

Note : results are reported as percentage recovery of known spike concentrations

TABLE C
DUPLICATE SAMPLE
(Ref No: 13649/1-AA)

ANALYTES	BH1 0-0.1 m mg/kg	Duplicate D1 mg/kg	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
METALS			
Arsenic	8	4	67
Cadmium	0.4	<0.3	-
Chromium	14	11	24
Copper	27	20	30
Lead	23	17	30
Mercury	0.03	0.03	0
Nickel	16	10	46
Zinc	53	43	21
TOTAL PETROLEUM HYDROCARBONS (TPH)			
F1 (C6-C10 less BTEX)	<25	<25	-
F2 (>C10-C16)	<25	<25	-
F3 (>C16-C34)	<90	<90	-
F4 (>C34-C40)	<120	<120	-
BTEX			
Benzene	<0.1	<0.1	-
Toluene	<0.1	<0.1	-
Ethyl Benzene	<0.1	<0.1	-
Xylenes	<0.3	<0.3	-
POLYCYCLIC AROMATIC HYDROCARBONS			
Benzo(a)Pyrene TEQ	<0.3	<0.3	-
Total PAH	<0.8	<0.8	-
Naphthalene	<0.1	<0.1	-
Benzo(a)Pyrene	<0.1	<0.1	-
ORGANOCHLORINE PESTICIDES (OCP)			
Hexachlorobenzene (HCB)	<0.1	<0.1	-
Heptachlor	<0.1	<0.1	-
Aldrin+Dieldrin	<0.15	<0.15	-
Endrin	<0.2	<0.2	-
Methoxychlor	<0.1	<0.1	-
Mirex	<0.1	<0.1	-
Endosulfan (alpha, beta & sulphate)	<0.5	<0.5	-
DDD+DDE+DDT	<0.6	<0.6	-
Chlordane (alpha & gamma)	<0.2	<0.2	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<1	<1	-

TABLE D
SPLIT SAMPLE
(Ref No: 13649/1-AA)

ANALYTES	BH15 0-0.1 m mg/kg (SGS)	Split Sample S2 mg/kg (ENVIROLAB)	RELATIVE PERCENTAGE DIFFERENCES (RPD) %
METALS			
Arsenic	5	6	18
Cadmium	<0.3	<0.4	-
Chromium	8.4	10	17
Copper	18	24	29
Lead	14	15	7
Mercury	0.03	<0.1	-
Nickel	8	12	40
Zinc	35	44	23
TOTAL PETROLEUM HYDROCARBONS (TPH)			
F1 (C6-C10 less BTEX)	<25	<25	-
F2 (>C10-C16)	<25	<50	-
F3 (>C16-C34)	<90	<100	-
F4 (>C34-C40)	<120	<100	-
BTEX			
Benzene	<0.1	<0.2	-
Toluene	<0.1	<0.5	-
Ethyl Benzene	<0.1	<1	-
Xylenes	<0.3	<3	-
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
Benzo(a)Pyrene TEQ	<0.3	<0.5	-
Total PAH	<0.8	<1.55	-
Naphthalene	<0.1	<0.1	-
Benzo(a)Pyrene	<0.1	<0.05	-
ORGANOCHLORINE PESTICIDES (OCP)			
Hexachlorobenzene (HCB)	<0.1	<0.1	-
Heptachlor	<0.1	<0.1	-
Aldrin+Dieldrin	<0.15	<0.2	-
Endrin	<0.2	<0.1	-
Methoxychlor	<0.1	<0.1	-
Endosulfan (alpha (I), beta (II) & sulphate)	<0.5	<0.3	-
DDD+DDE+DDT	<0.6	<0.3	-
Chlordane (alpha & gamma)	<0.2	<0.2	-
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<1	<0.7	-

TABLE E
METALS, CATION EXCHANGE CAPACITY (CEC) & pH TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13649/1-AA)

		METALS (mg/kg)									
Sample Location	Depth (m)	ARSENIC	CADMIUM	CHROMIUM (Total)	COPPER	LEAD	MERCURY	NICKEL	ZINC	CEC (cmol/kg)	pH
BH1	0-0.1	8	0.4	14	27	23	0.03	16	53	20	8.0
BH2	1.0-1.2	8	0.3	9.3	39	17	0.05	24	78	-	-
BH3	0-0.1	4	<0.3	8.7	27	14	0.06	13	57	-	-
BH5	0-0.1	9	0.5	14	21	12	0.07	8.7	35	-	-
BH6	0.5-0.7	5	0.3	11	23	17	0.03	10	56	16	7.8
BH7	0-0.1	13	<0.3	6.3	15	10	0.03	1.3	7.8	-	-
BH9	0-0.1	5	<0.3	13	18	23	0.03	9.3	47	-	-
BH10	0.5-0.7	11	0.3	11	24	24	0.03	12	47	-	-
BH11	0-0.1	8	<0.3	13	24	19	0.03	8.9	55	-	-
BH13	0-0.1	5	<0.3	14	19	19	0.02	11	46	15	7.8
BH15	0-0.1	5	<0.3	8.4	18	14	0.03	8.0	35	-	-
BH16	0.5-0.7	5	<0.3	9.0	23	15	0.03	9.8	43	-	-
Limits of Reporting (LOR)		3	0.3	0.3	0.5	1	0.01	0.5	0.5	0.02	-
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)											
Health-based Investigation Levels (HIL) D - [a] Commercial / Industrial D		3000	900	3600[c]	240000	1500	180[d]	6000	400000		
Ecological Investigation Levels (EIL) - Commercial and industrial		160[e]	-	660[b,f]	300[g]	1900[h]	-	380[b]	940[b]		
GUIDELINES FOR THE NSW SITE AUDITOR SCHEME (2006)											
Provisional Phytotoxity-Based Investigation Levels (PIL)			3				1				

Notes:
a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.
b: EIL of aged chromium(III), nickel & zinc were derived from calculation spreadsheet developed by CSIRO for NEPC; old NSW suburb with low traffic volume; the lowest CEC=15 cmolc/kg & pH=7.8; the assumed clay content=10 % were selected for derivation of EIL; a conservative approach.
c: Chromium (VI)
d: Methyl Mercury
e: Generic EIL for aged arsenic
f: Chromium (III)
g: EIL = Ambient Background Concentration (ABC) + Added Contaminant Level (ACL) (Rounding rules applied). ABC = 18mg/kg, 25th percentile of the data for old NSW suburb with low traffic volume. ACL=280mg/kg, the lower ACL used based on the lowest CEC=10cmol/kg or pH=8.0.
h: Generic added contaminant limit for aged lead + ambient background concentration; old NSW suburb with low traffic volume.

TABLE F
TOTAL PETROLEUM HYDROCARBONS (TPH) AND BTEX TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13649/1-AA)

												NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)															
			TPH (mg/kg)					BTEX (mg/kg)				Health Screening Levels (HSL) D Commercial / Industrial						Ecological Screening Levels for fine-grained soil Commercial and industrial									
Sample Location	Depth (m)	Soil type	F1	F2*	F2**	F3	F4	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	F1	F2*	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES	F1	F2**	F3	F4	BENZENE	TOLUENE	ETHYLBENZENE	XYLENES
BH1	0-0.1	clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	310	NL	4	NL	NL	NL	215	170	2500	6600	95	135	185	95
BH2	1.0-1.2	clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	480	NL	6	NL	NL	NL	215	170	2500	6600	95	135	185	95
BH3	0-0.1	clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	310	NL	4	NL	NL	NL	215	170	2500	6600	95	135	185	95
BH5	0-0.1	clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	310	NL	4	NL	NL	NL	215	170	2500	6600	95	135	185	95
BH6	0.5-0.7	clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	310	NL	4	NL	NL	NL	215	170	2500	6600	95	135	185	95
BH7	0-0.1	clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	310	NL	4	NL	NL	NL	215	170	2500	6600	95	135	185	95
BH9	0-0.1	clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	310	NL	4	NL	NL	NL	215	170	2500	6600	95	135	185	95
BH10	0.5-0.7	clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	310	NL	4	NL	NL	NL	215	170	2500	6600	95	135	185	95
BH11	0-0.1	clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	310	NL	4	NL	NL	NL	215	170	2500	6600	95	135	185	95
BH13	0-0.1	clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	310	NL	4	NL	NL	NL	215	170	2500	6600	95	135	185	95
BH15	0-0.1	clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	310	NL	4	NL	NL	NL	215	170	2500	6600	95	135	185	95
BH16	0.5-0.7	clay	<25	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	310	NL	4	NL	NL	NL	215	170	2500	6600	95	135	185	95
Limits of Reporting (LOR)			25	25	25	90	120	0.1	0.1	0.1	0.3														

Notes: F1: C6-C10 less BTEX
F2*: >C10-C16 less Naphthalene
F2**: >C10-C16
F3: >C16-C34
F4: >C34-C40
NL: Not Limiting

TABLE G
POLYCYCLIC AROMATIC HYDROCARBONS (PAH) TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13649/1-AA)

								NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)				
			PAH (mg/kg)					Health-based Investigation Levels (HIL) D - Commercial / Industrial D		Health Screening Level (HSL) D - Commercial / Industrial	Generic Ecological Investigation Level (EIL) - Commercial and industrial	Ecological Screening Level (ESL) - Commercial and industrial
Sample Location	Depth (m)	Soil type	BaP TEQ	TOTAL PAHs	NAPHTHALENE	BENZO(a)PYRENE (BaP)		BaP TEQ	TOTAL PAHs	NAPHTHALENE	NAPHTHALENE	BENZO(a)PYRENE (BaP)
BH1	0-0.1	clay	<0.3	<0.8	<0.1	<0.1		40	4000	NL	370	1.4
BH2	1.0-1.2	clay	<0.3	<0.8	<0.1	<0.1		40	4000	NL	370	1.4
BH3	0-0.1	clay	<0.3	<0.8	<0.1	<0.1		40	4000	NL	370	1.4
BH5	0-0.1	clay	<0.3	<0.8	<0.1	<0.1		40	4000	NL	370	1.4
BH6	0.5-0.7	clay	<0.3	<0.8	<0.1	<0.1		40	4000	NL	370	1.4
BH7	0-0.1	clay	<0.3	<0.8	<0.1	<0.1		40	4000	NL	370	1.4
BH9	0-0.1	clay	<0.3	<0.8	<0.1	<0.1		40	4000	NL	370	1.4
BH10	0.5-0.7	clay	<0.3	<0.8	<0.1	<0.1		40	4000	NL	370	1.4
BH11	0-0.1	clay	<0.3	<0.8	<0.1	<0.1		40	4000	NL	370	1.4
BH13	0-0.1	clay	<0.3	<0.8	<0.1	<0.1		40	4000	NL	370	1.4
BH15	0-0.1	clay	<0.3	<0.8	<0.1	<0.1		40	4000	NL	370	1.4
BH16	0.5-0.7	clay	<0.3	<0.8	<0.1	<0.1		40	4000	NL	370	1.4
Limits of Reporting (LOR)			0.3	0.8	0.1	0.1						

Notes: a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.

NL: Not Limimting

TABLE H
ORGANOCHLORINE PESTICIDES (OCP) & POLYCHLORINATED BIPHENYLS (PCB) TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13649/1-AA)

Sample Location	Depth (m)	OCP (mg/kg)										PCB (mg/kg)
		HEXACHLOROBENZENE (HCB)	HEPTACHLOR	ALDRIN+DIELDRIN	ENDRIN	METHOXYCHLOR	MIREX	ENDOSULFAN (alpha, beta & sulphate)	DDD+DDE+DDT	DDT	CHLORDANE (alpha & gamma)	
BH1	0-0.1	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
BH2	1.0-1.2	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
BH3	0-0.1	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
BH5	0-0.1	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
BH6	0.5-0.7	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
BH7	0-0.1	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
BH9	0-0.1	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
BH10	0.5-0.7	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
BH11	0-0.1	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
BH13	0-0.1	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
BH15	0-0.1	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
BH16	0.5-0.7	<0.1	<0.1	<0.15	<0.2	<0.1	<0.1	<0.5	<0.6	<0.2	<0.2	<1
Limits of Reporting (LOR)		0.1	0.1	0.15	0.2	0.1	0.1	0.5	0.6	0.2	0.2	1
NATIONAL ENVIRONMENT PROTECTION AMENDMENT MEASURE (2013)												
Health-based Investigation Levels (HIL) D [a] Commercial / Industrial		80	50	45	100	2500	100	2000	3600		530	7
Ecological Investigation Levels (EIL) - Commercial and industrial										640 [b]		

Notes: a: Commercial / industrial includes premises such as shops, offices, factories and industrial sites.
b: Generic EIL for DDT

TABLE I
ASBESTOS TEST RESULTS
DISCRETE SAMPLES
(Ref No: 13649/1-AA)

Sample Location	Depth (m)	ASBESTOS
BH1	0-0.1	No asbestos detected
BH1	0.5-0.7	No asbestos detected
BH1	1.0-1.2	No asbestos detected
BH2	0-0.1	No asbestos detected
BH2	0.5-0.7	No asbestos detected
BH2	1.0-1.2	No asbestos detected
BH3	0-0.1	No asbestos detected
BH3	0.5-0.7	No asbestos detected
BH3	1.0-1.2	No asbestos detected
BH4	0-0.1	No asbestos detected
BH4	0.5-0.7	No asbestos detected
BH5	0-0.1	No asbestos detected
BH5	0.5-0.7	No asbestos detected
BH6	0-0.1	No asbestos detected
BH6	0.5-0.7	No asbestos detected
BH7	0-0.1	No asbestos detected
BH7	0.5-0.7	No asbestos detected
BH8	0-0.1	No asbestos detected
BH8	0.5-0.7	No asbestos detected
BH9	0-0.1	No asbestos detected
BH9	0.5-0.7	No asbestos detected
BH10	0-0.1	No asbestos detected
BH10	0.5-0.7	No asbestos detected
BH11	0-0.1	No asbestos detected
BH11	0.5-0.7	No asbestos detected
BH12	0-0.1	No asbestos detected
BH12	0.5-0.7	No asbestos detected
BH13	0-0.1	No asbestos detected
BH14	0-0.1	No asbestos detected
BH14	0.5-0.7	No asbestos detected
BH15	0-0.1	No asbestos detected
BH15	0.5-0.7	No asbestos detected
BH16	0-0.1	No asbestos detected

ATTACHMENT G

ENVIRONMENTAL NOTES

IMPORTANT INFORMATION REGARDING YOUR ENVIRONMENTAL SITE ASSESSMENT

These notes have been prepared by Geotechnique Pty Ltd, using guidelines prepared by the ASFE (Associated Soil and Foundation Engineers). The notes are offered to assist in the interpretation of your environmental site assessment report.

REASONS FOR AN ENVIRONMENTAL ASSESSMENT

Environmental site assessments are typically, though not exclusively, performed in the following circumstances:

- As a pre-acquisition assessment on behalf of a purchaser or a vendor, when a property is to be sold
- As a pre-development assessment, when a property or area of land is to be redeveloped, or the land use has changed, e.g. from a factory to a residential subdivision
- As a pre-development assessment of greenfield sites, to establish baseline conditions and assess environmental, geological and hydrological constraints to the development of e.g. a landfill
- As an audit of the environmental effects of previous and present site usage

Each circumstance requires a specific approach to assessment of soil and groundwater contamination. In all cases the objective is to identify and if possible quantify the risks that unrecognised contamination poses to the ongoing proposed activity. Such risks may be financial (clean-up costs or limitations in site use) and physical (health risks to site users or the public).

ENVIRONMENTAL SITE ASSESSMENT LIMITATIONS

Although information provided by an environmental site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment might not detect all contamination within a site. Contaminants could be present in areas that were not surveyed or sampled, or migrate to areas that did not show signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant that may occur; only the most likely contaminants are screened.

AN ENVIRONMENTAL SITE ASSESSMENT REPORT IS BASED ON A UNIQUE SET OF PROJECT SPECIFIC FACTORS

In the following events and in order to avoid cost problems, you should ask your consultant to assess any changes in the conclusion and recommendations made in the assessment:

- When the nature of the proposed development is changed e.g. if a residential development is proposed, rather than a commercial development
- When the size or configuration of the proposed development is altered e.g. if a basement is added
- When the location or orientation of the proposed structure is modified
- When there is a change of land ownership, or
- For application to an adjacent site

ENVIRONMENTAL SITE ASSESSMENT FINDINGS ARE PROFESSIONAL ESTIMATES

Site assessment identifies actual sub-surface conditions only at those points where samples are taken, when they are taken. Data obtained from the sampling and subsequent laboratory analyses are interpreted by geologists, engineers or scientists and opinions are drawn about the overall sub-surface conditions, the nature and extent of contamination, the likely impact on any proposed development and appropriate remediation measures. Actual conditions may differ from those inferred, because no professional, no matter how qualified and no sub-surface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, however, steps can be taken to help minimise the impact. For this reason site owners should retain the services of their consultants throughout the development stages of the project in order to identify variances, conduct additional tests that may be necessary and to recommend solutions to problems encountered on site.

Soil and groundwater contamination is a field in which legislation and interpretation of legislation by government departments is changing rapidly. Whilst every attempt is made by Geotechnique Pty Ltd to be familiar with current policy, our interpretation of the investigation findings should not be taken to be that of the relevant authority. When approval from a statutory authority is required for a project, approval should be directly sought.

STABILITY OF SUB-SURFACE CONDITIONS
Sub-surface conditions can change by natural processes and site activities. As an environmental site assessment is based on conditions existing at the time of the investigation, project decisions should not be based on environmental site assessment data that may have been affected by time. The consultant should be requested to advise if additional tests are required.

ENVIRONMENTAL SITE ASSESSMENTS ARE PERFORMED FOR SPECIFIC PURPOSES AND CLIENTS
Environmental site assessments are prepared in response to a specific scope of work required to meet the specific needs of specific individuals e.g. an assessment prepared for a consulting civil engineer may not be adequate to a construction contractor or another consulting civil engineer.

An assessment should not be used by other persons for any purpose or by the client for a different purpose. No individual, other than the client, should apply an assessment, even for its intended purpose, without first conferring with the consultant. No person should apply an assessment for any purpose other than that originally contemplated, without first conferring with the consultant.

MISINTERPRETATION OF ENVIRONMENTAL SITE ASSESSMENTS
Costly problems can occur when design professionals develop plans based on misinterpretation of an environmental site assessment. In order to minimise problems, the environmental consultant should be retained to work with appropriate design professionals, to explain relevant findings and to review the adequacy of plans and specifications relative to contamination issues.

LOGS SHOULD NOT BE SEPARATED FROM THE REPORT
Borehole and test pit logs are prepared by environmental scientists, engineers or geologists, based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these would not be redrawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however, contractors can still misinterpret the logs during bid preparation if separated from the text of the assessment. Should this occur, delays and disputes, or unanticipated costs may result.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete assessment should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of sub-surface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations, such as contractors.

READ RESPONSIBILITY CLAUSES CLOSELY
An environmental site assessment is based extensively on judgement and opinion; therefore, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. In order to aid in prevention of this problem, model clauses have been developed for use in written transmittals. These are definitive clauses, designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment and you are encouraged to read them closely. Your consultant will be happy to give full and frank answers to any questions you may have.