Douglas Partners
Geotechnics / Environment / Groundwater

Integrated Practical Solutions

Remediation Action Plan

Proposed North Kellyville Primary School
120-126 Hezlett Road, North Kellyville

Prepared for
GHD Pty Ltd

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Table of Contents

Page

1. Introduction 1
2. Scope of Work 2
3. Site Identification, Description and Surrounding Land Uses 2
4. Site Geology, Topography and Hydrogeology 3
5. Proposed Development 3
6. Summary of Previous Contamination Investigation Reports 4
   6.1 Summary of DP (2017a) 4
   6.2 Summary of DP (2017b) 6
7. Extent of Remediation Required 6
8. Remediation Options Evaluation and Preferred Remediation Option 7
   8.1 Remediation Options 7
      8.1.1 Off-Site Disposal 7
      8.1.2 Land Farming 8
      8.1.3 Strategic Relocation 8
      8.1.4 On-Site Re-Use (Burial) 8
   8.2 Preferred Remediation Strategy 9
9. Remediation Acceptance Criteria 9
   9.1 Site Assessment Criteria 10
      9.1.1 Health Investigation and Screening Levels 10
      9.1.2 Ecological Investigation and Screening Levels 12
      9.1.3 Management Limits 14
      9.1.4 Asbestos in Soil 14
   9.2 Waste Classification for Off-Site Disposal 15
   9.3 Imported Materials 15
10. Remediation Procedures 15
   10.1 Dam Investigation / Remediation 16
   10.2 Delineation of AEC (TRH, PAH and asbestos) 16
   10.3 Land farming of TRH Impacted Soil 17
   10.4 Relocation of PAH Impacted Soil 17
   10.5 Remediation of Asbestos Impacted Soil 18
   10.6 Contingencies for Unexpected Finds 19
11. Validation 19
   11.1 Validation Data Quality Objectives (DQO) 19

DRAFT

11.2 Validation Sample Collection and Analysis 20
11.3 Waste Classification Sample Collection and Analysis 20
11.4 TRH Impacted Soils 21
11.5 Imported and Capping Materials 21
11.6 Quality Assurance Plan 23
11.6.1 Sample Collection and Handling 23
11.6.2 Field QA/QC 23
11.6.3 Laboratory Quality Assurance and Quality Control 24
11.6.4 Achievement of Data Quality Objectives 24
12. General Environmental Management Plan 24
12.1 General 24
12.2 Vibration Control 25
12.3 Dust Control 25
12.4 Odour Control 25
12.5 Stormwater Management and Control 26
12.6 Occupational Health and Safety 26
12.7 Hours of Operation 27
12.8 Contingency Plans to Respond to Site Incidents 27
12.9 Identify Regulatory Compliance 27
12.10 Community Engagement 28
12.11 Contact Details 28
13. Validation Report 28
14. References 29
15. Limitations 30

Appendix A: Drawings and Notes about this Report
Appendix B: Previous Results

DRAFT

Remediation Action Plan
Proposed North Kellyville Primary School
120-126 Hezlett Road, North Kellyville

1. Introduction

This report presents a remediation action plan (RAP) by Douglas Partners Pty Ltd (DP) for the proposed primary school at 120-126 Hezlett Road, North Kellyville. The report was commissioned by Mike Dean of GHD Pty Ltd (GHD) and was undertaken in accordance with DP's emailed proposal and acceptance, both dated 14 November 2017.

It is understood that the RAP is required for submission as part of a development application (DA) for the proposed primary school at the site.

The overall goal of the remediation programme outlined in the RAP is to render the site suitable, from a contamination perspective, for the proposed school development. The objectives of the RAP are therefore to:

- Set the remediation goal;
- Evaluate the range of remediation options available to address the existing site contamination issues, and thereby reduce risks to acceptable levels;
- Document the preferred remediation techniques and procedures; and
- Establish the various safeguards required to complete the remediation work in a safe and environmentally acceptable manner.

In the preparation of this RAP, reference has been made to the following guidelines:

- National Environment Protection Council (NEPC) *National Environment Protection (Assessment of Site Contamination) Measure 1999* (as amended in 2013), (NEPC, 2013);
- NSW EPA, *Sampling Design Guidelines* (EPA, 1995);
- NSW OEH, *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (OEH, 2011);
- NSW EPA (2017) *Contaminated Sites: Guidelines for the NSW Site Auditor Scheme* (EPA, 2017);
- NSW EPA *Waste Classification Guidelines, Part 1: Classifying Waste* (EPA, 2014).

The following previous reports have been used to inform the RAP:

- DP Report on *Addendum Letter: Updated Detailed Site Investigation, Proposed North Kellyville New Primary School, 56 - 58 Hezlett Road, North Kellyville* (Reference 85998.01.R.002.Rev0) dated July 2017 (DP, 2017a).
- DP Report on *Detailed Site (Contamination) Investigation, Proposed North Kellyville New Primary School, 56 - 58 Hezlett Road, North Kellyville* (Reference 85998.01.R.001.Rev0.DSI) dated July 2017 (DP, 2017b).

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- DP Report on *Stockpile Waste Classification (SP1), Proposed North Kellyville New Primary School, 56 - 58 Hezlett Road, North Kellyville* (Reference 85998.01.R.002.Rev0.WC) dated 5 July 2017 (DP, 2017c).

2. Scope of Work

The scope of work in preparing this RAP was as follows:

- Review previous reports;
- Undertake discussions with GHD to develop remediation options and preferred remediation strategy;
- Prepare this RAP that includes the following:
  - Remediation options for the range of contaminants identified;
  - Nomination of the preferred remediation option;
  - Establishment of remediation acceptance criteria (RAC);
  - Provide a methodology for the validation of remedial work; and
  - Contingency measures for unexpected finds or unsuccessful remediation strategies.

3. Site Identification, Description and Surrounding Land Uses

For the purpose of this RAP "the site" refers to the area of the proposed school development, as shown on Drawing 1, Appendix A. The site details are shown in the following Table 1.

Table 1: Summary of Site Details

Street Address	120-126 Hezlett Road, Kellyville
Lot and Plan	Part Lot 101 & Lot 100, DP 1216659
Size	Approximately 3.45 Ha
Current Zoning	R1 General Residential and R2 Low Density Residential
Current Use	Vacant Land

The site is located approximately 43 km North West of Sydney's CBD and is situated in the local government authority of the Hills Shire Council.

At the time of conducting the investigations in 2017, the site was largely vacant with previous structures having been demolished prior to the DP field investigation. The previous structures comprised a house and a number of ancillary sheds. A dam is located in the north western corner of the site, with an additional dam located outside the proposed school boundary on the proposed Hipwell Avenue extension. Adjacent land uses are dominated by low density residential development (south, east and west).

A site locality map and plan showing the layout are shown on Drawing 1, Appendix A.

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4. Site Geology, Topography and Hydrogeology

Geological mapping indicates that the site is underlain by Ashfield Shale typically comprising black to dark-grey shale and laminite. Landscape mapping sheets indicate that the site is also underlain by residual Blacktown soils comprising yellow, red and brown podzolic soils and soloths.

A review of the NSW Acid Sulfate Soil Risk Map indicates that the site is located in an area with no known occurrence of acid sulphate soils.

The level of the site is at approximately 65-80 m AHD. Smalls Creek is located approximately 496 m to the south west of the site. Cattai Creek is located approximately 1190 m north east of the site. Both creeks flow in a south east to north west direction. Surface drainage direction at the site is difficult to identify due to the relatively flat nature of the area, however is anticipated to flow in a south west direction toward Smalls Creek.

A search of NSW Office of Water registered groundwater bores in the vicinity of the site indicated one bore located at the end of Halloway Street drilled to a depth of 128 m (approximately 280 m south west of the site and hydraulically down-gradient).

Groundwater flow direction at the site is anticipated to be in a south west direction based on topography and local water sources.

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5. Proposed Development

It is understood that a proposed new public school is to be constructed at North Kellyville. The proposed development layout is shown in the GHD Woodhead development plans provided in Appendix A.

The new school development comprises *inter alia:*

- A new road into the site to the north (Thorogood Boulevard);
- A new school building with central courtyards;
- Dewatering and backfilling of the dams located on the proposed school site, and to the west of the site;
- New soccer fields;
- New netball courts;
- New greens store and playground;
- New bulk and maintenance store;
- Activity space; and
- Sports store.

6. Summary of Previous Contamination Investigation Reports

This section presents a summary of the pertinent findings of the previous investigations considered to be most relevant to the design of the remediation of the site.

6.1 Summary of DP (2017a)

The DP (2017a) scope of work primarily involved:

- Site history review including historical titles, aerials, Safework NSW, EPA database and council records;
- Excavation / drilling of 71 test pits (TP1 to TP71) located based on a pre-determined 20 m x 20 m grid, as shown on Drawing 2, Appendix A;
- Collection of soil samples at regular intervals from the surface to the base of the test pit and target each soil strata and potential areas of contamination; and
- Chemical analysis of 76 soil samples for a range of common contaminants.

The site history information examined showed that the site was predominantly bushland prior to be used for market gardening some time prior to the 1970s, continuing, but in decline, until some time prior to 2017. No notices issued by Council or the EPA were found, and no records were provided by SafeWork NSW pertaining to the storage of dangerous goods.

The conceptual site model for the site, informed by the historical information and site walkover, identified potential contamination sources including uncontrolled filling, market gardening and the demolition of former buildings which probably contained asbestos.

Based on observations, the subsurface profile encountered across the site generally comprised brown silty and/or shaly clay filling or topsoil with some fine igneous gravel and rootlets, overlying residual clay and weathered shale. No groundwater was encountered to the maximum depth of test pit excavation.

Suspected asbestos containing material (ACM) in the form of fibre cement fragments were visually observed on the surface soils during the site walkover and within TP54 at a depth of 0.1 – 0.2 m as indicated in Drawings 2 and 3, Appendix A. The ACM observed within TP54 and at the surface in areas shown on Drawing 3, Appendix A, is most likely associated with the former buildings at the site due to the shallow depth at which they were encountered and less likely the result of contaminated imported fill. No ACM was detected through laboratory analysis in TP54.

The recovered soil samples were analysed for various combinations of common contaminants including metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc), total recoverable hydrocarbons (TRH), BTEX (benzene, toluene, ethyl benzene, xylene), organochlorine pesticides (OCP), organophosphorus pesticides (OPP), polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), phenols and asbestos.

The adopted site assessment criteria (SAC) were predominantly the health and ecological investigation and screening levels for a residential land use (which includes primary schools).

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All analyte concentrations for soil samples analysed were below laboratory limits of reporting (LOR) and the adopted SAC with the exception of the following:

- TRH fraction C16 – C34 exceeded HIL- A (direct contact), ESL and Management Limits in TP36/0.1 – 0.2 (5,600 mg/kg). TP36 is located in the footprint of previous sheds and structures in the centre of the site which were not inspected by an environmental scientist prior to demolition and may have been used to store equipment such as fuels and chemicals for farming and may account for the exceedance in that area. The results indicate that the TRH contamination extends marginally into natural soils however does not exceed the adopted SAC beyond 0.4 m depth; and
- Benzo(a)pyrene (a PAH) exceeded the ESL in TP11/0.0 – 0.1 (0.89 mg/kg). The source is not clear, but possibly related to the nature of the fill at that location.

No asbestos was detected above the 0.1g/kg laboratory reporting limit, however fragments were observed as noted above. Asbestos fines (AF) / fibrous asbestos (FA) was detected in the sample taken from the side wall of the dam AA (0.029 w/w%) exceeding the <0.001 w/w% SAC. This location is highlighted on Drawing 3, Appendix A.

Contaminant concentrations for the analysed filling / topsoil samples were within the contaminant thresholds (CT1s) for general solid waste (GSW), as listed in EPA (2014). Fill and surface soils were therefore preliminarily classifies as general solid waste (non-putrescible), however where asbestos impact is present the soils are pre=classified as special waste (asbestos).

Based on the results of the DSI, it was concluded that the site can be made suitable, from a contamination perspective, for the proposed primary school development subject to:

- Delineation and localised remediation of the TRH impacted soils at TP36. Remediation could comprise either waste classification and off-site disposal, or on-site land farming and validation prior to re-using within the site;
- Delineation and localised remediation / management of the B(a)P impacted soils at TP11. Remediation / management could comprise either waste classification and off-site disposal, or on-site relocation of the impacted soils away from future landscaping;
- Delineation and removal of soils impacted with ACM, and any other ACM identified during future civil and construction works. Remediation / management could comprise either waste classification and off-site disposal, or on-site relocation of the impacted soils under a capping system and long term Environmental Management Plan (EMP);
- Testing of the dam water prior to disposal to inform the disposal requirements;
- Testing of dam sediment, which can be an accumulator of surface contaminants, to inform the requirements for specific management and/or remediation; and
- Development of a Construction Environmental Management Plan (CEMP), incorporating an unexpected finds protocol, to be initiated during the planned civil and construction works, to inform the appropriate management of asbestos or other potential contaminants encountered during the works.

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6.2 Summary of DP (2017b)

DP (2017b) focussed on Lot 100 (the north eastern portion of the site), which was not included in the DP (2017a) investigation. The DP (2017b) scope of work primarily involved:

- Site history review including historical titles, aerials, Safework NSW, EPA database and council records;
- Excavation / drilling of 8 test pits (TP72 to TP79) based on the pre-determined 20 m x 20 m grid, as shown on Drawing 2, Appendix A; and
- Chemical analysis of the 13 soil samples for a range of common contaminants.

A similar soil profile was encountered to that discussed for DP (2017a).

All analyte concentrations for soil samples analysed for metals, TRH, PAH, BTEX, phenols, OCP, OPP, PCB and asbestos were below LOR and/or the adopted SAC. No asbestos was detected above the 0.1g/kg laboratory reporting limit.

Based on the observations at the time of sampling and the reported analytical results, the surface and fill soils at the site were preliminarily classified as general solid waste (non-putrescible) as defined in EPA (2014).

Based on the results of the supplementary investigation, it was concluded that the site (Lot 100) is suitable, from a contamination perspective, for the proposed primary school development. The report also concurred with the previous recommendation that a CEMP, incorporating an unexpected finds protocol, be prepared and initiated during the planned civil and construction works, to inform the appropriate management of any asbestos or other potential contaminants encountered during the works.

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7. Extent of Remediation Required

Based on the results of the previous contamination investigation works undertaken at the site, as summarised in Section 6, the following areas of environmental concern (AEC) are identified for either further investigation and/or remediation:

- TRH impacted soils at TP36 - delineation and localised remediation / management of the TRH impacted soil.
- PAH (B(a)P) impacted soils at TP11 - delineation and localised remediation / management of the B(a)P impacted soil;
- ACM impacted soil in the surface and in stockpile - delineation and remediation / management of the ACM impacts soils; and
- The dam – including dam water and sediments. Testing of the dam water prior to disposal to inform the disposal requirements; testing of dam sediment, which can be an accumulator of surface contaminants, to inform the requirements for specific management and/or remediation, if required.

The remediation areas are shown in Drawing 3, Appendix A. The dam us located in the north western corner of the site.

Protocols are also developed in this RAP for the management of unexpected finds such as asbestos, if encountered during bulk earthworks.

8. Remediation Options Evaluation and Preferred Remediation Option

8.1 Remediation Options

A number of remediation options were reviewed with reference to the principles and criteria defined in relevant documents, including NEPC (2013) and OEH (2011).

NEPC (2013) states that the preferred hierarchy of options for site clean-up and/or management is as follows:

- On-site treatment of the contamination so that it is destroyed or the associated risk is reduced to an acceptable level; and
- Off-site treatment of excavated soil, so that the contamination is destroyed or the associated risk is reduced to an acceptable level, after which soil is returned to the site; or,

If the above are not practicable:

- Consolidation and isolation of the soil on site by containment with a properly designed barrier;
- Removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material; or
- Where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

The remediation options considered viable for the subject site, with due consideration to the above, are summarised as follows:

- Delineation, excavation, waste classification and off-site disposal of affected soil to landfill;
- Delineation, excavation, land farming, then re-application to the site (TRH impacted soils);
- Delineation, excavation and strategic relocation within the site (PAH impacted soil);
- Delineation, excavation and strategic re-burial of affected soil below a physical barrier such as a clean soil cap and/or hardstand (non-mobile contaminants such as asbestos).

Opportunities and constraints associated with each option were assessed and are broadly summarised in the following sub sections.

8.1.1 Off-Site Disposal

Off-site disposal of contaminated soils comprises the excavation of the contaminated soils, waste classification of soil and disposal to a facility which can legally receive it. Based on current results all

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soils within identified AEC are suitable for off-site disposal without treatment, subject to appropriate waste classification.

Disposal of the contaminated soils or ACM off-site is technically a straight forward option and could be completed in a relatively short time scale prior to development of the site. The option would remove from the site any maintenance and risk legacy associated with each AEC.

Off-site disposal is, however, an expensive option and the total volume of material that would require disposal would need to be determined through an initial delineation assessment. Off site disposal is also not considered to be a sustainable option, as designed landfill facilities are filling up. This option is low on the NEPC (2013) preferred hierarchy.

8.1.2 Land Farming

Landfarming is a biological process which uses naturally occurring micro-organisms, such as bacteria and fungi, to eliminate, attenuate or transform polluting or contaminating substances in soils to reduce the risks to human health and the environment. It is an above-ground, engineered process which involves the spreading of excavated contaminated soils in a thin layer (generally <0.3 m) on a suitably prepared surface. This is followed by the stimulation of aerobic microbial activity within the soils through aeration and/or the addition of minerals, nutrients and moisture. Other materials such as compost can be added to improve the properties of the substrate. The movement of oxygen through the soil promotes the aerobic degradation of organic chemicals (EPA, 2014).

The land farming process is suitable for organic contaminants such as TRH. The advantage is that the impacted soil is treated sustainably and then re-used within the same site. The disadvantage is that the process can take significant time, and requires suitable space within the site.

8.1.3 Strategic Relocation

Strategic relocation is a process whereby impacted soils are relocated from a part of the site where there is a potential impact to human health or the environment, to an area under the new development where there is not considered to be such an impact.

An example of this is in relation to the PAH impacted soils at TP11 on the site. The benzo(a)pyrene concentration exceeds to ecological investigation level, and therefore potentially presents a risk to future plat growth within the site. By relocating the soils to an area not exposed to future plant growth (e.g. building slab) then the ecological risk no longer exists.

The advantage of this process is that the impacted soil is managed sustainably within the same site. The disadvantage is that the movement of the soil, including its relocation position, must be documented accurately.

8.1.4 On-Site Re-Use (Burial)

On-site re-use through burial involves the excavation, placement and cover of the impacted soils (in this case ACM impacted soils) beneath an appropriate physical barrier. Typically such a barrier comprises a minimum of 500 mm of clean, compactable soil, or a combination of the clean soil and

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hardstand. Where deeper services or tree planting are proposed, the required capping layer could be greater in thickness.

The advantage of such a process is that the impacted soils are sustainably managed within the same site. The disadvantage of the process is that the proposed burial area needs to be engineered to accommodate the impacted soil thickness and the overlying capping thickness, the placement needs to be well documented, there is a notation on the title, and a long term environmental management plan (EMP) needs to be in place in perpetuity. The geotechnical suitability of the placed material would also need to be considered.

8.2 Preferred Remediation Strategy

Following discussions with the client and the evaluation of the remediation options, the preferred remediation strategy for the site is as follows:

- Delineation, excavation, land farming, then re-application to the site (TRH impacted soils at TP36);
- Delineation, excavation and strategic relocation within the site (PAH impacted soil at TP11); and
- Delineation, excavation and strategic re-burial of ACM impacted soil below a physical barrier such as a clean soil cap and/or hardstand. The physical barrier will comprise a cap of 500mm clean validated soil (landscaped area) or 500mm combination clean validated soil and hardstand (building slab or hardstand). Subject to long term EMP detailing how the contained contaminated soil is to be managed in the future.

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9. Remediation Acceptance Criteria

The Remediation Acceptance Criteria (RAC) will be considered to have been met when one of the following applies to all remediation areas of the site. One or more RAC may be applied to different sub-areas of the site:

- All results are less than the Site Acceptance Criteria (SAC, Section 9.1); OR
- Test results are found not to be statistically significant based on analysis of a like database (e.g. lead in filling materials) showing:
  - all results are less than 250% of the SAC; and
  - the 95% Upper Confidence Limit (UCL) of the arithmetic mean is less than the SAC; and
  - the standard deviation is less than 50% of the SAC; OR
- Any exceedances of the SAC have been shown not to present an unacceptable risk based on a qualitative or quantitative risk assessment.

9.1 Site Assessment Criteria

9.1.1 Health Investigation and Screening Levels

The Health Investigation Levels (HIL) and Health Screening Levels (HSL) are scientifically-based, generic assessment criteria designed to be used in the first stage (Tier 1) of an assessment of potential human health risk from chronic exposure to contaminants.

HILs are applicable to assessing health risk arising via all relevant pathways of exposure for a range of metals and organic substances. The HIL are generic to all soil types and apply generally to a depth of 3 m below the surface for residential use. Site-specific conditions may determine the depth to which HILs apply for other land uses.

HSLs are applicable to selected petroleum compounds and fractions to assess the risk to human health via inhalation and direct contact pathways. HSLs have been developed for different land uses, soil types and depths to contamination.

The generic HIL and HSL are considered to be appropriate for the assessment of contamination at the site. Given the proposed land use the adopted HIL and HSL are:

- **HIL-A** – Residential with garden/accessible soil;
- **HSL-A & B** – Low –high density residential (for vapour intrusion); and
- **HSL-A** – Residential (low-density) (for direct contact).

It is noted that health screening levels for intrusive maintenance workers are listed in CRC CARE (2011), however, these have not be used as SAC for the current investigation as the screening levels are higher than HSL-A and therefore are considered unlikely to be risk drivers for remediation.

The HSL adopted are predicated on the inputs summarised in Table 2.

Table 2: Inputs to the Derivation of HSLs

Variable	Input	Rationale
Potential exposure pathway	Soil vapour intrusion (inhalation) / Direct contact *	Both potential exposure pathways were identified in the CSM. It is noted that direct contact HSLs are generally not the risk drivers for further site assessment for the same contamination source as the HSLs for vapour intrusion (NEPC, 2013).
Soil Type	Clay	Clay filling type was recorded at the site and is the most conservative medium for soil HSLs.
Depth to contamination	0 m to <1 m	Filling or topsoil comprising clay was present within the top 1 m at the site.

* Developed by CRC CARE (2011)

The adopted soil HIL and HSL for the potential contaminants of concern are presented in Table 3.

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Table 3: Health Investigation and Screening Levels (HIL and HSL) in mg/kg Unless Otherwise Indicated

Contaminants		HIL- A and HSL- A Direct Contact	HSL- AB Vapour Intrusion 0-<1 m
Metals	Arsenic	100	-
	Cadmium	20	-
	Chromium (VI)	100	-
	Copper	6 000	-
	Lead	300	-
	Manganese	3 800	-
	Mercury (inorganic)	40	-
	Nickel	400	-
	Zinc	7 400	-
PAH	Benzo(a)pyrene TEQ[1]	3	-
	Naphthalene	1 400	3
	Total PAH	300	-
TRH	C6 – C10 (less BTEX) [F1]	4 400	45
	>C10-C16 (less Naphthalene) [F2]	3 300	110
	>C16-C34 [F3]	4 500	-
	>C34-C40 [F4]	6 300	-
BTEX	Benzene	100	0.5
	Toluene	14 000	160
	Ethylbenzene	4 500	55
	Xylenes	12 000	40
Phenol	Pentachlorophenol (used as an initial screen)	100	-
OCP	Aldrin + Dieldrin	6	-
	Chlordane	50	-
	DDT+DDE+DDD	240	-
	Endosulfan	270	-
	Endrin	10	-
	Heptachlor	6	-
	HCB	10	-
	Methoxychlor	300	-
OPP	Chlorphyrifos	160	-
PCB [2]		1	-

Notes:

1 sum of carcinogenic PAH

2 non dioxin-like PCBs only

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9.1.2 Ecological Investigation and Screening Levels

Ecological Investigation Levels (EIL) have been derived for selected metals and organic compounds and are applicable for assessing risk to terrestrial ecosystems (NEPC, 2013). EIL depend on specific soil physiochemical properties and land use scenarios and generally apply to the top 2 m of soil, which corresponds to the root zone and habitation zone of many species. The EIL is determined for a contaminant based on the sum of the ambient background concentration (ABC) and an added contaminant limit (ACL). The ABC of a contaminant is the soil concentration in a specific locality that is the sum of naturally occurring background levels and the contaminants levels that have been introduced from diffuse or non-point sources (e.g. motor vehicle emissions). The ACL is the added concentration (above the ABC) of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required.

The EIL is calculated using the following formula:

EIL = ABC + ACL,

The ABC is determined through direct measurement at an appropriate reference site (preferred) or through the use of methods defined by Olszowy et al *Trace element concentrations in soils from rural and urban areas of Australia*, Contaminated Sites monograph no. 4, South Australian Health Commission, Adelaide, Australia 1995 (Olszowy, 1995) or Hamon et al, *Geochemical indices allow estimation of heavy metal background concentrations in soils*, Global Biogeochemical Cycles, vol. 18, GB1014, (Hamon, 2004). ACL is based on the soil characteristics of pH, CEC and clay content.

EIL (and ACLs where appropriate) have been derived in NEPC (2013) for only a short list of contaminants comprising As, Cu, Cr (III), DDT, naphthalene, Ni, Pb and Zn. An *Interactive (Excel) Calculation Spreadsheet* may be used for calculating site-specific EIL for these contaminants, and has been provided in the ASC NEPM Toolbox available on the SCEW (Standing Council on Environment and Water) website (http://www.scew.gov.au/node/941).

The adopted EIL, derived from the *Interactive (Excel) Calculation Spreadsheet* are shown in the following Table 4.

The following assumptions have been used to determine the EILs:

- A protection level of 80% for urban residential areas and public open space has been adopted;
- The EILs will apply to the top 2 m of the soil profile which corresponds to the root zone and habitation zone of many species;
- Given the likely predominant source of soil contaminants (i.e. historical site uses / fill) the contamination is considered as “aged” (>2 years);
- ABCs have been derived using the *Interactive (Excel) Calculation Spreadsheet* using input parameters of NSW, and low for traffic volumes; and
- Location specific pH and CEC values have been used as input parameters, adopted from DP (2017a).

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Table 4: Ecological Investigation Levels (EIL) in mg/kg

Analyte		EIL	Comments
Metals	Arsenic	100	*Adopted pH of 6.78 and CEC of 14.7 $cmol_c$/kg; **A conservative assumed clay content of 10% was adopted.
	Copper*	230	
	Nickel*	220	
	Chromium III**	410	
	Lead	1,100	
	Zinc*	670	
PAH	Naphthalene	170	
OCP	DDT	180	

Ecological Screening Levels (ESL) are used to assess the risk of selected petroleum hydrocarbon compounds, BTEX and benzo(a)pyrene to terrestrial ecosystems. ESL apply to the top 2 m of the soil profile as for EIL.

ESL have been derived in NEPC (2013) for petroleum fractions F1 to F4 as well as BTEX and benzo(a)pyrene. Site specific data and assumptions as summarised in Table 5 have been used to determine the ESL. The adopted ESL, from Table 1B(6), Schedule B1 of NEPC (2013) are shown in Table 6.

Table 5: Inputs to the Derivation of ESL

Variable	Input	Rationale
Depth of ESL application	Top 2 m of the soil profile	The top 2 m depth below ground level corresponds to the root zone and habitation zone of many species
Land use	Residential/Open Space	Proposed land use is a primary school
Soil Texture	Fine	Site soils include clay in filling

DRAFT

Table 6: Ecological Screening Levels (ESL)

Analyte		ESL	Comments
TRH	C6 – C10 (less BTEX) [F1]	180*	All ESLs are low reliability apart from those marked with * which are moderate reliability
	>C10-C16 (less Naphthalene) [F2]	120*	
	>C16-C34 [F3]	1300	
	>C34-C40 [F4]	5600	
BTEX	Benzene	65	
	Toluene	105	
	Ethylbenzene	125	
	Xylenes	45	
PAH	Benzo(a)pyrene	0.7	

9.1.3 Management Limits

NEPC (2013) Table 1B(7) provides 'management limits' for TPH fractions, which are applied after consideration of the relevant HSL. The management limits have been adopted to avoid or minimise the following potential effects of petroleum hydrocarbons:

- Formation of non-aqueous phase liquids (LNAPL);
- Fire and explosive hazards; and
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services by hydrocarbons.

Management limits for residential, parkland and public open space have been adopted as a conservative measure. Management limits for fine and coarse material are presented in Table 7 based on the previous investigation findings.

Table 7: Management Limits for TPH Fractions in Soil

TPH Fraction	Management Limit (mg/kg)
Soil Texture	**Fine**
C_6-C_{10} [F1]	800
>C_{10}-C_{16} [F2]	1,000
>C_{16}-C_{34} [F3]	3,500
>C_{34}-C_{40} [F4]	10,000

9.1.4 Asbestos in Soil

NEPC (2013) provides HSL for asbestos which are appropriate in areas where a detailed asbestos investigation has been undertaken. This includes sampling and analysis of 10 L and 500 mL samples from sample locations placed at twice the density recommended in EPA (1995). The HSL for Residential A land-use have been adopted for the proposed remediation, and are shown in Table 8 below. In areas where a detailed asbestos investigation in accordance with NEPC (2013) has not

DRAFT

been undertaken, any detection of asbestos will be considered to require remediation or further investigation.

Table 8: Health Screening Levels for Asbestos Contamination in Soil

Health Screening Level (where detailed asbestos conducted)	
Form of Asbestos	**HSL (w/w)**
Bonded ACM	0.01%
AF/FA (Friable Asbestos)	0.001%
All forms	No visible asbestos for surface soil

9.2 Waste Classification for Off-Site Disposal

All soils proposed for off-site disposal (should this contingency be enacted) will be assessed in accordance with the POEO Act (1997). For disposal to landfill, this will comprise assessment in accordance with the NSW Environment Protection Authority (EPA) *Waste Classification Guidelines* (2014).

9.3 Imported Materials

Any additional material required for redevelopment works, including backfilling of remediation excavations, and forming of the capping layer, shall be either:

- Materials from validated areas of the site, meeting the RAC; or
- Imported materials classified as virgin excavated natural materials (VENM) by the supplier (including laboratory analysis), as well as meeting the RAC; or
- Imported materials complying with a Resource Recovery Orders (RRO) and its corresponding Resource Recovery Exemption (RRE) issued by EPA under the *Protection of the Environment Operations (Waste) Regulation* 201, as well as meeting the RAC.

10. Remediation Procedures

The detailed procedures and sequence for the remediation work will rest with the contractor and will depend upon the equipment to be used and the overall sequence of the proposed development. It is the contractor's responsibility to devise a safe work method statement and to implement proper controls that enable the personnel undertaking the remediation to work in a safe environment. This RAP does not relieve the contractor(s) of their ultimate responsibility for work health and safety of their workforce and to prevent contamination of areas outside the immediate workspace. This RAP sets out the minimum standards and guidelines for remediation that will need to be used in preparing a method statement.

DRAFT

10.1 Dam Investigation / Remediation

Dam dewatering should be undertaken with reference to the following guideline provided by the Hills Shire Council:

- FACTSHEET *Guidelines for Preparing a Dam Dewatering Report* The Hills Shire [reference - https://www.thehills.nsw.gov.au/files/.../ecm.../dewartering_dams_fact_sheet.pdf]

At the commencement of the remediation programme of investigation and remediation associated with dam is envisaged:

- Sample and test the dam water (Environmental Consultant) – classification for an option as outlined in Section 2 of the fact sheet, viz. irrigating onto land, reuse on site, reuse during construction, removal to an authorised waste management facility, and discharge into the stormwater drainage system or local creek. Water samples will be tested for heavy metals (As, Cd, Cu, Fe, Pb, Hg, Zn), nutrients (total N and P), *E.Coli*, faecal coliforms, TRH, BTEX, and field parameters (temperature, turbidity, dissolved oxygen, biochemical oxygen demand, pH, salinity);
- The Environmental Consultant will prepare a report on the basis of the testing, which outlines the dewatering options available;
- Dewatering of dam, as informed by the test results, and in accordance with the relevant NSW legislation;
- Soils impacted with ACM as identified in and around the dam wall to be removed and managed according to Section 10.5;
- Scraping and stockpiling of dam sediment for sampling and analysis by the Environmental Consultant, or sampling of sediment from walls close to the side of dam (with consideration of dam stability following dewatering);
- The Environmental Consultant will prepare a report on the basis of the testing, which outlines the re-use, remediation or management options available. If required, an addendum to this RAP will be prepared to outline the remediation requirements, should contamination be identified;
- If remediation of the sediment is required, the validation of the dam base and walls will be required upon complete removal of the sediment; and
- If no remediation or specific management is required, the Environmental Consultant will advise that re-use within the site, subject to geotechnical and engineering requirements, is viable.

10.2 Delineation of AEC (TRH, PAH and asbestos)

At the commencement of the remediation programme the following sequence of works will be undertaken:

- Mark out all test locations from DP (2017a) that indicate remediation is required due to elevated concentrations of TRH, PAH or asbestos areas identified at the site and shown in Drawing 3, Appendix A;
- At each AEC, delineation will initially be undertaken, to the extent practical, by the Environmental Consultant using visual means (e.g. ACM fragments, soil staining, odours). Secondary delineation will be undertaken through intrusive sampling at “step out” locations from the original location (or subsequent locations found to be contaminated), at 5 m steps to the north, south, east and west,

DRAFT

or as directed by the Environmental Consultant. Vertical delineation will be undertaken concurrently through deeper sampling;

- The recovered samples will be analysed for the contaminant(s) identified initially at each location. Samples of 500mL will be recovered and analysed for asbestos assessment;
- The above process will be repeated until adequate delineation of the contaminated soil is achieved; and
- The Environmental Consultant will prepare a report on the results which will map the extents of the contamination at each location.

10.3 Land farming of TRH Impacted Soil

TRH impacted soil around TP36, once delineated, will be stockpiled preferably on hardstand in an area outside of the proposed development footprint. The designated area will allow for the spreading of the stockpile to a nominal height of about 0.5 m.

- The stockpile will be periodically turned and aerated on a weekly basis;
- Sampling will be undertaken after 1 month and samples analysed for TRH/BTEX;
- The number of samples will be taken according to the density outlined in Section 11.4;
- Concentrations will be compared to the RAC in Section 9. If results are within the RAC (the objective of the process), the material will be deemed suitable for re-use on the site without the need to bury or relocate under building footprints;
- If required, the process will be repeated until the objective is achieved; and
- If the stockpile was not able to be placed on a hardstand area, once the stockpile has been successfully remediated and removed, the footprint will be validated in accordance with Section 11.2.

As a contingency, should the process prove unsuccessful in achieving the objective, or time or space becomes no longer available, the materials will be waste classified and disposed to landfill under that classification.

10.4 Relocation of PAH Impacted Soil

PAH impacted soil around TP11, once delineated, will be stockpiled in a designated area in preparation for relocation to a proposed building footprint or hardstand (the objective). The location of the stockpile will be well clear of ongoing civil works to ensure that there is no cross contamination.

Once the preferred position for the relocation of the soils is determined, the area will be prepared (including over-excavation to accommodate the soils if required) and the PAH soils relocated and compacted. The process will be overseen by the Environmental Consultant and documented for inclusion in the validation report.

As a contingency, should the process prove unsuccessful in achieving the objective (such as the nature of the material being geotechnically unsuitable for use beneath a hardstand area), the materials will be waste classified and disposed to landfill under that classification.

DRAFT

10.5 Remediation of Asbestos Impacted Soil

The remediation of asbestos impacted soil requires to allocation of an area (or areas) for burial. Ideally, the area(s) will be nominated such that there is minimal potential for disturbance in the future (e.g. the laying of new underground services, or the planting of significant trees). The burial area(s) may be under hardstand or landscaping, and the nature of capping will vary depending on the location.

Once the ACM impacted soils are delineated, a stockpiling area will be designated away from the ongoing civil works. The impacted soils will be excavated and transported to the stockpiling area, then covered with a robust geofabric which will be pinned down. The stockpile area will be bunded to minimise any surface runoff issues.

Whilst no friable asbestos has been identified at the site to date, given the residential environment in which the site sits, it is considered prudent that continuous asbestos air monitoring be conducted during any movement of ACM impacted soils.

Once the designated burial area(s) is determined, the area will be engineered to accommodate the material and the required capping configuration, as shown on Drawing 4, Appendix A. Once prepared, the ACM impacted material can be relocated to the burial area(s) and capped as below. Should the designated burial area be subject to planned intrusive works such as buried services, or the planting of trees, then the capping design may need to be amended. The Environmental Consultant will propose an alternative design under either scenario.

The construction of the cap will consist of:

- Relocation of the ACM impacted soil to the designated burial area [*Hold Point for the surveying of the lateral extent of the area, and the surface levels at the top of the ACM impacted soil*];
- A brightly coloured marker layer (geofabric, geotextile or a combination) being placed immediately above the contaminated soil marking its presence as a physical signal to stop excavation [*Hold Point for confirmation by the Environmental Consultant*];
- Placing and compacting the capping layer soils (as validated by the Environmental Consultant, refer Section 11.4) to the required thickness as shown on Drawing 4, Appendix A [*Hold Point for confirmation by the Environmental Consultant; and surveying of the top of the validated soils*]; and
- Placing of topsoil or hardstand to the finished level [*Hold Point for confirmation by the Environmental Consultant; and surveying of finished levels*].

Under this remediation scenario, a long term EMP will be prepared by the Environmental Consultant, to be enacted by the school in perpetuity.

As a contingency, should the burial process prove unsuccessful in achieving the objective, or the process becomes incompatible with the proposed development, the materials will be waste classified and disposed to landfill under that classification.

DRAFT

10.6 Contingencies for Unexpected Finds

If unexpected conditions with respect to contamination are encountered by the contractor during the earthworks (such as fragments of suspected asbestos, buried structures or unexpected contaminated soil or contaminants) and construction, the following general approach will be adopted:

- Upon discovery of an unexpected find (UF), works will cease in that area, the Contractor's Site Manager is to be notified and the affected area closed off by the use of barrier tape;
- The Site Manager is to contact the Principal's Representative (PR), and the PR is to notify the Environmental Consultant;
- The Environmental Consultant will inspect the area and make an assessment of the significance of the find in terms of the potential impact to human health and the environment with reference to NSW EPA endorsed guidelines including NEPC (2013);
- Provision of advice from the Environmental Consultant to the PR regarding the recommended course of action, which may comprise an intrusive investigation, remediation and/or management;
- If an investigation is undertaken, the Environmental Consultant will prepare a report detailing the results of the investigation, including recommendations for remediation or management, as required;
- If required, an addendum to this RAP will be prepared by the Environmental Consultant; and
- The agreed remedial strategy shall be implemented and validated in accordance with the RAP addendum.

In the event that the UF relates to the identification of asbestos, an Occupational Hygienist may be consultant in lieu of the Environmental Consultant. There may also be a requirement to undertake asbestos air monitoring and/or decontamination, depending upon the nature of the asbestos find.

DRAFT

11. Validation

11.1 Validation Data Quality Objectives (DQO)

The objective of the validation plan is to assess the results of pre and post remediation testing against the RAC and SAC stated within the RAP and to provide information on any environmental impacts which may have resulted from the works.

The validation assessment will be conducted with reference to data quality objectives (DQOs) as outlined in NEPC (2013).

The following DQOs will be adopted, based on the seven step DQO process:

- State the Problem;
- Identify the Decision;
- Identify Inputs to the Decision;
- Define the Boundary of the Assessment;

- Develop a Decision Rule;
- Specify Acceptable Limits on Decision Errors;
- Optimise the Design for Obtaining Data.

An evaluation of the data against data quality indicators (DQI) in accordance with NEPC (2013) will be completed as part of the validation assessment.

11.2 Validation Sample Collection and Analysis

Following the removal of contaminated materials from identified remediation areas, the exposed surfaces will be validated through a combination of visual and analytical means. The delineation process may produce sufficient sample testing results to be used in the validation process. If not, the surface soils from the base and walls of the excavation(s) will be validated to assess complete removal of the contaminated materials as follows:

- Validation sampling at a rate of one sample per 100 m2, for excavation of less than 500 m2, over the base of the remedial excavation. For excavations greater than 500 m2, sampling to be undertaken in accordance with EPA (1995);
- Where 'walls' of greater than 0.5 m height are formed by the remedial excavation, validation samples will be collected at a minimum rate of one sample per side wall, at a minimum of 20 m horizontal length (collected at the horizon/s most likely to be contaminated);
- Analysis of all samples for the contaminant(s) of concern at each location; and
- Collection and analysis of QA/QC samples as per Section 11.6.

If the validation test results exceed the RAC (Section 9) further excavation of the contaminated materials may be required.

The Environmental Consultant will undertake the validation sampling.

11.3 Waste Classification Sample Collection and Analysis

In the event that any soils require off-site disposal (e.g. contingency remediation action) the following waste classification process will be followed:

- In stockpile, sampling at a rate of one sample per 25-100 m^3, with a minimum of three samples per stockpile. The sampling rate could be adjusted at the discretion of the Environmental Consultant to minimum of one sample per 100-250 m^3 for stockpiles of homogenous material with a total volume in excess of 500 m^3;
- When *in situ*, sampling at a rate of one test location per 20-30 m, sampling at the surface and 1 m depths (or as advised by the Environmental Consultant);
- Analysis of all samples for the contaminants of concern at each location, with selected samples also analysed for other common contaminants including metals, TRH, BTEX, PAH, OCP, PCB, asbestos and phenols.
- Collection and analysis of QA/QC samples as per Section 11.6.

DRAFT

The Environmental Consultant will undertake the waste classification sampling.

11.4 TRH Impacted Soils

As stated in Section 10.3, the TRH impacted soils will be land farmed until suitable to be re-instated into the site. The validation of the process will be undertaken as follows:

- Sampling at a rate of one sample per 25 m^3, with a minimum of three samples (or at the discretion of the Environmental Consultant);
- Analysis of all samples for TRH and BTEX;
- Comparison of the data against the RAC;
- Collection and analysis of QA/QC samples as per Section 11.6; and
- Repeating the remediation and validation on a monthly basis until RAC compliance is achieved.

The Environmental Consultant will undertake the stockpile sampling.

11.5 Imported and Capping Materials

As stated in Section 9.3, any additional material required for redevelopment works, including backfilling of remediation excavations, and forming of the capping layer, shall be either:

- Materials from validated areas of the site, meeting the RAC; or
- Imported materials classified as virgin excavated natural materials (VENM) by the supplier (including laboratory analysis), as well as meeting the RAC; or
- Imported materials complying with a Resource Recovery Orders (RRO) and its corresponding Resource Recovery Exemption (RRE) issued by EPA under the *Protection of the Environment Operations (Waste) Regulation* 201, as well as meeting the RAC.

For any site won materials proposed for use as part of the works (including the capping layer) the Environmental Consultant will assess suitability on the basis of the results reported in DP (2017a) and DP(2017b). Validating the suitability of the material may also require visual and/or analytical assessment, to be determined by the Environmental Consultant.

Any material proposed to be imported from off-site must initially be assessed for suitability by the Environmental Consultant, before the material is imported to site. The procedure for approving material for import will be generally:

- The supplier of the material will provide a report from a suitably qualified environmental consultant stating that the material is either VENM or compliant with a RRO allowing general land application;
- The Environmental Consultant will review the documentation, and compare the analytical data against the RAC;
- The Environmental Consultant may at this stage reject the proposed material outright, or require more information to make an assessment;

DRAFT

- If the reporting is considered appropriate, the Environmental Consultant will then:
  - Visit the source site, if considered beneficial;
  - Collect samples at a density of 1 sample per 1,000 m^3, or a minimum of 3 samples per source site;
  - Analysis of samples for heavy metals, PAH, TPH, BTEX, PCB, OCP, OPP, phenols, and asbestos; with the additional of foreign materials, pH and EC for materials classified under a RRO; and
  - Comparison of results with published background levels (VENM), the thresholds listed in the applicable RRO (for materials documented as complying with a RRO), and the RAC to determine its suitability for use on the site;
- The Environmental Consultant will issue a memorandum either approving or rejecting the materials for import to the site.

Materials used on site should also meet any other requirements (e.g. geotechnical and salinity requirements).

The requirements for importation extend to other materials that are not necessary part of backfilling and capping works, but are used as surface treatments, such as:

- Roadbase / Basecourse (if a recycled product, which is not preferred);
- Topsoil (preferably not a recycled product); and
- Mulch.

These materials, if proposed to be sourced as a “recycled” product, can introduce contaminants to the site including asbestos, hydrocarbons, lead and PCB. As such, any proposal to import such materials must also be approved by the Environmental Consultant. The approval process will comprise:

- A review of the materials specifications from the supplier, which must document compliance with an appropriate RRO, where one exists;
- An assessment of the data presented in the specifications against the RRO;
- If considered necessary, an inspection of the source site;
- Check sampling and testing to confirm compliance with the RRO and RAC. The number of samples and the testing regime will be at the discretion of the Environmental Consultant;
- The Environmental Consultant will issue a memorandum either approving or rejecting the materials for use at the site.

Materials imported to the site must also be inspected at arrival to the site by an appointed “gate keeper” who will keep a record of the truck movements, inspections and any rejected loads. All loads must contain materials consistent with those approved by the Environmental Consultant.

DRAFT

11.6 Quality Assurance Plan

11.6.1 Sample Collection and Handling

The general sampling procedures will comprise:

- The use of stainless steel or disposable (e.g. nitrile glove) sampling equipment;
- Washing of all re-usable sampling equipment, in contact with the sample, in a 3% solution of phosphate free detergent (Decon 90) then rinsing with distilled water prior to each sample being collected; transfer of the sample into an appropriate sampling container, sealing of containers to eliminate cross contamination during transportation to the laboratory;
- Use of laboratory prepared sampling containers for samples for analysis of chemical contaminants (generally comprising new glass jars sealed with Teflon lined lids);
- Labelling of the sample containers with individual and unique identification including Project No. and Sample No.;
- Placement of the containers into a chilled (where necessary), enclosed and secure container for transport to the laboratory; and
- Use of chain-of-custody documentation to ensure that sample tracking and custody can be cross-checked at any point in the transfer of samples from the field to hand-over to the laboratory.

11.6.2 Field QA/QC

Quality assurance (QA) and quality control (QC) procedures will be adopted throughout the field sampling programme to ensure sampling precision and accuracy and prevent cross contamination.

The following QA/QC samples will be collected/prepared and analysed:

- 5% intra-laboratory replicate samples;
- 5% inter-laboratory replicate samples;
- Rinsate samples at a rate of one rinsate sample per day where re-usable sampling equipment is being used;
- Trip blank samples – one per sampling batch where there is volatile analysis; and
- Trip spike samples – one per sampling batch where there is volatile analysis.

Appropriate sampling procedures will be undertaken to ensure that cross contamination does not occur. These include:

- Standard operating procedures are followed;
- Replicate field samples are collected and analysed;
- Samples are stored under secure, temperature controlled conditions;
- Chain-of-custody documentation is employed for the handling, transport and delivery of samples to the selected laboratory; and that
- Proper disposal of contaminated soil, fill or surface water originating from the site is completed.

DRAFT

11.6.3 Laboratory Quality Assurance and Quality Control

A NATA accredited laboratory will be used to conduct analysis. The laboratory will need to undertake analysis in accordance with its accreditation, including in-house QA/QC procedures involving the routine testing of:

- Reagent blanks;
- Spike recovery analysis;
- Laboratory duplicate analysis;
- Analysis of control standards;
- Calibration standards and blanks; and
- Statistical analysis of QC data including control standards and recovery plots.

11.6.4 Achievement of Data Quality Objectives

Based on the analysis of quality control samples i.e.: replicates and in-house laboratory QA/QC procedures, the following DQOs will be required to be achieved:

- Conformance with specified holding times;
- QA/QC samples collected and analysed in accordance with this RAP; and
- Field and laboratory duplicates and replicates samples have a preferred precision average of +/ 30% relative percentage difference (RPD) (note some exceptions to this apply, including analyte concentrations within ten times of the laboratory reporting limits, samples collected from heterogeneous filling, and organic compounds, where higher RPDs may be appropriate). RPDs exceeding +/- 30% will be assessed and a conclusion made as to the significance of the results.

An assessment of the overall data quality will be presented in the final validation report.

DRAFT

12. General Environmental Management Plan

12.1 General

The contractors involved in the project will undertake the work with due regard to the minimisation of environmental effects and to meet regulatory and statutory requirements.

The contractors should have in place an over-arching construction environmental management plan that incorporates this RAP so that work on the site complies with, but not limited to, the following:

- *Protection of the Environment Operations Act* 1997;
- *Contaminated Land Management Act* 1997;
- *Work Health and Safety Act* 2011; and
- *Work Health and Safety Regulation* 2011.

The following general measures outlined below should be implemented during the remediation phase. All personnel should be made familiar with the following section prior to the commencement of site works as required.

12.2 Vibration Control

The use of any plant and/or machinery should not cause unacceptable vibrations to nearby properties and should meet Council requirements.

12.3 Dust Control

Dust emissions should be confined within the site boundary. The following dust control procedures will be employed to comply with this requirement as necessary:

- Erection of dust screens around the perimeter of the site;
- Securely covering all loads entering or exiting the site;
- Use of water sprays across the site to suppress dust;
- Covering of all stockpiles of contaminated soil remaining onsite more than 48 hours;
- Dust monitoring as may be required by the Council DA consent; and
- Keeping excavation and stockpile surfaces moist.

12.4 Odour Control

No odours should be detected at any boundary of the site during remediation works by an authorised Council Officer relying solely on sense of smell. The following procedures should be employed to comply with this requirement as required:

- Use of appropriate covering techniques such as plastic sheeting, polythene or geotextile membranes to cover excavation faces or stockpiles;
- Fine spray of water and/or hydrocarbon mitigating agent on the impacted areas/materials;
- The use of water spray, as and when appropriate, to eliminate wind-blown dust;
- Use of sprays or sprinklers on stockpiles or loads to lightly condition the material;
- Restriction of stockpile heights to 5 m above surrounding site level. If required, restrict uncovered stockpiles to appropriate sizes to minimise odour generation;
- Ceasing works during periods of inclement weather such as high winds or heavy rain;
- Regular checking of the fugitive dust and odour issues to ensure compliance. Undertake immediate remediation measures to rectify any cases of excessive dust or odour (e.g. use of misting sprays or odour masking agent); and
- Adequate maintenance of equipment and machinery to minimise exhaust emissions.

DRAFT

12.5 Stormwater Management and Control

As necessary, the remediation contractor shall take appropriate measures to ensure that potentially contaminated water does not leave the site. In particular, stormwater management for the duration of the remediation works shall be utilised and monitored to minimise stormwater flow into adjacent waterways.

12.6 Occupational Health and Safety

The Contractors shall develop a site emergency response plan (ERP) and occupational health and safety plan (OHSP). This will ensure the safety of the personnel working on site, given any likely emergency situation which may occur. The OHSP and ERP should include emergency phone numbers and details of local emergency facilities.

Appropriate fencing and signage should be installed around and within the site to prevent unauthorised access to the site, restricted access remediation areas and/or deep excavations.

All personnel on site should be required to wear the following personnel protective equipment (PPE) at all times:

- Steel-capped boots;
- High visibility clothing; and
- Hard hat meeting AS1801-1981 requirements.

The following additional PPE will be worn, as required:

- Hearing protection meeting AS1270-1988 requirements when working around machinery or plant equipment if noise levels exceed exposure standards;
- Safety glasses or safety goggles with side shields meeting AS1337-1992 requirements (as necessary, particularly during any demolition);
- Disposable coveralls (if necessary) to prevent contact with splashed contaminated soil, materials or water;
- Nitrile work gloves meeting AS2161-1978 requirements or heavy duty gauntlet gloves; and
- Any additional protection identified by the Environmental Consultant.

In the event that personnel are required to work in areas of potential contact with asbestos, the following PPE in addition to standard construction PPE, should be worn during works involving the handling and/or removal of soils impacted by asbestos:

- Disposable coveralls (rated type 5, cat 3 or equivalent);
- Half-face P1/P2 respirator or equivalent;
- Gloves; and
- Safety footwear which should be laceless.

DRAFT

Excavation, handling, stockpiling, transport etc. of materials containing asbestos should be undertaken by a licensed contractor in accordance with relevant regulatory requirements.

12.7 Hours of Operation

All remediation work should be conducted within the hours specified by Hills Shire Council.

12.8 Contingency Plans to Respond to Site Incidents

The key to effective management of incidents is the timely action taken before any situation reaches a reportable or critical level. Therefore, surveillance activities are extremely important, and should be conducted for the measures prescribed herein and any other measures as seen appropriate by the Principal's representative. During work activities on the site, the following inspection or preventative actions must be performed by the main Contractor and carefully documented:

- Regular inspection of works;
- Completion of routine environmental checklists and follow-up of non-compliance situations;
- Maintenance of supervision on-site; and
- An induction process for site personnel involved in the remediation works that includes relevant information on environmental requirements, and ensures that all site personnel are familiar with the site emergency procedures.

The Contractor's site foreman should be responsible for initiating an immediate emergency response using the resources available on the site. Where external assistance is required, the relevant emergency services should be contacted. A list containing contact details for key personnel who may be involved in an environmental emergency response should be completed and be readily available to personnel at all times.

DRAFT

12.9 Identify Regulatory Compliance

The work should be undertaken with all due regard to the minimisation of environmental effects and to meet all statutory requirements, including, inter alia, provisions specified in:

- *Protection of the Environment Operations Act* 1997;
- *Contaminated Land Management Act* 1997;
- *Dangerous Goods Act* 2008;
- *Work Health and Safety Act* 2011;
- *Work Health and Safety Regulation* 2011;
- DUAP NSW EPA (1998) *State Environmental Planning Policy No. 55* (SEPP 55).

12.10 Community Engagement

The Contractor must affix a sign to the main entrance of the site displaying contact details of the Contractor, Environmental Consultant and developer (on behalf of NSW Department of Education). Each party must keep a log of any communications received by the public. A summary of any communications received will be included in the validation report.

12.11 Contact Details

The following table provides a list of personnel and contact details relevant to the remediation. The list should be filled in as relevant personnel are appointed to the remediation project.

Table 9: Contact Details

Role	Personnel / Contact	Contact Details (phone)
Principal		
Principal's Representative		
Site Manager		
Environmental Consultant		
Regulator	NSW EPA (pollution line)	131 555
Regulator	NSW EPA (general enquiries)	131 555
Consent Authority	Hill Shire City Council	(02) 9843 0555
Utility Provider	Sydney Water	13 20 92
Utility Provider	Power	
Utility Provider	Gas	

Note to table: Table to be completed when the contact details are known.

DRAFT

13. Validation Report

A Site Validation Report will be prepared by the Environmental Consultant with reference to OEH (2011) *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*. The report will be submitted to the client at the completion of the remediation works programme. The objective is for the validation report to confirm that the site has been remediated to a suitable standard for the proposed development and occupation and that no related adverse human health and environmental effects have occurred as a result of the works. The validation report will also include a summary of the information from previous investigations.

In summary, the validation report will include:

- The adopted remediation process;
- Waste classification results;

- The final disposal destination of the materials removed from site and disposal dockets, where appropriate including all necessary waste tracking information, waste disposal (weighbridge dockets) and waste reconciliation information verifying that the volumes taken off site match the disposed amounts;
- Photographic record during the works;
- Records of imported materials including all relevant material tracking information including movement of material within the site (stockpiling and final repository);
- Details of any unexpected finds or environmental incidents; and
- Survey information confirming the location of contaminated soil (e.g. asbestos) and the thickness of final cap.

If asbestos contaminated soils are buried and capped at the site, the Environmental Consultant will also prepare a long term EMP, which will document the following:

- Location and depth of ACM impacted soil;
- Details, including thickness, of the capping layers;
- Ongoing maintenance procedures in relation to the cap;
- Procedures for planned ground intrusions in the burial area, including worker and public safety, and soil management; and
- Incident recording.

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14. References

DP Report on *Addendum Letter: Updated Detailed Site, Proposed North Kellyville New Primary School, 56 - 58 Hezlett Road, North Kellyville* (Reference 85998.01.R.002.Rev0) dated July 2017 (DP, 2017a).

DP Report on *Detailed Site (Contamination) Investigation, Proposed North Kellyville New Primary School, 56 - 58 Hezlett Road, North Kellyville* (Reference 85998.01.R.001.Rev0.DSI) dated July 2017 (DP, 2017b).

DP Report on *Stockpile Waste Classification (SP1), Proposed North Kellyville New Primary School, 56 - 58 Hezlett Road, North Kellyville* (Reference 85998.01.R.002.Rev0.WC) dated 5 July 2017 (DP, 2017c).

FACTSHEET Guidelines for Preparing a Dam Dewatering Report, The Hills Shire reference https://www.thehills.nsw.gov.au/files/.../ecm.../dewartering_dams_fact_sheet.pdf

NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended in 2013)

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

NSW EPA (2014a) Waste Classification Guidelines, Part 1: Classifying Waste

NSW EPA (2014b) Waste Classification Guidelines Part 2: Immobilisation of Waste

NSW EPA (1995) Sampling Design Guidelines

NSW OEH (2011) Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites

15. Limitations

This report presents the results of a remediation action plan prepared for a new primary school at 120-126 Hezlett Road, North Kellyville. The RAP was commissioned by Mike Dean of GHD Pty Ltd and was undertaken in accordance with Douglas Partners Pty Ltd (DP) emailed proposal and acceptance, both dated 14 November 2017.

The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of GHD Pty Ltd 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 indicative of 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.

Although the sampling plan adopted for these investigations is considered appropriate to achieve the stated project objectives, there are necessarily parts of the site that have not been sampled and analysed. This is either due to undetected variations in conditions, budget constraints, parts of the stockpile being inaccessible and not available for inspection/sampling, or to vegetation preventing visual inspection and reasonable access. It is therefore considered possible that hazardous building materials, including asbestos, may be present in unobserved or untested parts of the site, between and beyond sampling locations, and hence no warranty can be given that hazardous building materials are not present in the fill or surface soils at the site.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

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.

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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.

Douglas Partners Pty Ltd

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Appendix A

Drawings

About This Report

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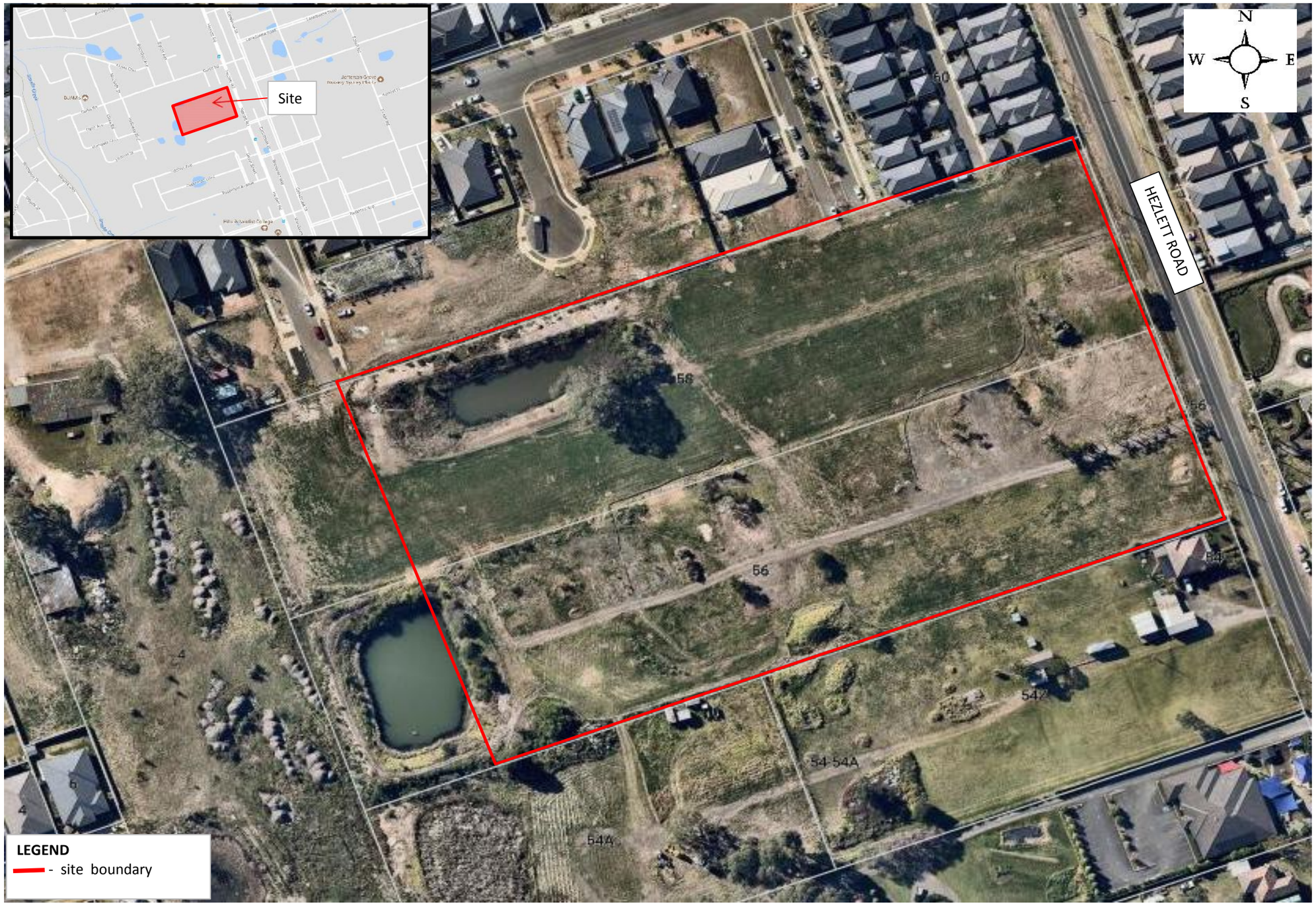
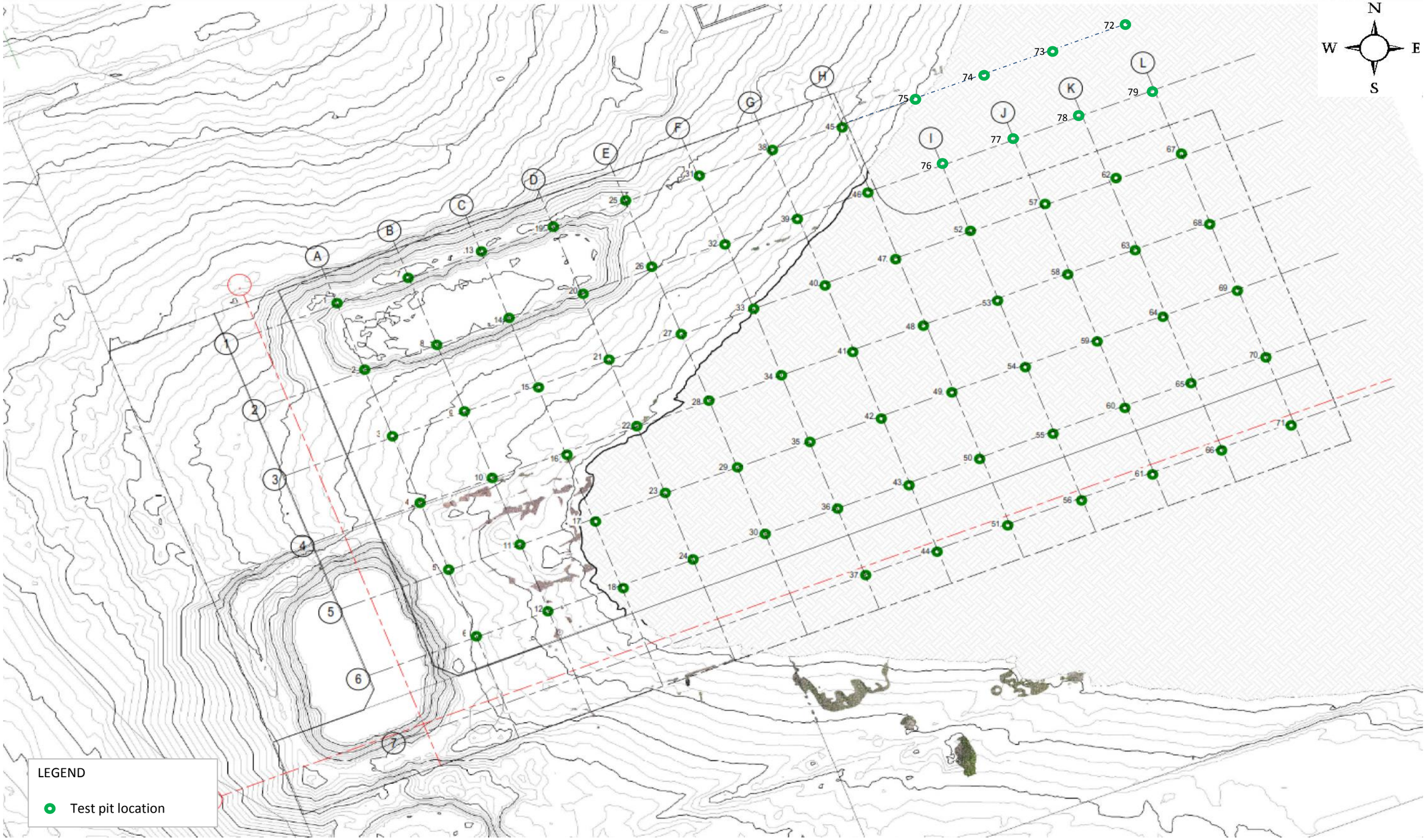
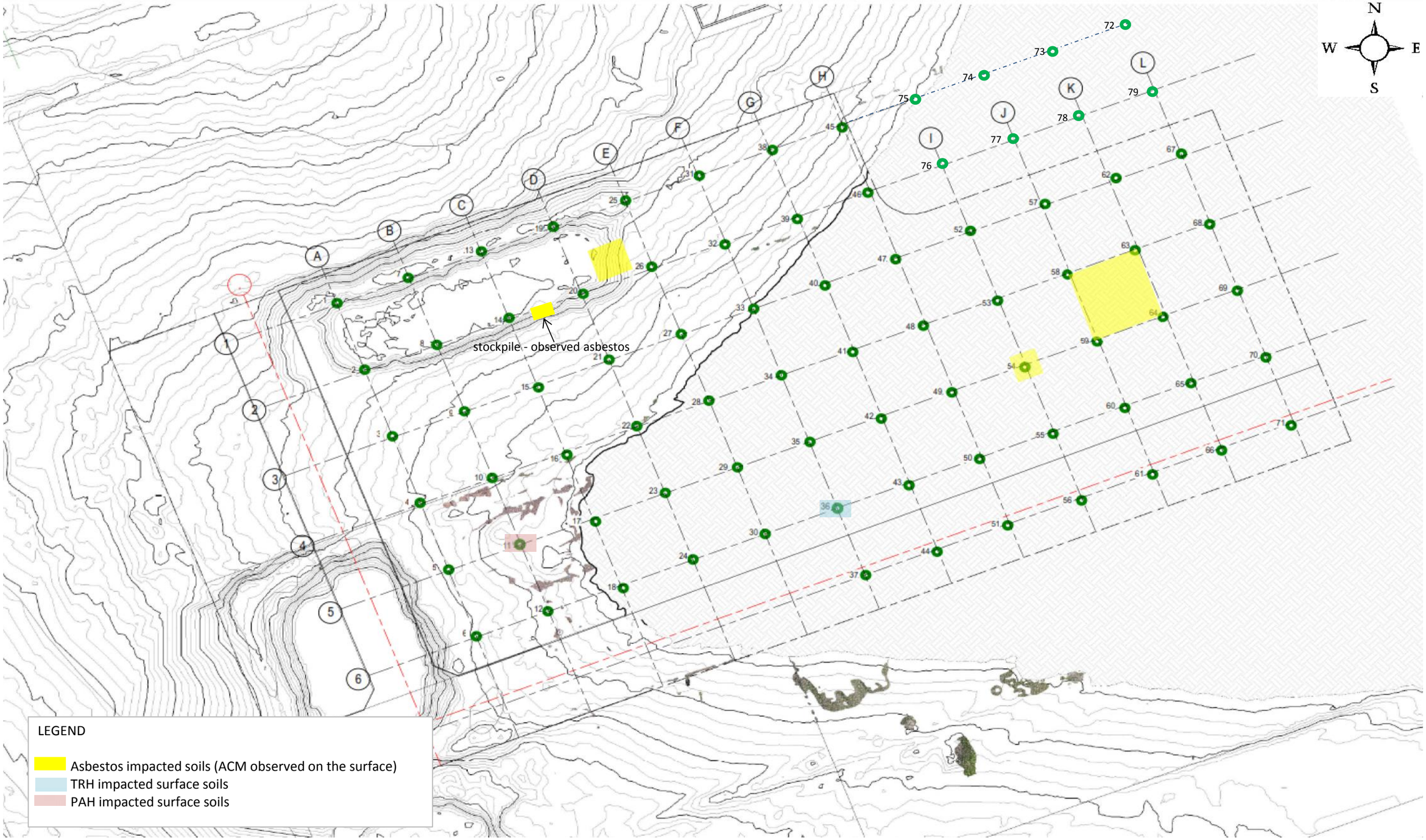


Source: Nearmap

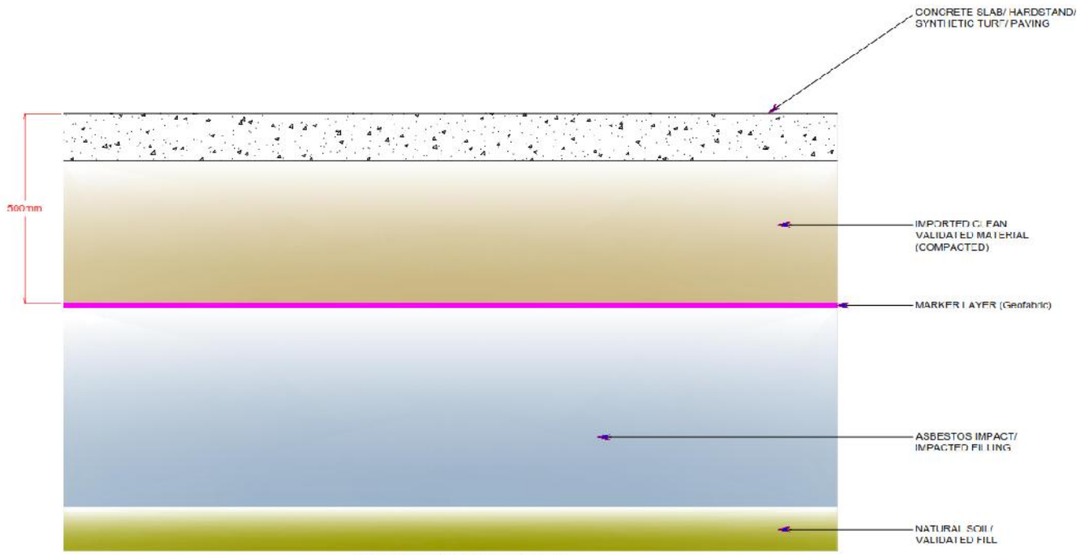
Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: GHD Pty Ltd		TITLE: **Site Locality and Boundary Map**	PROJECT No:	85998.01
	OFFICE: SYDNEY	DRAWN BY: CB	**Proposed New Primary School**	DRAWING No:	1
	SCALE: As Shown	DATE: Nov 2017	**120 - 126 Hezlett Road, North Kellyville**	REVISION:	A



Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: GHD Pty Ltd		TITLE: **Tes Pit Locations**	PROJECT No:	85998.01
	OFFICE: SYDNEY	DRAWN BY: CB	**Proposed New Primary School**	DRAWING No:	2
	SCALE: No Scale	DATE: Nov 2017	**120 - 126 Hezlett Road, North Kellyville**	REVISION:	B



Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: GHD Pty Ltd		TITLE: **Remediation Areas**	PROJECT No:	85998.01
	OFFICE: SYDNEY	DRAWN BY: CB	**Proposed New Primary School**	DRAWING No:	3
	SCALE: No Scale	DATE: Nov 2017	**120 - 126 Hezlett Road, North Kellyville**	REVISION:	B



PAVEMENT CAPPING DETAIL

LANDSCAPE CAPPING DETAIL

Douglas Partners Geotechnics / Environment / Groundwater	CLIENT: GHD Pty Ltd		TITLE: **Sections of Capping Detail**	PROJECT No:	85998.01
	OFFICE: SYDNEY	DRAWN BY: CB	**Proposed New Primary School**	DRAWING No:	4
	SCALE: No Scale	DATE: Nov 2017	**120 - 126 Hezlett Road, North Kellyville**	REVISION:	A

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.

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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:

- 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.

Appendix B

Previous Results (DP (2017a)

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Geotechnics / Environment / Groundwater

R1: Summary of Soil Laboratory Results

	Inorganics		Metals								TPH															BTEX						Halogenated Benzenes																					Polychlorinated Biphenyls														
	Moisture	TDC	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29-C36	>C10 - C36 (Sum of total)	C10 - C40 (Sum of total)	C6-C10 less BTEX (F1)	C6-C10	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	Hexachlorobenzene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(a)pyrene TEQ calc(half)	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Benzo(b,j+k)fluoranthene	Total +ve PAHs	Pyrene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane (cis)	Chlordane (trans)
	%	mg/kg	mg/kg	mg/kg

	Organochlorine Pesticides															Organophosphorous Pesticides												Asbestos	
	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos-methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Ronnel	Parathion	Asbestos	AF/FA
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.001
CRC Care Direct Contact HSL-A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 EILs Res/Open Space Aged	-	-	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1A(1) HILs Res A Soil	-	-	-	240	-	-	-	-	10	-	-	6	-	300	-	-	160	-	-	-	-	-	-	-	-	-	ND	<0.001
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Clay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0-1m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil 0-2m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time	Matrix_Description																										
AA	AA	0-0.1	15/06/2017	Filling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.029
BD1/150617	TP7	0-0.1	15/06/2017	Filling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD2/160617	TP44	0-0.1	16/06/2017	Filling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD3/150617	TP32	0.4-0.5	15/06/2017	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	TP1	0-0.1	15/06/2017	Filling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	TP1	0.4-0.5	15/06/2017	Natural	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP2	TP2	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.2	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP3	TP3	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.1	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP4	TP4	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP5	TP5	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP6	TP6	0-0.1	15/06/2017	Filling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP6	TP6	0.4-0.5	15/06/2017	Natural	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP7	TP7	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP8	TP8	0-0.1	15/06/2017	Filling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP8	TP8	0.3-0.4	15/06/2017	Natural	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP9	TP9	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP10	TP10	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP11	TP11	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP12	TP12	0.4-0.5	15/06/2017	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP12	TP12	0.9-1	16/06/2017	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13	TP13	0-0.2	15/06/2017	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP13	TP13	1.4-1.5	15/06/2017	Natural	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP14	TP14	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP15	TP15	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP16	TP16	0-0.2	15/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP17	TP17	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP18	TP18	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP19	TP19	0.4-0.5	15/06/2017	Natural	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP19	TP19	1.9-2	15/06/2017	Natural	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP20	TP20	0-0.1	15/06/2017	Filling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001
TP20	TP20	0.3-0.4	15/06/2017	Natural	<0.1	<0.1	0.2	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP21	TP21	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP22	TP22	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP23	TP23	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.2	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP24	TP24	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP25	TP25	0-0.2	15/06/2017	Filling	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP26	TP26	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.001
TP27	TP27	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP28	TP28	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.4	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP29	TP29	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.001
TP30	TP30	0-0.1	19/06/2017	Filling	<0.1	<0.1	0.3	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP31	TP31	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP32	TP32	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP32	TP32	0.4-0.5	15/06/2017	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP33	TP33	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP34	TP34	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP35	TP35	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.001
TP36	TP36	0.1-0.2	22/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.001
TP36	TP36	0.4-0.5	22/06/2017	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP37	TP37	0-0.1	16/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP38	TP38	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP39	TP39	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.2	0.6	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP40	TP40	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP41	TP41	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP42	TP42	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP43	TP43	0-0.1	16/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP44	TP44	0-0.1	16/06/2017	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP45	TP45	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP46	TP46	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP47	TP47	0-0.1	15/06/2017	Filling	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP48	TP48	0-0.1	15/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP49	TP49	0-0.1	16/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP50	TP50	0-0.1	16/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP51	TP51	0-0.1	16/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP52	TP52	0-0.1	19/06/2017	Filling	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP53	TP53	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP54	TP54	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.001
TP55	TP55	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP56	TP56	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP57	TP57	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP58	TP58	0-0.1	19/06/2017	Filling	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.001
TP59	TP59	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.001
TP60	TP60	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP61	TP61	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP62	TP62	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP63	TP63	0-0.1	19/06/2017	Filling	<0.1	<0.1	0.1	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.001
TP64	TP64	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	<0.001
TP65	TP65	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP66	TP66	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP67	TP67	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP68	TP68	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP69	TP69	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP70	TP70	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
TP71	TP71	0-0.1	19/06/2017	Filling	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
SP1-1	SP1-1	0-0.1	19/06/2017	Stockpile	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
SP1-2	SP1-2	0-0.1	19/06/2017	Stockpile	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
SP1-3	SP1-3	0-0.1	19/06/2017	Stockpile	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-
SP1-4	SP1-4	0-0.1	19/06/2017	Stockpile	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	-

Statistical Summary

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				Metals									TPH											BTEX					Halogenated Benzenes	PAH/Phenols																									Polychlorinated Biphenyls										
			Moisture	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Lead TCLP	Mercury	Nickel	Zinc	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29-C36	C6-C10 less BTEX (F1)	C6-C10	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Hexachlorobenzene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(a)pyrene TCLP	B(a)P Total Potency Equivalent	Benzo(b)&(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Phenolics Total	Pyrene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin
PQL				4	0.4	1	1	1	0.1	1	1	50	100	100	25	50	100	100	25	0.2	1	0.5	2	1	0.05	0.005			0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Unit				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EPA (2014) General Solid Waste (CT1)		-	100	20	-	-	100	-	4	40	-	-	-	-	-	650	10,000			-	-	10	600	288	1000		-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPA (2014) General Solid Waste (SCC1, TCLP1)		-	500	100	-	-	1500	5	50	1050	-	-	-	-	-	650	10,000			-	-	18	1080	518	1800		-	-	-	-	-	10	0.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPA (2014) Restricted Solid Waste (CT2)		-	400	80	-	-	400	-	16	160	-	-	-	-	-	2600	40,000			-	-	40	2400	1152	4000		-	-	-	-	-	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPA (2014) Restricted Solid Waste (SCC2, TCLP2)		-	2000	400	-	-	6000	20	200	4200	-	-	-	-	-	2600	40,000			-	-	72	4320	2073	7200		-	-	-	-	-	23	0.16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NEPC 1999				1-50	1	5-1000	2-100	2-200		0.03	5-500	10-300																																																			
ANZECC 2000				0.2-30	0.04-2	0.5-110	1-190	<2-200		0.001-0.1	2-400	2-180												0.05-1		0.1-1																			0.95-5																				
Field_ID	**Sample_Depth_Range**	**Sampled_Date-Time**																																																														
TP1	0-0.1	15/06/2017	8.8	4	<0.4	8	25	17	-	0.1	7	47	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	-	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	0.4-0.5	15/06/2017	19	7	<0.4	17	16	21	-	<0.1	3	14	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
TP2	0-0.1	15/06/2017	20	10	<0.4	20	30	21	-	<0.1	9	76	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.2
TP3	0-0.1	15/06/2017	21	9	<0.4	22	31	20	-	<0.1	8	77	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.2
TP4	0-0.1	15/06/2017	21	11	<0.4	22	32	22	-	<0.1	7	65	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.2
TP5	0-0.1	15/06/2017	19	11	<0.4	20	35	25	-	<0.1	12	100	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	<0.1	<0.1	<0.2
TP6	0-0.1	15/06/2017	21	7	<0.4	16	27	20	-	<0.1	13	53	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	-	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
TP6	0.4-0.5	15/06/2017	9.8	11	<0.4	11	35	85	-	<0.1	26	120	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
TP7	0-0.1	15/06/2017	11	8	<0.4	7	20	17	-	<0.1	6	29	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
TP8	0-0.1	15/06/2017	20	15	<0.4	22	30	23	-	<0.1	9	90	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	-	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
TP8	0.3-0.4	15/06/2017	8.7	14	<0.4	8	22	16	-	0.1	7	45	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
TP9	0-0.1	15/06/2017	20	15	<0.4	25	27	23	-	<0.1	8	81	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.2
TP10	0-0.1	15/06/2017	25	21	<0.4	26	27	23	-	<0.1	8	66	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
TP11	0-0.1	15/06/2017	17	7	<0.4	16	26	18	-	<0.1	10	53	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	0.1	0.2	0.7	1.2	0.89	<0.001	1.2	2	0.5	1.1	<0.1	3.5	0.2	0.4	<0.1	16	2.6	-	2.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.2
TP12	0.4-0.5	15/06/2017	21	15	<0.4	16	36	30	-	<0.1	20	130	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	-	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
TP12	0.9-1	16/06/2017	18	8	<0.4	15	25	19	-	<0.1	4	31	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	-	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13	0-0.2	15/06/2017	14	4	<0.4	8	15	15	-	<0.1	3	19	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
TP13	1.4-1.5	15/06/2017	20	7	<0.4	19	19	20	-	<0.1	4	21	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
TP14	0-0.1	15/06/2017	22	11	<0.4	23	29	22	-	<0.1	9	82	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.2
TP15	0-0.1	15/06/2017	21	10	<0.4	23	27	22	-	<0.1	9	69	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.2
TP16	0-0.2	15/06/2017	21	13	<0.4	21	26	22	-	<0.1	8	73	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.2
TP17	0-0.1	19/06/2017	21	11	<0.4	21	44	28	-	<0.1	12	100	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.3	<0.1	-	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.2
TP18	0-0.1	15/06/2017	19	11	<0.4	20	39	28	-	<0.1	12	86	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.2
TP19	0.4-0.5	15/06/2017	18	10	<0.4	13	19	21	-	<0.1	2	14	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
TP19	1.9-2	15/06/2017	18	10	<0.4	23	16	13	-	<0.1	5	33	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
TP20	0-0.1	15/06/2017	21	12	<0.4	26	29	23	-	<0.1	9	87	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	-	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
TP20	0.3-0.4	15/06/2017	20	11	<0.4	21	30	23	-	<0.1	9	91	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.2
TP21	0-0.1	15/06/2017	21	12	<0.4	24	28	25	-	<0.1	9	92	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.2
TP22	0-0.1	15/06/2017	22	15	<0.4	22	30	25	-	<0.1	10	92	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.2
TP23	0-0.1	15/06/2017	21	25	0.6	22	54	120	<0.03	<0.1	13	690	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.2
TP24	0-0.1	19/06/2017	21	27	0.4	24	38	110	<0.03	<0.1	10	660	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
TP25	0-0.2	15/06/2017	20	13	<0.4	25	29	24	-	<0.1	8	75	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.2
TP26	0-0.1	15/06/2017	19	14	<0.4	24	29	21	-	<0.1	8	81	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.2
TP27	0-0.1	15/06/2017	21	14	<0.4	25	25	27	-	<0.1	9	77	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.2
TP28	0-0.1	15/06/2017	19	18	<0.4	28	23	20	-	<0.1	8	66	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.2
TP29	0-0.1	19/06/2017	20	13	<0.4	20	27	59	-	<0.1	9	130	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.2
TP30	0-0.1	19/06/2017	21	22	<0.4	22	29	110	<0.03	<0.1	8	150	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	<0.1	<0.1	<0.2
TP31	0-0.1	15/06/2017	17	12	<0.4	27	25	23	-	<0.1	8	67	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.2
TP32	0-0.1	15/06/2017	19	15	<0.4	25	25	21	-	<0.1	8	73	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.2
TP32	0.4-0.5	15/06/2017	18	12	<0.4	22	23	21	-	<0.1	4	30	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	-	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
TP33	0-0.1	15/06/2017	20	17	<0.4	23	25	19	-	<0.1	8	71	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.2
TP34	0-0.1	15/06/2017	20	15	<0.4	21	23	19	-	<0.1	8	51	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.2
TP35	0-0.1	19/06/2017	20	12	<0.4	22	25	48	-	<0.1	8	77	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2
TP36	0.1-0.2	22/06/2017	18	10	<0.4	20	31	21	-	<0.1	8	61	<50	5600	230	<50	<25	<50	4300	1500	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.5	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.2
TP36	0.4-0.5	22/06/2017	18	15	<0.4	19	23	20	-	<0.1	5	38	<50	610

Table R2: Summary of Waste Classification

			Organochlorine Pesticides																	Organophosphorous Pesticides											Pesticides	Asbestos
			b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Ronnel	Parathion	Asbestos
PQL			0.1	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Unit			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		
EPA (2014) General Solid Waste (CT1)			<50*								60					<50*				-	-	4	-	-			250**			-	-	ND
EPA (2014) General Solid Waste (SCC1, TCLP1)			-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	-	-	-	-	-	-	-	ND
EPA (2014) Restricted Solid Waste (CT2)			-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-	-	-	-	-	-	ND
EPA (2014) Restricted Solid Waste (SCC2, TCLP2)			-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-	ND
NEPC 1999					none	none																										
ANZECC 2000					none	none																										
Field_ID	**Sample_Depth_Range**	**Sampled_Date-Time**																														
TP1	0-0.1	15/06/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	0.4-0.5	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP2	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP3	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP4	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP5	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP6	0-0.1	15/06/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP6	0.4-0.5	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP7	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP8	0-0.1	15/06/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND
TP8	0.3-0.4	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP9	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP10	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP11	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP12	0.4-0.5	15/06/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP12	0.9-1	16/06/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13	0-0.2	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP13	1.4-1.5	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP14	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP15	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP16	0-0.2	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP17	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP18	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP19	0.4-0.5	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP19	1.9-2	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP20	0-0.1	15/06/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP20	0.3-0.4	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP21	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP22	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP23	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP24	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP25	0-0.2	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP26	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP27	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP28	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP29	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP30	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	0.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP31	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP32	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP32	0.4-0.5	15/06/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TP33	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP34	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP35	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP36	0.1-0.2	22/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP36	0.4-0.5	22/06/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP37	0-0.1	16/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP38	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP39	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.6	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP40	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP41	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP42	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP43	0-0.1	16/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP44	0-0.1	16/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP45	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP46	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP47	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP48	0-0.1	15/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP49	0-0.1	16/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP50	0-0.1	16/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP51	0-0.1	16/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP52	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP53	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP54	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP55	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP56	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP57	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP58	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP59	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP60	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP61	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP62	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP63	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP64	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP65	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP66	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP67	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP68	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND
TP69	0-0.1	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Table 2: Waste Classification Results

			Inorganics		Metals								TPH										BTEX					Halogenated Benzenes
			Asbestos	Moisture	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	C10-C16	C16-C34	C34-C40	F2-NAPHTHALENE	C6 - C9	C10 - C14	C15 - C28	C29-C36	C6-C10 less BTEX (F1)	C6-C10	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Hexachlorobenzene
			g/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	4	0.4	1	1	1	0.1	1	1	50	100	100	50	25	50	100	100	25	25	0.2	1	0.5	2	1	0.1
EPA (2014) General Solid Waste (CT1)			ND	-	100	20	-	-	100	4	40	-	-	-	-	-	650	10,000			-	-	10	600	288	1000		-
EPA (2014) General Solid Waste (SCC1, TCLP1)			ND	-	500	100	-	-	1500	50	1050	-	-	-	-	-	650	10,000			-	-	18	1080	518	1800		-
EPA (2014) Restricted Solid Waste (CT2)			ND	-	400	80	-	-	400	16	160	-	-	-	-	-	2600	40,000			-	-	40	2400	1152	4000		-
EPA (2014) Restricted Solid Waste (SCC2, TCLP2)			ND	-	2000	400	-	-	6000	200	4200	-	-	-	-	-	2600	40,000			-	-	72	4320	2073	7200		-
Field_ID	**Sample_Depth_Range**	**Sampled_Date-Time**																										
SP1-1	-	19/06/2017	ND	23	7	<0.4	25	13	20	<0.1	3	12	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1
SP1-2	-	19/06/2017	ND	14	4	<0.4	12	14	14	<0.1	4	28	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1
SP1-3	-	19/06/2017	ND	23	10	<0.4	18	21	25	<0.1	6	62	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1
SP1-4	-	19/06/2017	ND	18	10	<0.4	15	16	16	<0.1	7	37	<50	<100	<100	<50	<25	<50	<100	<100	<25	<25	<0.2	<1	<0.5	<2	<1	<0.1

NOTES: EPA (2014) - Waste Classification Guidelines - Part 1: Classification of Waste

ND - Not Detected

* Scheduled Chemicals; Note 11 to Table 1 of EPA (2014)

** Moderately harmful pesticides; Note 6 to Table 1 of EPA (2014)

Table 2: Waste Classification Results

			PAH/Phenols																		Polychlorinated Biphenyls						
			Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	BaP TEQ	Benzo(b)&(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Phenolics Total	Pyrene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.1	0.1	0.05	0.05	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
EPA (2014) General Solid Waste (CT1)			-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPA (2014) General Solid Waste (SCC1, TCLP1)			-	-	-	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPA (2014) Restricted Solid Waste (CT2)			-	-	-	-	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPA (2014) Restricted Solid Waste (SCC2, TCLP2)			-	-	-	-	23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field_ID	**Sample_Depth_Range**	**Sampled_Date-Time**																									
SP1-1	-	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SP1-2	-	19/06/2017	<0.1	<0.1	<0.1	<0.1	0.05	<0.05	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.05	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SP1-3	-	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SP1-4	-	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

NOTES: EPA (2014) - Waste Classification Guidelines - Part 1: Classification of Waste

ND - Not Detected

* Scheduled Chemicals; Note 11 to Table 1 of EPA (2014)

** Moderately harmful pesticides; Note 6 to Table 1 of EPA (2014)

Table 2: Waste Classification Results

			Organochlorine Pesticides																					Organophosphorous Pesticides											Pesticides
			4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDD+DDE	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Ronnel	Parathion
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
EPA (2014) General Solid Waste (CT1)			<50*												60					<50*			-	-	-	4	-	-	250**					-	-
EPA (2014) General Solid Waste (SCC1, TCLP1)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	-	-	-	-	-	-	-
EPA (2014) Restricted Solid Waste (CT2)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-	-	-	-	-	-
EPA (2014) Restricted Solid Waste (SCC2, TCLP2)			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-
Field_ID	**Sample_Depth_Range**	**Sampled_Date-Time**																																	
SP1-1	-	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SP1-2	-	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SP1-3	-	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SP1-4	-	19/06/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

NOTES: EPA (2014) - Waste Classification Guidelines - Part 1: Classification of Waste

ND - Not Detected
* Scheduled Chemicals; Note 11 to Table 1 of EPA (2014)

** Moderately harmful pesticides; Note 6 to Table 1 of EPA (2014)