Remediation Action Plan

Gillieston Public School Redevelopment
and New Public Preschool

24/01/2025

Prepared for:

NSW Department of Education

Prepared by:

Stantec Australia Pty Ltd

School Name	Gillieston Public
School ID	1982
School Address	100 Ryans Road (Lot 51 DP1162489), and 19 Northview Street (Lot 2 DP1308605), Gillieston Heights, NSW, 2321
School Region	Hunter and Central Coast NSW
Company Name	Stantec Australia Pty Ltd
Report Status	Final for REF
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The Gillieston Public School have been identified by the NSW Department of Education (DoE) as requiring redevelopment. The proposed Gillieston Public School redevelopment and new public preschool is driven by service need including increase in expected student enrolments and the and removing demountable structure and replacement with permanent teaching spaces.

The Gillieston Public School redevelopment and new public preschool comprises the following:

- Demolition and removal of existing temporary structures.
- Site preparation activity, including demolition, earthworks, tree removal.
- Construction of new:
  - 32 permanent general learning spaces and 3 support teaching spaces
  - Administration and staff hubs
  - Hall, canteen and library
  - Out of school hours care
  - Public preschool (standalone building for 60 places)
  - Covered Outdoor Learning Areas (COLAs)
  - Outdoor play areas, including games courts and yarning circle
  - New at-grade car parking
  - Extension of the existing drop-off / pick-up area and new bus bay
  - Realignment of the existing fencing
  - Associated stormwater infrastructure upgrades
  - Associated landscaping
  - Associated pedestrian and road upgrade activity

Executive Summary

Stantec Australia Pty Ltd (Stantec) were engaged by School Infrastructure NSW (SINSW) to prepare a Remediation Action Plan (RAP) for Gillieston Public School, located at 100 Ryans Road and 19 Northview Street, Gillieston Heights, NSW (as indicated in **Figure 1**, **Appendix A**) and legally identified as Lot 51 of Deposited Plan (DP) 1162489 and Lot 2 DP 1308605 (the site).

The purpose of this RAP is to support the Review of Environmental Factors (REF) for the proposed site activity, as described in **Section 1.2** and shown on the plans provided in **Appendix B** and described below:

- Demolition and removal of existing temporary structures.
- Site preparation activity, including demolition, earthworks, tree removal.
- Construction of new:
  - 32 permanent general learning spaces and 3 support teaching spaces
  - Administration and staff hubs
  - Hall, canteen and library
  - Out of school hours care
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  - Realignment of the existing fencing
  - Associated stormwater infrastructure upgrades
  - Associated landscaping
  - Associated pedestrian and road upgrade activity

The objective of this RAP is to set remediation objectives and document the process to remediate the site. Since this RAP has been prepared to support the REF approval, it may require updating post-approval to be suitable for application during construction, considerate of advancements and alterations to the design and construction methodologies.

Based on previous investigations and initial remediation works undertaken at the site, the contamination present and requiring remediation consists of lead above human health criteria as outlined in **Figure 3**, **Appendix A**. Lead, zinc and nickel also exceed the ecological criteria at some locations. Bonded ACM and friable asbestos exceeding the human health criteria were identified during previous site investigation, however, were remediated during the initial site remediation.

As outlined in **Section 7.1**, there is the potential for contamination to be present beneath inaccessible areas in the vicinity of the remediation area (beneath hardstands, demountable buildings and permanent

structures). As the proposed activity will require the removal of hardstands (staff car park and footpaths) and buildings, as well as exposing previously unassessed areas, a data gap investigation is required and is specified in **Section 12.4**.

The following remediation strategy is recommended for implementation as part of remedial works:

1. Preliminaries and site establishment (see **Section 12.3**);
2. Additional investigation in previously inaccessible areas (underneath hardstands and / or beneath existing demountable buildings and demolition of any structures) to determine additional areas requiring remediation (see **Section 12.5**);
3. Engineered design and capping requirement of the fill embankment / encapsulation area (see **Section 12.7**).
4. Remedial excavation of contaminated soils (see **Section 12.5**) and either:
    a. Waste classifications, and/ or
    b. In-situ/ above ground encapsulation, subject to geotechnical considerations and the engineered design of the proposed fill embankment / encapsulation area, the lead impacted soils (excluding grass cover) may be considered to be placed within the fill embankment / encapsulation area with nominal compaction.
5. Validation works (see **Section 12.6**);
6. Survey and inspection of as-built works (see **Section 12.7**);
7. Validation Reporting (see **Section 12.9**).
8. Development and implementation of a Long-Term Environmental Management Plan for the site (see **Section 12.8**) in accordance with the NSW EPA (2020) Consultants Reporting on Contaminated Sites: Contaminated Land Guidelines to include information on the following:
    a. Management roles and responsibilities;
    b. Ongoing reporting requirements;
    c. Emergency contact and procedures;
    d. Management measures; and
    e. Ongoing audit and review of the plan for continuing suitability

Once all data gap investigations are completed, remediation and validation undertaken, and remaining contamination (if any) managed under an LTEMP, then the site would be considered suitable for the intended land use post-construction of the proposed activity.

Abbreviations

ACM	Asbestos Containing Material
AEC	Area of Environmental Concern
AF	Asbestos fines
ARCP	Asbestos Removal Control Plan
AS	Australian Standard
ASS	Acid Sulfate Soil
ASSMP	Acid Sulfate Soils Management Plan
AST	Aboveground Storage Tank
B(α)P	Benzo(a)pyrene
BTEX	Benzene, toluene, ethylbenzene and xylene
CAR	Contamination Assessment Report
CEMP	Construction Environmental Management Plan
COC	Chain of Custody
CoPC	Chemicals of Potential Concern
CSM	Conceptual Site Model
DP	Deposited Plan
DQI	Data Quality Indicators
DQO	Data Quality Objectives
EIL	Environmental Investigation Level
EMP	Environmental Management Plan
EPA	Environment Protection Authority
FA	Friable asbestos
GLS	General Learning Space
HI	Health Infrastructure
HIL	Health Investigation Level
LAA	Licenced Asbestos Assessor
LGA	Local Government Authority
LOR	Limit of Reporting
m	metres
mBGL	metres Below Ground Level
NATA	National Association of Testing Authorities
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measures
NSW	New South Wales
OCP	Organochlorine Pesticides
OHS	Occupational Health and Safety
OPP	Organophosphorus Pesticides
PAHs	Polycyclic Aromatic Hydrocarbons

PASS	Potential Acid Sulfate Soils
PCB	Polychlorinated Biphenyls
PID	Photoionization Detector
PoEO	Protection of Environment Operations
PPE	Personal protective equipment
PQL	Practical Quantitation Limit
PSI	Preliminary Site Investigation
QA/QC	Quality Assurance / Quality Control
RAP	Remediation Action Plan
REF	Review Environmental Factors
RG	Remediation Goals
RPD	Relative Percentage Difference
SEPP	State Environmental Planning Policy
SOP	Standard Operating procedures
SPR	Source-pathway-receptor
SWMS	Safe Work Method Statement
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxicity Equivalent Quotient
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
UFP	Unexpected finds protocol
UST	Underground storage tanks
WADoH	Western Australia Department of Health
WHESP	Work Health, Environment and Safety Plan
WHS	Work Health and Safety
WHSP	Work Health and Safety Plan
WMP	Waste Management Plan

1.0 INTRODUCTION

Stantec Australia Pty Ltd (Stantec) were engaged by School Infrastructure NSW (SINSW) to prepare a Remediation Action Plan (RAP) for Gillieston Public School, located at 100 Ryans Road and 19 Northview Street, Gillieston Heights, NSW (as indicated in **Figure 1**, **Appendix A**) and legally identified as Lot 51 of Deposited Plan (DP) 1162489 and Lot 2 DP1308605 (the site).

1.1 BACKGROUND

The site had previously been investigated for contamination to inform the initial proposed activity as outlined in **Section 3.1.1** and **Table 3-1**. Following completion of the initial investigations, contamination was found at the site in the form of lead, asbestos, copper and zinc in exceedance of applicable land use criteria as further outlined in **Section 3.1.2**. A previous revision of the RAP was prepared, and partial remediation works were undertaken at the site as outlined in **Section 3.1.2** and **Table 3-2**. Following advancements in the proposed activity, an additional investigation was completed as outlined in **Section 3.1.4** and **Table 3-2**, in which additional lead contamination above applicable land use criteria was identified. A revised RAP is required to outline the remediation status of the site and to support the REF for the proposed activity.

1.2 PURPOSE AND OBJECTIVES

1.2.1 Purpose

The purpose of this RAP is to support the Review of Environmental Factors (REF) for the proposed site redevelopment, as described in **Section 1.2** and shown on the plans provided in **Appendix B**. Following approval, the RAP may require updating upon refinement of the design and to be suitable for implementation during construction.

1.2.2 Objectives

The objective of this RAP is to set remediation objectives and document the process to remediate the site. Since this RAP has been prepared to support the REF approval, it may require updating post-approval to be suitable for application during construction, considerate of advancements and alterations to the design and construction methodologies.

The specific remediation objectives for the site are as follows:

- To ensure that the identified contaminated material is managed in accordance with best and most sustainable practices to remove unacceptable health risk to human and ecological receptors;

- Demonstrate, through remediation and validation, that potential health risk to site receptors has been reduced to an acceptable level, and the site is considered suitable for the proposed land use; and
- If contamination remains following remediation, the material is to be managed such that a complete source-pathway-receptor linkage is incomplete under the ongoing land use post-construction, for example via implementation of a Long-Term Environmental Management Plan (LTEMP).

1.3 PROPOSED ACTIVITY

The proposed activity is understood to consist of the following:

- Demolition and removal of existing temporary structures.
- Site preparation activity, including demolition, earthworks, tree removal.
- Construction of new:
  - 32 permanent general learning spaces and 3 support teaching spaces
  - Administration and staff hubs
  - Hall, canteen and library
  - Out of school hours care
  - Public preschool (standalone building for 60 places)
  - Covered Outdoor Learning Areas (COLAs)
  - Outdoor play areas, including games courts and yarning circle
  - New at-grade car parking
  - Extension of the existing drop-off / pick-up area and new bus bay
  - Realignment of the existing fencing
  - Associated stormwater infrastructure upgrades
  - Associated landscaping
  - Associated pedestrian and road upgrade activity

1.4 SCOPE OF WORK

The preparation of this RAP included the following scope of work:

- Review of previously prepared site reports and remedial works to review and identify:
  - Site features and extents;
  - A conceptual site model (CSM); and
  - What further assessment, if any, is required.
- Propose and evaluate options for remediation of the identified contaminants of concern in impacted soil, and recommend the preferred remediation strategies;
- Detail the steps required for implementation of the preferred remediation strategies including:
  - Identifying legislative, planning and permitting requirements;

  - Develop a Construction and Waste Management Plan outlining environmental controls required for the duration of the remediation works including an Unexpected Finds Protocol (UFP) and contingency plan; and
  - Identify environmental and occupational health and safety (OHS) control measures and community consultation requirements associated with implementation of the preferred remedial strategy;
- Preparation of a Remediation Action Plan in accordance with the (NSW EPA, 2020) Consultants reporting on contaminated land: Contaminated land guidelines.

1.5 GUIDELINES AND LEGISLATION

This RAP was completed in accordance with the following applicable guidelines and legislation:

- National Environment Protection (Assessment of Site Contamination) Measure (NEPM). National Environment Protection Council (NEPC) 1999, Amendment 2013;
- State Environmental Planning Policy (Resilience and Hazards) 2021;
- NSW EPA (2014) Waste Classification Guidelines. Part 1: Classifying Waste;
- NSW EPA (2017) Contaminated Land Management - Guidelines for the NSW Auditor Scheme (3rd edition). New South Wales Environment Protection Authority, October 2017;
- NSW EPA (2020) Consultants reporting on contaminated land; Contaminated land guidelines. New South Wales Environment Protection Authority;
- NSW EPA (2022) Sampling design part 1 - application. New South Wales Environment Protection Authority (EPA), August 2022;
- NSW EPA (2022) Sampling design part 2 - interpretation. New South Wales Environment Protection Authority (EPA), August 2022;
- SafeWork NSW (2019) Code of Practice: How to Safely Remove Asbestos;
- Standards Australia (2005) Australian Standard AS 4482.1-2005 – Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds. Standards Australia, Homebush, NSW;
- Standards Australia (1999) Australian Standard AS 4482.2-1999 - Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances. Standards Australia, Homebush, NSW;
- WorkCover NSW (2014) Managing asbestos in or on soil.

2.0 SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

Based on the identification of potential impacts and an assessment of the nature and extent of the impacts of the proposed activity, it is determined that all potential impacts can be appropriately mitigated to ensure that there is minimal impact on the locality, community and/or the environment.

Further information on the mitigation measures for the identified contamination issues for the site are outlined in **Section 19.0**.

3.0 SITE DESCRIPTION

The site is identified as 100 Ryans Road and 19 Northview Street, Gillieston Heights, legally described as Lot 51 DP 1162489 and Lot 2 DP1308605 .

The site is located within the Maitland Local Government Area (LGA) and is zoned RU2 Rural Landscape and R1 General Residential zone under the provisions of the Maitland Local Environmental Plan 2011 (MLEP2011).

Existing attributes of the subject site are noted as follows:

- The subject site exhibits an area of approximately 23,385m² and is located in the suburb of Gillieston Heights;
- The subject site has a frontage to Ryans Road to the west, Gillieston Road to the north, and Northview Street to the south;
- In its existing state, the subject site comprises the existing Gillieston Public School. Existing school buildings are primarily located in the west portion of the subject site with a large area of open space situated in the eastern portion. There are limited permanent structures located on the subject site with thirteen (13) existing demountable classrooms currently occupying the subject site. Permanent buildings consist of the Main Administration Building, Original Brick Cottage, Library and GLS building located in the centre of the subject site; and
- Carparking is provided from Gillieston Road for staff. Pedestrian access is available via this main entrance from Gillieston Road and via a separate pedestrian-only access gates on Northview Street and Ryans Road.

The existing site context is shown in **Figure 3-1** and **Figure 3-2** below.

Figure 3-1 Indicative Cadastral Boundary – Topographic Map (Source: NSW Spatial Viewer)

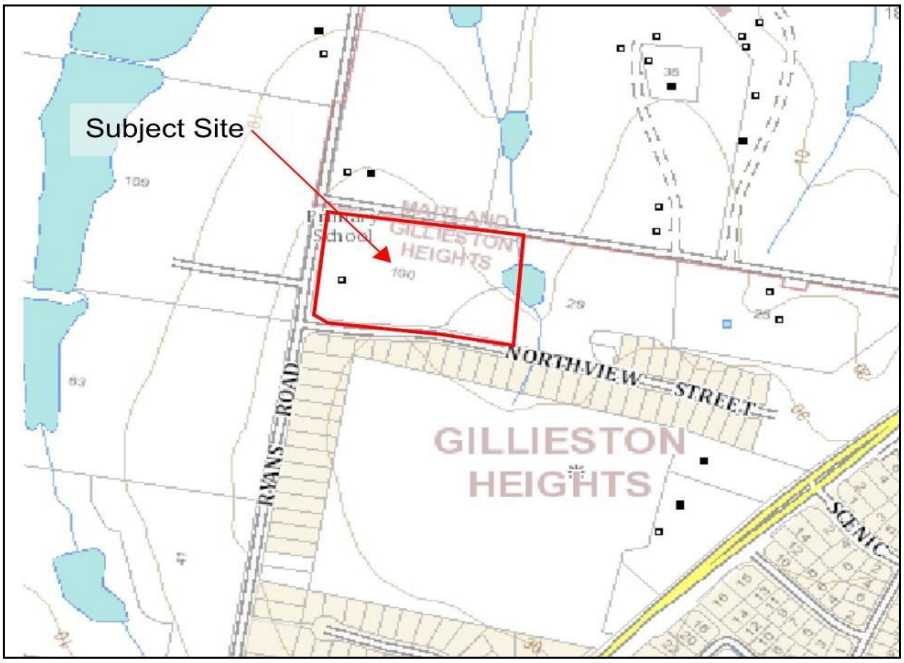


Figure 3-2 Indicative Cadastral Boundary – Aerial Photograph (Source: NSW Spatial Viewer)

3.1 SITE IDENTIFICATION

Site details are included below in **Table 3-1** whilst **Figures 1** and **2** of **Appendix A** illustrate the site locality and site plan, respectively.

Table 3-1 Site details

Details	Comments	
Site address	100 Ryans Road and 19 Northview Street, Gillieston Heights, NSW, 2321	
Lot and Deposited Plan	Lot 51 DP 1162489 and Lot 2 DP1308605	
Current land use	The current land use is a primary school (Gillieston Public). The site consists of multiple school buildings, grass and paved outdoor open space, other school infrastructure, car parking space, and some localised vegetation.	
School operating Hours	**Activity**	**Hours**
	Main School	8:45am to 3:05pm
	Preschool	8:45am to 3:05pm
	Before School Care	6:00am to 8:35am
	After School Care	3:05pm to 6:00pm
	Vacation Care (during school holidays)	6:00am to 6:00pm
Proposed land use	Under the proposed design, the site will continue being utilised as a school, with additional learning facilities such as an Outside School Hours Care (OSHC), preschool, a hall and canteen as well as associated infrastructure such as additional carparks. The design plans and bulk earthworks plans are provided in **Appendix D** and **Appendix E**, respectively.	
Local Government Authority (LGA)	Maitland Local Government Area	
Current zoning (Maitland Local Environmental Plan, 2011)	RU2: Rural Landscape R1: General Residential	
Site area	2.3 ha	
Site coordinates (GDA2020 MGA 56)	**Easting (m)**	**Northing (m)**
	924573.782	6367134.881
	924743.173	6367094.194
	924681.181	6366990.38
	924552.632	6367014.636
Surrounding land use	**North**: Gillieston Road with one residence and agricultural land further north **East**: Agricultural land with some residential properties further to the east **South**: Northview Street with residences and open space surrounding further west **West**: Ryans Road followed by agricultural land with sparse residences	

3.2 REGIONAL AND SITE SETTINGS

The site and regional context, as listed in publicly available data sets, is summarised in **Table 3-2 b**elow:

Table 3-2 Site Setting Information

Details	Comments
Topography **(Nearmap, 2024)**	A review of elevation data in Nearmap shows the site elevation ranging from 30m AHD on the southern boundary to 18m AHD in the north-east corner and 22m AHD in the north-west corner. The topography indicates a general downward slope to the north with a ridge running north-south through the western third of the site, and a downward slope to the east and west from that point. The NSW DPIE *eSPADE* v2.2 website shows the regional topography is "*rolling low hills with slopes ranging from 5–20%. Local relief is generally 50 m but ranging to 80 m. Elevation is 40–100 m. Rock outcrop is localised, often occurring where Muree Sandstone is present (<2%)*".
Regional Soil Landscape **(NSW Department of Planning, Industry and Environment)**	The NSW DPIE *eSPADE* v2.2 website indicates that the site overlies the Bolwarra Heights (bh) residual soil landscape. Soils within the Bolwarra Heights landscape consist of "*shallow to moderately deep (<150 cm) yellow, red and brown podzolic soils and some moderately deep (<100 cm) well-drained Lithosols on crests, whilst moderately deep (<140 cm) yellow soloths are evident on lower slopes*".
Regional Geology (Minview v. 2023.7.17, 2023)	The Newcastle 1:100,000 Geological Map, Herbert C, 1983, illustrates that the site is underlain by Sandstone, siltstone, conglomerate, and erratics (Pmb) of the Branxton Formation, part of the Maitland Group from the Permian group of the Palaeozoic era.
Regional Groundwater **(Department Finance, Services & Innovation 2024)** **(Bureau of Meteorology 2024)**	Data sourced from WaterNSW and Bureau of Meteorology shows one groundwater bore within a 2000 m radius of the site: GW201877 – located approximately 1260m to the north-east of the site. Installed as a "stock and domestic bore" in 1990 with a final depth of 26 metres. Bore is listed as "functioning".
Surface Water Bodies **(Nearmap, 2024)**	There is an unnamed ephemeral drainage line located in the northeastern portion of the site that flows from southeast to northwest. The second nearest surface water bodies to the site are multiple agricultural dams/ ponds within approximately 500 m to the north/ northwest of the site, which are expected to receive surface water flows originating from the site. The off-site dams appear to then flow into Wentworth Swamp, located further to the northwest. Wentworth Swamp drains into Swamp Creek, which is located approximately 1,000 m to the northwest of the site. Swamp Creek flows into Wallis Creek which then flows into the Hunter River. Given the peri-urban and agricultural regional setting, the site and surrounds are mostly covered with grass with some buildings, structures and roads. Topographic features include a ridge running through the site, with surface water flows inferred to flow predominantly north, with some north-east and north-west, generally toward downstream receivers including Wentworth Swamp and Swamp Creek.

Details	Comments
Acid Sulfate Soils **(Department of Land and Water Conservation (1998)** **(Maitland Local Environmental Plan, 2011)**	The NSW Government Planning Industry and Environment online mapping tool, *eSPADE* Version 2.2, indicates that the site is located within a soil class 5 ASS risk area, where acid sulfate soils are typically not found. Activities within 500 metres of adjacent Class 1, 2, 3, or 4 land that is below 5 metres AHD and by which the water table is likely to be lowered below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk and require REF approval. The nearest ASS risk is a class 2 area located approximately 250m west of the site in the vicinity of some of the nearby private dams. The Atlas of Australian Acid Sulfate Soils indicates the site is within a Class B area, with a low probability of occurrence (6-70%).
Salinity **(Department Finance, Services & Innovation 2024)**	When reviewing with the Dryland Salinity National Assessment data, the site is mapped as a high hazard or risk defined for all years: 2000, 2020, 2050.

3.3 SITE DESCRIPTION

This document has been prepared following completion of Stantec's PDSIC and DSI site works, without subsequent site works. Site observations that were noted during the previous investigations are summarised below in **Table 3-3** and are assumed to be representative of current site conditions.

Table 3-3 Site Description Details

Item	Information	Applicable Investigation
Weather Conditions	19/12/2022: Overcast clearing to sunny, windy, 23°C 20/12/2022: Mostly sunny, patchy cloud, 23°C 21/12/2022: Sunny, 25°C 25/01/2023: Sunny, 32°C 03/02/2023: Sunny, 33°C 10/02/2023: Sunny, 34°C 22/04/2024: Overcast clearing to sunny, windy, 21°C. 23/04/2024: Overcast clearing to sunny, 20°C. 24/04/2024: Overcast clearing to sunny, very windy, 22°C. 29/04/2024: Overcast clearing to sunny, windy, 19°C.	PDSIC & DSI
Site slope and drainage features	The site buildings are situated almost entirely in the western half of the site. There is a ridge running north-south through the site, approximately 50m east of the western site boundary. The ridge slopes gently down in a northerly direction with a gentle slope down to the west and a steep slope down to the east towards the site boundaries. The low-lying area directly to the east of the site comprises an ephemeral drainage line, acting as a catchment for the surrounding area to the south. The system feeds into a culvert draining north underneath Gillieston Road and north off-site.	DSI

Site Description

Item	Information	Applicable Investigation
Nearby surface water bodies	There is a chain of dams/ ponds to the north, east and west of the site, with the largest to the north-west. These dams are linked by ephemeral creek lines that lead to the north away from the site, eventually draining into Wentworth Swamp and Swamp Creek to the northwest of the site.	DSI
Site surface coverings	The eastern portion of the site was covered in grass with minimal exposed soil visible. The western half was covered with a combination of grass, sporadic weeds, mature trees and garden beds. Concrete hardstands were observed surrounding school buildings and appeared to be in good condition with minor discolouring and cracking evident. Additionally, a concrete and asphalt staff carpark was observed at the northwestern extent of the site. There is an area of mulch/ woodchips between some central buildings. Maintained, healthy grass surrounded most school buildings. Areas of exposed soil were observed within the central to northwestern portion of the site.	DSI
Surface soils	Surface soils, where observed, were brown-grey silty sands that were consistent across the site. Surface soil was relatively shallow except in the low-lying eastern areas.	PDSIC & DSI
Site cut and fill	No notable anthropogenic material was observed in surficial soils across the site. Minor filling was observed in close proximity to the buildings in the western portion of the site. Filling in this area appeared to comprise site-won materials and is likely associated with site-levelling practices.	PDSIC & DSI
Buildings and structures	Two buildings constructed pre 1950 were present on the site, one in the north-western corner (Building D – Learning Centre) and one just to the south of the centre of the site (Library). Original buildings were of brick and weatherboard construction and were in relatively good condition, however, some paint flaking was observed. Other buildings observed were primarily temporary demountable buildings on light concrete block footings raised 1-2m above ground level. Above ground water tanks were observed in the southwestern portion of the site and one underground storage structure was noted in the northwestern portion, confirmed to be sewer storage.	PDSIC & DSI
Potential asbestos in building materials	No detailed hazardous material survey was conducted by Stantec, however, there is an existing HAZMAT report that has been summarised in the PDSI (Stantec, 2023c). The schools asbestos register identifies asbestos in the Library and Building D and indicates the potential for asbestos material in other buildings located on site. During initial remediation works it was established that contaminant impacts in soil surrounding Building D (as shown on **Figure 3, Appendix A**) are likely attributable to weathering and historical destruction of hazardous building materials.	PDSIC & DSI
Manufacturing, industrial, or chemical processes and infrastructure	Not observed.	PDSIC & DSI

Site Description

Item	Information	Applicable Investigation
Fuel storage tanks (USTs/ASTs)	Not observed. Underground structure noted above related to sewerage.	PDSIC & DSI
Dangerous goods	Not observed.	PDSIC & DSI
Solid waste deposition	The housekeeping of waste and facilities was acceptable. Multiple 240L yellow-lid recycling bins and one general waste skip bin (approximately 5m^3 volume) were observed in the south-western area of the site, used for management of waste and recyclable materials generated from school operations.	PDSIC & DSI
Liquid waste disposal features	Not observed. A canteen was observed on site where liquid waste such as cooking oil may be generated, however, Stantec are unable to comment the potential wastes and management systems related to the canteen as this area was not accessible during investigations.	PDSIC & DSI
Evidence of previous site contamination investigations	Not observed, however, Stantec note the prior geotechnical and contamination site investigations that have occurred.	DSI
Evidence of land contamination (staining or odours)	Not observed.	PDSIC & DSI
Evidence of groundwater contamination	Not observed.	PDSIC & DSI
Groundwater use	Not observed.	PDSIC & DSI
Vegetation	Vegetation within the site was limited to well-maintained grass throughout the school grounds and mature trees scattered across the western half of the site with some smaller shrubs and vegetated garden beds. Stressed vegetation were not observed at the site. Exposed soils were observed in the central to northwestern portion, however, the cause is unknown and may not be related to vegetation stress.	PDSIC & DSI
Site fencing	The site is bound by 1.8m high steel security fencing around the majority of the Gillieston Public School grounds, The southeastern portion and northeastern portion were unfenced. Pedestrian access to the site is from the south off Northview Street, car parking access is from the north off Gillieston Road, and there is a locked vehicle access gate from the south off Northview Street (just east of the pedestrian access point).	PDSIC & DSI

4.0 SITE HISTORY AND INVESTIGATION / REMEDIATION SUMMARY

A desktop review of available information for the site has been provided as the following sections:

- A general summary of the site land use history (see **Section 4.1**);
- A high-level summary of recent site activities, considerate of previous site investigations and the REF approval process (see **Section 4.2**); and
- A review of previous investigation reports (see **Section 4.3**).

4.1 LAND USE HISTORY

Utilising available documentation, the following points outline the site land use history:

- The historical aerial photo review indicates that from at least 1954 the site has been utilised for a school land use, with sporadic construction and removal/ demolishment of site structures until present day. The surrounding land for the most part has not gone through significant changes and modifications during the assessed history, except for the south-east which has been developed into low-density residential housing.
- The historical business directories returned a single record of Gillieston Public School, operating since 1991.
- A search of the NSW EPA public searches/ databases returned no results within a 500 m buffer for the following:
  - Contaminated Land Records of Notice
  - List of NSW Contaminated Sites Notified to the NSW EPA
- The PoEO Public Register identified one active and three former licensed activities associated with the application of herbicides within all waterbodies.
- Additionally, the site was not within 1,000 m of the following datasets:
  - NSW EPA Former Gasworks Listed Site
  - Liquid Fuel Facilities
  - PFAS Investigation and Management Programs
  - Defence Sites
  - EPA Sites with other contamination (James Gardie asbestos manufacturing and waste disposal sites, Radiological investigation sites in Hunter's Hill, Pasminco Lead Abatement Strategy Area)
  - Military Sites and UXO Areas
  - Naturally occurring asbestos
- The site and surrounds are subject to a historical mining and exploration title for petroleum and minerals.

- The historical land title indicated that the western portion of the site was acquired by the Minister of Public Education in 1898. With the eastern portion appearing to be utilised for agriculture and grazing until 2011 when the entire site was acquired by the Minister for Education.
- A SafeWork NSW Schedule 11 Hazardous Chemicals Search identified a single historical 1,100L above ground storage tank that contained liquid petroleum gas (LPG).
- A Section 10.7 Certificate obtained from Maitland Council did not identify and items pertaining to contaminated land at the site.

4.2 SUMMARY OF RECENT SITE ACTIVITIES

4.2.1 Initial proposed activity

At the time of preparing the original RAP (Stantec, 2023d), DoE were assessing two options for the proposed activity as described below:

- Option 1:
  - Two storey General Learning Hub with 12 General Learning Spaces (GLS)
  - 12 GLS over admin and library
  - Library, Hall and Admin and Staff Hub on southern boundary with carpark access
  - Learning Support spaces included in GLS
  - Carpark and ‘kiss n drop’ on eastern boundary. Total cars required for activity likely to be accommodated onsite
  - Bus bay on Gillieston Road
  - Pre-K located on western side of school attached to existing heritage building
  - Future link to neighbouring development ring-road
- Option 2:
  - Two storey General Learning Hub with 24 GLS
  - 12 GLS over admin and library
  - 3 SLS
  - Library, Hall and Admin and Staff Hub on southern boundary with carpark access
  - Learning Support spaces included in GLS
  - Carpark and kiss n drop on eastern boundary. Total cars required for activity likely to be accommodated onsite
  - Bus bay on Gillieston Road
  - Pre-K located on western side of school attached to existing heritage building

4.2.2 Initial investigation

Stantec was engaged by SINSW to undertake a preliminary assessment of contamination to inform the concept design process for the proposed activity as described above. A Preliminary Desktop Site Investigation – Contamination (PDSIC) report (Stantec, 2023a) identified a bonded chrysotile asbestos

containing material (ACM) fragment and friable asbestos (in the form of asbestos fines (AF) and fibrous asbestos (FA)) in soil of 0.055%w/w within surficial fill materials at sample location HA331.

Exceedances of lead (Pb) for the applicable human health criteria were identified at twelve (12) locations (BH14, BH15, HA102, HA103, HA104, HA108, HA109, HA111, HA112, HA309, HA311 and HA331). Exceedances of ecological criteria for lead were found in two (2) locations (HA103 and HA331), for zinc in fifteen (15) locations (BH14, BH15, HA102, HA103, HA104, HA108, HA111, HA116, HA309, HA310, HA317, HA319, HA321, HA330 and HA331) and for nickel in one (1) location (BH15), with all exceedances situated within near-surface fill materials.

Based on the identified bonded chrysolite ACM and friable asbestos (at sample location HA331), lead and zinc exceedances of the applicable land use criteria, the site was determined unsuitable for the intended land use, however, it was considered that the site could be made suitable following the implementation of a remediation.

4.2.3 Interim remedial Activity

Stantec prepared a RAP (previous revision of this report, Rev1) in March 2023 which outlined the remediation strategy for the identified metal and asbestos exceedances above applicable land use criteria for the site. Stantec were then engaged by SINSW to supervise excavations and to collect validation samples to remediate the areas of contamination identified during the investigation described above in **Section 4.2.2**. Stantec attended site on the 17, 18, 19 and 20 of April as well as the 3 of May 2023 to supervise excavation, collect validation samples and conduct waste classification on soil requiring removal from the site, as well as assess soil materials being imported to the site.

Remediation was completed to the extent possible in consideration of constraints (structures, utilities), with a more detailed description provided in **Table 4-2** and initial remediation extents shown on **Figure 3**, **Appendix A**.

4.2.4 Additional investigation

Stantec were engaged by SINSW to undertake a Detailed Site Investigations (DSI) to assess the site in consideration of the activity design that was current at the time of the request. SINSW also requested a scope and fee to investigate an additional area, previously unassessed, located directly southeast of the original investigation area.

A cut and fill plan was provided which outlined areas proposed for bulk earthworks, with SINSW requesting additional investigation in areas that extend beyond 0.45 m bgl. The following was identified during the investigation:

- An exceedance of applicable human health criteria for lead was identified in soil sample AHA103_0.35-0.4, considered a ‘hotspot’ as per the definition of Schedule B1 of the ASC NEPM. The

vertical extent of contamination was not determined, and the sampling point is located approximately 10 m east of an area previously identified as lead impacted.

- The report recommended that a revised RAP or addendum to the existing RAP must be prepared to consider the findings of the DSI (Stantec, 2024). The works undertaken during the DSI represent the last assessment of contamination completed at the site leading to preparation of this document.
- Stantec were advised by SINSW that the construction timing for the proposed activity is anticipated to commence mid to late 2025, upon completion of the approvals process. Stantec understand that remediation and validation of the site is unlikely to occur until that time. However, to manage the health and safety of current site users until that time, interim management controls were required, as outlined below:
  - An Interim Site Management Plan (or similar) should be prepared by a suitably qualified occupational hygienist to identify the risk areas and specify appropriate management controls and procedures to render the source-pathway-receptor linkages incomplete. All existing documents relating to contamination are to be supplied to the occupational hygienist.
  - Stantec has since been advised by SINSW that the Asset Management Unit (AMU) has sought advice and implemented interim management controls for lead impacted areas at the site. Management measures were outlined as fencing until the area can be successfully remediated.
  - Noting that if remediation occurs prior to the planned activity (mid 2025), then it must be completed as per this RAP.

4.2.5 Current Proposed Activity and Updated RAP

Stantec understand that the proposed activity at the site will consist of the following key features, which are shown on both the updated Site Plan in **Appendix B** and Cut and Fill Plan in **Appendix C**:

- Northern area: a large structure “Building C” is to be constructed and utilised as a library, administration and staff hub. The area is approximately 4,350m^2.
- Southern area: two buildings “Building A” (a preschool) and “Building B” (a hall, canteen and Outside School Hours Care (OSHC) facility with a covered outdoor learning area structure attached). The area is approximately 2,750m^2.
- An area that was initially unassessed during geotechnical investigations (Lot 2 DP1308605) to the southeast is proposed to be developed into a staff carpark. The area is approximately 2,750m^2.
- Both the site plan and the cut-and-fill plan specify the addition of a car park at the northeastern boundary of the site, and a basketball court in the northwestern area.
- The cut and fill plans indicate that the eastern, southeastern and central areas of the site are to be filled to a maximum depth of 3.5m. A maximum cut depth of – 3.5m bgl is proposed in the central-northern portion of the site.
- Total earthworks quantities are as follows:
  - Total Cut – 1,790m^3
  - Total Fill – 17,875m^3
  - Balance: Approximate Fill Requirement of 16,085 m^3

The site had been partially remediated (as of June 2023), to the extent practicable at that time, with residual contamination remaining above the applicable screening criteria at some locations due to

excavation constraints (utilities and structures). To satisfy the requirements of the REF Approval, a revised RAP is necessary to consider all available information and the revised design.

Johnstaff, the Project Manager on behalf of SINSW, indicated to Stantec that on-site containment and/or encapsulation of impacted soils should be considered a potential remediation option. SINSW had previously advised that the preferred remediation option was off-site disposal, hence the remediation options assessment within the revised RAP will need to be updated.

4.3 REVIEW OF PREVIOUS REPORTS

Stantec is aware of the following environmental assessments historically undertaken within the site footprint:

- Stantec Australia Pty Ltd (2023c)*, Preliminary Desktop Site Investigation – Contamination, Gillieston Public School*, issued March 2023.
- Stantec Australia Pty Ltd (2024)*, Detailed Site Investigation, Gillieston Public School,* issued July 2024.

Stantec is aware of the following reports that are summarised in detail within the PDSIC (Stantec, 2023b):

- Stantec Australia Pty Ltd (2023a), Geotechnical DD – Preliminary Desktop Review, Gillieston Public School, Prepared for School Infrastructure NSW, Issued 8 February 2023.
- Stantec Australia Pty Ltd (2023b), Intrusive Geotechnical Report, Gillieston Public School, Prepared for School Infrastructure NSW, Issued 10 February 2023.

Additionally, as Stantec has previously undertaken initial supervision of remediation and validation works ate the site, the remediation completed to date for the site has also been summarised below.

A summary of the previous reports and works associated with contamination for the site are summarised in **Table 4-1**, and **Table 4-2**, **Table 4-3** below.

Table 4-1 Preliminary Desktop Site Investigation – Contamination (Stantec, 2023c)

Item	Description
Stantec, Preliminary Desktop Site Investigation – Contamination	
Objectives	Stantec completed a Preliminary Desktop Site Investigation – Contamination (PDSIC) to preliminarily assess the suitability of the land for the proposed land use(s). The primary objectives of this investigation were therefore to preliminarily evaluate the potential for site contamination to be present based on the historical land use, desktop searches and an intrusive investigation.
Scope of works	Preliminary Contamination Assessment with Limited Sampling: • Desktop study site history review. • Site walkover. • Environmental sampling in conjunction with geotechnical investigation, including 28 boreholes to a maximum depth of 1.8 m bgl with soil sampling every 0.5m. • Quality assurance and quality control sampling and analysis at a NATA accredited laboratory. • Recording of site observations for visual aesthetics and olfactory indicators of potential contamination. • Preparation of a Preliminary Desktop Site Investigation – Contamination (PDSIC) Report. • Preparation of a supplementary data gap investigation based on preliminary soil investigation findings. Data Gap Investigations: • Additional extensive site walkover to investigate potential sources of contamination and areas of potential environmental concern. • Environmental sampling including fifty-one (51) hand augers advanced to a maximum depth of 0.3m BGL. • Recording of site observations for visual aesthetics and olfactory indicators of potential contamination. Preparation of a PDSIC report in general accordance with the *Consultants Reporting on Contaminated Land* (NSW EPS, 2020) and the *National Environmental Protection (Assessment of Contamination) Measure* (1999).
Site history review results	Upon review of desktop information pertaining to the site, the following was noted: • The historical aerial photo review indicates that from at least 1954 the site has been utilised for a school land use, with sporadic construction and removal/ demolishment of site structures until present day. The surrounding land for the most part has not gone through significant changes and modifications during the assessed history, except for the south-east which has been developed into low-density residential housing. • The historical business directories returned a single record of Gillieston Public School, operating since 1991. • A search of the NSW EPA public searches/ databases returned no results within a 500 m buffer for the following: – Contaminated Land Records of Notice – List of NSW Contaminated Sites Notified to the NSW EPA

REMEDIATION ACTION PLAN

Site History and Investigation / Remediation Summary

Item	Description
	• The PoEO Public Register identified one active, and three former licensed activities associated with the application of herbicides within all waterbodies. • Additionally, the site was not within 1,000 m of the following datasets: – NSW EPA Former Gasworks Listed Site – Liquid Fuel Facilities – PFAS Investigation and Management Programs – Defence Sites – EPA Sites with other contamination (James Gardie asbestos manufacturing and waste disposal sites, Radiological investigation sites in Hunter's Hill, Pasminco Lead Abatement Strategy Area) – Military Sites and UXO Areas – Naturally occurring asbestos • The site and surrounds are subject to a historical mining and exploration title for petroleum and minerals. • The historical land title indicated that the western portion of the site was acquired by the Minister of Public Education in 1898. With the eastern portion appearing to be utilised for agriculture and grazing until 2011 when the entire site was acquired by the Minister for Education. • A SafeWork NSW Schedule 11 Hazardous Chemicals Search identified a single historical 1,100L above ground storage tank that contained liquid petroleum gas (LPG). • A Section 10.7 Certificate obtained from Maitland Council did not identify and items pertaining to contaminated land at the site.
Results	Soil Observations • A consistent fill material was identified across the site to a maximum depth of 1.2mBGL at BH27. It is noted that the average depth of fill across site was 0.59 m BGL based on the 28 boreholes that penetrated into the natural stratum. • Anthropogenic material (soft plastics, plastic tape, PVC pipe fragments, metal, nails, tile, brick, concrete, glass) was observed in trace quantities in fill material in HA104, HA201, HA202, HA204, HA306, HA309, HA310, HA316, HA317, HA324, HA325, HA326, HA328, HA329 and HA331. • No visual or olfactory evidence of contamination was observed. • Indicators of acid sulfate soils and salinity were not observed. • Groundwater was not observed during drilling of any sample locations. Human Health • Twelve (12) sample locations exceeded the HIL screening criteria for lead (BH14, BH15, HA102, HA103, HA104, HA108, HA109, HA111, HA112, HA309, HA311 and HA331). • A single bonded asbestos containing material (ACM) fragment within surficial fill materials at sample location HA331 was observed, furthermore, friable asbestos (in the form of asbestos fines (AF) and fibrous asbestos (FA)) was

Item	Description
	detected in in soil of 0.055%w/w at the same location when WA/NEPM quantification analysis was completed at a NATA accredited laboratory. Ecological • Exceedances of EIL criteria included the following: - Two (2) sample locations for lead (HA103 and HA331). - Fifteen (15) sample locations for zinc (BH14, BH15, HA102, HA103, HA104, HA108, HA111, HA116, HA309, HA310, HA317, HA319, HA321, HA330 and HA331). - One (1) sample location for nickel (BH15) Aesthetic • Anthropogenic material in trace quantities in fill material was observed at 15 locations. • With the exception of asbestos / ACM, the type, quantity and nature of anthropogenic material found in fill across the majority of the site was determined not to pose a risk to human health or be likely to cause visual concern if they were reused on site. Groundwater • It is anticipated that groundwater will be associated with seepage flows along the interface of the residual clay and bedrock and also minor seepage through fractures and joints in the rock above the permanent regional groundwater table. Considering the proposed earthwork will be limited to general levelling only, it is anticipated the proposed earthworks will not intersect with the groundwater table. Acid Sulfate Soils (ASS) • No indicators of ASS were observed during the desktop assessment or intrusive investigation. • During the Intrusive Geotechnical report (Stantec, 2023b) following SPOCAS testing, there were indicators of potential acid sulfate soils (PASS) select samples. • These indicators may be due to organic interference, and it is recommended that additional ASS analysis be undertaken to determine the requirement for an acid sulfate soil management plan (ASSMP) for the proposed activity.
Conclusions	Upon completion of the scope of works outlined above, the following was concluded; • Gillieston Public is proposed for land use as pre-kindy and K-6 school. While development plans are still being finalised, this investigation was undertaken to preliminarily identify potential contamination and aid in determining suitability of the site. • Based on the desktop review of available documentation, the documented site history and land use of the Gillieston Public site and immediate surrounding appeared to have been predominantly used for educational purposes and agriculture, with ownership since at least 1898. The use of the site for educational purposes has continued to date. The site has undergone progressive development throughout the studied history, with the staged construction of current school infrastructure, noting that many of the current school buildings are temporary demountable buildings rather than

Item	Description
	permanent buildings, the most recent of which was added in late 2022. The surrounding land for the most part has not gone through significant changes and modifications during the assessed history, except for the south-east which has been developed with residences. • Specific activities of relevance to potential contamination that appear to have occurred on site include demolition and filling. • The site was not subject to regulation by the NSW EPA and was found to be free of statutory notices and licencing agreements under both the CLM Act 1997 and PoEO Act 1997 and was not included on the List of NSW Contaminated Site. • Based on review of supplied asbestos building materials register asbestos has been identified in external features in Buildings A and D. Potential exists for further unidentified asbestos in soil in proximity with these structures associated with historical demolition work and poor construction and maintenance practices. Based on the above conclusions, the following was recommended: • Develop a Remediation Action Plan (RAP) and / or develop a site-specific Human Health and Ecological Risk Assessment (HHERA); • Develop an Unexpected Finds Protocol to manage risks of unidentified impacts such as hazardous materials or waste in fill material at the site. • Prepare a Construction and Environmental Management Plan (CEMP) to minimise potential risks to human health and the environment during implementation of the RAP; • The preparation of waste classification assessments (as required) for disposal of impacted soil. It is recommended that stockpiling and assessment of each area or spoil type to confirm the final classification due to the heterogeneity in the fill material. • Any material being removed from site (including virgin excavated natural materials or VENM) must be classified for off-site disposal in accordance the EPA (2014) Waste Classification Guidelines and/or a NSW EPA Resource Recovery Order. • Based on the findings of this assessment and with reference to the proposed activity, Stantec recommends the development of: - A Remediation Action Plan (RAP) and/or Human Health and Ecological Risk Assessment (HHERA) for the site; - The preparation of waste classification assessments (as required); and - Site validation report to inform the site remediation work and future site development plans.

Table 4-2 Remediation and Validation Works (2023)

Item	Description
Stantec, Supervision of Remediation and Validation Works (2023)	
Objectives	Stantec were engaged by SINSW as the Environmental Consultant to supervise remediation works at the site in accordance with the RAP (Stantec, 2023d)
Scope of works	Stantec was tasked with supervising remedial excavations and collecting samples which were analysed for the contaminants of potential concern (CoPCs) (lead, nickel and asbestos). Stantec attended site on the 17, 18, 19 and 20 of April and the 3 of May 2023 to collect samples for analysis, conduct waste classifications on soil material to be removed and disposed from site as well as validate imported soil materials being brought to site.
Results	• Validation samples were collected from the walls and base of remedial excavations as per **Table 11-1** of this RAP (Stantec 2023b), with eighty-two (82) samples collected in total, and fourteen (14) samples reporting lead concentrations above the adopted remediation/ HIL A criteria (300mg/kg): - VAL_W03 reported a concentration of 391 mg/kg. - VAL_W15 reported a concentration of 330 mg/kg. - VAL_W17 reported a concentration of 920 mg/kg. - VAL_W19 reported a concentration of 400 mg/kg. - VALC_W02 reported a concentration of 410 mg/kg. - VALC_W06 reported a concentration of 660 mg/kg. - VALC_W10 reported a concentration of 340 mg/kg. - VALC_W11 reported a concentration of 340 mg/kg. - VALN_W01 reported a concentration of 300 mg/kg. - VALN_W02 reported a concentration of 360 mg/kg. - VALN_W06 reported a concentration of 360 mg/kg. - VALN_B02 reported a concentration of 500 mg/kg, with the duplicate and triplicate samples QA500 and QA600 reporting a concentration of 550mg/kg and 360 mg/kg respectively. - VALE_B03 reported a concentration of 310 mg/kg. - VALE_B04 reported a concentration of 420 mg/kg. • The location of validation samples can be viewed in **Figure 2** and **Figure 3** of **Appendix A.** • Waste classifications as per the NSW EPA Waste Classification guidelines were conducted on three (3) stockpiles, SP1, SP2 and SP3. • Stockpiles were analysed for TRH, BTEX, PAH, metals, OCP, OPP PCB and asbestos. - SP1 was generated from material to the south of Building D and was approximately 34t. o Three (3) soil samples and two possible asbestos containing material (PACM) samples were collected from the stockpile (ACMD14417_1, ACM_D14417_2, SP01(S)_1, SP(01)(S)_2 and SP01(S)_3.

Item	Description
	o Concentrations of lead and benzo(a)pyrene were reported above the General Solid Waste (GSW) CT1 criteria, as no Toxicity Characteristic Leachate Procedure (TCLP) analysis was performed due to time constraints the stockpile was classified and disposed of as restricted Solid Waste (RSW). - SP2 was generated from material in all directions of Building D and (comprised of the majority of the material excavated as part of the remedial works. SP2 was approximately 190t. o Five (5) soil samples were collected from the stockpile (SP02-1, SP02-2, SP02-3, SP02-4 and SP02-5). o Concentrations of lead and benzo(a)pyrene were reported above the General Solid Waste (GSW) CT1 and CT2 criteria, following TCLP analysis concentrations were reported below TCLP1 criteria which indicated the soil material met the chemical requirements to be classified as GSW. o Chrysotile asbestos was detected in weathered fibrous material when conducting asbestos analysis of sample SP02-4. o The above factors indicated the stockpile was assessed and disposed of as GSW – Special Waste. o SP3 was generated from soil material located east of Building D, surrounding the area in which a bonded chrysotile asbestos fibre cement fragment was identified (HA331). SP3 was approximately 11t. o Three (3) soil samples were collected from the stockpile (SP03(S)-1, SP03(S)-2 and SP03(S)-3. o Lead concentrations were reported above CT1 and Specific Contaminant Criteria (SCC1) criteria which indicated that the soil material was chemically classified as RSW. o Due to the previous asbestos found during sampling, the soil material was classified and disposed of as RSW – Special Waste. • Following validation sampling and waste classification of soil materials excavated during remedial works, it was considered unfeasible to remediate the remaining fourteen (14) lead exceedances due to time constraints and the location of some exceedances (underneath building footprints). - The majority of lead exceedances were deemed acceptable through statistical analysis and initial risk assessment; however, one sample (VAL-W17-0.1) reported a concentration of 920 mg/kg, which is more than 250% of the HIL A criteria for lead (300 mg/kg). As such, this is considered a hotspot requiring remediation or management and cannot be deemed an acceptable risk through statistical analysis of existing data. As this location is located against a building footprint, further excavation were not deemed practicable. • The following options were provided to SINSW (via email on the 24/04/2023): - We further excavate this area surrounding W17 with hand tools all the way to the building foundations and conduct validation sampling on the base and walls of the excavation: o Noting that lead analysis may produce a number similar or higher than the current concentration which would again require remediation or management. - We further conducted a brief risk assessment and prepare a short and initial Health Risk Assessment Letter that outlines the reason why this area is not considered a risk to current site users. o This would not discredit risk to future site users and the Validation Report would recommend further management of the material. - Preparation of a Long-term Environmental Management Plan (LTEMP).

Item	Description
	o An LTEMP would detail the residual risk (current and future site users) and appropriate management strategies for the remaining lead contamination on site. • After discussions with SINSW it was decided that the remedial excavations would be temporarily filled, and the remaining unacceptable lead exceedances would be addressed during the planned bulk earthworks as part of the proposed activity of the school. - The soil material imported to the site underwent validation sampling and visual inspection before being brought to the site. - The soil material was imported from Australian Native Landscapes and consisted of a mixture of topsoil, mulch and sand. - The soil material was considered suitable for importation following analysis by a previous consultant and verification that the material met the current land use criteria through analysis by Stantec. • The Validation Report could not be finalised due to at least one remaining hotspot location at the site.

Table 4-3 Detailed Site Investigation (Stantec, 2024)

Item	Description
Stantec, Detailed Site Investigation	
Objectives	The purpose of the DSI was to further delineate known contamination, assess areas that are planned for excavation/ redevelopment and identify further actual or potential contamination within the site. The objectives of the assessment and report included: • Undertake an intrusive investigation program to identify whether additional contamination impacts are present (further to those previously identified (Stantec, 2023c), and if so, to what extent; and • Prepare a report to outline the results of the investigation and provide: - A statement on the suitability of the site for the proposed use; and • Recommendations on any future actions including management, remediation or further investigation (if required).
Scope of works	The following scope of work was completed as part of the DSI: • Preparation of safety documentation and completion of a Before You Dig Australia (BYDA) (formerly Dial-Before-You-Dig) underground utilities search. • A Telstra accredited underground service locater was engaged and carried out locating and marking of underground services in areas where intrusive sampling locations were proposed; • A detailed site walkover inspection was undertaken by an experienced environmental scientist and contaminated land professional to assess for potential contamination sources that may have occurred since previous investigations. • Soil boring of fourteen (14) sample locations utilising hand tools (hand auger). • Advancing twenty-one (21) test-pits within the site, utilising a 5t tracked excavator. • Surface water and sediment sampling was conducted from a dam located at the eastern extent of the site to assess for potential contamination.

Item	Description
	• Soil samples were collected at near surface and 0.5 m intervals until target depth is achieved, with additional samples collected at change in strata and/or if contamination indicators (such as staining or odours) were observed. • The soil profile at each test pit was logged on site in accordance with Australian Standard AS 1726:2017 – Geotechnical Site Investigations and excavated cuttings assessed on site for the presence of Volatile Organic Compounds (VOC) utilising a calibrated photo-ionisation detector (PID). • Laboratory testing of soil, sediment and surface water samples at a National Association of Testing Authorities, Australia (NATA) accredited laboratory for analysis of Contaminants of Potential Concern (CoPCs) as well as a broader range of contaminants in select samples. • Preparation of a DSI report in accordance with the NSW EPA Consultants Reporting on Contaminated Land (NSW EPA, 2020) and the National Environment Protection (Assessment of Site Contamination) Measure (1999) (NEPC, 2013).
Results	**Soil** Soil Observations • The fill profile encountered across the site ranged from 0.1 – 2.0 m bgl. Fill thickness was observed to occur deepest within the northeastern portion of the site at sample location TP5, this location is within a drainage line that has potentially been filled. - The remainder of the site contains a consistent fill layer that varies between 0.1 and 1.2 m bgl. • Trace anthropogenic materials (plastic, concrete, bricks, metal wire and nails) were encountered within shallow surficial soils, generally ranging between 0.0 – 0.3 m bgl at sample locations AHA103, AHA105, TP5 and TP20. • Sheen, odour, discolouration and staining were not observed on ground surfaces or in excavated materials. Asbestos was not observed on ground surfaces or within soils, and large masses of demolition rubble in fill were not observed. • Groundwater was not observed during the excavation of any sample locations. Human Health • All soil samples analysed were recorded either below the laboratory Limit of Reporting (LOR) or the applicable human health screening criteria, except for sample AHA103_0.35 -0,4 which reported a lead concentration of 780 mg/kg, exceeding the applicable HIL A criteria of 300 mg/kg. Ecological • All soil samples analysed reported concentrations either below the laboratory LOR or applicable ecological screening criteria. Aesthetic • Areas targeted by the investigation were generally selected based on having an elevated risk of contamination, including locations potentially impacted by latent hazardous building materials and the presence of potential filling. Observations of anthropogenic materials in fill were predominantly traces of plastic, concrete, bricks, metal wire and nails generally within surficial soils but observed to a maximum depth of 0.3 m bgl.

Item	Description
	• Based on the proposed land-use and absence of significant inert materials observed within site soils or at surface, the soils are unlikely to cause substantial concern aesthetically or risk of physical harm. This would need to be reconsidered upon completion of construction to ensure that non-hazardous inert foreign material, such as construction debris, is not present at or near ground surface. **Surface Water** Surface Water Observations • One (1) surface water sample was collected from the dam/ ephemeral drainage line within the northeast extent of the site in the vicinity of the neighbouring agricultural paddocks. • Surface water was stagnant and only minimal water was observed within the dam during the sampling event. • Cloudy and turbid water was observed at the sampled water body. • During sampling, reeds and grasses were observed surrounding the waterbody. • The water body appeared to receive surface water runoff from the site but also have a larger off-site catchment upgradient to the south, which is fed by an ephemeral stream and engineered stormwater infrastructure. **Analytical Results** • All results were below the laboratory LOR or adopted criteria with the exception of the total and dissolved copper, lead, nickel and zinc as well as PFOS. • The above analytes exceeded the applicable ecological screening criteria. **Sediment** Sediment Observations • One (1) sediment sample was collected from the centre of an unnamed water body located at the eastern site boundary, at the same location from which a surface water sample (SW1) was collected. • The sediment was characterised as clayey silt, brown to dark brown, low plasticity with rootlets and trace sands and gravels. • Reeds and grasses were present at the sampling location with a waterbody approximate 0.1m deep present where samples were obtained. • A moderate sulfidic odour was present upon sampling. • The water body appeared to receive surface water runoff from the site but also have a larger off-site catchment upgradient to the south, which is fed by an ephemeral stream and engineered stormwater infrastructure. **Analytical Results** • All sediment samples analysed contained contaminant concentrations below the adopted laboratory LOR and/or below the adopted sediment screening criteria. However, it is noted that the screening criteria for some pesticide (chlordane, DDD and endrin) and PCB analytes were less than the reported LOR:
Conclusions	Upon completion of the scope of works outlined above, the following was concluded;

Item	Description
	• An exceedance of applicable human health criteria for lead was identified in soil sample AHA103_0.35-0.4, which is considered a 'hotspot' as per the definition of Schedule B1 of the ASC NEPM. The vertical extent of contamination is currently unknown, and the sampling point is located approximately 10 m east of an previously identified as lead impacted. • Under the current and future land use, the lead concentration at AHA103 presents an unacceptable risk to human health for current and future site users and will require management. Conservatively, for remediation planning it should be considered that lead impacts are present from surface to 0.4 m bgl at and in the vicinity of AHA103, however, actual remediation extents are to be determined during remediation and validation of the site. – Until such time that site remediation and validation works have been completed and/or a long-term environmental management plan has been completed for the site, interim management of impacted soils is recommended not only for the impacts at AHA103 but for other locations within the site known to contain contamination (see recommendations below). • Whilst asbestos has not been identified during this investigation, asbestos has been previously observed within some fill soils excavated within the northwestern portion of the site. Soils at the site have generally been assessed using hand tools due to constraints presented by current buildings, structures and subsurface utilities. This sampling methodology limits observations of subsoils and appropriate sampling opportunities to assess for asbestos, and as such it is considered that asbestos could existing in fill at some locations within the site • There were no exceedances of the applicable ecological screening criteria in soil. • There were no exceedances of applicable screening criteria in sediment. • Exceedances of ecological criteria for total and dissolved copper and zinc, dissolved lead, total nickel and PFOS were reported within surface water samples collected from the dam. It is noted that the water catchment collects surface waters from the broader surrounds to the south (off-site), which is inferred upgradient. As such, waters within the dam may be subject to off-site influences. The dam is proposed to be filled with approximately 2m of material placed as part of the proposed activity. Under this activity scenario, these ecological exceedances do not present a complete source-pathway-receptor linkage. From the findings of this investigation and previous investigations, with the exception of the areas identified as being impacted by lead in soil, indicatively shown on **Figure 3** in **Appendix A**, the site is suitable for the current and proposed land-use as school infrastructure. Based on current information, it is considered that the lead impacted soil can be made suitable following implementation of the recommendations outlined below, and the potential risk to site users in lieu of eventual remediation (post-approval) can be managed through implementation of an Interim Site Management Plan (or similar). Based on the above conclusions, the following was recommended: • Stantec were advised by SINSW that the construction timing for the proposed activity is anticipated to commence mid to late 2025, upon completion of the approvals process. Stantec understand that remediation and validation of the site is unlikely to occur until that time. However, to manage the health and safety of current site users until that time, interim management controls are required, as outlined below: - An Interim Site Management Plan (or similar) should be prepared by a suitably qualified occupational hygienist to identify the risk areas and specify appropriate management controls and procedures to render the source-pathway-receptor linkages incomplete. All existing documents relating to contamination are to be supplied to the occupational hygienist.

Item	Description
	- The Plan should be prepared as soon as practicable and must be considerate of the known or potential site receptors including students and teachers, groundskeepers and maintenance staff. The approximate lateral extent of known and approximate contamination is shown on **Figure 3**, **Appendix A**, and it should be noted that soils beneath buildings and structures have not been assessed. - If the proposed activity were not to proceed as proposed, a more permanent management approach would be required such as further investigation and remediation of contaminated soils. • A revised RAP or addendum to the existing RAP (Stantec (2023e) must be prepared to consider the findings of this investigation. - This approximate lateral extents for remediation are shown on **Figure 3**, **Appendix A**. Delineation can occur during implementation of the RAP, with final remediation extents to be determined during remedial activities and site validation. - Upon completion of the remediation works and successful soil validation, a Validation Report must be prepared in accordance with NSW EPA (2020), by a suitably qualified and experienced contaminated land professional. - Construction activities undertaken at the site must be planned and executed considerate of this DSI report and the revised/ addendum Remediation Action Plan (RAP). • Areas of the site containing asbestos should be recorded under an asbestos management plan and associated register in accordance with SafeWork NSW requirements, inclusive of current buildings and structures, and any soils that are identified as being asbestos impacted. • The management options and fate of waters and sediments within the dam require consideration by the civil construction contractor prior to commencement of construction activities. • All future activities should be conducted as per a suitable Construction and Environmental Management Plan (CEMP) to minimise potential risks to human health and the environment during implementation of the RAP. • Where material is to be removed from the site as part of the RAP implementation and/ or future activity, waste classification assessments for such materials must occur in accordance with the NSW EPA Waste Classification Guidelines (2014) or an applicable resource recovery order/exemption.

5.0 REMEDIATION / VALIDATION CRITERIA

5.1 REMEDIATION / VALIDATION CRITERIA

Where impacted material is excavated, the underlying and surrounding soils and/or bedrock must be sampled and analysed (i.e. validated) to confirm that all contaminated soils have been removed, and/ or to determine if source-pathway-receptor linkage is incomplete.

A statistical approach to remediation and validation sampling may also be considered, provided the concentrations are not considered a contamination “hotspot” (e.g., greater than 250% of applicable screening criteria) and does not pose a significant risk to human health or ecological receptors.

The adopted soil validation criteria for the site have been derived from the NEPC (2013) and are outlined in **Table 5.1** below. Following remediation, all retained soils and/or bedrock must be below the adopted criteria, ensuring the contaminated soils have been adequately removed and no further unacceptable risk remains. Where materials are to be remediated through on-site containment and/or encapsulation, and where excavation is not practical, other considerations for its management must be prepared and documented in a LTEMP.

Table 5-1 Soil Remediation / Validation Criteria

Value	Guideline	Criteria
Human Health	NEPC, 2013, Schedule B1, Section 6, Tables 1A(1) and 1A(3); For asbestos: Section 4, Table 7.	The criteria have been derived in consideration of the proposed end land use i.e. Gillieston Public School and Pre-Kindy. The HIL-A / HSL-A exposure scenario (residential with garden/accessible soil) is considered most appropriate given the sensitive land use / receptors. The specific criteria to be used are summarised below: • Health Investigation Level (HIL) for ‘residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry), also includes children’s day care centres, preschools and primary schools’ (HIL-A) • Health Screening Level (HSL) for ‘Low – high density residential’ (HSL-A&B) **For asbestos**: Whilst no known asbestos remains at the site, due to the presence of filling and prior identification of asbestos in soil, the following validation criteria must be applied to soils where asbestos is identified: • No visible asbestos within surface soils (0.0-0.1 m bgl). • 0.001% w/w for friable asbestos in soil, applicable to all land uses. • 0.01% w/w for bonded asbestos in soil, applicable to a low-density residential setting.

Value	Guideline	Criteria
Ecological	NEPC 2013, Schedule B1	For excavations that are located within areas that will become landscaping or potentially interact with ecological receptors, the ecological criteria for urban residential and public open space are considered to be appropriate. This criteria also applies to soils that are excavated and are being considered for potential on-site reuse, with comparison required to ensure that a complete source-pathway-receptor does not exist to current or future ecological receptors: - Site-specific ecological investigation levels (EILs) were previously calculated utilising the physiochemical properties of shallow (maximum of 2 m) site soils from samples collected during the DSI (Stantec, 2024). o The site-specific parameters utilised to calculate the EILs utilised for this assessment are below in **Table 5-2**. - Ecological Screening Levels (ESL) for urban residential and public open space, fine soil, 0-2m.

Table 5-2 Ecological Validation Criteria

Sample ID	Matrix description	Parameters				Criteria – Aged			
		pH	CEC	Clay (%)	TOC (%)	Copper	Chromium	Nickel	Zinc
TP1_0.1	Sandy to gravelly SILT/ Silty SAND	4.9	6.1	<2.5	3	100	260	55	230
TP13_0.5	Clayey to gravelly SAND	4.5	1.1	<2.5	0.3	35	260	6	110

Soils remaining onsite must also comply with the aesthetic requirements provided in Section 3.6 of Schedule B1 of the NEPM (NEPC, 2013). The general assessment considerations include:

- The risk for a person to be injured by metal, glass or other sharp objects;
- That chemically discoloured soils or large quantities of various types of insert refuse, particularly if unsightly, may cause ongoing concerns to site users;
- The depth of any residue in relation to the final surface of the site; and
- The need for and practicality of any long-term management of foreign material.
- Soils remaining within the site should be such that at surface there is no detectable odour, identifiable staining or large quantities of inert waste.

The previously identified CoPCs as outlined in **Section 7.0** and the applicable screening criteria for each analyte is outlined below in

Table 5-3 Consolidated Validation Criteria

Contaminant of Potential Concern	Human Health Screening Value	Ecological Screening Value
Lead	300 mg/kg	1,100 mg/kg
Zinc	7,400 mg/kg	230 mg/kg (Fill – Sandy to Gravelly Silt)
		110 (Natural – Clayey to Gravelly Sand)
Asbestos*	No visible asbestos within surface soils (0.0-0.1 m bgl).	-
	0.001% w/w for friable asbestos in soil	
	0.01% w/w for bonded asbestos in soil	

* validation for asbestos will occur where evidence of asbestos is noted during remediation

5.2 WASTE CLASSIFICATION CRITERIA

5.2.1 Exported materials

Excavated material requiring removal from the site must be classified in accordance with the NSW EPA waste classification framework, including applicable Resource Recovery Orders / Exemptions (RRO/RRE) and the *Waste Classification Guidelines* (2014a). This process is outlined in further detail in **Section 12.5.1** and **Section 15.1**.

Off-site reuse of material is permitted subject to satisfaction of the applicable RRO / RRE, however, where contaminated materials generated during remediation are to be removed from the site, they must be classified in accordance with the Waste Classification Guidelines (2014a) and disposed of at a NSW EPA licensed facility in accordance with the *NSW Waste Regulation 2014*.

Existing data and observations can be utilised during future off-site disposal, however, additional supplementary sampling and analysis must be undertaken (as necessary) to satisfy the relevant NSW EPA requirements such as:

- NSW EPA Sampling design part 1 - application (2022);
- NSW EPA Waste Classification Guidelines (2014a).

An unexpected finds protocol must be incorporated into the remediation / construction contractor documentation and implemented during site redevelopment to ensure that different material types are segregated and classified separately. This approach is discussed in more detail under the Contingency Plan outlined in **Section 16.0**.

5.3 IMPORTED MATERIALS

Any soil materials proposed for importation to the site during the proposed activity must be deemed suitable and meet the following requirements, noting that the process for assessing the suitability of material proposed for importation is outlined in detail in **Section 12.6.2** and **Section 15.1**:

- Compliance and conformance with an NSW EPA Resource Recovery Exemption / Order (such as Excavated Natural Material (ENM)) or meet the definition of Virgin Excavated Natural Material (VENM).
- The material must not contain any asbestos in any form, to be confirmed through inspection, sampling and laboratory testing.
  - A thorough visual inspection must be undertaken of any imported material and sampling of imported materials must be completed at minimum rate of one sample per 100 m^3); and
- Must meet aesthetic criteria.

Supporting documentation must demonstrate that the material satisfies an EPA Resource Recovery Order, or a NSW EPA Special Exemption by application where a current NSW EPA Resource Recovery

Order does not exist. The documentation required will include a specification sheet from the supplier showing the type of material imported is approved, and the materials are inspected by the appointed Environmental Consultant. The site landowner must declare acceptance of the imported material on the basis that the material satisfies all importation and receival requirements. In this regard, it is recommended that:

- The documentation is reviewed by a qualified environmental consultant prior to it being accepted; and,
- All importation sites should be assessed by a suitably qualified environmental consultant through a site visit, sampling, and analyses of representative samples from the importation site.

5.4 TRIGGERS FOR FURTHER MANAGEMENT

Further investigation or remediation may be required during the remediation and construction phase of the proposed activities, with triggers for further management including:

- Change of the development plan which may involve shallower excavation works with retention of impacted fill soils;
- Unexpected finds of contaminated material which are incompatible with the remedial approach;
- Finalisation of development plans; and
- Any modification to NSW environmental or planning legislation affecting the RAP.

- Where triggers for further management are identified, the applicable validation criteria are to be assessed. Refer to **Section 13.6** for an outline of measures to be implemented when unexpected finds are encountered.

6.0 RESULTS

The site history section of the report (**Section 4.0**) described the previous investigations and initial remediation works in detail, including the sample locations that exceeded applicable land use criteria. The full data summary tables from all samples analysed during previous investigations can be viewed in **Appendix F** and can be viewed in **Figure 3**, **Appendix A**. **Table 6-1** below details the locations and depths of samples with lead contamination that exceed the remediation criteria outlined in **Section 5.0**.

Table 6-1 Soil Analytical Results

Analyte	Remediation Criteria	Sample Location	Sample Type	Sample Depth	Laboratory Result (mg/kg)
Lead	NEPC (2013) HIL-A (300 mg/kg)	VAL_W03,	Validation sample – wall of excavation	0.2	391
		VAL_W15	Validation sample – wall of excavation	0.35	330
		VAL_W17	Validation sample – wall of excavation	0.4	920
		VAL_W19	Validation sample – wall of excavation	0.25	400
		VALC_W02	Validation sample – wall of excavation	0.15	410
		VALC_W06	Validation sample – wall of excavation	0.2	660
		VALC_W10	Validation sample – wall of excavation	0.1	340
		VALC_W11	Validation sample – wall of excavation	0.3	340
		VALN_W01	Validation sample – wall of excavation	0.1	300
		VALN_W02	Validation sample – wall of excavation	0.2	360
		VALN_W06	Validation sample – wall of excavation	0.15	360
		VALN_B02	Validation sample – base of excavation	0.4	500
		QA500	Duplicate sample of VALN_B02		550
		QA600	Triplicate Sample of VALN_B02		360
		VALE_B03	Validation sample – base of excavation	0.3	310

Results

Analyte	Remediation Criteria	Sample Location	Sample Type	Sample Depth	Laboratory Result (mg/kg)
		VALE_B04	Validation sample – base of excavation	0.3	420
		AHA103	Soil bore advanced curing DSI	0.35-0.4	780

7.0 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) provides a high-level assessment of the potential fate and transport of CoPC within the context of site-specific subsurface conditions with regard to their potential risk to human health and the environment. Risk to human health and the environment is identified through complete Source – Pathway – Receptor (SPR) linkages. In order to identify SPR linkages the CSM considers site specific factors, including:

- Source(s) of contamination;
- Identification of contaminants of concern associated with past (and present) source(s);
- Site specific information including soil type(s), inferred depth to groundwater, inferred permeability, inferred groundwater flow direction and surface water bodies and interactions;
- Location of any identified sources relative to the proposed site activity; and
- Actual or potential receptors considering both current and future land use both for the site, adjacent properties and any sensitive ecological receptors.

Table 7-1 summarises the CSM for the site following the completion of the works described in **Section 4.0**. Based on the findings, there are potentially complete SPR linkages identified for human site users under both current and future land uses as well as ecological receptors.

Conceptual site model

Table 7-1 Conceptual Site Model

Contaminant Source	Impacted Media	Contaminants of Potential Concern	Potential Exposure Pathways	Receptors	Likelihood of Completeness
Hazardous building materials contained within former and existing site structures/ within imported fill Weathering of exposed building fabrics	Air Surficial fill soils	Lead Zinc Nickel Asbestos	Direct Contact Incidental Inhalation Incidental Ingestion	**Human:** Current site users Future Site workers (including maintenance workers) Neighbouring site users (through lead dust or asbestos fibres) **Ecological:** Existing and future plant-based biota within the site	**High:** high likelihood of exposure by site receptors due to the shallow depth of impact and probable interactions
Water in ephemeral drainage line	Surface water	Metals (total and dissolved) PFOS	Direct contact	**Ecological:** Existing and future plant-based biota within the site	**Low**: the reported metals exceedances are total metals and may be representative of sediment interference. The potential PFOS source is unknown and based on current soil data would suggest a possible off-site source. Exceedances related to ecological receptors only. The ephemeral drainage line is proposed to be filled as part of the construction. As such, the potential for ecological interaction with dam waters is incomplete. The management options and fate of waters and sediments within the dam would require consideration by the civil construction contractor prior to commencement of construction, ensuring that the waters do not present a potential risk to ecological receptors during management.

7.1 DATA GAPS AND UNCERTAINTIES

The following data gaps and uncertainties remain for the site:

- Soil quality beneath buildings and hardstand areas (particularly concrete pathways and the staff carpark) was unable to be assessed visually or by laboratory analysis.
  - As the redevelopment requires the removal of hardstands, the removal of existing demountable buildings and/ or demolition of existing structures/ buildings in the vicinity of the remediation area, these soils should be assessed when available.
- The concept plans and cut and fill plans indicate that excavation works will be required along Gillieston Road, this area has not been assessed as part of this investigation.
- The exact vertical and lateral extent of lead impacted soils at the site remains undefined at some locations, however, it is envisaged the extents would be determined during remediation and validation.
- Groundwater quality and flow direction has not been assessed. Groundwater has not been observed during any intrusive investigations and as such is not anticipated to present a significant contamination risk to the proposed activity or the current and future land uses.
- A hazardous materials survey (HAZMAT) was not conducted for potentially hazardous building materials, however, it is noted that a HAZMAT survey has previously been completed and is available on the Schools Asbestos Register website (https://www.schoolinfrastructure.nsw.gov.au/what-we-do/we-look-after-our-schools/schools-asbestos-register.html#).
- Hand tools were utitlised for sampling during previous investigations at some locations due to constraints presented by current buildings, structures and subsurface utilities. This sampling methodology limits observations of subsoils and visual assessment for contaminant indicators, particularly asbestos. Current information suggests localized asbestos impact. Remediation requirements for asbestos will be informed by site observations gathered during remedial earthworks and construction, and managed under an unexpected finds protocol (see **Section 13.6**)

8.0 EXTENT OF REMEDIATION REQUIRED

Based on the works completed to date and utilising the available documentation, the approximate lateral extents of the site requiring remediation are illustrated on **Figure 3, Appendix A**. These indicative extents have been defined by exceedances of the applicable ASC NEPM (2013) Tier 1 Screening Criteria for lead (HIL-A) that remain within fill soil, specifically: AHA_103, VAL_W03, VAL_W15, VAL_W17, VAL_W19, VALC_W02, VALC_W06, VALC_W10, VALC_W11, VALN_W01, VALN_W06, VALN_B02, VALE_B03, VALE_B04. The final lateral and vertical extent will be determined during the remediation activities. Stantec acknowledges that exceedances of the applicable ecological criteria exist at the site, and those materials are discussed in more detail below.

As noted above in the CSM, there were previous exceedances of applicable ecological screening criteria for nickel and zinc in shallow fill soils. During the initial delineation works as part of the PDSIC (Stantec, 2023c), nickel concentrations surrounding the initial exceedance (BH15) were below criteria. Due to the isolated distribution of this ecological exceedance, nickel was not further considered a CoPC. Zinc concentrations were reported above applicable ecological screening criteria within shallow fill in similar locations to the human health exceedances for lead, so it is considered that these soils will be addressed through remediation of lead impacted soils. If materials impacted by zinc above the ecological criteria are retained on site under a containment scenario, the potential impact to ecological receptors would be considered in the containment design (i.e. ensuring an incomplete S-P-R linkage).

Stantec have estimated the volume of contaminated soils requiring remediation based on existing soil sampling, analytical results and sample distribution (vertical and lateral). The estimates are provided below in **Table 8-1** , however, are subject to change based on actual site conditions encountered during remediation.

Table 8-1 Estimated Soil Contamination Volumes Onsite

Remediation Area	CoPC	Estimated Depth of Remediation Excavation	Estimated Area of Remediation Excavation	Estimated Volume	Validation Requirements
Initial remediation area that requires further remediation. **Located surrounding Building D, (Refer to Figure 3, Appendix A)**	Lead Zinc	0.3 m bgl Fill; Silty Sand, Sandy Clay, Silty Clay	115 m^2	35 m^3	Sample walls and base to confirm removal. Final lateral and vertical extent of contamination is not known, and validation samples may dictate further excavation requirements.

REMEDIATION ACTION PLAN

Extent of remediation required

Remediation Area	CoPC	Estimated Depth of Remediation Excavation	Estimated Area of Remediation Excavation	Estimated Volume	Validation Requirements
Approximate additional remediation area. **Located adjacent to the initial remediation area which includes soils beneath hardstands. (Refer to Figure 3, Appendix A)**	Lead Zinc	0.4 m bgl Fill; Silty Sand, Sandy Clay, Silty Clay	197 m^2	80 m^3	Sample walls and base to confirm removal. Final lateral and vertical extent of contamination is not known, and validation samples may dictate further excavation requirements.

The current design for the redevelopment indicates that existing hardstands covering the current staff car park and footpaths surrounding Building D, as well as demountable buildings, are to be removed / demolished (see Demolition Plan in **Appendix D**). These areas must be assessed for contamination to determine if further remedial works are required. Due to the relatively small area, and the inferred shallow fill profile at these locations, Stantec consider that required data gap investigation can be completed post-REF Approval when the area is more accessible and unconstrained, for example following demolition but prior to any construction.

Once pavement and structures are demolished / removed, potentially contaminated materials may be exposed. To mitigate against potential health and environmental risks, it is recommended that the data gap investigation occur as soon as practicable, and exposed surfaces managed appropriately in accordance with a Construction Environmental Management Plan (CEMP) and Earthworks Management Plan.

9.0 DATA QUALITY OBJECTIVES

9.1 DATA QUALITY OBJECTIVE

The NEPC (2013) which is endorsed by the NSW EPA under s105 of the *Contaminated Land Management Act 1997,* requires that Data Quality Objectives (DQOs) are adopted for all assessment and remediation programs. The DQO process as adopted by the NSW EPA is described within the US EPA (2000) *Guidance for the Data Quality Objectives Process and Data Quality Objectives Process for Hazardous Waste Site Investigations*.

The DQOs for the remediation of the site are summarised below in **Table 9-1**.

Table 9-1 Data Quality Objectives

DQO Step	Discussion
Step 1: State the problem (Summarise the contamination problem that will require new environmental data and identify the resources available to resolve the problem; develop a conceptual site model).	Soil materials at the site have been contaminated by CoPCs at concentrations above the Tier 1 screening guidelines. There is a potentially complete source to receptor pathway, indicating a potential risk to human health and the environment. Therefore, remediation or management of soils is necessary to render the site suitable for the intended land use as a primary school and pre-kindergarten facility.
Step 2: Identify the decision / goal of the study (Identify the decisions that need to be made on the contamination problem and the new environmental data required to make them).	Based on the objective outlined in **Section 1.2**, the following decision / goals of the study are: 1. Have the site contamination issues been resolved so as to remove potential human health (and/ or ecological) exposure risk to a suitable level for the proposed land use and any off-site risks? 2. Has the site been suitably validated to confirm conformance to the RAP? 3. Is an Environmental Management Plan (EMP) required for long-term management of contamination at the site following its remediation? 4. Is on-going monitoring at the site required post-remediation?
Step 3: Identify the information inputs (Identify the information needed to support any decision and specify which inputs require new environmental measurements).	Inputs to the decision making process include: • The proposed end land use outlined in **Section 1.3**; • Guidelines made or approved by the NSW EPA under the Contaminated Land Management Act 1997; • Information provided by the client; • Available site historical information; • Previous investigations and remedial works performed at the site, summarised in **Section 4.0**; • Soil validation sampling of remedial excavation; • Laboratory analytical results of soil validation samples; and • Sampling and laboratory analysis from stockpiled soil material for waste classification assessment; • Assessing the suitability of imported materials;

DQO Step	Discussion
	• Assessment of analytical results in relation to the remediation / validation criteria. At the end of the validation, a decision must be made regarding whether the environmental conditions are suitable for the proposed activity, or if additional investigation or remedial works are required to make the site suitable.
Step 4: Define the boundaries of the study (Specify the spatial and temporal aspects of the environmental media that the data must represent to support decision)	The boundaries of the study are: **Lateral** – the intrusive investigation is limited to the site boundary as shown in **Figure 2** in **Appendix A**; **Vertical** – from existing ground surface, underlying fill material and natural soil horizons to the base of contaminated soil and/ or maximum excavation depth which is anticipated to be < 0.5 m bgl; and **Temporal** – Results are valid on the day of data / sample collection and remain valid as long as no changes occur at the site or contamination (if present) does not migrate on site or to the site from offsite sources.
Step 5: Develop the analytical approach (To define the parameter of interest, specify the action level, and integrate previous DQO outputs into a single statement that describes a logical basis for choosing from alternative actions).	Parameters of interest include the laboratory results of primary and quality control soil analytical testing. Decision rules for soil and criteria exceedances are outlined as follows: • If the laboratory quality assurance/ quality control data are within the acceptable ranges, the data will be considered suitable for use. • The Practical Quantitation Limit (PQL) for all analyses is at or below the adopted criteria level; • The laboratory soil test results will be considered to have met the adopted soil criteria when the following occur: – The laboratory reported result is below the investigation human health and ecological criteria for the site; or, – The calculated 95% Upper Confidence Level of the arithmetic mean (95%UCL) contaminant concentration does not exist in soil samples at concentrations in excess of Tier 1 Assessment Criteria; and – The standard deviation of the results is less than 50% of the relevant adopted criteria; and, – No single analytical result for a CoPC should exceed 250% of the relevant investigation level or screening level. • RPDs for duplicate samples are within accepted limits. • Further decisions are also required following any additional assessment. This may require updating of the RAP to include groundwater remediation or management. • Soil concentrations of chemicals of concern that are below investigation/ validation criteria made or approved by the NSW EPA will be treated as acceptable and indicative of suitability for the proposed land use. The laboratory results and site observations associated with the assessment of asbestos in soil must meet the criteria specified in **Section 5.1**.
Step 6: Specify performance criteria or acceptance criteria (Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for	Decision errors are incorrect decisions caused by using data that is not representative of site conditions due to sampling or analytical error. The two types of decision errors are: • The sampling program does not detect the variability of a contaminant from point to point across the site; and • Errors made during sample collection, handling, preparation, analysis and data reduction. Decision errors will be minimised by the following:

DQO Step	Discussion
limiting uncertainties in the data).	• The field sampling design, frequency, and methodology, sample preservation techniques and laboratory analytical procedures will be conducted in accordance with accepted NSW EPA, NEPM (2013) and NATA accredited methodologies; • A check of the field and laboratory works is to be made against the Data Quality Indicators for precision, accuracy, representativeness, completeness and comparability as outlined in NEPM (2013) Schedule B2, Site Characterisation and included in **Section 9.2**; • A decision that soil is acceptable for the site land use is based on calculation of the 95% Upper Confidence Level of the arithmetic mean (95%UCL) and standard deviation for contaminant concentration and comparison with the adopted soil criteria. Therefore, the acceptable limit of a decision error is 5% that a conclusive statement may be a false positive or false negative. • Sampling errors may occur when the sampling program does not adequately detect the variability of a contaminant from point to point across the site or is not representative. Some examples of this scenario include but are not limited to: – Restrictions in excavation depths due to refusal. – Proposed samples cannot be collected due to access limitations (beneath hardstand areas and buildings/ structures). Measurement errors can occur during sample collection, handling, preparation, analysis and data reduction. To address this the following measures are proposed: • Field staff to follow a standard procedure when collecting samples, including decontamination of tools, collection of representative samples and use of appropriate sample containers and preservation methods. • Laboratories to follow a standard procedure when preparing samples for analysis and undertaking analysis. • Laboratories to report quality assurance/ quality control data for comparison with the DQIs established for the project.
Step 7: Develop the plan for obtaining data (Identify the most resource-effective sampling and analysis design for general data that are expected to satisfy the DQOs).	The work plan is designed to meet the project objective in **Section 1.2** and the DQOs outlined above. To ensure resource-effective sampling, analysis and data collection that satisfies the DQOs, the following actions are to be taken: • Written instructions will be used to guide field personnel in the required fieldwork activities; • Representative soil samples will be collected from the site and analysed for validation and characterisation purposes; • Validation field works and analyses will be undertaken in accordance with Stantec Standard Operating Procedures; • Soil remedial excavation is to be performed as per **Section 12.5.** • Soil validation sampling is to be completed as per the methodology prescribed in **Section 15.0**; and • Review of the soil results will be undertaken to determine if further excavation and additional sampling are warranted.

9.2 DATA QUALITY INDICATORS

To ensure that the data collected and fieldwork practice during the remedial activities will be of an acceptable quality, analytical data and field notes will be assessed against the data quality indicators (DQIs) outlined in **Table 9-2**.

Table 9-2 Data Quality Indicators

QA/QC Measure	Field Quality Indicator	Laboratory Quality Indicator
Precision: A quantitative measure of the variability (or reproducibility) of data.	SOPs are appropriate and complied with. Field duplicates and Blind field duplicates are collected and analysed at a rate of 5% (1 per 20 samples). Use of calibrated equipment (if applicable)	Laboratory analyses of laboratory and inter-laboratory duplicates, field duplicates, laboratory prepared volatile trip spiles. Relative Percent Difference (RPD) calculation results: <30% Relative Percentage Difference (RPD). The RPD values are calculated using the following equation: $RPD = \frac{I C_O - C_R I}{[(C_O + C_R) / 2]} \times 100$ Where, C_O = Analyte concentration of the original sample C_R = Analyte concertation of the duplicate sample
Accuracy: A quantitative measure of the closeness of reported data to the "true" value.	SOPs are appropriate and complied with. Use of calibrated equipment (where applicable). Field interlaboratory duplicates sampled and analysed at a rate of 1 per 20 samples. <30% Relative Percentage Difference (RPD) Analysis of rinsate sample collected at rate of 1 per day. Trip spike and trip blanks were used (only when analysing primary samples for volatile contaminants).	Laboratory holds NATA-accreditation for the analyses. Laboratory limit of reporting is below the adopted investigation level. Laboratory analysis of: field blanks, rinsate blank, reagent blank, method blank, matrix spike, matrix spike duplicate, surrogate spike, reference material, laboratory control sample, laboratory-prepared spikes. The nominal acceptance limits on laboratory control samples are: Laboratory spikes: 70-130% recovery for metals 60-140% for organics Laboratory duplicates. If contaminant concentration is: < 10 x PQL, no RPD limit 10-20 x PQL, RPD is 0% to 50% >20 x PQL, RPD is 0% to 20% Laboratory surrogates: 60-140% recovery. Laboratory blanks: <PQL Laboratory control samples, 70-130% recovery
Representativeness: The confidence (expressed qualitatively) that data are representative of	Appropriate media sampled. Preservation and storage of samples upon collection and	Blank samples run in parallel with field samples to confirm there are no unacceptable instances of laboratory artefacts.

QA/QC Measure	Field Quality Indicator	Laboratory Quality Indicator
each media present on site and the conditions encountered in the field	during transport to the laboratory occurs. Sampling is undertaken by an experienced sampler.	Review of RPD values for field and laboratory duplicates to provide an indication that the samples are generally homogeneous, with no unacceptable instances of significant sample matrix heterogeneities The appropriateness of collection methodologies, handling, storage and preservation techniques will be assessed to ensure/confirm there was minimal opportunity for sample interference or degradation (i.e. volatile loss during transport due to incorrect preservation / transport methods). Rinsate samples used when sampling equipment is reused have analytical results <LOR.
Completeness: A measure of the amount of useable data from the data collected during the fieldwork program	All critical locations sampled. All samples collected (from grid and at depth). Standard operating practices (SOPs) appropriate and complied with. Sampling is undertaken by an experienced sampler. Suitable records of field work are documented. Completed laboratory sample chain-of-custody and documentation.	All critical samples are analysed according to the remediation strategy. The CoPC are analysed. Appropriate methods and PQLs are implemented. Sample documentation is complete. Samples are analysed within holding times.
Comparability: The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Same SOP is used on each field occasion. Climatic conditions are documented. Experienced sampler Sample type, preservation and handling are consistent at sampling events. Use of calibrated equipment (where applicable).	Sample analytical methods used (including clean-up) Sample PQLs (justify/quantify if different) Same laboratories are used, and justification is given where differences occur. Same analytical methods, Practical Quantification Limits (PQLs), and units of measurement are used.

10.0 REMEDIATION OPTIONS

10.1 REMEDIATION OPTIONS HIERARCHY

Management strategies should be adopted to protect the environment during the activity. In accordance with the ASC NEPM, the preferred hierarchy of options for site clean-up and management of soil contamination is:

1. On-site treatment of soil contamination, so that the risk associated with the contaminant is reduced to an acceptable level.
2. Off-site treatment of excavated soil, so that the risk associated with the contaminant is reduced to an acceptable level, after which it is returned to the site.

If it is not possible for either of the above options to be implemented, then other options for consideration can include the following:

1. Removal of contaminated soil to an approved site or facility, and replacement with clean fill material where necessary.
2. Containment of the contamination on-site either in-situ with appropriate controls that reduce the risk to an acceptable level, or in an appropriately designed and managed containment facility.
3. Adoption of a less sensitive land use or controls on site activities that will reduce the need for remedial worksites, there should be appropriate controls in place to control emissions to air, land and water.

Potential remediation options that can be assessed for appropriateness include:

1. “Do Nothing” The ‘do nothing’ option involves not removing or addressing any of the identified impacts.
2. On-site treatment of soil so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable limit.
3. Off-site treatment of excavated soil so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable limit, after which the soil is returned to the site.
4. Removal of contaminated soil to an approved site or facility, and if necessary replacement with imported fill, and
5. Isolation and management of the soil on-site by capping/ containment within an appropriate barrier.

10.2 REMEDIATION OPTIONS EVALUATION

Stantec has identified and evaluated the potential remedial options listed in the hierarchy above to provide a recommended remedial strategy to address the impacted soils at the site. The options are described in **Table 10-1** below and the evaluation process is summarised in **Table 10-2**.

Table 10-1 Remedial Option Identification

Remedial Option	Description
Option 1: Do Nothing	This option involves not removing or addressing the identified impacted media.
Option 2: Monitored Natural Attenuation	This alternative involves not removing or addressing the identified impacted media but includes periodic monitoring to track CoPCs concentrations over time. Some CoPCs are amenable to concentration, toxicity and/or mass reductions through natural processes such as volatilisation, dispersion, and biodegradation among others.
Option 3: On-site treatment of soil – Immobilisation Fixation/ Stabilisation	This option involves mixing a reagent to the impacted media to solidify or fix the contaminants to make them chemically unavailable or immobile. This technology can be applied to contaminated material either in-situ or ex-situ.
Option 4: On-site treatment of soil – Soil Washing	This is an ex-situ treatment alternative which includes removing contaminants from soils by dissolving or suspending them in a water-based solution. The process utilises the difference in grain size and density of particles to separate the contaminants from the impacted media. The water-based solution used for the washing is then collected, treated, and discharged or collected and disposed off-site.
Option 5: Off-site treatment of excavated soil – Immobilisation Fixation/ Stabilisation	This option is the same as described in Option 3, but the impacted soil would be transported off-site prior to the stabilisation.
Option 6: Off-site treatment of excavated soil – Soil Washing	This option is the same as described in Option 4, but the impacted soil would be transported off-site prior to soil washing/ treatment.
Option 7: Off-site disposal – Excavation and Disposal at Landfill	This alternative includes excavating the impacted soil from the site and transporting it to an appropriately licensed landfill.
Option 8: Isolation and management of the soil on-site by Above-ground Consolidation Encapsulation	This alternative includes consolidation of the impacted material above ground in engineered mounds, stockpiles or embankments which are isolated via barrier layers and clean material capping. This option would be undertaken in conjunction with encapsulation of in-situ material beneath a capping layer, where excess material is required to be managed to achieve design levels. This option is potentially enforceable with a Long-Term Environmental Management Plan (LTEMP).
Option 9: isolation and management of the soil on-site by In-situ Encapsulation	This option includes installation of a capping layer over the impacted soils to isolate the material from potential receptors. This option can be undertaken in conjunction with other consolidation measures or off-site disposal if raising the level of the area is not appropriate. This alternative could be a standalone option or implemented in conjunction with another remedial alternative and potentially managed in conjunction with a LTEMP

Table 10-2 Remedial Options Evaluation

Option	Description	Advantages	Disadvantages	Outcome
1	Do Nothing	• Elimination of remedial costs.	• Impacted media has been identified at the site that must be addressed to minimize potential risks to human health and/ or the environment; and • Does not address the remediation objectives outlined in **Section 5.0**, and as such the land would remain unsuitable for the proposed use.	Unsuitable.
2	Monitored Natural Attenuation	• Elimination of remedial costs.	• The identified CoPCs are not amenable to concentration reduction through natural processes in a timely manner; and • Does not address the remediation objectives listed in **Section 1.2.2**, and as such the land would remain unsuitable for the proposed use.	Unsuitable.
3	On-site Immobilisation Fixation/Stabilisation and re-use on-site	• Technology has shown to be reliable at immobilising the identified CoPCs; • The CoPCs are amenable to stabilisation; • Moderate cost; • The operation and management costs are low, with minimal long-term monitoring once CoPCs are stabilised; • Care should be exercised so that polluted surface water does not affect clean soils; and • No significant WHS requirements.	• Some limitations with fully mixing the stabilisation reagent in media with a range of grain sizes; • May require segregation from growing mediums; • Would require an Environmental Management Plan (EMP) for long-term monitoring and protection of the remediated soil. • Would require bench-scale study – often trials are necessary to assist with the selection process. • Due to the staging of the proposed activity, onsite immobilisation would be prohibited by insufficient area.	Unsuitable

Remediation options

Option	Description	Advantages	Disadvantages	Outcome
4	On-site Soil Washing and re-use on-site	• The material requiring remediation has varying grain sizes.	• Soil washing does not remove waste (anthropogenic material). • Would require bench-scale study. • May require multi-stage process. • Would require construction of a secure soil wash containment area. • Would require liquid waste disposal and soil validation process.	Unsuitable.
5	Off-site Immobilisation Fixation/Stabilisation and re-use either on-site or off-site	• Technology has shown to be reliable at immobilising the identified CoPCs; • The CoPCs are amenable to stabilisation; • Would be completed at an appropriate facility. • The operation and management costs are low, with minimal long-term maintenance once CoPCs are stabilised; and • No significant WHS requirements.	• May require bench-scale study. • Requires certainty from an EPA licenced treatment facility; • Greater cost than Option 3 due to transportation and facility treatment costs. • Requires substantially more testing to validate soils for re-use once treated. • Requires waste treatment documentation to be complete.	Unsuitable.
6	Off-site Soil Washing and re-use on-site or off-site	• The material requiring remediation has varying grain sizes. • Would be completed at an appropriate facility.	• Soil washing will not remove waste (anthropogenic material) • Requires certainty from an EPA licenced treatment facility; • Would require bench-scale study. • May require multi-stage process. • Requires substantial more testing to validate soils for re-use once treated. • Would require liquid waste disposal. • Requires waste treatment documentation to be complete.	Unsuitable.
7	Excavation and Offsite Disposal at Landfill	• Relatively easy to implement and proven solution;	• Costs of offsite disposal at a licenced facility;	**Suitable**.

Remediation options

Option	Description	Advantages	Disadvantages	Outcome
		• Minimises potential risks to human health and environment; • Sustainable long-term remediation option; • Low ongoing operation and maintenance; • Economically viable for smaller, localised areas of CoPC with soils classified as general solid waste; and • Removes liability for ongoing management.	• Costs to import soil for construction purposes (if required); • Uses landfill capacity; • Higher energy expenditure and costs to transport off-site; and • Requires waste documentation to be complete.	
8	Above-ground consolidation containment / encapsulation	• Ease of implementation at the site; • Reliable option for removing human health and ecological receptor pathways; • Sufficient space on site to accommodate landscaped mounds or embankments; • Moderate costs; • The ongoing operation and maintenance have low costs as it requires minimal long-term monitoring; and • Relatively sustainable.	• Contamination is not reduced, only isolated; • The mobility of contaminants must be assessed to determine whether this option is viable; • Requires specific engineering design and verification of encapsulation mounds of impacted material at the site; • Ongoing management required by site management via legally enforceable Long Term Environmental Management Plan (LTEMP); • Additional engineering of containment within final design and construction;	**Suitable, subject to appropriate location.**
9	In-situ containment / encapsulation	• Easy implementation at site; • Reliable option at removing human health and ecological receptor pathways; • Moderate costs if used in conjunction with above-ground consolidation; • The ongoing operation and maintenance have low costs as it	• Contamination is not reduced, only isolated; • The mobility of contaminants must be assessed to determine whether this option is viable; • Requires engineering design for cap and contain of impacted material at the site; • Where applicable ongoing management (by site owner and/or operator) required	**Suitable, subject to appropriate location.**

Remediation options

Option	Description	Advantages	Disadvantages	Outcome
		requires minimal long-term monitoring; and • Sustainable option. • Proposed site plans indicate there are options suitable for in-situ encapsulation (e.g. beneath proposed basketball court).	via legally enforceable Environmental Management Plan (EMP);	

10.3 PREFERRED REMEDIATION EVALUATION

Based on the known contamination, as outlined in **Section 3.0** and **Section 5.0**, and the continued land use as a public school post-activity, the following remediation options are considered suitable:

- Option 7 (excavation and offsite disposal)
  - Removal of the contaminated materials will effectively mitigate the risk to human health and ecological receptors.
  - If contaminated materials are unable to be removed in their entirety, for example if underground services and/or structures restrict excavation, residual impacted material would require management under a long-term EMP (i.e. Option 9).
- Option 8 (above-ground containment / encapsulation) and Option 9 (in-situ containment / encapsulation)
  - Options 8 and 9 are suitable methods of eliminating an unacceptable risk to receptors under the future land use.
  - The location(s) for containment / encapsulation requires consultation with site stakeholders, including SINSW and the appointed NSW EPA site auditor. Under the current design scenario, the preferred locations are beneath pavement and within the western or central portions of the site, which are situated away from the drainage channel that runs east of the site.
  - As stated in **Section 8.0**, the estimated quantity of contaminated material requiring remediation is 115 m^3. The current bulk earthworks plan for the proposed activity indicates a fill requirement of 16,085 m^3, and as such it is considered that Option 8 and 9 are feasible and practical.
  - Toxicity Characteristic Leaching Procedure (TCLP) testing has been undertaken on several soil samples impacted by lead. The TCLP results represent worst case leachability scenario with the soils being exposed to pH 1 acid, which is an environmental setting that is not envisaged post-construction. The current leachability results, along with the vertical distribution of lead impact within the soil profile (i.e. shallow impact), indicate that the contaminated soil can be managed under a cap and contain scenario rather than requiring encapsulation. Further testing is necessary to confirm the leachability properties and to inform the design requirements for containment / encapsulation areas.
  - Following construction of containment / encapsulation areas, an LTEMP will be required for the ongoing management (in perpetuity). It is envisaged that the LTEMP would form a mitigation measure under the REF approval and is an appropriate mechanism for legal enforcement. Public notification would be through the Section 10.7 planning certificate and be available on the SI website.

11.0 ROLES AND RESPONSIBILITIES

11.1 PROPONENT/ LANDOWNER (SINSW)

A summary of the SINSW's role and responsibilities includes:

- Responsible for the distribution of the RAP and any subsequent revisions/ amendments to relevant parties as outlined below:
  - Current Site Owner;
  - Maitland City Council and any other authority such as an EPA Accredited Site Auditor (if applicable); and
  - Remediation Contractor responsible for remedial works, construction, demolition, management and maintenance of the site.
- Overall responsibility for the project activity and outcomes of the RAP;
- Liaison with neighbours and other stakeholders;
- Engagement of environmental management consultant to oversee implementation of the RAP;
- Engagement of contractors to perform further investigation works, and any subsequent contaminated soil disposal and site rehabilitation works as required;
- Provision of health and safety measures for site personnel and the site area; and
- Maintain relevant records associated with the RAP.

11.2 SITE MANAGER/ SITE SUPERVISOR

A site manager or site supervisor, who is an individual familiar with the site development construction and implementation of environmental controls, is to be appointed to take responsibility for implementation of this RAP at the site during excavation of impacted soils. The site manager's/ site supervisor's duties include:

- Complete control of all site activities;
- Workplace health and safety Induction for all site attendees;
- Regular inspection of the site and site activities;
- Maintenance of a daily activities record;
- Implementation and compliance with the RAP;
- Maintaining routine correspondence with the site owner, remediation contractor and environmental consultant on progress of site remediation;
- Liaison with site personnel/contractors and the proponent regarding progress of works;
- Provide and maintain a photographic record of works and results; and
- Identification, reporting and management of the rectification of any non-conformances with the RAP.

11.3 PRINCIPAL CONTRACTOR

The principal contractor engaged for the management of impacted soils must:

- Undertake all works in compliance with the provisions of the RAP;
- Coordinate works with the proponent and Environmental Consultant;
- Liaison with site supervisor regarding progress of works;

- Report any environmental incidents and unexpected finds to the site supervisor;
- Collate all project documentation including landfill disposal dockets (where relevant); and
- Conduct works in accordance with the Site WH&S plan.

11.4 ENVIRONMENTAL CONSULTANT

A suitably qualified Environmental Consultant familiar with the implementation of environmental controls, NEPC 2013, NSW EPA contaminated guidelines made or approved under the CLM Act 1997 should be appointed to monitor implementation of this RAP at the site during excavation of impacted soils. The Environmental Consultant's duties should include:

- Regular inspection of the site and site activities at critical moments. Inspection times should be coordinated by the Principal Contractor;
- Completion of daily monitoring notes;
- Provision of on-site advice and direction with regard to implementation and compliance with the RAP;
- Liaison with site personnel/contractors and the client regarding progress of works;
- Respond to queries from the Principal Contractor in relation to the RAP and remediation / validation process;
- Provide and maintain a photographic record of works and results in addition to those made by the Principal Contractor and Site Manager;
- Identification, reporting and management of the rectification of any non-conformances with the RAP;
- Validation sampling;
- Preparation of the Remediation and Site Validation report; and
- Preparation of a Long Term Environmental Management Plan (LTEMP), as required and appropriate.

12.0 REMEDIATION STRATEGY

As outlined above in **Section 10.3**, the preferred remedial strategies for this site are:

- Option 7 (excavation and offsite disposal);
- Option 8 (above-ground containment / encapsulation); and
- Option 9 (in-situ containment / encapsulation)

Details of the remedial strategy are outlined in the subsections below, and the following are also provided in later in the RAP:

- A Construction Environmental Management Plan (CEMP) to be implemented during remediation is included in **Section 13.0**.
- WHS practices that apply to the remediation are detailed in **Section 14.0**, provided to inform the future health and safety compliance documentation prepared by relevant contractors.
- The validation plan to be implemented during remediation is detailed in **Section 15.0**.

12.1 DATA GAP INVESTIGATION

At the time of preparing this RAP, the final design option for the redevelopment indicates that the removal of demountable buildings and hardstands adjacent to Building D will be required (see Demolition Plan in **Appendix D**), it is therefore recommended these areas be assessed for CoPCs contamination to determine if further remedial works are required.

It is also noted that the cut and fill plan (**Appendix C**) indicates that there are proposed earthworks within the Gillieston Road corridor to the north of the site. As this area has not been assessed as part of the previous investigations and this area is proposed for up to 3.5 m of cutting, it is recommended that intrusive investigation occur to assess for contamination.

An assessment of groundwater has not been completed due to the absence of groundwater during all previous geotechnical and contamination investigations. The metals detected in shallow soil do not appear to be leachable based on TCLP results and vertical delineation in the soil profile, and therefore an assessment of groundwater is not currently considered necessary. Further, volatile contaminants are not known to exist in soil. If groundwater is observed during remediation works or during construction, assessment may be necessary.

12.2 REMEDIATION STAGING AND SEQUENCE

12.2.1 Remediation staging

Based on current information in the Staging Plan (**Appendix G**) provided to Stantec, the proposed construction activities are split into three stages:

- Stage 1: site establishment of the eastern portion of the site and to include the construction of the new Learning Building and Public Preschool, while all buildings and demountables are retained. The western portion will remain operational as Gillieston Public School.

- Stage 2.1a: relocation of the Hall and OOSH demountables.
- Stage 2.1b: construction of the eastern new carpark.
- Stage 2.2: the completion and handover of the new Hall, OOSH buildings and landscaping. Completion of public domain works and North View St western 'Kiss n Drop' area.
- Stage 2.3: removal of relocated demountables and completion of landscaping including the basketball court.

Based on the above information, Stantec envisage the following remediation activities will occur under each stage.

- Stage 1: no known contamination exists within Stage 1 and as such construction could commence without any remediation requirements and subject to implementation of an unexpected finds protocol (see **Section 13.6**). To ensure that contaminated materials are not disturbed during Stage 1, it would be a requirement that construction workers are made aware of the location of contaminated soil and exclusion zones established.
- Stage 2.1a,: current data indicates there are additional remediation earthworks required during Stage 2.1a, with these extents further clarified upon removal of site structures. Previously inaccessible soils must be assessed for contamination in accordance with the data gap investigation specification (see **Section 12.4**). Remediation earthworks would predominantly be completed during Stage 2.1a of the proposed activity, including excavation and removal of contaminated soil. Where on-site containment is adopted as the preferred remediation option, contaminated materials are to be placed within designated locations and in accordance with an engineered cell design. Where contaminated materials require off-site disposal, temporary stockpiling may be required in accordance with the CEMP and contractors Earthworks Management Plan, prior to classification and disposal of the material.
- Stage 2.1b, and Stage 2.2: current data indicates that remediation earthworks for the defined areas for Stage 2.1b and Stage 2.2 should be complete prior to the commencement of Stage 2.1b, Stage 2.2. Any remaining contamination identified that requires remediation is to be managed in accordance with unexpected finds protocol (see **Section 13.6**) and the remediation options outlined in this RAP.
- Stage 2.3: current data indicates there are additional remediation earthworks required during Stage 2.3 With these extents further clarified upon removal of site structures. Previously inaccessible soils must be assessed for contamination in accordance with the data gap investigation specification (see **Section 12.4**). All remaining contamination identified that requires remediation is to be managed in accordance with the remediation options outlined in this RAP. Stage 2.3 is the final stage of the activity, and as such, potential on-site containment / encapsulation opportunities may not exist, in which case the material would require off-site disposal.

12.2.2 Remediation sequence

Whilst a data gap investigation is required (see **Section 12.1**), it is considered that the following remediation sequence would be performed jointly by a suitably qualified environmental consultant, occupational hygienist (if required) and a licensed remediation contractor. A detailed description of each item is provided in the subsections below, however, noting that the construction is staged the sequencing may vary for different stages:

1. Preliminaries and site establishment (see **Section 12.3**);

2. Additional investigation in previously inaccessible areas (underneath hardstands and / or beneath existing demountable buildings and demolition of any structures) to determine additional areas requiring remediation (see **Section 12.5**);
3. Engineered design and capping requirement of the fill embankment / encapsulation area (see **Section 12.7**).
4. Remedial excavation of contaminated soils (see **Section 12.5**) and either:
    a. Waste classifications, and/ or
    b. In-situ/ above ground encapsulation, subject to geotechnical considerations and the engineered design of the proposed fill embankment / encapsulation area, the lead impacted soils (excluding grass cover) may be considered to be placed within the fill embankment / encapsulation area with nominal compaction.
5. Validation works (see **Section 12.6**);
6. Survey and inspection of as-built works (see **Section 12.7**);
7. Validation Reporting (see **Section 12.9**).
8. Development and implementation of a Long-Term Environmental Management Plan for the site (see **Section 12.8**) in accordance with the NSW EPA (2020) Consultants Reporting on Contaminated Sites: Contaminated Land Guidelines to include information on the following:
    a. Management roles and responsibilities;
    b. Ongoing reporting requirements;
    c. Emergency contact and procedures;
    d. Management measures; and
    e. Ongoing audit and review of the plan for continuing suitability

12.3 PRELIMINIARIES AND SITE ESTABLISHMENT

Following completion of the RAP, and prior to commencing remedial works, the following documentation must be prepared by the licenced contractor to ensure human health and environmental protection during all remediation works at the site:

- A Health and Safety Management Plan / Safe Work Method Statement detailing the proposed activity and site-specific control measures including decontamination requirements. Due to the historical presence of asbestos in soil at discrete locations, contingency plans may be required in the event that further asbestos is identified in soil.
- A Construction Environmental Management Plan detailing the environmental controls required, with further details for this provided in **Section 13.0**.
- A minimum of 30 days notification prior to starting works to relevant stakeholders including local Council (Maitland City Council).
- Preparation of a site induction for workers and contractors that may interact with contaminated materials. The induction is to make reference to the RAP and specify locations containing contamination, along with the necessary controls.
- Establishment of site fencing and signage in accordance with relevant SafeWork NSW requirements.

Site establishment including setup of amenities, decontamination areas, staging and stockpile areas is to be undertaken as per a works plan agreed with relevant stakeholders.

12.4 ADDITIONAL INVESTIGATION (DATA GAP INVESTIGATION)

As outlined in **Section 12.1** additional investigation is required post occupation of the site and upon removal of hardstands/ demountables, which is proposed to take place during Stage 2 of the activity. The following scope of works is proposed to assess conditions:

- A suitably qualified Environmental Consultant will conduct a site walkover and clearance inspection of surficial soils in previously inaccessible areas to visually assess for the presence of demolition rubble, asbestos containing materials or contamination indicators (staining, odour or discolouration).
- Soil samples can be screened using X-Ray Fluorescence (XRF) to delineate zinc and lead in soils. The XRF will be used as semi-quantitative method of assessing for the presence of lead in soil, which will assist in determining requirements for and extents of remediation excavations. The procedure for utilising an XRF during site works is provided below:
  - XRF screening must be conducted by a suitably trained and qualified professional, as per the US EPA Method 6200 (SW-846) included in **Appendix H**.
  - XRF screening samples would be placed into sealed plastic bag, with the XRF to be calibrated prior to the commencement of field works. If required, the XRF will be re-calibrated during the field program in accordance with manufacturer's instructions.
  - The areas previously inaccessible that may be lead and/ or zinc impacted would be delineated using a handheld XRF analyser. Lead impacted soils identified using XRF are to be removed and placed in a temporary stockpile and managed as per **Section 12.5**.
  - This process is considered a preliminary screening and validation samples will still be required at the rate specified in **Section 15.1**.
- Following XRF screening, advance excavations to an inferred maximum of 1.0 m below ground level (bgl), 0.3 m into natural soil or refusal, whichever comes first.
  - The number of samples to be advanced will depend upon the area being assessed and will be determine by the Environmental Consultant with reference to the NSW EPA Sampling Design Guidelines (2022).
- Samples collected may depend on the results of XRF screening, however for completeness and where possible, they will be collected from the same locations as XRF screening.
  - Samples will be collected from near surface (0.1 m bgl), 0.3 m bgl, 0.5 m bgl and 1.0 m bgl, as well as any change in strata or contamination indicators (staining, odour, discolouration or presence of anthropogenic materials).
- The soil profile at each location should be logged on site in accordance with Australian Standard AS 1726:2017 – Geotechnical Site Investigations and excavated cuttings assessed on site for the presence of Volatile Organic Compounds (VOC) utilising a calibrated photo-ionisation detector (PID).
- Laboratory testing of select soil samples will be undertaken at a National Association of Testing Authorities, Australia (NATA) accredited laboratory for analysis of Contaminants of Potential Concern (CoPCs) specified in the Conceptual Site Model (**Section 7.0**).
  - Regarding asbestos, the process will be consistent with the WA DoH guidelines methodology and comprise of the following:
    - Visual assessment at each sample location;
    - If asbestos is identified, a WA DoH field assessment methodology of soils including collection of a representative 10L soil samples for assessment of ACM in accordance with the WA DoH procedure.

  - The 10L process will be conducted at locations observed to contain adversely impacted fill, and at locations previously identified as being impacted with asbestos.
  - Where a 10L sample is collected, a minimum 500ml sample of soil will be collected for assessment of asbestos fines (AF) and friable asbestos (FA).
- Following receipt and interpretation of laboratory results, if necessary, this RAP must be updated to reflect any additional exceedances of applicable land use criteria and remediation requirements. Any updates to the RAP will require consultation with and review by the NSW EPA site auditor.

12.5 REMEDIAL EXCAVATION OF CONTAMINATED SOILS

Contaminated soils, as indicatively shown on **Figure 3, Appendix A**, will require excavation as guided by **Table 8-1** and **Table 15-1** . The lateral and vertical extent of the remedial mechanical excavations will be until no evidence of residual contamination is observed, assessed through the following means:

- Identification of the natural alluvial layer (inferred Clayey SAND); and/or
- The on-site XRF assessment (discussed further in **Section 15.0**) indicates the absence of zinc or lead concentrations above the adopted screening criteria).

When the above conditions are encountered, validation samples would be collected from the walls and floor of the relevant excavation for laboratory assessment and confirmation of contaminant concentrations below the remediation / validation criteria. If contamination is evident in results of validation samples, remediation excavations are to continue until validation samples do not contain contaminants above the validation criteria, or when earthworks cannot extend further due to constraints. Where remediation excavations are advanced to the extent practicable and contamination remains at that interface, the remaining material must be managed in-situ in consultation with the appointed Environmental Consultant. This will likely require establishment of containment area that would be managed under a LTEMP.

The excavated soils should be stockpiled adjacent to the excavation on either hardstand or lined surfaces (i.e. with builders' plastic), prior to sampling the stockpile for waste classification purposes. Stockpiles should be placed in a safe area that will not pose risk to human health, environment, potential off-site migrations, the localised terrain (i.e. slopes that may fail due to overburden pressures), and climatic conditions that could cause severe collapse, erosion, or run-off. Should impacted soils be placed on bare soil or un-lined surfaces then validation sampling and an inspection of the underlying soils will need to be undertaken following the removal of the stockpiled soil.

Given that contaminated material may be contained on-site under an LTEMP, there may be a requirement for contaminated materials to be temporarily stored for extended period. Materials tracking and storage is to be in accordance with the CEMP and contractors Earthworks Management Plant to ensure that contaminated materials are not dispersed or mixed with other uncontaminated materials.

12.5.1 Waste Classification

All material requiring off-site disposal must be classified in accordance with the NSW EPA (2014) *Waste Classification Guidelines, Part 1: Classifying Waste*. The waste classification process will include the following:

- For stockpiles, collection of one sample per 25 m^3 of stockpiled material, as per NEPM (2013) guidelines, with a minimum of three primary samples required;

- Laboratory analysis of all collected soil samples for metals, TRHs, PAHs, BTEX, OCP, OPP pesticides, PCBs, PFAS and asbestos (quantification), and leachability testing as required (read below).
  - It is noted that a reduced list of analytes could be considered based upon previous investigations and CoPCs identified. This would depend on location of the material being assessed, observations made during the classification and is at the discretion of a suitably qualified Environmental Consultant.
- Leachability analysis for select analytes may be required should impacts exceed waste classification Contaminant Threshold (CT) criteria; and
- Preparation of a waste classification documents per stockpile detailing the material sampled, analytical results and overall classification for offsite disposal purposes.

12.5.2 Waste tracking

General waste handling (including transport and loading) and management procedures are outlined in **Section 13.1.1**. Waste must be tracked and disposed offsite at appropriately licenced facilities in accordance with the NSW EPA requirements.

In accordance with the *Protection of the Environment Operations (POEO)* Waste Regulation 2014, a tracking register will need to be maintained along with the collation of waste weighbridge disposal dockets from the receiving facilities for site validation purposes. An example of a suitable waste tracking template has been provided in **Appendix C**. Asbestos waste must be reported and tracked via the NSW EPA's WasteLocate tracking program, in accordance with Clause 79 of the POEO (Waste) Regulation 2014.

12.5.3 Unexpected finds

Should areas of previously unidentified contamination be encountered during the remediation and validation, the requirement for additional investigation and remedial measures shall be assessed. If encountered during construction, the Unexpected Finds Protocol (UFP) detailed in **Section 13.6** should be implemented. Details on the requirements during asbestos removal, including WHS measures, are included in **Section 13.4.**

12.6 VALIDATION ACTIVITIES

12.6.1 Validation of remediation excavations

Upon removal of contaminated material, the side-walls and the base of remediation excavations require validation sampling in accordance with the validation plan provided in **Section 15.0**. As stated in **Section 12.5**, where remediation excavations are advanced to the extent practicable and validation samples contain contamination above the remediation criteria, the residual contaminated material must be managed in-situ in consultation with the appointed Environmental Consultant, such as through establishment of an in-situ containment area managed under a LTEMP.

12.6.2 Validation of imported backfill soils

Where remedial excavations require importation of backfill soils from off-site source(s), the imported materials must be deemed suitable prior to importation to the site and must meet the criteria outlined in **Section 5.0.** Any materials intended for importation must be validated in accordance with the procedure outlined in **Section 15.0**.

12.7 CONTAINMENT / ENCAPSULATION CELL DESIGN

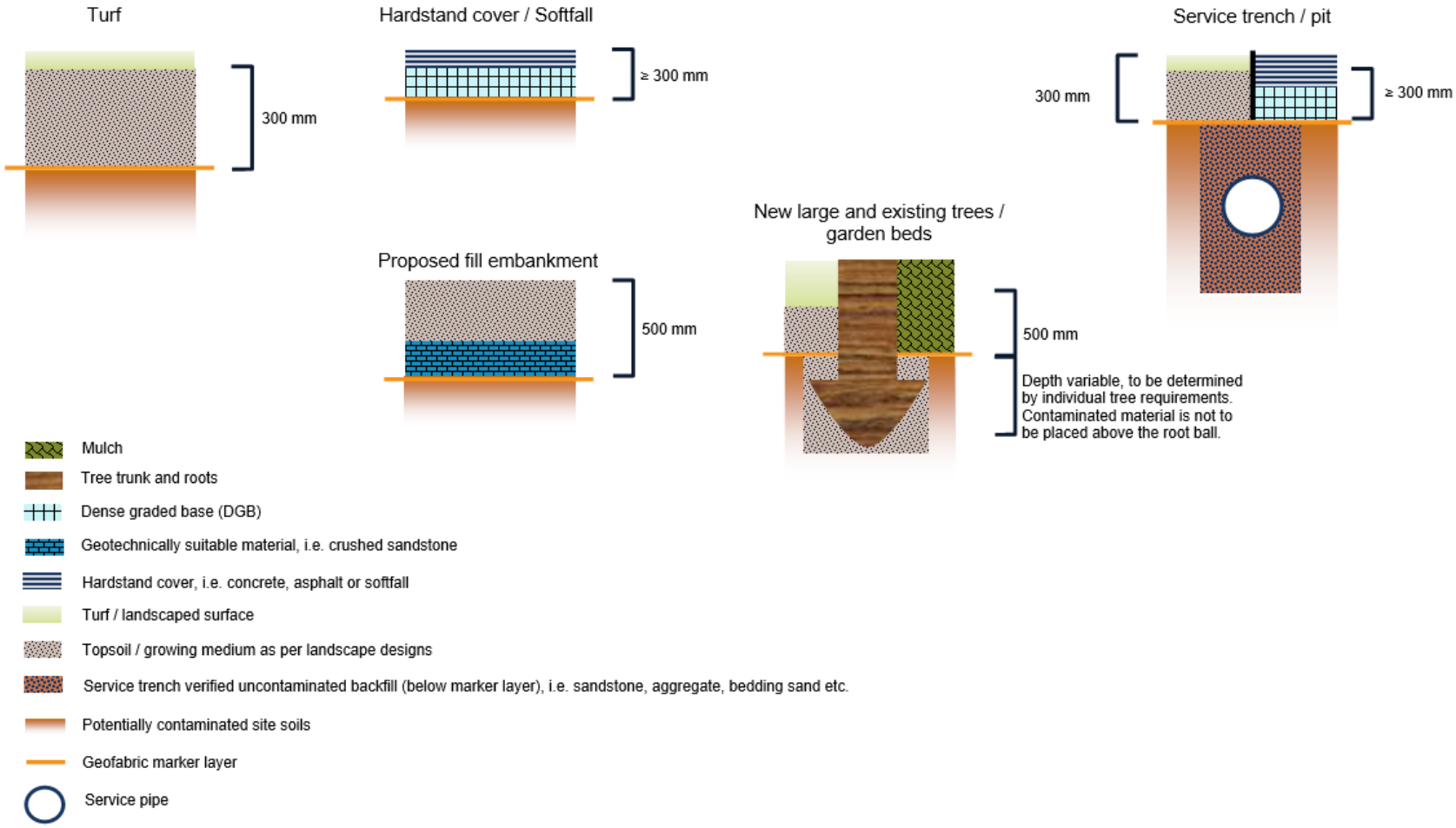
Several proposed hardstands/ paved areas are proposed as part of the activity, as indicatively shown in **Appendix B**. Several of these areas may potentially be utilised as an encapsulation area for containment of impacted materials identified within the site.

The design must be confirmed following completion of the remediation steps outlined in **Section 12.4** to **12.5** and in consideration of geotechnical suitability, leachability analysis, flooding potential, drainage and any other relevant constraints / considerations.

The current design scenario of placement of contaminated materials below existing ground level, capping and containment conceptual cross section is provided below in **Figure 12-1** for the possible scenarios, with a summary of the key features provided below:

1. Engineering and design of the encapsulation area must consider the anticipated volumes of material to be encapsulated and the leachability of said contaminants;
2. Placement of and compaction of contaminated materials requiring encapsulation;
3. Placement of a marker layer (geotextile or similar) across the surface of the compacted contaminated soils;
4. Placement of a hardstand capping layer with a minimum of 0.3 m of dense graded Base (DGB) and hardstand cover (e.g. asphalt or concrete).
5. Survey of all surfaces and the depth of clean material;
6. Implementation of a Long-Term Environmental Management Plan (LTEMP) (see **Section 12.8**).

Figure 12-1 Containment / Encapsulation, Conceptual Cross-Sections



12.8 LONG TERM ENVIRONMENTAL MANAGEMENT PLAN

Following completion of the activity, an LTEMP is to be developed for the site by a suitably qualified environmental consultant. The plan is required where contaminated materials remain on site and must be detailed and enforceable, and include the following items:

- Site details and background;
- Detail the contaminated material remaining at the site;
- Detail the nature, extent and survey of the encapsulated materials on site and the remedial works undertaken;
- The requirements for working in and around any impacted material, including works permit systems and rectification measures for any penetration to capping mechanisms or changes to the site;
- Detail roles, responsibilities and accountabilities for tasks and requirements of ensuring the effectiveness of the remedial works over the life of the strategy.
- Include an Inspection and Testing Plan detailing triggers, timelines, inspection criteria and responses for ongoing assessment of the remedial works.

12.9 REPORTING

12.9.1 Marker layer and final surface visual inspection report

Visual inspection reports should be prepared to assess the marker layer inspection and final surface inspections, with reports determining the suitability of these encapsulation controls. These should be brief memo-style reports that capture the inspection timing and conditions as well as the condition and suitability of the cap.

12.9.2 Capping material testing

Where capping material is to be imported or re-used from site, the material must be subject to visual and analytical screening (as outlined in **Section 15.0**) to ensure suitability. This assessment should be documented as appropriate.

Prior to importation or re-use of any material on site as fill, the relevant documentation, including classification certificates and reports, will be provided to the appointed Environmental Consultant for review. Material will not be imported to site until the Environmental Consultant has approved the materials in consideration of the current resource recovery exemptions / orders and remediation objectives for the site. In addition to the guidance of this RAP, the determining authority may also stipulate the minimum requirements for material import, generally provided as consent conditions.

12.9.3 Asbestos clearance inspection reporting

Asbestos has been previously identified in some fill soil at discrete locations. Whilst not a remediation requirement under this RAP, a contingency plan is provided in **Section 16.0** in the event that further asbestos is identified**.**

12.9.4 Other documentation

In addition to the marker layer and final surface visual inspection reports (**Section 12.9.1**), any information relating to site preparation and development, unexpected finds, and remediation validation should be collated for summary and inclusion within the final Validation Report. Such information may include photographs, survey records, design and as-builts.

12.9.5 Validation reporting

Following the completion of all remedial works onsite, a Remediation and Site Validation Report must be prepared, detailing the following:

- A clear description of the remedial works undertaken, the validation carried out and the final condition of the site;
- Assess the results of remediation samples against the remediation criteria stated in the RAP. Where these criteria have not been achieved, reasons must be stated and additional site work proposed to achieve the original objectives, or a LTEMP put in place. Should any unexpected finds be encountered during the works, the unexpected finds protocol will need to be implemented, along with an addendum to this RAP, as necessary; and
- The report will make a final statement on the suitability of the site for the proposed land use and comment on any conditions upon the suitability, such as providing details on the LTEMP (if required).

13.0 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

The following sections provide a framework for a Construction Environmental Management Plan which identifies measures required to minimise the potential impact of the activity on the local environment, site workers and third parties.

In all cases, environmental issues must be managed by the Principal Contractor in accordance with sound environmental management practices, including periodic supervision and documentation by the appointed Environmental Consultant. The purpose of these measures is to prevent site workers, the public and environmental exposure to potential health risks associated with the activity.

13.1 STOCKPILE MANAGEMENT

Soils placed in stockpiles are to be tracked according to the location of removal and location of stockpile. Stockpiles in place longer than 24 hours are to be placed on an impervious base away from steep slopes and in a location that will not be subject to run-off, compacted and covered with geofabric or similar.

Stockpiles are to be contoured to minimise the loss of material during rainfall, with upstream drainage and levee banks installed to divert water flows around the stockpile. Silt fencing is to be appropriately placed and installed to avoid sediment loading of stormwater drains and pipes. The installation of these controls is to be undertaken in accordance with the Landcom (2004) “Blue Book”.

The stockpile(s) should be clearly labelled, with stockpiles containing asbestos materials appropriately identified with warning signage. In the event that larger stockpiles of asbestos are required, an area can be lined with plastic and used as a stockpiling area. Any stockpiled asbestos impacted material should be dampened and covered with either geofabric layer or black plastic, which is to be disposed of as asbestos waste after completion of asbestos works.

Due to the variable fill material and contaminant concentrations encountered, Stantec recommends excavation and stockpiling of each waste stream, soil type, fill type, and/or area followed by check sampling to confirm the final classification of material for off-site disposal. Where different soil types are mixed together, this can inadvertently lead to an increased volume of contaminated material requiring management and/or disposal.

The Site Manager must consider potential risks to humans and the local environment during decision making for the location, positioning, sizes, and management of stockpiles to prevent potential off-site migration via run-off and air dispersion, and negative health, safety, environment, and security consequences.

13.1.1 Waste management and tracking

Any wastes generated as part of remediation and construction works will have to be classified in accordance with NSW EPA (2014) Waste Classification Guidelines and this report prior to disposal off-site.

Tracking of waste movements internally within the site will be the responsibility of the Principal Contractor, with the process specified within their CEMP and/or Earthworks Management Plan, and the following must be incorporated:

- Designation of a unique identification for each stockpile and maintenance of a register that specifies the source, volume, classification / chemical properties, inspection schedule and fate of the material.
- Tracking of materials generated on site during remediation, including contaminated materials that are intended to be reused as on site under a cap and contain scenario;
- Imported materials are to be recorded in a register that specifies the source site, classification and associated documentation, the validation process, volumes and placement location;
- Material removed from the site must be recorded in a register that specifies the classification and associated documentation, volume, location of disposal or reuse, tipping dockets (where disposed of), and other records that may be related to NSW EPA requirements.

The above is a critical component to demonstrate the remedial strategy is being implemented appropriately for the remediation works. All the tracking records should be maintained in a template similar to that provided in **Appendix G** and be reviewed by a competent person.

Waste tracking will be achieved through copies of weighbridge slips, tip dockets and consignment disposal confirmation (where appropriate, including NSW EPA WasteLocate), survey of stockpiled materials or excavations and photographic documentation of movements of soil around and off-site. A site log or a waste tracking software application shall be implemented and maintained by waste generator (or on their behalf). All waste stockpiles must be marked to enable the tracking of disposed loads against on-site origin and location of the waste. Such information should be provided to the site owner for reporting purposes. A suitably qualified environmental professional should fulfill the Environmental Consultant role and be present on-site to oversee the remedial works, ensuring that appropriate waste tracking procedures are employed.

If Hazardous Waste is encountered during remediation, advice on the appropriate management must be sought from the Environmental Consultant in consultation with an Occupational Hygienist, as necessary.

13.2 EXCAVATION WATER MANAGEMENT

It is not anticipated that the water table will be encountered during construction, or that dewatering will be required. Should any excavations accumulate water, or if dewatering is required, the water must be managed in accordance with the Local Water Authority and EPA disposal requirements. The details of the

discharge/ disposal requirements of any water that collects in the excavation will require further consideration during the remedial and validation works.

Water within the dam/ ephemeral drainage line in the eastern portion of the site will require management during construction in accordance with the Principal Contractor CEMP and/or Water Management Plan. Subject to a suitable assessment by the Environmental Consultant, and in consideration of existing data available at the time, water, if present within the dam / drainage line, may potentially be managed in the following ways:

- Removal off-site and disposed / managed in accordance with NSW EPA requirements;
- Discharged to stormwater/sanitary sewer (following consultation and approval from relevant authorities); and
- Dispersed within the downstream catchment, subject to the water meeting the necessary water quality requirements and receipt of necessary approvals.

The surface water sample results outlined in **Section 4.3** and **Section 7.0** must be considered as part of this process.

13.3 AIR AND DUST

13.3.1 Odours

The contaminants identified at the site do not possess offensive odours, and as such it is not anticipated that excessive or nuisance odours will result from remediation works. However, qualified and experienced staff will be on site during remedial earthworks, and should excessive odour be generated as a result of the process, then on-site controls will be considered, such as:

- Application of odour suppressant;
- A reduction in the size of the excavation face that is open at any one time to reduce the surface area generating the odour;
- Location of any temporary stockpiles of impacted soil as far as possible (and in the predominant down wind direction) from sensitive receptors;
- Smothering of the odours by covering the portion of the site that is generating the odour; and
- Minimal spraying of the stockpiles and excavations to minimise volatile emissions.

13.3.2 Dust control

The Principal Contractor will be responsible for ensuring that dust is managed during excavation, loading, carting, and stockpiling operations. Dust mitigation measures include; but are not limited to:

- Stockpile protection;
- Water application on stockpiles and access roads;
- Limiting the area of exposed excavations and surfaces;

- Wind fences around earthworks areas; and
- Air monitoring.

In the event that excessive dust is generated during any operations on-site, the works will cease and modifications to the process will be made before the operation is resumed. There must be no observable dust transported off-site.

13.4 REMOVAL OF ASBESTOS WASTE

Asbestos waste, if encountered, are to be managed in accordance with the following Guidelines, Acts, Regulations, and Codes of Practice:

- Work Health and Safety Act 2011.
- Work Health and Safety Regulation 2017.
- SafeWork NSW – How to Safely Remove Asbestos, Code of Practice (2019).
- WorkCover NSW - Managing asbestos in or on soil (2014).
- SafeWork NSW – How to Manage and Control Asbestos in the Workplace, Code of Practice (2019).

The process for unexpected finds of asbestos is to include:

- Assessment of the material by the Environmental Consultant to determine if an Asbestos Removal Control Plan (ARCP) is required (<10m^2 of non-friable asbestos or ACM). If localised and below the threshold for an ARCP / licensed removalist, management of the material would not require specialist services. Where above the threshold for an ARCP / licensed removalist, the following would be required:
  - Preparation of an Asbestos Removal Control Plan (ARCP) by an appropriately licenced asbestos removal contractor;
  - Notification and seeking of approvals from SafeWork NSW at least five business days prior to removal works commencing;
  - Establishment of appropriate controls required for asbestos removal works for either friable or bonded asbestos. Asbestos controls for friable asbestos include:
    - Establish an exclusion zone, appropriately signed;
    - The exclusion zone will have one entry and exit point with a decontamination unit set-up;
    - The exclusion zone will have appropriate dust suppression (water misting) controls in place during the removal works;
    - Prior to entering the exclusion zone, appropriate PPE will need to be worn, including Tyvek coveralls (appropriate category and class), Tyvek boot covers (or gumboots), half face or full-face respirator (recently fit tested), safety glasses and disposable nitrile gloves. All PPE will need to be wetted down and or discarded prior to leaving the exclusion zone;
  - Removal conducted by an appropriately licenced asbestos removalist, Class A for friable, or Class B for bonded;

- Asbestos air monitoring is to be undertaken for the duration of the removal of friable asbestos, which will be set-up by a Licenced Asbestos Assessor (LAA) and fibres will be counted by a NATA accredited laboratory; and
- Independent competent person (bonded) or LAA (friable) providing clearance and validation sampling at the end of the removal works.

All asbestos works, including remediation, validation / clearance inspection reports and waste classification must be incorporated and considered in the Validation Report.

13.5 ACID SULFATE SOILS MANAGEMENT (IF REQUIRED)

Acid Sulfate Soils (ASS) or Potential Acid Sulfate Soils (PASS) have potentially been identified at the site during the previous Intrusive Geotechnical Investigation (Cardno, now Stantec, 2023b), however, additional investigations are ongoing, noting that the site is not mapped as an ASS risk.

Current data indicating the potential presence of ASS applies to soils not within areas requiring remediation under this RAP. Any future Acid Sulfate Soils Management Plan (ASSMP), if required, is unlikely to impact the site remediation, however, this should be considered by the Environmental Consultant upon completion of the ASS investigation.

13.6 UNEXPECTED FINDS PROTOCOL

Workers are to be vigilant for observations of hazardous materials that may be uncovered during excavations. Unexpected finds include but are not limited to indicators of contamination (odour, visual), ASS or PASS, deleterious (possibility to cause harm) material inclusions, asbestos containing material (ACM), Underground Storage Tanks (USTs) or any other suspect materials.

Any unexpected finds must be reported to the Contractor's on-site manager immediately. Additionally, the site owner/ occupier should be informed as soon as practical following an unexpected find.

If hazardous materials are uncovered/ discovered during excavations the Contractor shall:

- Cease all work in that vicinity (and fence the area if safe to do so and appropriate);
- Remove workers from the vicinity;
- An experienced Environmental Consultant should be contacted to assess the potential risks associated with the Unexpected Finds and provide appropriate management options; and
- Investigate the nature of the risk of the materials, determine the appropriate response and document the actions in accordance with contractual obligations.

If the unexpected finds are considered to be potential asbestos the following should be followed:

- Do not handle the asbestos;
- Restrict access to the area if possible;

- Report the finding to:
  - The site supervisor;
  - Log the incident; and
  - Contact the appropriately qualified person (licensed asbestos assessor, asbestos removalist or the environmental consultant)

In the event of potential immediate harm to human health and/ or the environment, the Maitland City Council and the NSW EPA may need to be informed, to be determined in consultation with the Contractor's representatives and the Environmental Consultant.

13.6.1 Heritage constraints

The Demolition Plan (**Appendix D**) specifies that a verified Aboriginal Artefact is located directly northeast of the COLA within the central portion of the site. It is also noted that Building D – Learning Centre (as shown on **Figure 1**, **Appendix A**) is identified as a European Cultural heritage item.

The Principal Contractors construction documentation is to consider and protect the known items and locations of heritage significance, as noted above. The necessary protective controls are to be determined in consultation with a specialist Heritage Consultant and incorporated into the Contractor's construction documents.

If contamination is identified within the vicinity of known heritage areas, works must cease until the remediation approach has been established between SINSW, the Principal Contractor, the Environmental Consultant and a specialist Heritage Consultant. If contaminated materials remain at the site following remediation completion, this must be considered in and managed by the LTEMP (see **Section 12.8**).

Any unexpected finds of heritage significance are to be managed in accordance with an unexpected finds protocol (see **Section 13.6**).

13.7 STORMWATER

13.7.1 Erosion and sediment control

Cleared areas and exposed excavations may promote erosion. Erosion and sediment controls are to be implemented to minimise this risk and may comprise of the following:

- Limiting the extent of cleared areas and exposed excavations;
- Backfilling of excavated areas as soon as practicable;
- Diversion of stormwater from active areas using hay bales or sediment fences;
- Covering of temporary stockpiles with plastic (HDPE) or geofabric and placement of silt socks around excavations when necessary;
- Covering open stormwater grates in the vicinity of stormwater pits and excavations with silt fences or other appropriate materials;

- Placement of stockpiles away from footpaths, roadways, kerbs, access ways, drainage lines, natural or man-made slopes, and property boundaries;
- Minimising translocation of contaminated soils throughout the site by ensuring excavator operators do not track over contaminated areas;
- If possible, a single vehicle entry and exit to minimise translocating soil; and
- Depending on the volume of soil to be excavated, rumble strips may be required at the site access in order to prevent contaminated soil being transported off-site.
- Additional preventative measures should be undertaken on the basis of severe climatic conditions.

The installation and management of these controls is to be undertaken in accordance with the Landcom (2004) “Blue Book” and the Contractor’s Sediment and Erosion Control Plan (or equivalent).

13.8 NOISE

The hours of operation will comply with Council requirements as well as the requirements outlined in the noise and vibration impact assessment (RWDI 2024), typically council requirements are as follows:

- 7am and 5pm Monday through Friday
- 8am to 1pm Saturdays.
- No work is permitted on Sundays or public holidays.

13.9 LAND DISTURBANCE

This includes works such as excavation, loading, carting and stockpiling operations of associated soils. These works shall be carried out in an orderly manner to minimise impact to the surrounding residences.

- Excavation - the removal of soil shall be performed by the appointed excavation contractor using an excavator. If a transport truck is not on-site during excavation and soil will need to be temporarily stockpiled, no contaminated soils should be placed on areas validated as suitable for the proposed land use. In these locations, soils shall be excavated and placed on a suitable plastic liner or on concrete surfaces in discrete stockpiles prior to off-site disposal. Stockpiles should be segregated for each potential contamination source.
- Loading and Carting – the loading of the stockpile material shall occur with an appropriately sized loader. The trucks and trailers shall be covered for transport as deemed necessary and shall meet any other statutory requirements.

13.10 GENERAL

The appointed Principal Contractor shall ensure compliance with relevant SafeWork NSW guidelines and Work Health and Safety Acts and Regulations. The Principal Contractor shall also ensure compliance with any amendments to the Act or Regulations during the project duration.

The Principal Contractor shall monitor and control the access of all persons to the site and ensure that no unauthorised persons enter the site during remedial works (wherever practicable). All site personnel and visitors will be inducted and shall wear appropriate personal protective equipment (PPE).

The appointed Principal Contractor shall undertake additional underground and overhead service location specifically in areas surrounding the remediation location.

Any open excavation(s) are to be barricaded in accordance with the NSW Work Health and Safety Act; Clause 16 (1) and the Construction Safety Regulation Section 73, as administered by SafeWork NSW.

The appointed Principal Contractor shall install warning signs on the barricades surrounding the excavations, including but not limited to: DANGER: OPEN EXCAVATIONS; DANGER: NO SMOKING.

13.10.1 Vehicles

The appointed Principal Contractor shall ensure all vehicles are suitably contained and covered in the transport of all debris, spoil, rubbish and materials to or from the site, such that spillage or contamination of adjoining and other areas or property shall be prevented.

Vehicles shall also be maintained to prevent the transfer of mud or wastes onto adjacent streets or other areas. If wheel treads contain significant quantities of site soils the contractor is to manually remove and dispose in stockpiles.

Measures shall be implemented to ensure no contaminated material is spilled onto public roadways or tracked off-site on vehicle wheels. Such measures could include the deployment of a vehicle washing/cleaning facility, which should be placed at a location before the site egress. The facility shall be capable of handling all vehicles and plant operating on site. Residue from the cleaning facility is to be deemed contaminated unless show by validation to be below Reportable Acceptance Criteria

13.10.2 Traffic control

The Principal Contractor shall supply signs and safety cones; erect at the appropriate entry and exit points; and maintain these devices in good condition. Excavation works, stockpiles and other hazards, shall be individually barricaded at all times. The site is to be fully fenced to exclude the public.

On-site pedestrian traffic will be averted from the work areas and excavation by means of signage, fencing and safety barricading.

13.10.3 Refuse disposal

All site refuse, including food, equipment wrappings, unused materials, etc. shall be handled and disposed of appropriately into a skip.

13.10.4 Site security

The site shall be secured by a lockable fence around the perimeter of the site and access to the site is to be restricted. All excavations and above-ground remediation equipment will be barricaded with reflective barricades, with pertinent reflective signage. Keys to the gate will be restricted to approved personnel.

13.10.5 Training

Low environmental awareness of site workers may result in environmental impact including cross contamination of soil layers and off-site movement of contaminated soil. Accordingly, staff awareness training, inductions and daily toolbox meetings shall be conducted by the Principal Contractor with assistance from the Proponent and Site Supervisor.

14.0 WORK HEALTH AND SAFETY

Prior to mobilising to complete remedial works, the Principal Contractor and appointed remedial contractor will develop site and project specific Work Health and Safety Plans (WHSPs), Safe Work Method Statements (SWMS) and Job Safety Analyses for the scope of works to be undertaken. The WHS documentation will detail measures to mitigate potential risks to site workers, third parties and the local environment during the remedial works. General, minimal WHS procedures to be implemented during the remedial works are outlined as follows:

- For the contaminants identified, lead, zinc, nickel and bonded ACM, friable asbestos, excavation works to be undertaken pose potential for exposure via inhalation of dusts. Respirators, dust masks and disposable coveralls should be available and used on site for all works. The additional management practices detailed in **Section 13.0** should also be followed and included in the WHSPs.
- Given the nature of the proposed activity, which have identified asbestos in soils, air monitoring should be implemented under guidance of an occupational hygienist until deemed sufficient to cease in accordance with WHS Regulation 2017. This may involve the measurement of particulate matter, air fibres, and hazardous atmospheres.
- Potential exposure pathways for contaminants include dermal absorption (skin contact, ingestion) of dust. All workers should wear long sleeve trousers/shirts on-site. Gloves and safety glasses shall be worn by all workers involved in handling of potentially contaminated soils.
- Protective footwear (steel capped boots) to be worn on site at all times.
- Hearing protection should be worn during soil removal activities (or when working in the vicinity of heavy plant/machinery).
- Unauthorised access should be limited by ensuring that security gates are locked at the completion of each day's work.
- Excavations greater than 0.3m depth need to be "stepped" by the appointed civil contractor or otherwise made safe.
- Personnel are not to enter excavations (> 1m depth) at any time.
- PPE shall be provided in sufficient quantities to provide for the duties of each on-site individual.

For bonded asbestos works, the minimum WHS and PPE requirements will be as follows:

- Respirator
- Boot covers or gumboots
- Nitrile gloves
- Dust suppression (water misting)
- Exclusion zone
- Signage
- Asbestos Air Monitoring is optional for bonded asbestos works; however, it is recommended given the land occupants which include immunosuppressed individuals)

Furthermore, and as and outlined in **Section 13.4** the following requirements apply for friable asbestos:

- Establish an exclusion zone, appropriately signed;
- The exclusion zone will have one entry and exit point with a decontamination unit set-up;
- The exclusion zone will have appropriate dust suppression (water misting) controls in place during the removal works;
- Prior to entering the exclusion zone, appropriate PPE will need to be worn, including Tyvek coveralls (appropriate category and class), Tyvek boot covers (or gumboots), half face or full-face

14.1 INCIDENT MANAGEMENT PLAN

Emergency response includes pre-emergency planning, lines of authority and communication, emergency recognition and prevention, site control, evacuation routes, decontamination and first aid.

14.1.1 Medical emergency/ serious injury

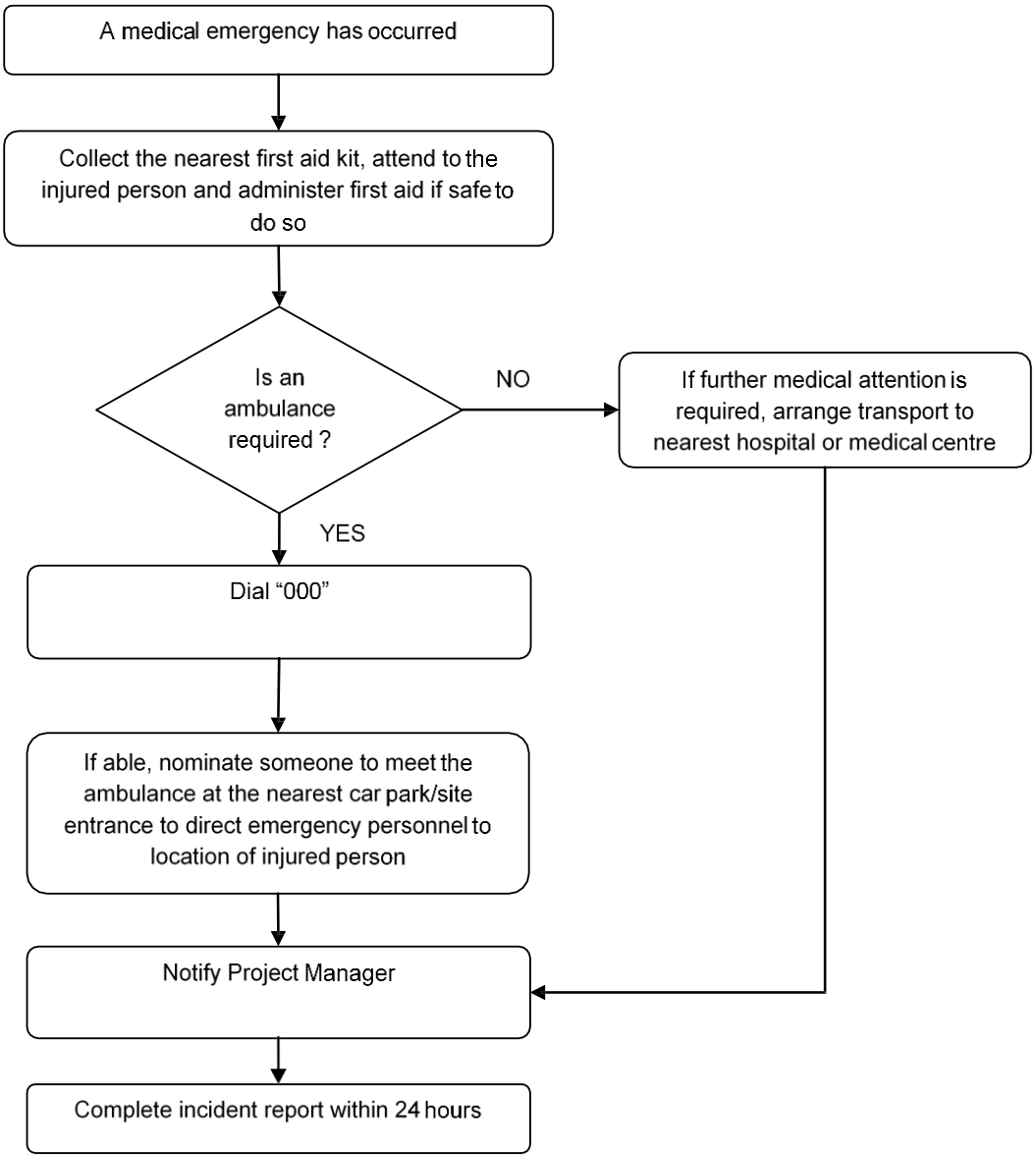
In the event of an accident or an emergency situation involving a serious injury or medical emergency, immediate action must be taken by the first person to recognise the event (refer to flowchart below).

A portable and fully-stocked first aid kit shall be retained on site at all times.

In the event of a fatality, the Police, Site Manager, and Project Manager shall be notified immediately.

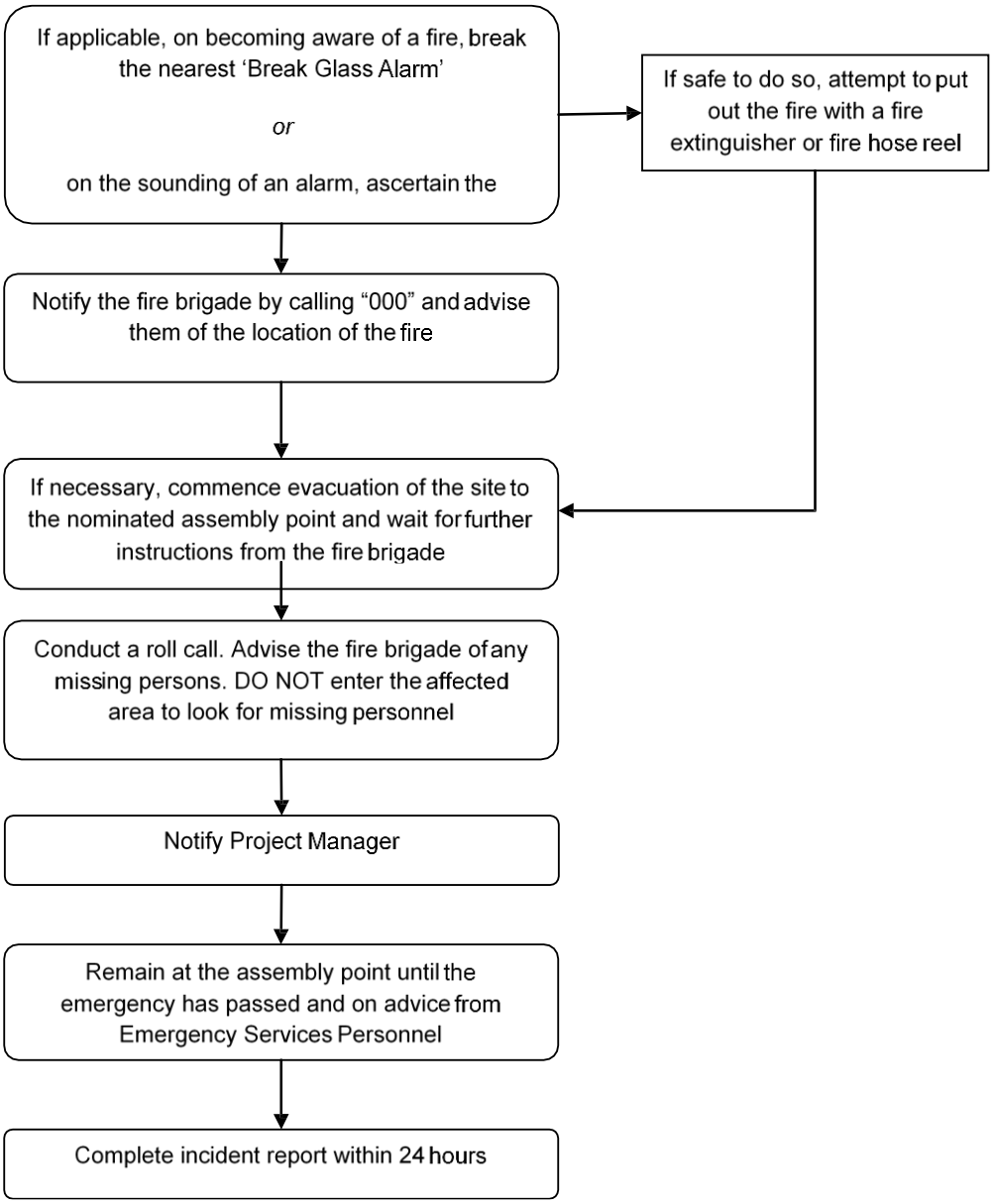
REMEDIATION ACTION PLAN

Work Health and Safety



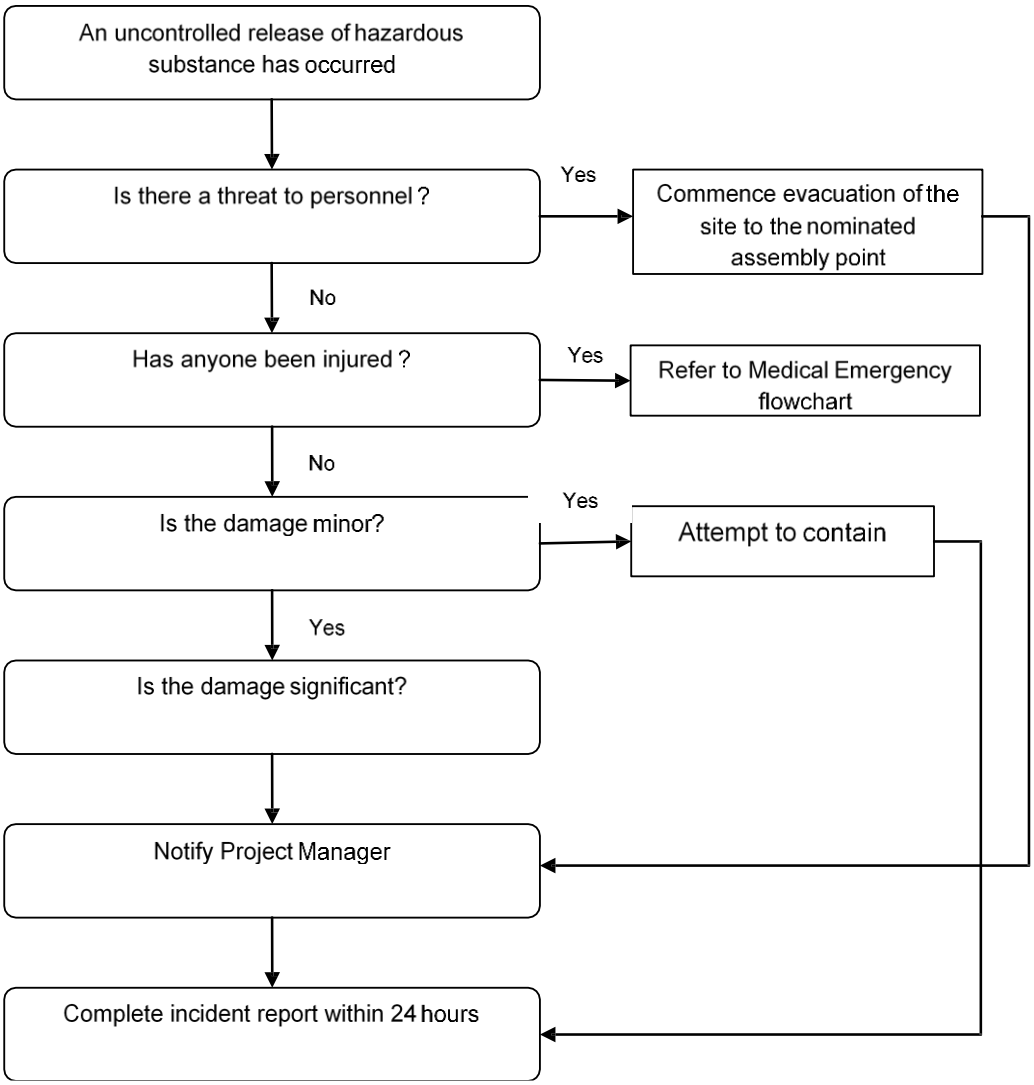
REMEDIATION ACTION PLAN

Work Health and Safety



14.1.2 Environmental incident

In the event of an environmental incident, the actions outlined below shall be taken:



14.2 INCIDENT REPORTING

All site workers and attendees are required to verbally report incidents, accidents and near-misses to the Site Manager and Project Manager immediately after an event has occurred. It is the responsibility of the Site Manager to notify the Proponent immediately after the occurrence of an incident and to complete a written incident report within 24 hours including notification to appropriate individuals and authorities (i.e.

HSE and Management teams, Safework NSW and NSW EPA). Additional investigations may be necessary should a serious incident occur.

14.3 COMMUNITY CONSULTATION

Stantec does not anticipate that significant community consultation will be required during the course of the remedial and validation works. Should this assumption change, a detailed Community Consultation Plan may be developed to manage communications with third parties.

15.0 SITE VALIDATION REQUIREMENTS

During implementation of this RAP, the following validation requirements are to be fulfilled by the Environmental Consultant.

15.1 VALIDATION SAMPLING

Validation sampling will be undertaken following removal of contaminated material to ensure that the vertical and lateral extent of the contamination has been defined. The process for validation sampling is outlined in **Table 15-1** .

15.1.1 XRF field screening

Following the removal of known contamination, and prior to advancing additional remedial excavations, an on-site XRF screen can be undertaken by the Environmental Consultant as a preliminary assessment of metals. A methodology for the use of the XRF during validation is outlined below:

- XRF screening would be utilised on exposed surfaces of the excavation walls and base of remedial excavations to assess for contamination and inform if remediation excavation should continue, or if validation samples should be collected.
  - XRF screening must be conducted by a suitably trained and qualified professional, as per the US EPA Method 6200 (SW-846) included in **Appendix H**.
  - The XRF is to be calibrated prior to the commencement of field works. If required, the XRF will be re-calibrated during the field program in accordance with manufacturer's instructions.
  - Areas previously inaccessible and/or unassessed (refer to data gap investigation in **Section 12.4**) can also be subjected to on-site semi quantitative assessment via an XRF screen, and to be supplemented by sampling and laboratory analysis, as appropriate.
  - The XRF on-site screening process is considered a preliminary and semi-quantitative screening and validation input, with sample collection and laboratory analysis required at the rate specified below in **Table 15-1**.

Should residual contamination be identified following receipt of validation results, the handheld XRF can be utilised on-site to inform further remedial earthworks extents, and the depths / locations for validation sample collection.

15.1.2 Validation sampling

The soil validation procedure required during the remediation works are described below in **Table 15-1** and soil sampling and handling of the collected samples must be completed in accordance with **Table 15-2**.

Table 15-1 Soil Validation Sampling Summary

Remediation Area	Sampling Density	Laboratory Analyses	Validation Criteria
Area of human health exceedances for lead (as per Figure 3, Appendix A) **Areas requiring remediation based on the findings of the Data Gap Investigation (Section 12.4)**	For each remediation excavation: • Linear – 1 sampling location per 5m length of excavation wall. • Vertical –1 sampling location per 0.5 m depth of excavation or change in soil horizon. • Base – 1 sample location per 25m2 (grid size 5m x 5m, to allow detection of a circular hotspot with a nominal diameter of 6m with 95% certainty). The collection of validation samples will be based on: • Visual and olfactory observations; • XRF screening results; and • Extents of remediation excavations.	• Lead • Zinc	Chemical analytes to be less than HIL-A and EIL UR/ POS
Stockpiled material (for disposal)	One sample per 25m^3 of stockpiled material, up to 250m^3. A minimum of three (3) samples is required for any stockpile. For stockpiles >250m^3 but <2500 m^3 in size, a statistical analysis approach may be used for classification, with the collection of at least 10 samples.	• Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); • TRH; • BTEX; • PAHs; • OCP; • OPP; • PCB; • PFAS; and • Asbestos. TCLP testing (as required) and any additional chemicals that may be identified by the supplementary investigation	Chemical analytes to be below adopted Tier 1 Screening Criteria as outlined in **Section 5.1** As noted in **Section 12.5.1** that a reduced list of analytes may be analysed during waste classification, however this will be at the discretion of the suitably qualified Environmental Consultant.
Imported material	Imported materials must be certified by the Environmental Consultant as being suitable and must: • Review associated classification documentation on consideration of the applicable NSW EPA RRE / RRO. If inadequate, the material must be rejected. • If the documentation is adequate, the material is to be inspected in small batches by the Environmental Consultant upon receipt at the site. Inspection is required to confirm consistency of the material with that described in the classification.		Chemical analytes to be below adopted Tier 1 Screening Criteria as outlined in **Section 5.1**

	• If the material is consistent with that described in the documentation, sampling is required at a minimum rate of one per 100 m3 and minimum 3 primary samples to be analysed for a broad suite of contaminants, with data compared against the relevant RRO/RRE and applicable ASC NEPM (2013) criteria. The Environmental Consultant may perform classification on behalf of the Principal Consultant, for materials intended to be imported onto the site. The process is to include classification of the material in accordance with NSW EPA RRE/RRO, on-site inspection as described above, and on-site validation sampling as described above.		

Excavation of contaminated material shall continue until the analytical results indicate compliance with Step 6 of the Data Quality Objectives (see **Section 9.0**). If additional excavation is necessary, the excavation shall be extended until the excavation wall and base samples indicate that the location is validated as meeting the remediation criteria. Near site boundaries, excavations should extend to a safe distance so as to not undermine off-site lands. Where contamination extends to the site boundary and cannot be further excavated, an assessment of Duty to Report should be undertaken and suitable measures to stop contamination from re-entering the site should be designed, implemented, and validated.

Where contamination extends within a distance that would undermine an adjacent structure, works should not proceed until adequate consideration has been made by the Environmental Consultant. This may require structural, architectural and other specialist services, and where excavations cannot advance, alternative measures might apply such as establishment of in-situ containment and management under an LTEMP.

15.1.3 Validation sample collection

Validation sample collection and handling must be completed as outlined in **Table 15-2** below. Any modifications to the below should be made based on consideration of relevant NSW EPA endorsed processes and procedures.

Table 15-2 Soil Validation Sample Collection

Activity	Details
Soil Sampling	• Soil samples to be collected directly from exposed surface or the excavator bucket using disposable nitrile gloves and transferred to laboratory provided glass jars and sampling bags. The soil samples are to be collected on the same day as excavation to ensure that contaminants prone to degradation / weathering (as applicable) are representative. • Analytical testing of soil samples is to generally target fill materials, however, at least one (1) soil sample is to be collected from the underlying natural soil and may be tested if physical evidence of contamination is noted or if overlying fill is found to be significantly contaminated. • Primary and duplicate soil samples to be submitted to National Association of Testing Authorities, Australia (NATA) accredited laboratory. • Field procedure for asbestos identification in soils to include: Visual assessment at each sample location; if asbestos is identified WA DoH field assessment methodology of soils including collection of 10L soil samples and visual assessment against a coloured tarp for asbestos fragments. This process will be conducted at locations observed to contain adversely impacted fill, and at locations previously identified as being impacted with asbestos.
Sampling Frequency and Laboratory Analysis	As outlined in **Table 15-1** .
Soil Logging	Soils encountered during the investigation to be described and logged in accordance with Australian Standard AS 1726:2017 – Geotechnical site investigations.
Soil sample containers and holding times	• Metals - 250g glass jar / refrigeration 4°C / 6 months (maximum holding period). • TRH/ VOCs - 250g glass jar / refrigeration 4°C / 14 days (maximum holding period). • PAH/ OCP /OPP/ PCB - 250g glass jar / refrigeration 4°C / 14 days (maximum holding period). • Asbestos – up to a 10-litre resealable plastic (polyethylene) bag/ no refrigeration/ indefinite holding time.
Decontamination Procedure	Reusable sampling equipment such as hand tools (shovel, trowel, mattock) to be decontaminated by washing with phosphate free detergent (Liquinox) followed by a rinse with potable water.
Sample Preservation and Transport	Samples will be placed in laboratory supplied containers and stored on ice in an ice box while on Site and in transit to the laboratory under Chain of Custody documentation.
Quality Control, Laboratory Analysis and transport	All soil samples are to be submitted for analysis of previously identified chemicals of concern by a NATA Certified laboratory as outlined in **Section 9.0**. Field duplicate samples to be collected for QA/ QC purposes, by carefully mixing the material and distributing evenly between sampling containers. Quality assurance (QA) and quality control (QC) procedures as outlined in **Section 9.0** will be adopted throughout the field sampling program to ensure sampling precision and accuracy. QA/ QC testing is to also comprise of rinsate blank and trip blank / trip spike samples. All samples are to be transported under strict Chain-of-Custody (COC) conditions.

16.0 CONTINGENCY PLAN

As with any remedial scope of work, unanticipated events or outcomes may be encountered during the remedial program. Stantec has developed contingencies throughout the RAP to mitigate risks associated with potential issues that may arise during the remedial works. Contingency items considered for the current remediation are summarised in **Table 16-1** noting that there may be other unforeseen circumstances that may arise during the course of the works.

Table 16-1 Remedial Works Contingency Plan

Potential Issue	Contingency Measure
Evidence of additional contamination not previously identified	Further assessment involving intrusive investigations or remediation may be required to quantify and delineate potential contamination. The CoPC analytical suite may be adjusted based on the nature of the potential source. The Unexpected Finds Protocol (UFP, **Section 13.6**) will be communicated, implemented and followed during the construction phase of the project.
Greater than anticipated volumes of soil require management	In the case of additional contaminated soil being identified and on-site containment is feasible, this may be undertaken subject to approval by the relevant authority. Off-site soil disposal can occur where unexpected volumes of soil are produced and cannot be contained on-site for containment / encapsulation.
Unintentional release of stockpiled soil or water drained from stockpile	Construction of appropriate erosion and sedimentation controls around stockpiles Spill equipment will be staged on-site during the remedial works. Weather forecasts will be monitored throughout the course of the remedial works to anticipate any significant storm events. Works may be suspended if large volumes of rain are anticipated. Soil stockpiles would be sufficiently covered prior to any storm event. Assess if off-site migrations cause Duty to Report.
Water ingress to excavation is unmanageable	Consider aggressive means to remove the water (multiple vacuum trucks) or below ground dewatering equipment. Consider installation of a physical barrier to block the water ingress.
Elevated CoPC concentrations are encountered within remaining soils following remedial excavations	Following the validation sampling of the initial remedial excavations (walls and base), should contamination be identified to remain then additional excavation will be required to chase out the extent of contamination. Further validation sampling will be undertaken. This process will be repeated until soils are suitable to remain onsite.
Imported material is determined unsuitable	If identified prior to entry onto site, material is to be stopped at the site gate and returned to point of origin. If emplaced prior to unsuitability is identified, material is to be isolated and demarcated. If stockpiled prior to removal offsite the stockpile should be lined to avoid contact with unimpacted ground surfaces.

Potential Issue	Contingency Measure
	Any material leaving the site must undergo waste classification to allow for appropriate disposal offsite. The responsibility for this task would be decided by the Principal Contractor.
An update to this RAP is required	Updates to the RAP may be required in the following situations: • If contamination is identified following completion of the data gap investigation (see **Section 12.1**) and/or unexpectedly during construction. If the material is contaminated with the CoPC specified in this RAP, updates would be limited to the locations and volumes of material to be remediated. • If contamination is identified that differs to the CoPC specified in this RAP, a substantial revision to the RAP would be required including reconsideration of the remediation options assessment. Any updates or revisions to the RAP must be undertaken by the Environmental Consultant and the document provided to relevant stakeholders for consideration prior to implementation, including local Council and the NSW EPA site auditor.

17.0 REGULATORY APPROVALS/ LICENSES

17.1 REGULATORY COMPLIANCE REQUIREMENTS

Regulations and sources of regulatory guidance relevant to this remediation programme relate to waste management, environment protection and occupational health and safety.

17.1.1 Waste Management

The remediation program must comply with the following legislation and policies:

- Waste Avoidance and Resource Recovery Act 2001;
- Protection of the Environment Operations (Waste) Regulation 2014; and
- NSW EPA (2014) Waste Classification Guidelines.

17.1.2 Environmental Protection

The remediation of asbestos impacted soils and environmental media with elevated contamination concentrations, must be carried out in a manner compliant with national, state and local environmental regulations, including the:

- NSW Work Health and Safety Act 2011;
- NSW Work Health and Safety Regulation 2017;
- Protection of the Environment Operations Act 1997;
- SafeWork NSW Code of Practice – How to Safely Remove Asbestos 2019;
- State Environmental Planning Policy (SEPP) 55 – Resilience and Hazard, 2021;
- Contaminated Land Management Act 1997

- National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).

17.1.3 Planning Controls

Planning controls applicable to the proposed remediation are provided in the following:

- State Environmental Planning Policy (SEPP) 55 – Resilience and Hazard, 2021;
- State Environmental Planning Policy (SEPP) (Transport and Infrastructure) 2021;
- Maitland City Council Development Control Plan (DCP) 2011; and
- Maitland City Council Local Environmental Plan (LEP) 2011.

The proposed remedial works are to be managed as Category 2 remediation as per the SEPP 55 definition subject to Client requirements or requirements set out in any Development or Ministerial Consent.

18.0 CONCLUSION

Stantec Australia Pty Ltd (Stantec) were engaged by School Infrastructure NSW (SINSW) to prepare a Remediation Action Plan (RAP) for Gillieston Public School, located at the corner of Northview Street and Ryans Road, Gillieston Heights, NSW (as indicated in **Figure 1**, **Appendix A**) and legally identified as Lot 51 of Deposited Plan (DP) 1162489 and Lot 2 DP1308605 (the site).

The purpose of this RAP is to support the Review of Environmental Factors (REF) approval for the proposed site activity, as described in **Section 1.2** and shown on the plans provided in **Appendix B**. Following approval, the RAP may require updating upon refinement of the design and to be suitable for implementation during construction. Demolition and removal of existing temporary structures. The proposed activity is understood to consist of the following:

- Site preparation activity, including demolition, earthworks, tree removal.
- Construction of new:
  - 32 permanent general learning spaces and 3 support teaching spaces
  - Administration and staff hubs
  - Hall, canteen and library
  - Out of school hours care
  - Public preschool (standalone building for 60 places)
  - Covered Outdoor Learning Areas (COLAs)
  - Outdoor play areas, including games courts and yarning circle
  - New at-grade car parking
  - Extension of the existing drop-off / pick-up area and new bus bay
  - Realignment of the existing fencing
  - Associated stormwater infrastructure upgrades
  - Associated landscaping
  - Associated pedestrian and road upgrade activity

The specific remediation objectives for the site are as follows:

- To ensure that the identified contaminated material is managed in accordance with best and most sustainable practices to remove unacceptable health risk to human and ecological receptors;
- Demonstrate, through remediation and validation, that potential health risk to site receptors has been reduced to an acceptable level, and the site is considered suitable for the proposed land use; and
- If contamination remains following remediation, the material is to be managed such that a complete source-pathway-receptor linkage is incomplete under the ongoing land use post-construction, for example via implementation of a Long-Term Environmental Management Plan (LTEMP).

Based on previous investigations and initial remediation works undertaken at the site, the contamination present and requiring remediation consists of lead above human health criteria as outlined in **Figure 3**,

Appendix A. Zinc concentrations were reported above applicable ecological screening criteria within shallow fill in similar locations to the human health exceedances for lead, so it is considered that these soils will be addressed through remediation of lead impacted soils. If materials impacted by zinc above the ecological criteria are retained on site under an containment scenario, the potential impact to ecological receptors would be considered in the containment design (i.e. ensuring an incomplete S-P-R linkage).

As outlined in **Section 7.1**, there is the potential for additional contamination to be present beneath inaccessible areas in the vicinity of the remediation area (beneath hardstands, demountable buildings and permanent structures). As the proposed activity will require the removal of hardstands (staff car park and footpaths) and buildings, as well as exposing previously unassessed areas, a data gap investigation is required, as specified in **Section 12.4**.

The following remediation strategy is recommended for implementation as part of remedial works:

1. Preliminaries and site establishment (see **Section 12.3**);
2. Additional investigation in previously inaccessible areas (underneath hardstands and / or beneath existing demountable buildings and demolition of any structures) to determine additional areas requiring remediation (see **Section 12.5**);
3. Engineered design and capping requirement of the fill embankment / encapsulation area (see **Section 12.7**).
4. Remedial excavation of contaminated soils (see **Section 12.5**) and either:
    a. Waste classifications, and/ or
    b. In-situ/ above ground encapsulation, subject to geotechnical considerations and the engineered design of the proposed fill embankment / encapsulation area, the lead impacted soils (excluding grass cover) may be considered to be placed within the fill embankment / encapsulation area with nominal compaction.
5. Validation works (see **Section 12.6**);
6. Survey and inspection of as-built works (see **Section 12.7**);
7. Validation Reporting (see **Section 12.9**).
8. Development and implementation of a Long-Term Environmental Management Plan for the site (see **Section 12.8**) in accordance with the NSW EPA (2020) Consultants Reporting on Contaminated Sites: Contaminated Land Guidelines to include information on the following:
    a. Management roles and responsibilities;
    b. Ongoing reporting requirements;
    c. Emergency contact and procedures;
    d. Management measures; and
    e. Ongoing audit and review of the plan for continuing suitability

Once all data gap investigations are completed, remediation and validation undertaken, and remaining contamination (if any) managed under an LTEMP, then the site would be considered suitable for the intended land use post-construction of the proposed activity.

19.0 MITIGATION MEASURES

See the below table that outlines the appropriate mitigation measures for risks associated with site contamination and remedial activities outlined in this report.

Table 19-1 Mitigation Measures

Project Stage Design (D) Construction (C) Operation (O)	Mitigation Measures	Relevant Section of report
D / C / O	Contamination is known to exist at the site that currently renders the site unsuitable. In order to render the site suitable, a data gap investigation is required as well as implementation of the RAP and preparation of a Validation Report upon completion.	-
D / C / O	Where encapsulation or cap and contain of contaminated material is chosen as the preferred remediation strategy, a Long-Term Environmental Management Plan must be prepared for the site.	Section 12.8
D / C	Prior to remediation works taking place, interim management controls should be put in place to ensure no risk to site users	Section 4.3

20.0 LIMITATIONS

This Document has been undertaken in general accordance with the current “industry standards” for a Remediation Action Plan and contamination assessment for the purpose, objectives and scope identified in this report. These standards are set out in:

- National Environment Protection Measure (NEPM) - *Assessment of Site Contamination 1999* (NEPC, 1999) as varied May 2013 (the ‘NEPM 2013’).
- NSW EPA (2020) Consultants reporting on contaminated land; Contaminated land guidelines. New South Wales Environment Protection Authority;

The scope of this Document is limited to the scope identified in **Section 1.3**. The assessment may not identify contamination occurring in all areas of the site or occurring after sampling was conducted. Subsurface conditions may vary considerably away from the sample locations where information has been obtained.

This Document has been provided by Stantec subject to the following limitations:

- This Document has been prepared for the particular purpose outlined in Stantec’s proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.
- The scope and the period of Stantec’s services are as described in Stantec’s proposal and are subject to restrictions and limitations. Stantec did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Stantec in regards to it.
- Conditions may exist which were undetectable given the limited nature of the enquiry Stantec was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Document. Accordingly, additional studies and actions may be required.
- In addition, it is recognised that the passage of time affects the information and assessment provided in this Document. Stantec’s opinions are based upon information that existed at the time of the production of the Document. It is understood that the services provided allowed Stantec to form no more than an opinion of the actual conditions of the site at the time this Document was prepared and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.
- Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.

- Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Stantec for incomplete or inaccurate data supplied by others.
- Stantec may have retained sub consultants affiliated with Stantec to provide services for the benefit of Stantec. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any direct legal recourse to, and waives any claim, demand, or cause of action against, Stantec's affiliated companies, and their employees, officers and directors.

This assessment report is not any of the following:

- An assessment of hazardous building materials.
- An assessment of Acid Sulfate Soils (ASS) within the site or nearby.
- A Site Audit Report or Site Audit Statement as defined under the *Contaminated Land Management Act, 1997*.
- A detailed hydrogeological assessment in conformance with NSW DEC (2007) Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination.
- A Site Validation Report or Environmental Management Plan.
- An assessment of groundwater contaminants potentially arising from other Sites or sources nearby.

21.0 REFERENCES

- ASSMAC Acid Sulfate Soils Assessment Guidelines, Acid Sulfate Soils Management Advisory Committee, August 1998 (ASSMAC 1998)
- Australian Standard 4482.1-2005: Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil.
- Guideline on the Investigation Levels for Soil and Groundwater' of the *National Environment Protection (Assessment of Site Contamination) Measure* (NEPM) *1999* (NEPC, 1999) as varied May 2013 (the 'NEPM 2013'); Standards Australia (2005).
- Guidelines for Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, Western Australia Department of Health (WA DOH). 2009
- Landcom. (2004). Managing Urban Stormwater: Soils and construction - Volume 1. Landcom.
- NSW DPIE (2021) eSPADE v2.1, NSW Department of Planning Industry and Environments (DPIE), Retrieved from: https://www.environment.nsw.gov.au/eSpade2Webapp.
- NSW EPA (2015) Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997. NSW Environment Protection Authority, Sydney. September 2015.
- NSW EPA (2017) Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3rd edition). NSW Environment Protection Authority, Sydney. October 2017.
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- Office of Environment and Heritage (OEH) (2017) *Acid Sulfate Soils*. NSW Government, November 2017.
- NSW Department of Urban Affairs and Planning (2021) Managing Land Contamination: Planning Guidelines: SEPP Hazards and Resilience, 2021 (SEPP 55)
- NSW Department of Planning and Environment, State Environmental Planning Policy (Resilience and Hazards) 2021
- NSW Environment Protection Authority Guidelines for the NSW Site Auditor Scheme, 3rd Edition (NSW EPA, 2017);
- NSW EPA Consultants Reporting on Contaminated Land: Contaminated Land Guidelines. New South Wales Environment Protection Authority, April 2020, Updated May 2020 (NSW EPA 2020)
- NSW EPA (2014) Waste Classification Guidelines, Part 1: Classifying Waste;
- NSW EPA (2022) Sampling Design Part 1 – Application; Contaminated land guidelines (NSW EPA, 2022);
- NSW EPA (2022) Sampling Design Part 2 – Interpretation; Contaminated land guidelines (NSW EPA, 2022);
- Safework NSW. (2019). *Code of Practice: How to Safely Remove Asbestos*. Safework NSW.

References

- WorkCover NSW. (2014). *Managing asbestos in or on soil*. WorkCover NSW.
- Stantec Australia Pty Ltd (2023a), *Geotechnical DD – Preliminary Desktop Review, Gillieston Public School,* Prepared for School Infrastructure NSW, Issued 8 February 2023.
- Stantec Australia Pty Ltd (2023b), *Intrusive Geotechnical Report, Gillieston Public School,* Prepared for School Infrastructure NSW, Issued 10 February 2023
- Stantec Australia Pty Ltd (2023d), *Preliminary Desktop Site Investigation - Contamination, Gillieston Public School*, Prepared for School Infrastructure NSW, Issued 10 March 2023.
- Stantec (2024), Detailed Site Investigation, Gillieston Public School, prepared for School Infrastructure, Issued 25 July 2024
- Standards Australia, (2005) - *Guide to the sampling and investigation of potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds.* AS 4482.1—2005.

Appendix A - FIGURES

Site and Location Plan

Gillieston Public School,
Gillieston Heights NSW

Project Code: 304100928-GS-048
Drawn By: CC, Checked By: CL
Figure: 01 Rev: 02
Date: 2024-10-04

Stantec

Legend

- Site Boundary
- Watercourse
- Major Road
- Railway
- Contour
- Cadastre

Notes:
1. Coordinate System: GDA2020 MGA Zone 56

References:
1. Aerial imagery (Nearmap, June 2024)
2. Cadastre (NSW SS, 2022)
3. Watercourse, Major Road, Railway, Contour (NSW SS)

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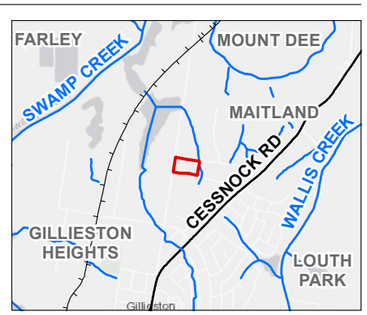

Previous Sampling Plan - Overview

Gillieston Public School,
Gillieston Heights NSW

Project Code: 304100928-GS-051
Drawn By: CC, Checked By: CL
Figure: 02 Rev: 02
Date: 2024-10-04

Stantec

Legend

- Site Boundary
- Watercourse
- Major Road
- Railway
- Cadastre

DSI Sample Location

- Hand Auger
- Surface Water/ Sediment
- Test Pit

Previous Sample Location

- Previous Sample Location
- Validation Sample - Lead Exceedance
- Validation Sample

Remediation Extent

- Approximate Additional Areas Requiring Remediation
- Approximate Initial Remediation Extent

Notes:
1. Coordinate System: GDA2020 MGA Zone 56

References:
1. Aerial imagery (Nearmap, June 2024)
2. Cadastre (NSW SS, 2022)
3. Watercourses, Railway and Major Roads (NSW SS)

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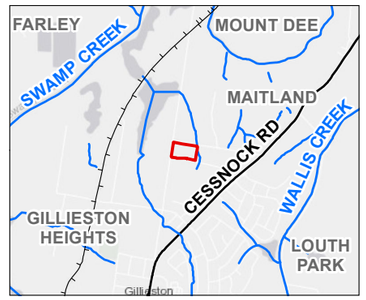

Validation Sampling and Remediation Extents

Gillieston Public School,
Gillieston Heights NSW

Project Code: 304100928-GS-052
Drawn By: CC, Checked By: CL
Figure: 03 Rev: 02
Date: 2024-09-27

Stantec

Legend

- Site Boundary
- Watercourse
- Railway
- Major Roads
- Cadastre

DSI Sample Locations

- Hand Auger
- Test Pit

Previous Sample Location

- Previous Sample Location
- Validation Sample - Lead Exceedance
- Validation Sample

Remedial Extent

- Approximate Additional Areas Requiring Remediation
- Approximate Initial Remediation Extent
- Previously Remediated Area

Notes:
1. Coordinate System: GDA2020 MGA Zone 56

References:
1. Aerial imagery (Nearmap, June 2024)
2. Cadastre (NSW SS, 2022)
3. Watercourses, Railway and Major Roads (NSW SS)

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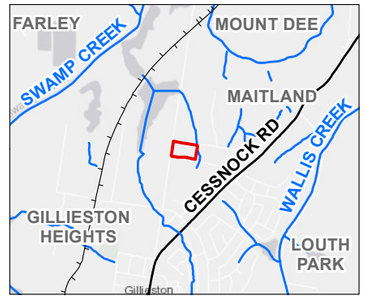
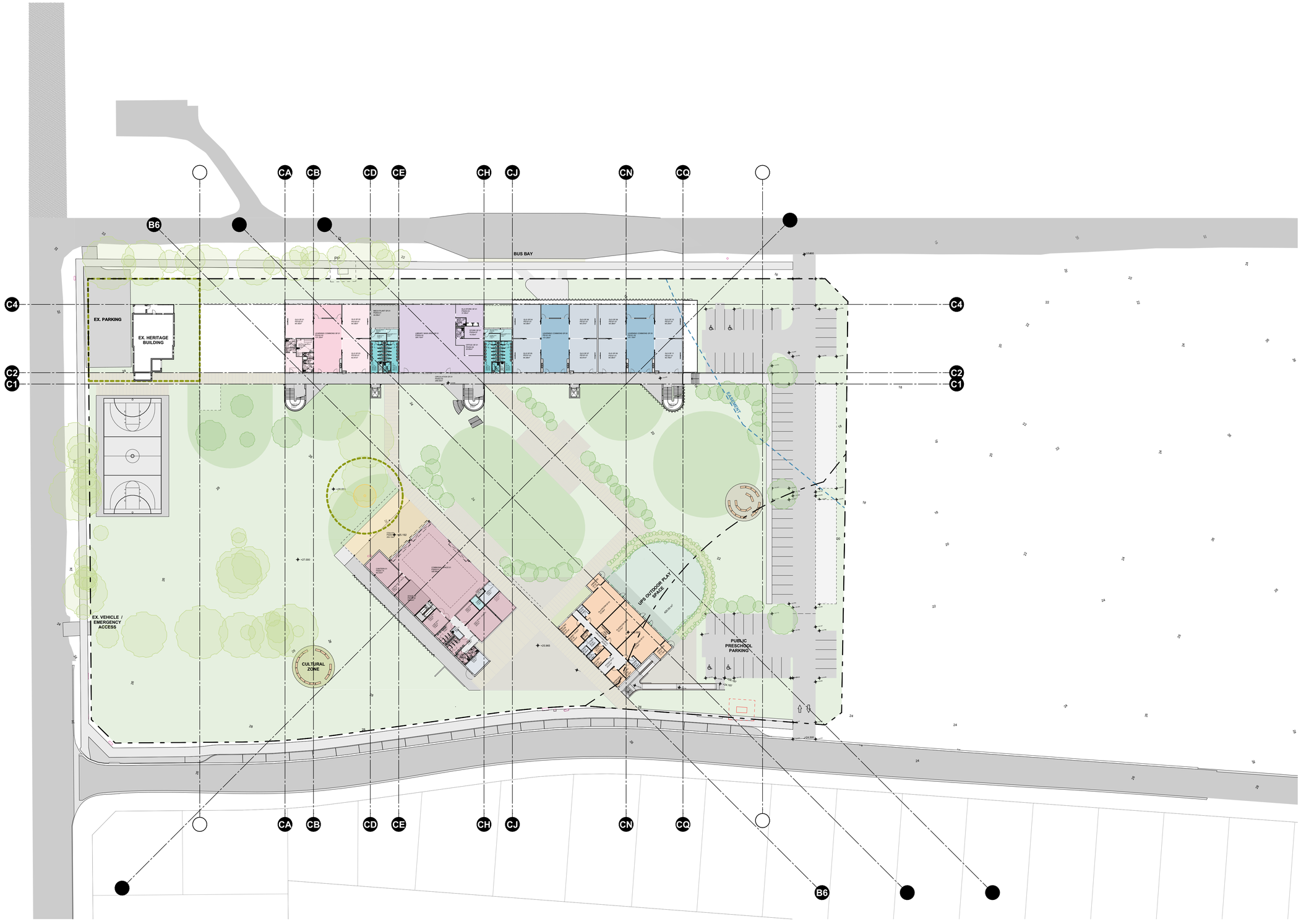


Appendix B – SITE PLAN



CONSULTANTS

STRUCTURAL/CIVIL ENGINEER	SERVICES ENGINEER	LANDSCAPE ARCHITECT	QUANTITY SURVEYOR	CONSULTANT AREA	CONSULTANT AREA
ACOR Consultants	ARCADIS	Terras Landscape Architects	Muller Partnership	Company Name	Company Name
T 4926 4811	T 02 8907 9000	T 4926 3069	T 4965 4722	T 49XX XXXX	T 49XX XXXX

AMENDMENTS

No	Drn	Chk	Date	Comment
A	RB	EB	23.07.24	PROJECT REFERENCE ADDED
B	RB	EB	26.07.24	FOR INFORMATION
C	RB	EB	02.05.24	FOR INFORMATION
D - WIP	RB	EB		DRAFT Transmittal Set

uncontrolled issue

No	Drn	Chk	Date	Comment

uncontrolled issue

No	Drn	Chk	Date	Comment

uncontrolled issue

NOTES

1. Dimensions are in millimetres unless otherwise shown.
2. Work to given dimensions. Do not scale from drawing.
3. Check all dimensions on site prior to construction and fabrication.
4. Bring any discrepancies to the attention of the proprietor & architect.

SINSW INFORMATION CONTAINER REF:

GPS-SHAC-ZZ-ZZ-M2-A-021102-Proposed Ground Floor Site Plan - Detailed

CLIENT NAME

NSW GOVERNMENT Education School Infrastructure

SCALE

0m 5 10 15 20 25 1:500 @A1

PROJECT NAME AND ADDRESS

Gillieston Public School
100 Ryans Road

DRAWN **RB** APPROVED **EB**

STATUS

PRELIMINARY

DRAWING TITLE

Proposed Ground Floor Site Plan - Detailed

PROJECT NO.	DRAWING NO.	REV.
4814	**02 1102**	**D - WIP**

SHAC

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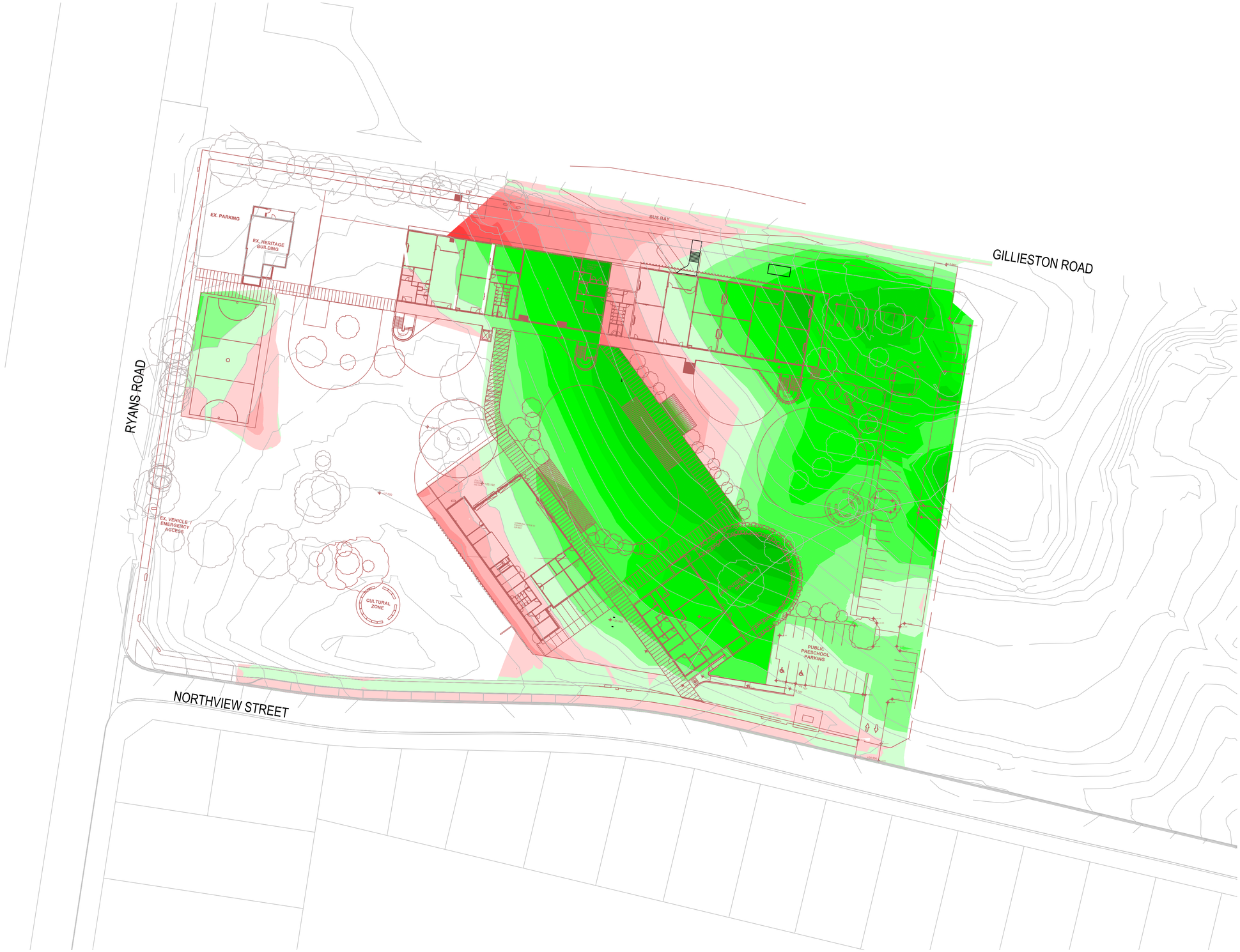
F +61 2 4962 2577 | Islington NSW 2296 | Justin Hamilton (6160)
E info@shac.com.au | Australia | ABN 32 131 584 846

Appendix C – CUT AND FILL PLAN



EARTHWORKS CUT/ FILL ISOPACH				
Lower_value		Upper_value	Colour	
-999	to	-3.50	m	
-3.50	to	-3.00	m	
-3.00	to	-2.50	m	
-2.50	to	-2.00	m	
-2.00	to	-1.50	m	
-1.50	to	-1.00	m	
-1.00	to	-0.50	m	
-0.50	to	0.00	m	
0.00	to	0.50	m	
0.50	to	1.00	m	
1.00	to	1.50	m	
1.50	to	2.00	m	
2.00	to	2.50	m	
2.50	to	3.00	m	
3.00	to	3.50	m	
3.50	to	999	m	

EARTHWORKS QUANTITIES ARE AS FOLLOWS.

TOTAL CUT = 1,790 m³
TOTAL FILL = 17,875 m³
TOTAL FILL OVER CUT = 16,085 m³

NOTE - THESE VOLUMES ARE BETWEEN THE CURRENT DESIGN SURFACE LEVEL (FSL) AND EXISTING SURFACE LEVEL (ESL).

NO ALLOWANCE HAS BEEN MADE FOR BULKING, STRIPPING OF TOP SOIL, PAVEMENT THICKNESS, FOUNDATIONS AND FOOTINGS OR SERVICE TRENCHING

SCALE 1:500 @ A1
SCALE 1:1000 @ A3
0 5 10 20 30 40 50 metres

NOT FOR CONSTRUCTION

This drawing has been assigned an electronic code that signifies the drawing has been checked and approved by:

Issue	Description	Date	Drawn	Approved
B	ISSUED FOR INFORMATION	14.08.24	JK	JR
A	ISSUED FOR CONCEPT DESIGN	22.09.23	MDM	UK

1cm at full size 10cm 20cm

North

Client
SCHOOLS INFRASTRUCTURE NSW
8/259 GEORGE STREET
SYDNEY NSW 2000
PHONE : 1300 482 651

Architect
SHAC ARCHITECTS
224 MAITLAND ROAD
ISLINGTON, NSW 2296
PHONE : 4961 5888

ACOR Consultants Pty Ltd
The Forum Level 1, Suite 1 240-244 Pacific Highway
Charlestown NSW 2290
T +61 2 4926 4811
ENGINEERS | MANAGERS | INFRASTRUCTURE PLANNERS | DEVELOPMENT CONSULTANTS

Project
GILLIESTON HEIGHTS PRIMARY SCHOOL
100 RYANS ROAD
GILLIESTON HEIGHTS, NSW, 2321

Drawing Title
BULK EARTHWORKS PLANS

Drawn	Date	Scale A1	Q.A. Check	Date
MDM	SEP 2023	1:500	UK	19.09.23
Designed	Project No.		Dwg. No.	Issue
SJO	NS221454		C04-001	B

S:\SYDNEY\Projects\NS221454\Drawings\ACAD\Drawings\NS221454-C04-001.dwg
Aug 14, 2024 - 3:37pm

Appendix D – DEMOLITION PLAN

CONSULTANTS

STRUCTURAL/CIVIL ENGINEER
ACOR Consultants
T 4926 4811

SERVICES ENGINEER
ARCADIS
T 02 8907 9000

LANDSCAPE ARCHITECT
Terras Landscape Architects
T 4926 3069

QUANTITY SURVEYOR
Muller Partnership
T 4965 4722

PROJECT MANAGER
Johnstaff
T 8256 0500

AMENDMENTS

No	Drn	Chk	Date	Comment
A	tbc	tbc.	28.08.24	FOR INFORMATION
B	tbc	tbc.	17.09.24	SCHEMATIC

NOTES

1. Dimensions are in millimetres unless otherwise shown.
2. Work to given dimensions. Do not scale from drawing
3. Check all dimensions on site prior to construction and fabrication.
4. Bring any discrepancies to the attention of the proprietor & architect.

SINSW INFORMATION CONTAINER REF:
GPS-SHAC-ZZ-ZZ-M2-A-031003-Demolition Site

CLIENT NAME
NSW Government Education School Infrastructure

SCALE 1:500 @A1
0m 5 10 15 20 25

PROJECT NAME AND ADDRESS
Gillieston Public School
100 Ryans Road

DRAWN **tbc**
APPROVED **tbc.**

STATUS
SCHEMATIC

DRAWING TITLE
Demolition Site

PROJECT NO. **4814**
DRAWING NO. **03 1003**
REV. **B**

SHAC

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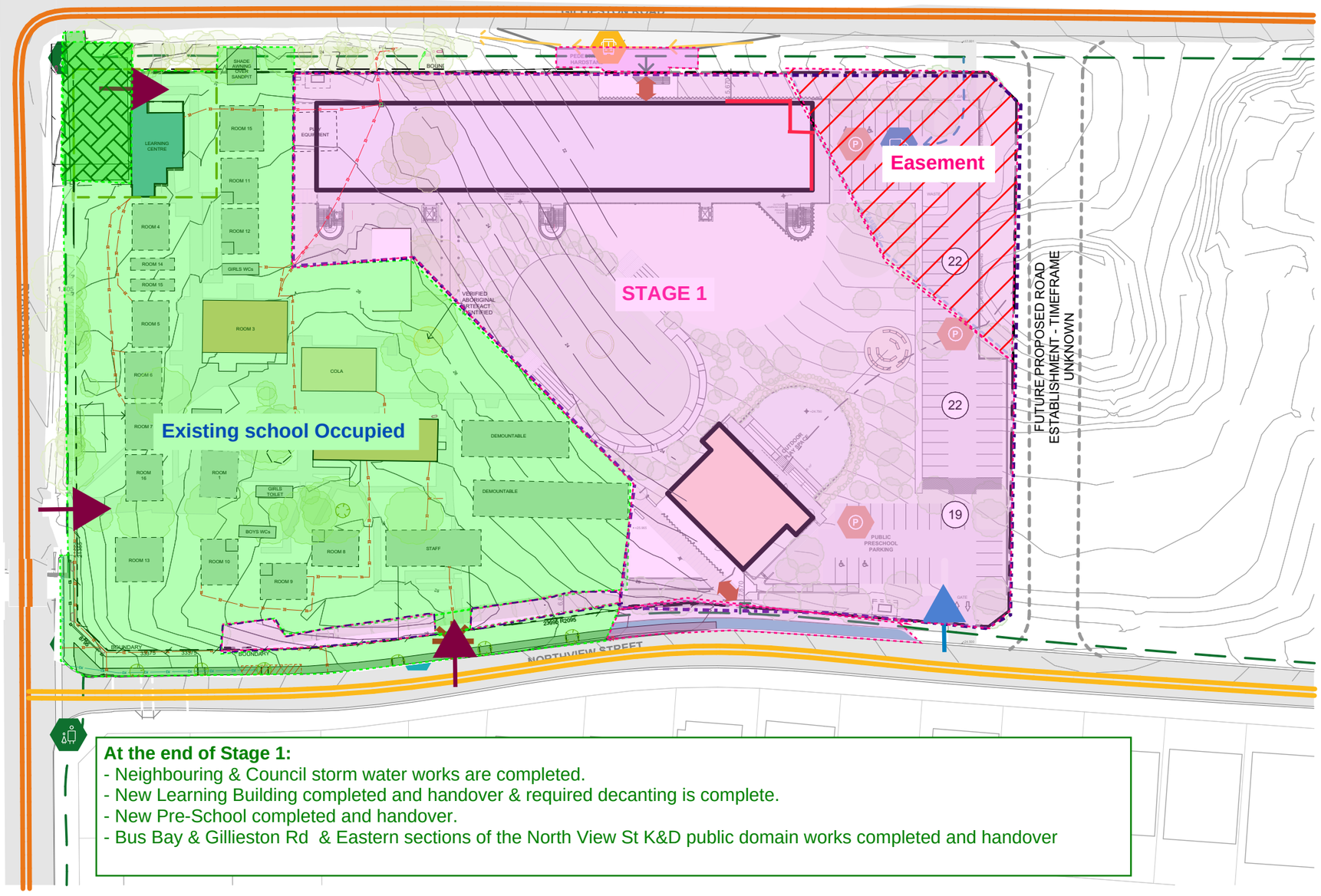
E info@shac.com.au
224 Maitland Road
Islington NSW 2296
Australia
Nominated Architect
Justin Hamilton (6160)
ABN 32 131 584 846

Appendix E– STAGING PLAN REV.7

Gillieston Public School - Stage 1 Construction Works

Construction works includes:
- Site Establishment
- Neighbouring & Council storm water works
- All works required for the Completion of the new Learning Building & required decanting
- All works required for the Completion of the new Pre-School
- Bus Bay & Gillieston Rd & Eastern sections of the North View St K&D public domain works

Key Notes:
1. Staff will be utilising the existing car park adjacent to Building D (Brick Cottage) on Gillieston Road during Stage 1 Construction Works
2. School Access on Northview Street is retained across Stage 1 Services corridor



At the end of Stage 1:
- Neighbouring & Council storm water works are completed.
- New Learning Building completed and handover & required decanting is complete.
- New Pre-School completed and handover.
- Bus Bay & Gillieston Rd & Eastern sections of the North View St K&D public domain works completed and handover

CONSTRUCTION LEGEND

Easement - This area is in possession of the Contractor. However, works in this area cannot be commenced until neighbouring & council stormwater works are complete

In Construction & Site in possession with the contractor

Existing and Operational

Completed and Occupied

Contractor Site Access

School Access

Hoarding Line

Staff car park

Remediation - This area is required to be remediated and made good prior to Hall and OOSH demountable installation

TECHNICAL OVERLAY

Bus Stop

Carparking

Kiss n Drop

Bicycles and Scooters

Crossings and School Zones

Maintenance and Delivery Access

LEGEND

- FUTURE PROPOSED ROADS
- CAR PARKING
- KISS N DROP & QUEUING ZONE
- BICYCLE / SCOOTER PARKING
- MAINTENANCE / DELIVERY ACCESS
- ACTIVE TRANSPORT LINKS
- MULTIDIRECTIONAL CAR ACCESS
- NARROW CUL DE SAC
- BUSBAY DROP OFF
- ENTRY

4814
DA3502
RevA 17.09.24

Gillieston Public School
100 Ryans Road & 29 Northview Street

0m 10 20 30 40 50 1:1000 @A3

SHAC

Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846

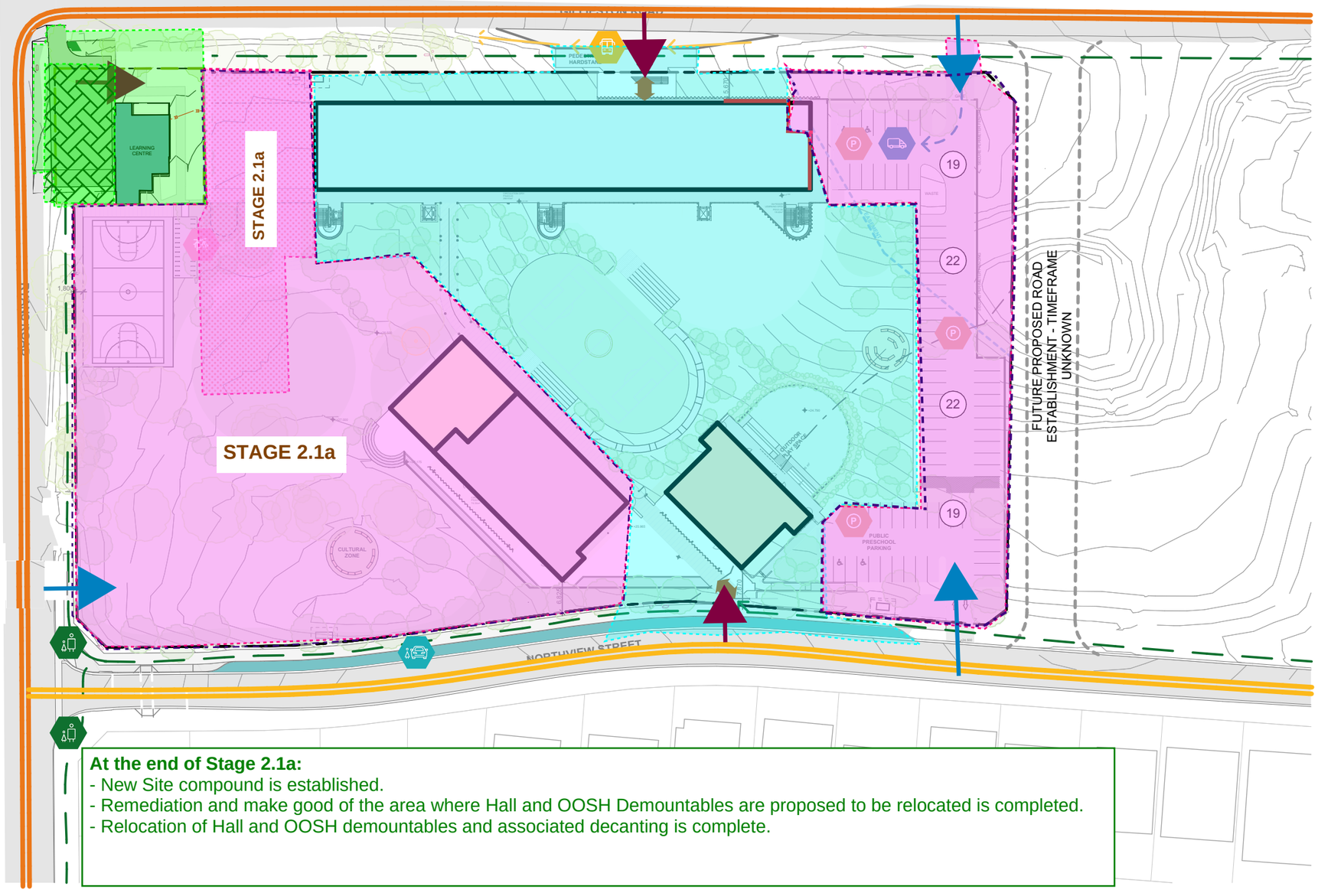
Gillieston Public School - Stage 2 Construction Works

Some parts of Stage 2 works would occur simultaneously

Gillieston Public School - Stage 2.1a Construction Works

Construction works include:
- Site shed relocation.
- Remediation and make good of the area where Hall and OOSH Demountables are proposed to be relocated.
- Relocation of Hall and OOSH demountables and associated decanting to facilitate construction of New Hall and OOSH Building.

Key Notes:
1. Staff will be utilising the existing car park adjacent to Building D (Brick Cottage) on Gillieston Road during Stage 2.1a Construction Works



At the end of Stage 2.1a:
- New Site compound is established.
- Remediation and make good of the area where Hall and OOSH Demountables are proposed to be relocated is completed.
- Relocation of Hall and OOSH demountables and associated decanting is complete.

CONSTRUCTION LEGEND

- Easement - This area is in possession of the Contractor. However, works in this area cannot be commenced until neighbouring & council stormwater works are complete
- In Construction & Site in possession with the contractor
- Existing and Operational
- Completed and Occupied
- Contractor Site Access
- School Access
- Hoarding Line
- Staff car park
- Remediation - This area is required to be remediated and made good prior to Hall and OOSH demountable installation

TECHNICAL OVERLAY

- Bus Stop
- Carparking
- Kiss n Drop
- Bicycles and Scooters
- Crossings and School Zones
- Maintenance and Delivery Access

LEGEND

- FUTURE PROPOSED ROADS
- CAR PARKING
- KISS N DROP & QUEUING ZONE
- BICYCLE / SCOOTER PARKING
- MAINTENANCE / DELIVERY ACCESS
- ACTIVE TRANSPORT LINKS
- MULTIDIRECTIONAL CAR ACCESS
- NARROW CUL DE SAC
- BUSBAY DROP OFF
- ENTRY

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Gillieston Public School
100 Ryans Road & 29 Northview Street

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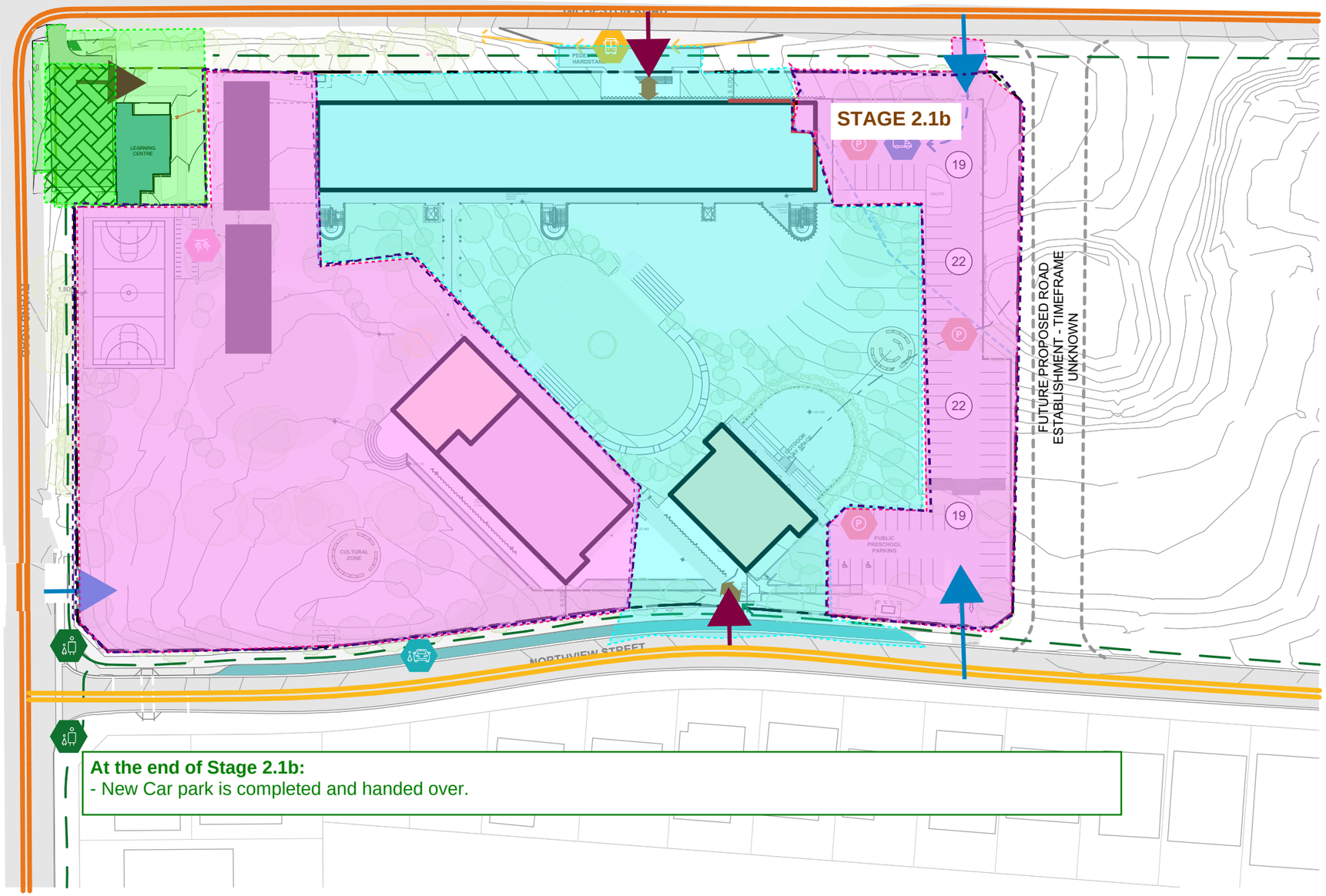
Gillieston Public School - Stage 2.1b Construction Works

Construction works include:
- Construction of New Car park

Key Notes:
1. Staff will be utilising the existing car park adjacent to Building D (Brick Cottage) on Gillieston Road during Stage 2.1b Construction Works



At the end of Stage 2.1b:
- New Car park is completed and handed over.

CONSTRUCTION LEGEND

- Easement - This area is in possession of the Contractor. However, works in this area cannot be commenced until neighbouring & council stormwater works are complete
- In Construction & Site in possession with the contractor
- Existing and Operational
- Completed and Occupied
- Contractor Site Access
- School Access
- Hoarding Line
- Staff car park
- Remediation - This area is required to be remediated and made good prior to Hall and OOSH demountable installation

TECHNICAL OVERLAY

- **Bus Stop**
- **Carparking**
- **Kiss n Drop**
- **Bicycles and Scooters**
- **Crossings and School Zones**
- **Maintenance and Delivery Access**

LEGEND

- FUTURE PROPOSED ROADS
- CAR PARKING
- KISS N DROP & QUEUING ZONE
- BICYCLE / SCOOTER PARKING
- MAINTENANCE / DELIVERY ACCESS
- ACTIVE TRANSPORT LINKS
- MULTIDIRECTIONAL CAR ACCESS
- NARROW CUL DE SAC
- BUSBAY DROP OFF
- ENTRY

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Gillieston Public School
100 Ryans Road & 29 Northview Street

0m 10 20 30 40 50 1:1000 @A3

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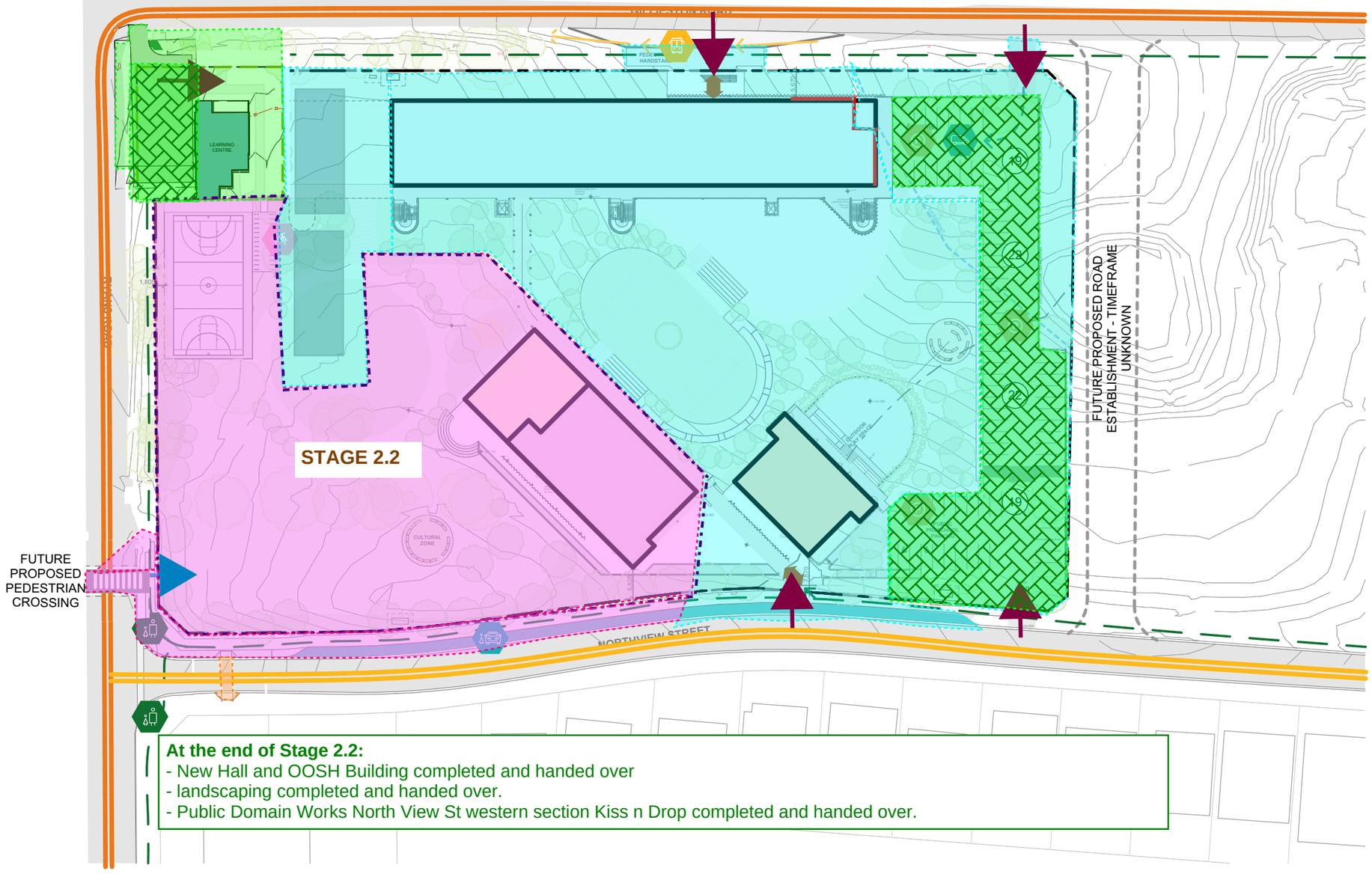
Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846

Gillieston Public School - Stage 2.2 Construction Works

Construction works include:
- Completion & Handover of New Hall and OOSH Building
- Completion of landscaping
- Completion of Public Domain Works North View St western section Kiss n Drop

Key Notes:
1. Staff will be utilising the existing car park adjacent to Building D (Brick Cottage) on Gillieston Road and the new car park during Stage 2.2 Construction Works



At the end of Stage 2.2:
- New Hall and OOSH Building completed and handed over
- landscaping completed and handed over.
- Public Domain Works North View St western section Kiss n Drop completed and handed over.

CONSTRUCTION LEGEND

- Easement - This area is in possession of the Contractor. However, works in this area cannot be commenced until neighbouring & council stormwater works are complete
- In Construction & Site in possession with the contractor
- Existing and Operational
- Completed and Occupied
- Contractor Site Access
- School Access
- Hoarding Line
- Staff car park
- Remediation - This area is required to be remediated and made good prior to Hall and OOSH demountable installation

TECHNICAL OVERLAY

- **Bus Stop**
- **Carparking**
- **Kiss n Drop**
- **Bicycles and Scooters**
- **Crossings and School Zones**
- **Maintenance and Delivery Access**

LEGEND

- FUTURE PROPOSED ROADS
- CAR PARKING
- KISS N DROP & QUEUING ZONE
- BICYCLE / SCOOTER PARKING
- MAINTENANCE / DELIVERY ACCESS
- ACTIVE TRANSPORT LINKS
- MULTIDIRECTIONAL CAR ACCESS
- NARROW CUL DE SAC
- BUSBAY DROP OFF
- ENTRY

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Gillieston Public School
100 Ryans Road & 29 Northview Street

0m 10 20 30 40 50 1:1000 @A3

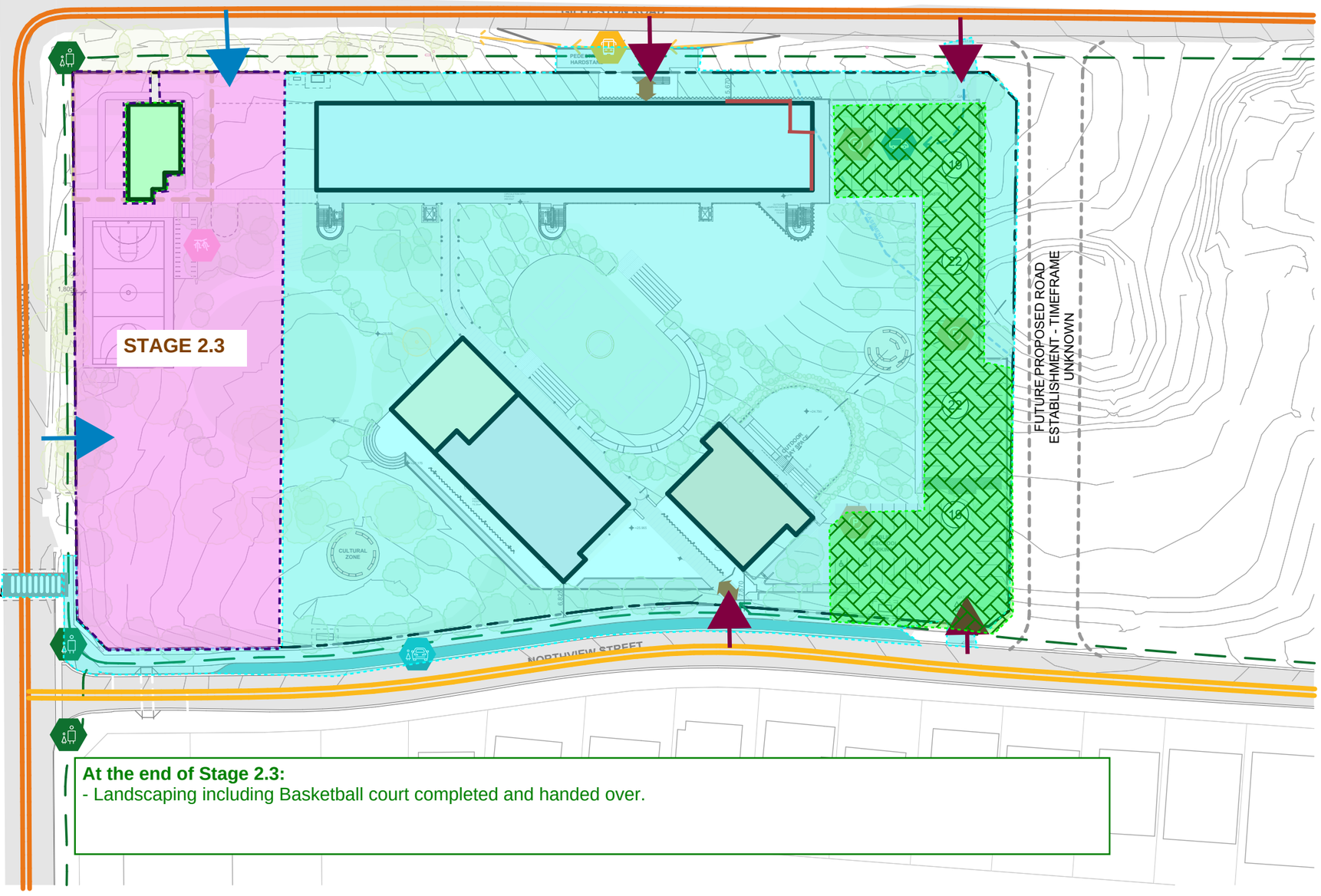
SHAC

Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846

Gillieston Public School - Stage 2.3 Construction Works

Construction works include:
- Removal of relocated demountables
- Completion of landscaping including Basketball court

Key Notes:
1. Staff will be utilising the new car park during Stage 2.3 Construction Works



At the end of Stage 2.3:
- Landscaping including Basketball court completed and handed over.

CONSTRUCTION LEGEND

- Easement - This area is in possession of the Contractor. However, works in this area cannot be commenced until neighbouring & council stormwater works are complete
- In Construction & Site in possession with the contractor
- Existing and Operational
- Completed and Occupied
- Contractor Site Access
- School Access
- Hoarding Line
- Staff car park
- Remediation - This area is required to be remediated and made good prior to Hall and OOSH demountable installation

TECHNICAL OVERLAY

- Bus Stop
- Carparking
- Kiss n Drop
- Bicycles and Scooters
- Crossings and School Zones
- Maintenance and Delivery Access

LEGEND

- FUTURE PROPOSED ROADS
- CAR PARKING
- KISS N DROP & QUEUING ZONE
- BICYCLE / SCOOTER PARKING
- MAINTENANCE / DELIVERY ACCESS
- ACTIVE TRANSPORT LINKS
- MULTIDIRECTIONAL CAR ACCESS
- NARROW CUL DE SAC
- BUSBAY DROP OFF
- ENTRY

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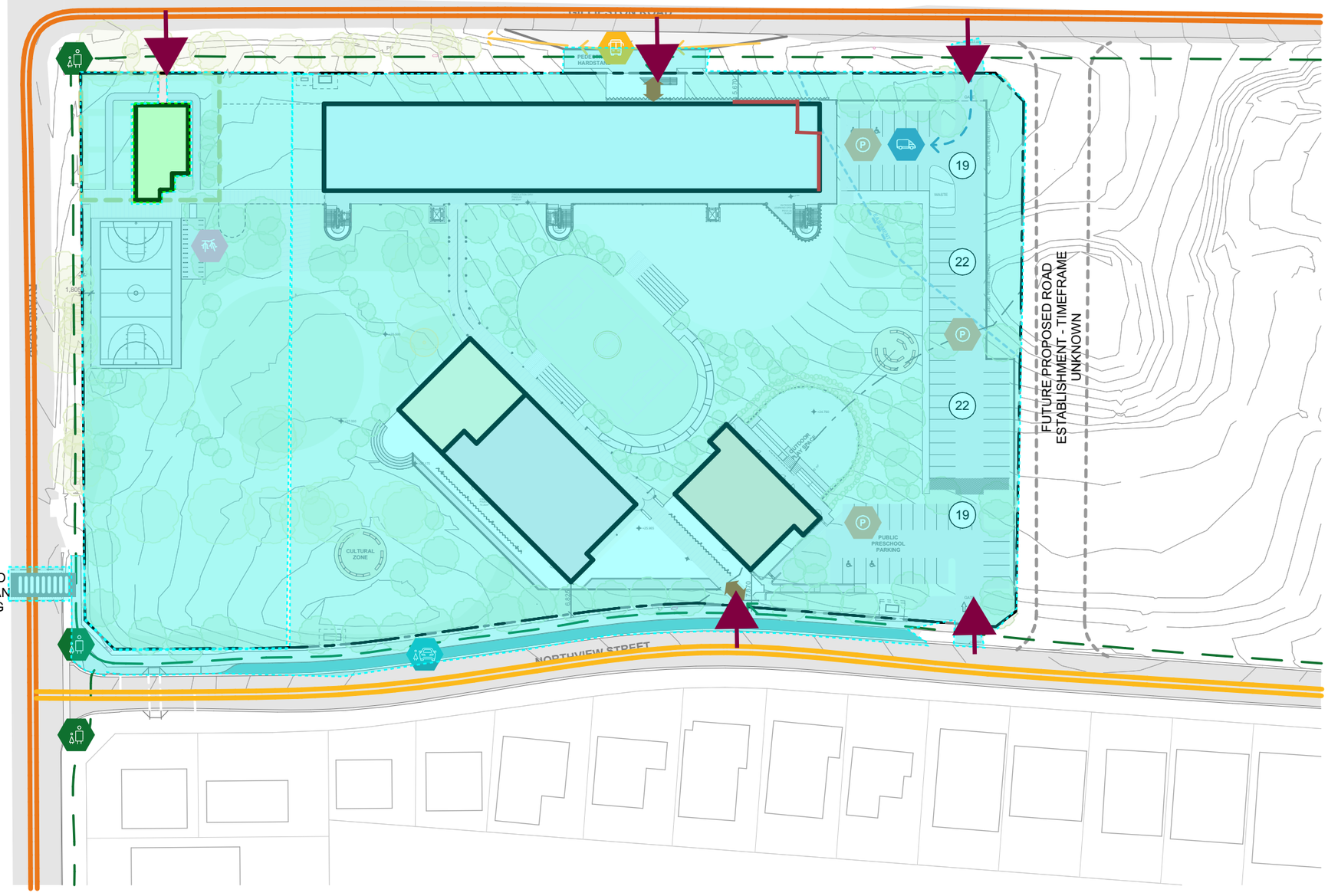
Gillieston Public School
100 Ryans Road & 29 Northview Street

0m 10 20 30 40 50 1:1000 @A3

SHAC

Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846

Gillieston Public School - Completion



CONSTRUCTION LEGEND

- Easement - This area is in possession of the Contractor. However, works in this area cannot be commenced until neighbouring & council stormwater works are complete
- In Construction & Site in possession with the contractor
- Existing and Operational
- Completed and Occupied
- Contractor Site Access
- School Access
- Hoarding Line
- Staff car park
- Remediation - This area is required to be remediated and made good prior to Hall and OOSH demountable installation

TECHNICAL OVERLAY

- **Bus Stop**
- **Carparking**
- **Kiss n Drop**
- **Bicycles and Scooters**
- **Crossings and School Zones**
- **Maintenance and Delivery Access**

LEGEND

- FUTURE PROPOSED ROADS
- CAR PARKING
- KISS N DROP & QUEUING ZONE
- BICYCLE / SCOOTER PARKING
- MAINTENANCE / DELIVERY ACCESS
- ACTIVE TRANSPORT LINKS
- MULTIDIRECTIONAL CAR ACCESS
- NARROW CUL DE SAC
- BUSBAY DROP OFF
- ENTRY

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DA3502
RevA 17.09.24

Gillieston Public School
100 Ryans Road & 29 Northview Street

0m 10 20 30 40 50 1:1000 @A3

SHAC

Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846

Appendix F– SUMMARY DATA ANALYTICAL TABLES

Stantec

Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

				Acid Sulphate Soils			ES_EPA8100	EW_EPA418	TPH					CRC Care TPH Fractions						
				pH Delta (pHF-pHFox)	Reaction Rate	Reaction Rate	Total PAH (NEPM/WHO 16)	TRH C37-C40	C6 - C9	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	C10 - C40 (Sum of total)	F1: C6-C10 less BTEX	F2: >C10-C16 less NAPHTHALENE
				-	No 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
EQL				-10	0	0	0.05	100	10	20	45	45	50	10	25	90	100	50	10	25
NEPM 2013 HIL, Residential A																				
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																			45 | 70 | 110 | 200	110 | 240 | 440
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																				
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential														4,400	3,300	4,500	6,300			
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil										120					120	300	2,800		180	
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**																
AHA101	AHA101 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA102	AHA102 0-0.01	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA103	AHA103 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA103 0.35-0.4	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA104	AHA104 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA105	AHA105 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA105 0.2-0.25	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA106	AHA106 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA107	AHA107 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP1	Field_D	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip1	Interlab_D	22 Apr 2024	SE264540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA108	AHA108 0.02-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA109	AHA109 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA110	AHA110 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip4	Interlab_D	24 Apr 2024	SE264540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP4	Field_D	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA111	AHA111 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA112	AHA112 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA113	AHA113 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA113 0.1-0.2	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	TP1 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP1 0.6-0.7	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP2	TP2 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP2 0.2-0.3	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP3	TP3 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP4	TP4 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP4 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP5	TP5 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	63	63	<20	<50	<100	<100	<100	<20	<50
	TP5 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP5 1.4-1.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP5 2.2-2.3	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP6	TP6 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	55	<50	55	<20	61	<100	<100	<100	<20	61
	TP6 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP7	TP7 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP8	TP8 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP8 0.9-1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP9	TP9 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP10	TP10 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP10 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP10 0.7-0.8	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP11	TP11 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	62	62	<20	<50	<100	<100	<100	<20	<50
TP12	TP12 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP12 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP13	TP13 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP13 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP14	TP14 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP15	TP15 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Acid Sulphate Soils			ES_EPA8100	EW_EPA418	TPH					CRC Care TPH Fractions						
					pH Delta (pHF-pHFox)	Reaction Rate	Reaction Rate	Total PAH (NEPM/WHO 16)	TRH C37-C40	C6 - C9	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	C10 - C40 (Sum of total)	F1: C6-C10 less BTEX	F2: >C10-C16 less NAPHTHALENE
					-	No 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
EQL					-10	0	0	0.05	100	10	20	45	45	50	10	25	90	100	50	10	25
NEPM 2013 HIL, Residential A																					
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				45 | 70 | 110 | 200	110 | 240 | 440
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																					
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																					
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																					
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential															4,400	3,300	4,500	6,300			
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																					
NEPM 2013 ESL UR/POS, Coarse Soil											120					120	300	2,800		180	
TP16																					
	TP16 0-0.1	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP17																					
	TP17 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	63	63	<20	<50	<100	<100	<100	<20	<50
	TP17 0.5-0.6	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP17 1-1.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP18																					
	TP18 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP18 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
TP19																					
	TP19 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP19 0.3-0.4	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP19 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	53	<50	53	<20	<50	<100	<100	<100	<20	<50
	TP19 0.8-0.9	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP2	**Field_D**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	Trip2	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	<0.8	<100	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
TP20																					
	TP20 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP20 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21																					
	TP21 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	82	<50	82	<20	<50	110	<100	110	<20	<50
TP/HA22																					
	TP/HA22 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	TP/HA22 0.2-0.3	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	DUP3	**Field_D**	**24 Apr 2024**	**1091634**	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
	Trip3	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	<0.8	<100	<20	<20	50	51	<110	<25	<25	92	<120	<210	<25	<25

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Project: 304100928
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Remediation Action Plan

					Acid Sulphate Soils			ES_EPA8100	EW_EPA418	TPH					CRC Care TPH Fractions						
					pH Delta (pHF-pHox)	Reaction Rate	Reaction Rate	Total PAH (NEPM/WHO 16)	TRH C37-C40	C6 - C9	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	C10 - C40 (Sum of total)	F1: C6-C10 less BTEX	F2: >C10-C16 less NAPHTHALENE
					-	No 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
EQL					-10	0	0	0.05	100	10	20	45	45	50	10	25	90	100	50	10	25
NEPM 2013 HIL, Residential A																					
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				45 | 70 | 110 | 200	110 | 240 | 440
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NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																					
NEPM 2013 ESL UR/POS, Coarse Soil											120					120	300	2,800		180	
BH01	BH01_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH01_0.5	Normal	19 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
BH03	BH03_0.3	Normal	19 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
	BH03_0.8-1.0	Normal	19 Dec 2022	SE241126	0.3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH03_1.3-1.5	Normal	19 Dec 2022	SE241126	-	-	-	<0.8	-	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
BH04	BH04_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05	BH05_1.0	Normal	19 Dec 2022	SE241126	0.3	1	-	<0.8	-	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
	BH05_1.5	Normal	19 Dec 2022	SE241126	0.8	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06	BH06_0.2	Normal	19 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	82	<110	<25	<25	110	<120	<210	<25	<25
	BH06_0.5	Normal	19 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
BH07	BH07_0.5	Normal	19 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
	BH07_1.5	Normal	19 Dec 2022	SE241126	-	-	-	<0.8	-	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
BH08	BH08_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH08_0.5	Normal	20 Dec 2022	SE241126	1.2	1	-	<0.8	-	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
BH09	BH09_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11	BH11_0.1	Normal	21 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	94	110	210	<25	<25	180	<120	<210	<25	<25
BH12	BH12_0.1	Normal	21 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
BH14	BH14_0.2	Normal	20 Dec 2022	SE241126	-	-	-	1.5	<100	<20	<20	130	130	260	<25	26	230	<120	250	<25	26
	BH14_1.3	Normal	20 Dec 2022	SE241126	0.2	1	-	<0.8	-	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
	BH14_1.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	BH15_0.2	Normal	20 Dec 2022	SE241126	-	-	-	6.1	<100	<20	44	270	150	470	<25	63	380	<120	440	<25	63
	BH15_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH15_1.4	Normal	20 Dec 2022	SE241126	0.7	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Field_D	20 Dec 2022	SE241126	-	-	-	4.6	<100	<20	28	240	130	400	<25	41	330	<120	370	<25	41
	QC400	Interlab_D	20 Dec 2022	957232	-	-	-	-	-	<20	46	350	230	626	<20	75	490	130	695	<20	75
BH16	BH16_0.2	Normal	21 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	59	<110	<25	<25	<90	<120	<210	<25	<25
BH17	BH17_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH17_0.9	Normal	21 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
BH18	BH18_0.2	Normal	21 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	86	65	150	<25	<25	130	<120	<210	<25	<25
BH19	BH19_0.2	Normal	21 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
	BH19_0.5	Normal	21 Dec 2022	SE241126	1.0	1	-	<0.8	<100	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
BH20	BH20_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH20_1.5	Normal	21 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
BH21	BH21_0.8	Normal	21 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	53	<110	<25	<25	<90	<120	<210	<25	<25
BH22	BH22_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23	BH23_0.1	Normal	21 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	60	71	130	<25	<25	120	<120	<210	<25	<25
BH24	BH24_0.2	Normal	21 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	54	<110	<25	<25	<90	<120	<210	<25	<25
BH25	BH25_0.2	Normal	20 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	55	60	110	<25	<25	100	<120	<210	<25	<25
BH26	BH26_0.2	Normal	19 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	53	<110	<25	<25	<90	<120	<210	<25	<25
BH27	BH27_0.1-0.2	Normal	19 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	62	<110	<25	<25	93	<120	<210	<25	<25
	BH27_0.5	Normal	19 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
	BH27_1.5	Normal	19 Dec 2022	SE241126	-	-	-	<0.8	-	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
	QA200	Field_D	19 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
	QC200	Interlab_D	19 Dec 2022	957232	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
BH28	BH28_0.2	Normal	19 Dec 2022	SE241126	-	-	-	<0.8	<100	<20	<20	<45	52	<110	<25	<25	<90	<120	<210	<25	<25
	BH28_1.0	Normal	19 Dec 2022	SE241126	0.4	1	-	<0.8	-	<20	<20	<45	<45	<110	<25	<25	<90	<120	<210	<25	<25
HA101	HA101-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA102	HA102-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA102_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA103	HA103-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				SE242288A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA103_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA104	HA104-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA104_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA105	HA105-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA106	HA106-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA100	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC100	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA107	HA107-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA108	HA108-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA108_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA109	HA109-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	<100	<20	39	160	74	270	<25	50	210	<120	260	<25	-
	HA109_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA110	HA110-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	<100	<20	<20	64	47	110	<25	<25	97	<120	<210	<25	-
HA111	HA111-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	<100	<20	29	150	93	270	<25	39	210	<120	250	<25	-
	HA111_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Site: Gillieston Public School
Remediation Action Plan

					Acid Sulphate Soils			ES_EPA8100	EW_EPA418	TPH					CRC Care TPH Fractions						
					pH Delta (pHF-pHox)	Reaction Rate	Reaction Rate	Total PAH (NEPM/WHO 16)	TRH C37-C40	C6 - C9	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	C10 - C40 (Sum of total)	F1: C6-C10 less BTEX	F2: >C10-C16 less NAPHTHALENE
					-	No 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
EQL					-10	0	0	0.05	100	10	20	45	45	50	10	25	90	100	50	10	25
NEPM 2013 HIL, Residential A																					
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				45 | 70 | 110 | 200	110 | 240 | 440
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NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																					
NEPM 2013 ESL UR/POS, Coarse Soil											120					120	300	2,800		180	
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	<100	<20	25	110	71	210	<25	34	160	<120	<210	<25	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	25 Jan 2023	SE242288	-	-	-	-	<100	<20	27	150	73	250	<25	38	200	<120	240	<25	-
	QC200	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	<20	<20	99	100	199	<20	<50	170	<100	170	<20	<50
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	-	-	-	<0.8	<100	<20	<20	61	99	160	<25	<25	140	<120	<210	<25	<25
HA202	DUP1	Field_D	03 Feb 2023	SE242738	-	-	-	<0.8	<100	<20	<20	82	100	180	<25	<25	150	<120	<210	<25	<25
	HA202 0.1	Normal	03 Feb 2023	SE242738	-	-	-	<0.8	<100	<20	<20	59	82	140	<25	<25	120	<120	<210	<25	<25
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	-	-	-	<0.8	<100	<20	<20	71	87	160	<25	<25	140	<120	<210	<25	<25
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	-	-	-	<0.8	<100	<20	<20	76	100	180	<25	<25	150	<120	<210	<25	<25
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

					Acid Sulphate Soils			ES_EPA8100	EW_EPA418	TPH					CRC Care TPH Fractions						
					pH Delta (pHF-pHox)	Reaction Rate	Reaction Rate	Total PAH (NEPM/WHO 16)	TRH C37-C40	C6 - C9	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	C10 - C40 (Sum of total)	F1: C6-C10 less BTEX	F2: >C10-C16 less NAPHTHALENE
					-	No 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
EQL					-10	0	0	0.05	100	10	20	45	45	50	10	25	90	100	50	10	25
NEPM 2013 HIL, Residential A																					
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				45 | 70 | 110 | 200	110 | 240 | 440
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																					
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																					
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																					
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential															4,400	3,300	4,500	6,300			
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																					
NEPM 2013 ESL UR/POS, Coarse Soil											120					120	300	2,800		180	
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Stantec

Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Acid Sulphate Soils			ES_EPA8100	EW_EPA418	TPH					CRC Care TPH Fractions						
					pH Delta (pHF-pHox)	Reaction Rate	Reaction Rate	Total PAH (NEPM/WHO 16)	TRH C37-C40	C6 - C9	C10 - C14	C15 - C28	C29-C36	+C10 - C36 (Sum of total)	C6-C10	C10-C16	C16-C34	C34-C40	C10 - C40 (Sum of total)	F1: C6-C10 less BTEX	F2: >C10-C16 less NAPHTHALENE
					-	No 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
EQL					-10	0	0	0.05	100	10	20	45	45	50	10	25	90	100	50	10	25
NEPM 2013 HIL, Residential A																					
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				45 | 70 | 110 | 200	110 | 240 | 440
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																					
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																					
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																					
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential															4,400	3,300	4,500	6,300			
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																					
NEPM 2013 ESL UR/POS, Coarse Soil											120					120	300	2,800		180	
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					BTEX							
					Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Total BTEX	Xylene Total
					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	0.2	0.1	0.2	0.3
NEPM 2013 HIL, Residential A												
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand						0.5 | 0.5 | 0.5 | 0.5	160 | 220 | 310 | 540	55				40 | 60 | 95 | 170
NEPM 2013 Sch B1 Table 7 Asbestos HSLs												
PFAS NEMP 2.0 Table 2 Health Residential accessible soil												
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses												
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses												
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential						100	14,000	4,500				12,000
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged												
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT												
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND												
NEPM 2013 ESL UR/POS, Coarse Soil						50	85	70				105
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**								
AHA101	**AHA101 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
AHA102	**AHA102 0-0.01**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
AHA103	**AHA103 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
	AHA103 0.35-0.4	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
AHA104	**AHA104 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
AHA105	**AHA105 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
	AHA105 0.2-0.25	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
AHA106	**AHA106 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
AHA107	**AHA107 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
	DUP1	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
	Trip1	**Interlab_D**	**22 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-
AHA108	**AHA108 0.02-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
AHA109	**AHA109 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
AHA110	**AHA110 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
	Trip4	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-
	DUP4	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
AHA111	**AHA111 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
AHA112	**AHA112 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
AHA113	**AHA113 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
	AHA113 0.1-0.2	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
TP1	**TP1 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP1 0.6-0.7	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP2	**TP2 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP2 0.2-0.3	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	0.2	<0.1	<0.2	<0.1	-	<0.3
TP3	**TP3 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP4	**TP4 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP4 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP5	**TP5 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP5 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP5 1.4-1.5	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP5 2.2-2.3	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP6	**TP6 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP6 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP7	**TP7 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP8	**TP8 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP8 0.9-1	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP9	**TP9 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP10	**TP10 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP10 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP10 0.7-0.8	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP11	**TP11 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP12	**TP12 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP12 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP13	**TP13 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP13 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP14	**TP14 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP15	**TP15 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					BTEX							
					Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Total BTEX	Xylene Total
					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	0.2	0.1	0.2	0.3
NEPM 2013 HIL, Residential A												
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand						0.5 | 0.5 | 0.5 | 0.5	160 | 220 | 310 | 540	55				40 | 60 | 95 | 170
NEPM 2013 Sch B1 Table 7 Asbestos HSLs												
PFAS NEMP 2.0 Table 2 Health Residential accessible soil												
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses												
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses												
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential						100	14,000	4,500				12,000
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged												
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT												
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND												
NEPM 2013 ESL UR/POS, Coarse Soil						50	85	70				105
TP16	**TP16 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP17	**TP17 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP17 0.5-0.6	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP17 1-1.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP18	**TP18 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP18 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP19	**TP19 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP19 0.3-0.4	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP19 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP19 0.8-0.9	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
	DUP2	**Field_D**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	Trip2	**Interlab_D**	**24 Apr 2024**	**SE264540**	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
TP20	**TP20 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP20 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-
TP21	**TP21 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
TP/HA22	**TP/HA22 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	TP/HA22 0.2-0.3	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	DUP3	**Field_D**	**24 Apr 2024**	**1091634**	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
	Trip3	**Interlab_D**	**24 Apr 2024**	**SE264540**	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3

Stantec

Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					BTEX							
					Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Total BTEX	Xylene Total
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
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NEPM 2013 HIL, Residential A												
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand						0.5 | 0.5 | 0.5 | 0.5	160 | 220 | 310 | 540	55				40 | 60 | 95 | 170
NEPM 2013 Sch B1 Table 7 Asbestos HSLs												
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PFAS NEMP 2020 Ecological indirect exposure - All Land Uses												
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NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged												
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT												
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND												
NEPM 2013 ESL UR/POS, Coarse Soil						50	85	70				105
BH01	BH01_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-
	BH01_0.5	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH03	BH03_0.3	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	BH03_0.8-1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-
	BH03_1.3-1.5	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH04	BH04_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-
BH05	BH05_1.0	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	BH05_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-
BH06	BH06_0.2	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	BH06_0.5	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH07	BH07_0.5	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	BH07_1.5	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH08	BH08_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-
	BH08_0.5	Normal	20 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH09	BH09_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-
BH11	BH11_0.1	Normal	21 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH12	BH12_0.1	Normal	21 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH14	BH14_0.2	Normal	20 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	BH14_1.3	Normal	20 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	BH14_1.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-
BH15	BH15_0.2	Normal	20 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	BH15_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-
	BH15_1.4	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-
	QA400	Field_D	20 Dec 2022	SE241126	0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	QC400	Interlab_D	20 Dec 2022	957232	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
BH16	BH16_0.2	Normal	21 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH17	BH17_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-
	BH17_0.9	Normal	21 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH18	BH18_0.2	Normal	21 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH19	BH19_0.2	Normal	21 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	BH19_0.5	Normal	21 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH20	BH20_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-
	BH20_1.5	Normal	21 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH21	BH21_0.8	Normal	21 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH22	BH22_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-
BH23	BH23_0.1	Normal	21 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH24	BH24_0.2	Normal	21 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH25	BH25_0.2	Normal	20 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH26	BH26_0.2	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
BH27	BH27_0.1-0.2	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	BH27_0.5	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	BH27_1.5	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	QA200	Field_D	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	QC200	Interlab_D	19 Dec 2022	957232	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
BH28	BH28_0.2	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	BH28_1.0	Normal	19 Dec 2022	SE241126	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
HA101	HA101-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
HA102	HA102-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
	HA102_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-
HA103	HA103-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
				SE242288A	-	-	-	-	-	-	-	-
	HA103_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-
HA104	HA104-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
	HA104_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-
HA105	HA105-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
HA106	HA106-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
	QA100	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
	QC100	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-
HA107	HA107-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
HA108	HA108-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
	HA108_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-
HA109	HA109-0.1	Normal	25 Jan 2023	SE242288	-	<0.1	-	-	-	-	-	-
	HA109_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-
HA110	HA110-0.1	Normal	25 Jan 2023	SE242288	-	<0.1	-	-	-	-	-	-
HA111	HA111-0.1	Normal	25 Jan 2023	SE242288	-	<0.1	-	-	-	-	-	-
	HA111_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-

					BTEX							
					Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Total BTEX	Xylene Total
					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	0.2	0.1	0.2	0.3
NEPM 2013 HIL, Residential A												
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand						0.5 | 0.5 | 0.5 | 0.5	160 | 220 | 310 | 540	55				40 | 60 | 95 | 170
NEPM 2013 Sch B1 Table 7 Asbestos HSLs												
PFAS NEMP 2.0 Table 2 Health Residential accessible soil												
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses												
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses												
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential						100	14,000	4,500				12,000
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged												
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT												
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND												
NEPM 2013 ESL UR/POS, Coarse Soil						50	85	70				105
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	<0.1	-	-	-	-	-	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-
	QA200	Field_D	25 Jan 2023	SE242288	-	<0.1	-	-	-	-	-	-
	QC200	Interlab_D	25 Jan 2023	960232	<0.5	-	-	-	-	-	-	-
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
HA202	DUP1	Field_D	03 Feb 2023	SE242738	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
	HA202 0.1	Normal	03 Feb 2023	SE242738	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.6	<0.3
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-

					BTEX							
					Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Total BTEX	Xylene Total
					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	0.2	0.1	0.2	0.3
NEPM 2013 HIL, Residential A												
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand						0.5 | 0.5 | 0.5 | 0.5	160 | 220 | 310 | 540	55				40 | 60 | 95 | 170
NEPM 2013 Sch B1 Table 7 Asbestos HSLs												
PFAS NEMP 2.0 Table 2 Health Residential accessible soil												
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses												
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses												
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential						100	14,000	4,500				12,000
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged												
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT												
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND												
NEPM 2013 ESL UR/POS, Coarse Soil						50	85	70				105
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-	-	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	-	<0.3
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-

Stantec

Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					BTEX							
					Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Total BTEX	Xylene Total
					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	0.2	0.1	0.2	0.3
NEPM 2013 HIL, Residential A												
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand						0.5 | 0.5 | 0.5 | 0.5	160 | 220 | 310 | 540	55				40 | 60 | 95 | 170
NEPM 2013 Sch B1 Table 7 Asbestos HSLs												
PFAS NEMP 2.0 Table 2 Health Residential accessible soil												
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses												
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses												
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential						100	14,000	4,500				12,000
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged												
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT												
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND												
NEPM 2013 ESL UR/POS, Coarse Soil						50	85	70				105
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Metals															
					Arsenic	Cadmium	Calcium (filtered)	Chromium (III+VI)	Copper	Iron	Lead	Lead (filtered)	Magnesium (filtered)	Mercury	Nickel	Potassium (filtered)	Sodium (filtered)	Zinc	Zinc (filtered)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L
EQL					1	0.3	2	0.5	0.5	20	1	10	2	0.05	0.5	2	2	1	10
NEPM 2013 HIL, Residential A					100	20			6,000		300			40	400			7,400	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																			
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																			
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																			
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																			
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																			
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																			
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged					100			190	60		1,100				30			70	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT								260	100						55			230	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND								260	35						6			110	
NEPM 2013 ESL UR/POS, Coarse Soil																			
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**															
AHA101	**AHA101 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	<5	-	-	-	-	-	-	-	-
AHA102	**AHA102 0-0.01**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	70	-	-	-	-	-	-	-	-
AHA103	**AHA103 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	45	-	-	-	-	-	-	-	-
	AHA103 0.35-0.4	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	780	-	-	-	-	-	-	-	-
AHA104	**AHA104 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	110	-	-	-	-	-	-	-	-
AHA105	**AHA105 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	16	-	-	-	-	-	-	-	-
	AHA105 0.2-0.25	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-
AHA106	**AHA106 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	27	-	-	-	-	-	-	-	-
AHA107	**AHA107 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	180	-	-	-	-	-	-	-	-
	DUP1	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	150	-	-	-	-	-	-	-	-
	Trip1	**Interlab_D**	**22 Apr 2024**	**SE264540**	-	-	-	-	-	-	150	-	-	-	-	-	-	-	-
AHA108	**AHA108 0.02-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	24	-	-	-	-	-	-	-	-
AHA109	**AHA109 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	68	-	-	-	-	-	-	-	-
AHA110	**AHA110 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	39	-	-	-	-	-	-	-	-
	Trip4	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	-	-	-	77	-	-	-	-	-	-	-	-
	DUP4	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	72	-	-	-	-	-	-	-	-
AHA111	**AHA111 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	54	-	-	-	-	-	-	-	-
AHA112	**AHA112 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	47	-	-	-	-	-	-	-	-
AHA113	**AHA113 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	23	-	-	-	-	-	-	-	-
	AHA113 0.1-0.2	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	65	-	-	-	-	-	-	-	-
TP1	**TP1 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	4.7	<0.4	-	7.1	<5	7,900	12	-	-	<0.1	<5	-	-	24	-
	TP1 0.6-0.7	**Normal**	**23 Apr 2024**	**1091634**	7.2	<0.4	-	12	<5	-	7.1	-	-	<0.1	<5	-	-	<5	-
TP2	**TP2 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	4.9	<0.4	-	5.5	<5	-	8.1	-	-	<0.1	<5	-	-	7.4	-
	TP2 0.2-0.3	**Normal**	**23 Apr 2024**	**1091634**	47	<0.4	-	26	<5	-	13	-	-	<0.1	<5	-	-	<5	-
TP3	**TP3 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	6.3	<0.4	-	7.0	<5	-	9.3	-	-	<0.1	<5	-	-	14	-
TP4	**TP4 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	5.0	<0.4	-	<5	<5	-	8.9	-	-	<0.1	<5	-	-	19	-
	TP4 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	2.7	<0.4	-	<5	<5	-	<5	-	-	<0.1	<5	-	-	<5	-
TP5	**TP5 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	3.1	<0.4	-	5.0	<5	-	8.2	-	-	<0.1	<5	-	-	21	-
	TP5 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	<2	<0.4	-	<5	<5	-	<5	-	-	<0.1	<5	-	-	<5	-
	TP5 1.4-1.5	**Normal**	**23 Apr 2024**	**1091634**	3.2	<0.4	-	<5	<5	-	<5	-	-	<0.1	<5	-	-	<5	-
	TP5 2.2-2.3	**Normal**	**23 Apr 2024**	**1091634**	6.8	<0.4	-	8.7	<5	-	7.5	-	-	<0.1	<5	-	-	<5	-
TP6	**TP6 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	2.7	<0.4	-	<5	<5	-	9.4	-	-	<0.1	<5	-	-	14	-
	TP6 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	3.8	<0.4	-	<5	<5	-	<5	-	-	<0.1	<5	-	-	<5	-
TP7	**TP7 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<2	<0.4	-	<5	<5	-	12	-	-	<0.1	<5	-	-	17	-
TP8	**TP8 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	2.7	<0.4	-	5.2	<5	-	15	-	-	<0.1	<5	-	-	13	-
	TP8 0.9-1	**Normal**	**23 Apr 2024**	**1091634**	5.8	<0.4	-	6.5	<5	-	<5	-	-	<0.1	<5	-	-	<5	-
TP9	**TP9 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	14	<0.4	-	18	<5	-	10	-	-	<0.1	5.3	-	-	25	-
TP10	**TP10 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	3.7	<0.4	-	5.6	<5	-	11	-	-	<0.1	<5	-	-	16	-
	TP10 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	2.9	<0.4	-	<5	<5	-	<5	-	-	<0.1	<5	-	-	<5	-
	TP10 0.7-0.8	**Normal**	**23 Apr 2024**	**1091634**	9.2	<0.4	-	19	<5	-	9.7	-	-	<0.1	<5	-	-	6.4	-
TP11	**TP11 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	4.6	<0.4	-	7.0	<5	-	14	-	-	<0.1	<5	-	-	21	-
TP12	**TP12 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	8.3	<0.4	-	15	<5	-	16	-	-	<0.1	<5	-	-	19	-
	TP12 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	16	<0.4	-	19	<5	-	7.5	-	-	<0.1	<5	-	-	8.9	-
TP13	**TP13 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	4.5	<0.4	-	7.8	<5	-	16	-	-	<0.1	<5	-	-	21	-
	TP13 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	6.4	<0.4	-	8.7	<5	13,000	5.2	-	-	<0.1	<5	-	-	<5	-
TP14	**TP14 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	3.0	<0.4	-	<5	<5	-	12	-	-	<0.1	<5	-	-	14	-
TP15	**TP15 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	2.7	<0.4	-	<5	<5	-	11	-	-	<0.1	<5	-	-	19	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Metals															
					Arsenic	Cadmium	Calcium (filtered)	Chromium (III+VI)	Copper	Iron	Lead	Lead (filtered)	Magnesium (filtered)	Mercury	Nickel	Potassium (filtered)	Sodium (filtered)	Zinc	Zinc (filtered)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L
EQL					1	0.3	2	0.5	0.5	20	1	10	2	0.05	0.5	2	2	1	10
NEPM 2013 HIL, Residential A					100	20			6,000		300			40	400			7,400	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																			
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																			
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																			
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																			
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																			
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																			
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged					100			190	60		1,100				30			70	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT								260	100						55			230	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND								260	35						6			110	
NEPM 2013 ESL UR/POS, Coarse Soil																			
TP16																			
	TP16 0-0.1	**Normal**	**23 Apr 2024**	**1091634**	5.9	<0.4	-	9.5	<5	-	19	-	-	<0.1	<5	-	-	29	-
TP17																			
	TP17 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	6.2	<0.4	-	13	6.5	-	29	-	-	<0.1	<5	-	-	39	-
	TP17 0.5-0.6	**Normal**	**24 Apr 2024**	**1091634**	17	<0.4	-	37	<5	-	23	-	-	<0.1	<5	-	-	<5	-
	TP17 1-1.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18																			
	TP18 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	5.5	<0.4	-	11	<5	-	86	-	-	<0.1	<5	-	-	30	-
	TP18 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	18	<0.4	-	21	<5	-	6.8	-	-	<0.1	<5	-	-	<5	-
TP19																			
	TP19 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<2	<0.4	-	33	22	-	<5	-	-	<0.1	23	-	-	67	-
	TP19 0.3-0.4	**Normal**	**24 Apr 2024**	**1091634**	7.0	<0.4	-	9.0	8.2	-	44	-	-	<0.1	<5	-	-	110	-
	TP19 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	6.1	<0.4	-	13	<5	-	65	-	-	<0.1	<5	-	-	49	-
	TP19 0.8-0.9	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP2	**Field_D**	**24 Apr 2024**	**1091634**	<2	<0.4	-	37	27	-	<5	-	-	<0.1	25	-	-	56	-
	Trip2	**Interlab_D**	**24 Apr 2024**	**SE264540**	1	<0.3	-	38	25	-	3	-	-	<0.05	23	-	-	61	-
TP20																			
	TP20 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<2	<0.4	-	29	18	-	<5	-	-	<0.1	19	-	-	48	-
	TP20 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21																			
	TP21 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	7.4	<0.4	-	14	5.9	-	47	-	-	<0.1	5.5	-	-	69	-
TP/HA22																			
	TP/HA22 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	4.8	<0.4	-	11	6.9	-	8.4	-	-	<0.1	<5	-	-	30	-
	TP/HA22 0.2-0.3	**Normal**	**24 Apr 2024**	**1091634**	20	<0.4	-	22	<5	-	10	-	-	<0.1	<5	-	-	6.0	-
	DUP3	**Field_D**	**24 Apr 2024**	**1091634**	7.5	<0.4	-	13	<5	-	8.8	-	-	<0.1	<5	-	-	21	-
	Trip3	**Interlab_D**	**24 Apr 2024**	**SE264540**	15	<0.3	-	15	4.5	-	10	-	-	<0.05	3.5	-	-	25	-

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Remediation Action Plan

					Metals															
					Arsenic	Cadmium	Calcium (filtered)	Chromium (III+VI)	Copper	Iron	Lead	Lead (filtered)	Magnesium (filtered)	Mercury	Nickel	Potassium (filtered)	Sodium (filtered)	Zinc	Zinc (filtered)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L
EQL					1	0.3	2	0.5	0.5	20	1	10	2	0.05	0.5	2	2	1	10
NEPM 2013 HIL, Residential A					100	20			6,000		300			40	400			7,400	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																			
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																			
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																			
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																			
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																			
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																			
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged					100			190	60		1,100				30			70	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT								260	100						55			230	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND								260	35						6			110	
NEPM 2013 ESL UR/POS, Coarse Soil																			
BH01	BH01_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH01_0.5	Normal	19 Dec 2022	SE241126	7	<0.3	130	10	<0.5	24,000	8	-	74	<0.05	1.1	140	15	3.2	-
BH03	BH03_0.3	Normal	19 Dec 2022	SE241126	3	<0.3	-	6.0	0.5	-	6	-	-	<0.05	1.5	-	-	3.2	-
	BH03_0.8-1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH03_1.3-1.5	Normal	19 Dec 2022	SE241126	4	<0.3	-	9.2	0.9	-	6	-	-	<0.05	0.8	-	-	5.5	-
BH04	BH04_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05	BH05_1.0	Normal	19 Dec 2022	SE241126	10	<0.3	-	21	<0.5	-	10	-	-	<0.05	0.9	-	-	7.9	-
	BH05_1.5	Normal	19 Dec 2022	SE241126	-	-	270	-	-	29,000	-	-	480	-	-	240	55	-	-
BH06	BH06_0.2	Normal	19 Dec 2022	SE241126	6	<0.3	-	7.3	4.5	-	16	-	-	<0.05	2.5	-	-	26	-
	BH06_0.5	Normal	19 Dec 2022	SE241126	10	<0.3	-	15	1.6	-	10	-	-	<0.05	2.5	-	-	11	-
BH07	BH07_0.5	Normal	19 Dec 2022	SE241126	11	<0.3	-	16	<0.5	-	7	-	-	<0.05	1.6	-	-	7.9	-
	BH07_1.5	Normal	19 Dec 2022	SE241126	5	<0.3	-	17	1.0	-	6	-	-	<0.05	0.6	-	-	8.2	-
BH08	BH08_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH08_0.5	Normal	20 Dec 2022	SE241126	8	<0.3	-	21	0.9	-	10	-	-	<0.05	1.6	-	-	8.6	-
BH09	BH09_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11	BH11_0.1	Normal	21 Dec 2022	SE241126	9	<0.3	-	17	5.4	-	26	-	-	<0.05	4.8	-	-	71	-
BH12	BH12_0.1	Normal	21 Dec 2022	SE241126	5	<0.3	-	4.3	1.3	-	16	-	-	<0.05	1.0	-	-	15	-
BH14	BH14_0.2	Normal	20 Dec 2022	SE241126	9	<0.3	-	14	12	-	380	-	-	0.06	7.7	-	-	230	-
	BH14_1.3	Normal	20 Dec 2022	SE241126	8	<0.3	-	7.2	0.9	-	17	-	-	0.06	<0.5	-	-	9.2	-
	BH14_1.5	Normal	20 Dec 2022	SE241126	-	-	47	-	-	32,000	-	-	300	-	-	140	120	-	-
BH15	BH15_0.2	Normal	20 Dec 2022	SE241126	5	0.3	-	11	19	-	380	-	-	0.06	11	-	-	260	-
	BH15_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH15_1.4	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Field_D	20 Dec 2022	SE241126	7	0.4	-	14	16	-	490	-	-	0.05	11	-	-	290	-
	QC400	Interlab_D	20 Dec 2022	957232	6.1	<0.4	-	13	19	-	320	-	-	<0.1	10	-	-	250	-
BH16	BH16_0.2	Normal	21 Dec 2022	SE241126	5	<0.3	-	11	6.3	-	18	-	-	<0.05	5.3	-	-	67	-
BH17	BH17_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH17_0.9	Normal	21 Dec 2022	SE241126	6	<0.3	33	22	<0.5	6,200	4	-	310	<0.05	<0.5	130	140	2.3	-
BH18	BH18_0.2	Normal	21 Dec 2022	SE241126	6	<0.3	-	12	3.8	-	42	-	-	<0.05	2.4	-	-	39	-
BH19	BH19_0.2	Normal	21 Dec 2022	SE241126	6	<0.3	-	10	6.0	-	15	-	-	0.06	5.9	-	-	53	-
	BH19_0.5	Normal	21 Dec 2022	SE241126	12	<0.3	-	19	2.2	-	10	-	-	<0.05	7.0	-	-	39	-
BH20	BH20_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH20_1.5	Normal	21 Dec 2022	SE241126	8	<0.3	-	13	<0.5	-	6	-	-	<0.05	<0.5	-	-	2.8	-
BH21	BH21_0.8	Normal	21 Dec 2022	SE241126	9	<0.3	-	25	<0.5	-	5	-	-	<0.05	0.9	-	-	7.9	-
BH22	BH22_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23	BH23_0.1	Normal	21 Dec 2022	SE241126	5	<0.3	-	10	1.7	-	10	-	-	<0.05	2.1	-	-	10	-
BH24	BH24_0.2	Normal	21 Dec 2022	SE241126	4	<0.3	-	6.9	3.1	-	20	-	-	<0.05	1.8	-	-	19	-
BH25	BH25_0.2	Normal	20 Dec 2022	SE241126	6	<0.3	-	13	2.6	-	9	-	-	<0.05	2.4	-	-	15	-
BH26	BH26_0.2	Normal	19 Dec 2022	SE241126	5	<0.3	-	5.8	2.3	-	9	-	-	<0.05	1.8	-	-	14	-
BH27	BH27_0.1-0.2	Normal	19 Dec 2022	SE241126	2	<0.3	-	2.8	2.5	-	7	-	-	<0.05	1.2	-	-	18	-
	BH27_0.5	Normal	19 Dec 2022	SE241126	1	<0.3	-	4.1	2.2	-	10	-	-	<0.05	1.4	-	-	5.2	-
	BH27_1.5	Normal	19 Dec 2022	SE241126	4	<0.3	-	8.1	<0.5	-	6	-	-	<0.05	2.0	-	-	2.0	-
	QA200	Field_D	19 Dec 2022	SE241126	1	<0.3	-	4.2	2.0	-	11	-	-	<0.05	1.5	-	-	6.0	-
	QC200	Interlab_D	19 Dec 2022	957232	<2	<0.4	-	<5	<5	-	11	-	-	<0.1	<5	-	-	<5	-
BH28	BH28_0.2	Normal	19 Dec 2022	SE241126	3	<0.3	-	3.8	2.3	-	9	-	-	<0.05	1.4	-	-	14	-
	BH28_1.0	Normal	19 Dec 2022	SE241126	10	<0.3	-	4.6	<0.5	-	6	-	-	<0.05	<0.5	-	-	2.3	-
HA101	HA101-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	19	-	-	-	-	-	-	44	-
HA102	HA102-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	970	-	-	-	-	-	-	870	-
	HA102_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	910	-	-	-	-	-	-	880	-
HA103	HA103-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	2,500	-	-	-	-	-	-	1,900	-
				SE242288A	-	-	-	-	-	-	-	2,100	-	-	-	-	-	-	19,000
	HA103_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	1,200	-	-	-	-	-	-	1,000	-
HA104	HA104-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	390	-	-	-	-	-	-	910	-
	HA104_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	460	-	-	-	-	-	-	960	-
HA105	HA105-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	140	-	-	-	-	-	-	180	-
HA106	HA106-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	190	-	-	-	-	-	-	170	-
	QA100	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	170	-	-	-	-	-	-	190	-
	QC100	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	280	-	-	-	-	-	-	210	-
HA107	HA107-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	160	-	-	-	-	-	-	180	-
HA108	HA108-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	310	-	-	-	-	-	-	220	-
	HA108_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	480	-	-	-	-	-	-	370	-
HA109	HA109-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	310	-	-	-	-	-	-	200	-
	HA109_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	350	-	-	-	-	-	-	-	-
HA110	HA110-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	200	-	-	-	-	-	-	140	-
HA111	HA111-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	530	-	-	-	-	-	-	310	-
	HA111_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	360	-	-	-	-	-	-	310	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Metals																
					Arsenic	Cadmium	Calcium (filtered)	Chromium (III+VI)	Copper	Iron	Lead	Lead (filtered)	Magnesium (filtered)	Mercury	Nickel	Potassium (filtered)	Sodium (filtered)	Zinc	Zinc (filtered)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L
EQL					1	0.3	2	0.5	0.5	20	1	10	2	0.05	0.5	2	2	1	10
NEPM 2013 HIL, Residential A					100	20			6,000		300			40	400			7,400	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																			
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																			
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																			
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																			
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																			
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																			
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged					100			190	60		1,100				30			70	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT								260	100						55			230	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND								260	35						6			110	
NEPM 2013 ESL UR/POS, Coarse Soil																			
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	300	-	-	-	-	-	-	210	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	350	-	-	-	-	-	-	130	-
	QA200	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	290	-	-	-	-	-	-	190	-
	QC200	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	420	-	-	-	-	-	-	240	-
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	44	-	-	-	-	-	-	190	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	21	-	-	-	-	-	-	82	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	19	-	-	-	-	-	-	58	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	110	-	-	-	-	-	-	430	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	180	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	98	-	-	-	-	-	-	-	-
HA202	DUP1	Field_D	03 Feb 2023	SE242738	-	-	-	-	-	-	19	-	-	-	-	-	-	-	-
	HA202 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	22	-	-	-	-	-	-	-	-
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	15	-	-	-	-	-	-	-	-
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	31	-	-	-	-	-	-	-	-
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	25	-	-	-	-	-	-	90	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	17	-	-	-	-	-	-	22	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	9	-	-	-	-	-	-	15	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	10	-	-	-	-	-	-	12	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	32	-	-	-	-	-	-	32	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	29	-	-	-	-	-	-	77	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	52	-	-	-	-	-	-	72	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	31	-	-	-	-	-	-	63	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	340	-	-	-	-	-	-	280	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	190	-	-	-	-	-	-	230	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	460	-	-	-	-	-	-	200	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	460	-	-	-	-	-	-	200	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	97	-	-	-	-	-	-	100	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	50	-	-	-	-	-	-	95	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	96	-	-	-	-	-	-	160	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	81	-	-	-	-	-	-	160	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	71	-	-	-	-	-	-	140	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	270	-	-	-	-	-	-	290	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	120	-	-	-	-	-	-	69	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	73	-	-	-	-	-	-	230	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	240	-	-	-	-	-	-	170	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	260	-	-	-	-	-	-	180	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	280	-	-	-	-	-	-	550	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	75	-	-	-	-	-	-	92	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	94	-	-	-	-	-	-	130	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	83	-	-	-	-	-	-	84	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	120	-	-	-	-	-	-	160	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	110	-	-	-	-	-	-	160	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	47	-	-	-	-	-	-	77	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	17	-	-	-	-	-	-	42	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	10	-	-	-	-	-	-	16	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	91	-	-	-	-	-	-	140	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	200	-	-	-	-	-	-	220	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	1,600	-	-	-	-	-	-	830	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	550	-	-	-	-	-	-	390	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	260	-	-	-	-	-	-	190	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	140	-	-	-	-	-	-	200	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	13	-	-	-	-	-	-	27	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	9	-	-	-	-	-	-	34	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	38	-	-	-	8	-	-	46	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	6	-	-	-	-	-	-	21	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	24	-	-	-	-	-	-	24	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	164	-	-	-	-	-	-	137	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	235	-	-	-	-	-	-	322	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	51	-	-	-	-	-	-	64	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	102	-	-	-	-	-	-	111	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	391	-	-	-	-	-	-	112	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	249	-	-	-	-	-	-	164	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	152	-	-	-	-	-	-	80	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	181	-	-	-	-	-	-	147	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	55	-	-	-	-	-	-	43	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	16	-	-	-	-	-	-	12	-

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Site: Gillieston Public School
Remediation Action Plan

					Metals																
					Arsenic	Cadmium	Calcium (filtered)	Chromium (III+VI)	Copper	Iron	Lead	Lead (filtered)	Magnesium (filtered)	Mercury	Nickel	Potassium (filtered)	Sodium (filtered)	Zinc	Zinc (filtered)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L
EQL					1	0.3	2	0.5	0.5	20	1	10	2	0.05	0.5	2	2	1	10
NEPM 2013 HIL, Residential A					100	20			6,000		300			40	400			7,400	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																			
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																			
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																			
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																			
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																			
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																			
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged					100			190	60		1,100				30			70	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT								260	100						55			230	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND								260	35						6			110	
NEPM 2013 ESL UR/POS, Coarse Soil																			
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	36	-	-	-	-	-	-	34	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	87	-	-	-	-	-	-	55	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	39	-	-	-	-	-	-	36	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-	14	-	-	-	-	-	-	20	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-	34	-	-	-	-	-	-	57	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-	12	-	-	-	-	-	-	31	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	9.9	-	-	-	-	-	-	610	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-	9	-	-	-	-	-	-	410	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	5.6	-	-	-	-	-	-	290	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	34	-	-	-	-	-	-	180	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	8.9	-	-	-	-	-	-	570	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	-	-	-	-	33	-	-	-	-	-	-	390	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	240	-	-	-	-	-	-	350	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-	210	-	-	-	-	-	-	340	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-	280	-	-	-	-	-	-	410	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-	19	-	-	-	-	-	-	100	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-	19	-	-	-	-	-	-	101	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-	7.9	-	-	-	-	-	-	<5	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-	26	-	-	-	-	-	-	120	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-	15	-	-	-	-	-	-	16	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	48	-	-	-	-	-	-	250	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	410	-	-	-	-	-	-	840	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	160	-	-	-	-	-	-	910	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	150	-	-	-	-	-	-	800	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	360	-	-	-	-	-	-	420	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	42	-	-	-	-	-	-	180	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	37	-	-	-	-	-	-	340	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	-	-	-	-	140	-	-	-	-	-	-	250	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	340	-	-	-	-	-	-	230	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	340	-	-	-	-	-	-	370	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	150	-	-	-	-	-	-	490	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	100	-	-	-	-	-	-	180	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	53	-	-	-	-	-	-	380	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	67	-	-	-	-	-	-	110	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	48	-	-	-	-	-	-	110	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-	8.6	-	-	-	-	-	-	170	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-	17	-	-	-	-	-	-	54	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-	310	-	-	-	-	-	-	250	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-	420	-	-	-	-	-	-	200	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	13	-	-	-	-	-	-	26	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	150	-	-	-	-	-	-	360	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	270	-	-	-	-	-	-	260	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-	92	-	-	-	-	-	-	980	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	240	-	-	-	-	-	-	310	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	100	-	-	-	-	-	-	250	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	18	<0.4	-	20	<5	-	28	-	-	<0.1	<5	-	-	70	-
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	220	-	-	-	-	-	-	190	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	170	-	-	-	-	-	-	120	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Metals															
					Arsenic	Cadmium	Calcium (filtered)	Chromium (III+VI)	Copper	Iron	Lead	Lead (filtered)	Magnesium (filtered)	Mercury	Nickel	Potassium (filtered)	Sodium (filtered)	Zinc	Zinc (filtered)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L
EQL					1	0.3	2	0.5	0.5	20	1	10	2	0.05	0.5	2	2	1	10
NEPM 2013 HIL, Residential A					100	20			6,000		300			40	400			7,400	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																			
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																			
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																			
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																			
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																			
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																			
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged					100			190	60		1,100				30			70	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT								260	100						55			230	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND								260	35						6			110	
NEPM 2013 ESL UR/POS, Coarse Soil																			
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	260	-	-	-	-	-	-	230	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	9.8	-	-	-	-	-	-	14	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	54	-	-	-	-	-	-	170	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	170	-	-	-	-	-	-	150	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	550	-	-	-	-	-	-	170	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-	360	-	-	-	-	-	-	130	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	500	-	-	-	-	-	-	200	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	220	-	-	-	-	-	-	140	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	300	-	-	-	-	-	-	250	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	360	-	-	-	-	-	-	320	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	100	-	-	-	-	-	-	91	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	270	-	-	-	-	-	-	310	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-	83	-	-	-	-	-	-	320	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	660	-	-	-	-	-	-	450	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	200	-	-	-	-	-	-	160	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	15	-	-	-	-	-	-	79	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-	16	-	-	-	-	-	-	38	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	76	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	64	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	55	-	-	-	-	-	-	33	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	140	-	-	-	-	-	-	150	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	14	-	-	-	-	-	-	35	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	330	-	-	-	-	-	-	230	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	220	-	-	-	-	-	-	250	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	920	-	-	-	-	-	-	590	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	73	-	-	-	-	-	-	85	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-	400	-	-	-	-	-	-	260	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					pH		Asbestos	Organic			PAH									
					pH (Fox)	pH (F)	Asbestos Reported Result	Sum of US EPA PFAS (PFOS + PFOA)*	TOC	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Naphthalene	2-methylnaphthalene	1-Methylnaphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
					pH Unit	pH Unit	Comment	UG/KG	%	UG/KG	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0	0		5	0.05	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 HIL, Residential A																				
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand											3									
NEPM 2013 Sch B1 Table 7 Asbestos HSLs							<0.01 % w/w ACM in soil | <0.001 % w/w FA/AF in Soil | No visible asbestos at surface													
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential											1,400									
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged											170									
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**																
AHA101	AHA101 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA102	AHA102 0-0.01	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA103	AHA103 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA103 0.35-0.4	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA104	AHA104 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA105	AHA105 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA105 0.2-0.25	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA106	AHA106 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA107	AHA107 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP1	Field_D	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip1	Interlab_D	22 Apr 2024	SE264540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA108	AHA108 0.02-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA109	AHA109 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA110	AHA110 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip4	Interlab_D	24 Apr 2024	SE264540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP4	Field_D	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA111	AHA111 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA112	AHA112 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA113	AHA113 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA113 0.1-0.2	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	TP1 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	3.0	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP1 0.6-0.7	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP2	TP2 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP2 0.2-0.3	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP3	TP3 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP4	TP4 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP4 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP5	TP5 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP5 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP5 1.4-1.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP5 2.2-2.3	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP6	TP6 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP6 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP7	TP7 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP8	TP8 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP8 0.9-1	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP9	TP9 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP10	TP10 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP10 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP10 0.7-0.8	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP11	TP11 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP12	TP12 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP12 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP13	TP13 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP13 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	0.3	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP14	TP14 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP15	TP15 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					pH		Asbestos	Organic			PAH									
					pH (Fox)	pH (F)	Asbestos Reported Result	Sum of US EPA PFAS (PFOS + PFOA)*	TOC	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Naphthalene	2-methylnaphthalene	1-Methylnaphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
					pH Unit	pH Unit	Comment	UG/KG	%	UG/KG	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0	0		5	0.05	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 HIL, Residential A																				
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand											3									
NEPM 2013 Sch B1 Table 7 Asbestos HSLs							<0.01 % w/w ACM in soil | <0.001 % w/w FA/AF in Soil | No visible asbestos at surface													
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential											1,400									
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged											170									
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
TP16	TP16 0-0.1	Normal	23 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP17	TP17 0-0.1	Normal	24 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP17 0.5-0.6	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP17 1-1.1	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP18	TP18 0-0.1	Normal	24 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP18 0.4-0.5	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP19	TP19 0-0.1	Normal	24 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP19 0.3-0.4	Normal	24 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP19 0.4-0.5	Normal	24 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP19 0.8-0.9	Normal	24 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP2	Field_D	24 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Trip2	Interlab_D	24 Apr 2024	SE264540	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP20	TP20 0-0.1	Normal	24 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP20 0.4-0.5	Normal	24 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21	TP21 0-0.1	Normal	24 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	<5	-	<5	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP/HA22	TP/HA22 0-0.1	Normal	24 Apr 2024	1091634	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP/HA22 0.2-0.3	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	DUP3	Field_D	24 Apr 2024	1091634	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Trip3	Interlab_D	24 Apr 2024	SE264540	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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					pH Unit	pH Unit	Comment	UG/KG	%	UG/KG	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0	0		5	0.05	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 HIL, Residential A																				
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NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
BH01	BH01_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH01_0.5	Normal	19 Dec 2022	SE241126	-	-	-	-	0.93	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH03	BH03_0.3	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH03_0.8-1.0	Normal	19 Dec 2022	SE241126	4.7	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH03_1.3-1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH04	BH04_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05	BH05_1.0	Normal	19 Dec 2022	SE241126	4.3	4.7	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH05_1.5	Normal	19 Dec 2022	SE241126	4.1	4.8	-	-	0.72	-	-	-	-	-	-	-	-	-	-	-
BH06	BH06_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH06_0.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH07	BH07_0.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH07_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH08	BH08_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH08_0.5	Normal	20 Dec 2022	SE241126	4.0	5.3	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH09	BH09_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11	BH11_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH12	BH12_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
BH14	BH14_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	0.2
	BH14_1.3	Normal	20 Dec 2022	SE241126	4.8	5.1	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH14_1.5	Normal	20 Dec 2022	SE241126	-	-	-	-	0.12	-	-	-	-	-	-	-	-	-	-	-
BH15	BH15_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	0.2	0.4	0.5	<0.1	<0.1	<0.1	0.8	0.1	0.7	0.7
	BH15_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH15_1.4	Normal	20 Dec 2022	SE241126	4.2	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Field_D	20 Dec 2022	SE241126	-	-	-	-	-	-	0.1	0.2	0.5	<0.1	<0.1	<0.1	0.8	0.1	0.7	0.6
	QC400	Interlab_D	20 Dec 2022	957232	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5
BH16	BH16_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1
BH17	BH17_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH17_0.9	Normal	21 Dec 2022	SE241126	-	-	-	-	0.08	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH18	BH18_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH19	BH19_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH19_0.5	Normal	21 Dec 2022	SE241126	6.7	7.7	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH20	BH20_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH20_1.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH21	BH21_0.8	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH22	BH22_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23	BH23_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH24	BH24_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH25	BH25_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH26	BH26_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH27	BH27_0.1-0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH27_0.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.1
	BH27_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	QA200	Field_D	19 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1
	QC200	Interlab_D	19 Dec 2022	957232	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH28	BH28_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	BH28_1.0	Normal	19 Dec 2022	SE241126	4.3	4.7	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA101	HA101-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA102	HA102-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA102_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA103	HA103-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				SE242288A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA103_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA104	HA104-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA104_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA105	HA105-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA106	HA106-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA100	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC100	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA107	HA107-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA108	HA108-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA108_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA109	HA109-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA109_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA110	HA110-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA111	HA111-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA111_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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					pH (Fox)	pH (F)	Asbestos Reported Result	Sum of US EPA PFAS (PFOS + PFOA)*	TOC	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Naphthalene	2-methylnaphthalene	1-Methylnaphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
					pH Unit	pH Unit	Comment	UG/KG	%	UG/KG	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0	0		5	0.05	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 HIL, Residential A																				
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand											3									
NEPM 2013 Sch B1 Table 7 Asbestos HSLs							<0.01 % w/w ACM in soil | <0.001 % w/w FA/AF in Soil | No visible asbestos at surface													
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential											1,400									
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged											170									
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC200	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA202	DUP1	Field_D	03 Feb 2023	SE242738	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	HA202 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					pH		Asbestos	Organic			PAH									
					pH (Fox)	pH (F)	Asbestos Reported Result	Sum of US EPA PFAS (PFOS + PFOA)*	TOC	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Naphthalene	2-methylnaphthalene	1-Methylnaphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
					pH Unit	pH Unit	Comment	UG/KG	%	UG/KG	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0	0		5	0.05	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 HIL, Residential A																				
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand											3									
NEPM 2013 Sch B1 Table 7 Asbestos HSLs							<0.01 % w/w ACM in soil | <0.001 % w/w FA/AF in Soil | No visible asbestos at surface													
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential											1,400									
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged											170									
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	No asbestos detected at the reporting limit of 0.001% w/w. Organic fibre detected. No trace asbestos detected.	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					pH		Asbestos	Organic			PAH									
					pH (Fox)	pH (F)	Asbestos Reported Result	Sum of US EPA PFAS (PFOS + PFOA)*	TOC	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Naphthalene	2-methylnaphthalene	1-Methylnaphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
					pH Unit	pH Unit	Comment	UG/KG	%	UG/KG	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0	0		5	0.05	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 HIL, Residential A																				
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand											3									
NEPM 2013 Sch B1 Table 7 Asbestos HSLs							<0.01 % w/w ACM in soil | <0.001 % w/w FA/AF in Soil | No visible asbestos at surface													
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential											1,400									
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged											170									
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					PAH											
					Benz[a]anthracene	Chrysene	Benzo(k)fluoranthene	Benzo(b+j)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Benzo(a)pyrene TEQ (Zero LOR)	Benzo(a)pyrene TEQ (Half LOR)_1	Benzo(a)pyrene TEQ (Full LOR)	PAHs (Sum of total)
					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	0.1	0.1	0.1	0.5	0.5	0.5	0.5
NEPM 2013 HIL, Residential A													3	3	3	300
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																
NEPM 2013 ESL UR/POS, Coarse Soil									0.7							
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**												
AHA101	**AHA101 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
AHA102	**AHA102 0-0.01**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
AHA103	**AHA103 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
	AHA103 0.35-0.4	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
AHA104	**AHA104 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
AHA105	**AHA105 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
	AHA105 0.2-0.25	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
AHA106	**AHA106 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
AHA107	**AHA107 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
	DUP1	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
	Trip1	**Interlab_D**	**22 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-
AHA108	**AHA108 0.02-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
AHA109	**AHA109 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
AHA110	**AHA110 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
	Trip4	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-
	DUP4	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
AHA111	**AHA111 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
AHA112	**AHA112 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
AHA113	**AHA113 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
	AHA113 0.1-0.2	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
TP1	**TP1 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP1 0.6-0.7	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP2	**TP2 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP2 0.2-0.3	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP3	**TP3 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP4	**TP4 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP4 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP5	**TP5 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP5 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP5 1.4-1.5	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP5 2.2-2.3	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP6	**TP6 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP6 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP7	**TP7 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP8	**TP8 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP8 0.9-1	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP9	**TP9 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP10	**TP10 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP10 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP10 0.7-0.8	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP11	**TP11 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP12	**TP12 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP12 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP13	**TP13 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP13 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP14	**TP14 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP15	**TP15 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					PAH												
					Benz(a)anthracene	Chrysene	Benzo(k)fluoranthene	Benzo(b+j)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Benzo(a)pyrene TEQ (Zero LOR)	Benzo(a)pyrene TEQ (Half LOR)_1	Benzo(a)pyrene TEQ (Full LOR)	PAHs (Sum of total)
					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	0.1	0.1	0.1	0.5	0.5	0.5	0.5
NEPM 2013 HIL, Residential A													3	3	3	300
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																
NEPM 2013 ESL UR/POS, Coarse Soil									0.7							
TP16																
	TP16 0-0.1	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP17																
	TP17 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP17 0.5-0.6	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP17 1-1.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP18																
	TP18 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP18 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP19																
	TP19 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP19 0.3-0.4	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP19 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP19 0.8-0.9	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
	DUP2	**Field_D**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	Trip2	**Interlab_D**	**24 Apr 2024**	**SE264540**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
TP20																
	TP20 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP20 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-
TP21																
	TP21 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
TP/HA22																
	TP/HA22 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	TP/HA22 0.2-0.3	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	DUP3	**Field_D**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
	Trip3	**Interlab_D**	**24 Apr 2024**	**SE264540**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					PAH												
					Benz[a]anthracene	Chrysene	Benzo(k)fluoranthene	Benzo(b+j)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Benzo(a)pyrene TEQ (Zero LOR)	Benzo(a)pyrene TEQ (Half LOR)_1	Benzo(a)pyrene TEQ (Full LOR)	PAHs (Sum of total)
					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	0.1	0.1	0.1	0.5	0.5	0.5	0.5
NEPM 2013 HIL, Residential A													3	3	3	300
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																
NEPM 2013 ESL UR/POS, Coarse Soil									0.7							
BH01	**BH01_0.2**	**Normal**	**20 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-
	BH01_0.5	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH03	**BH03_0.3**	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
	BH03_0.8-1.0	**Normal**	**19 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-
	BH03_1.3-1.5	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH04	**BH04_0.2**	**Normal**	**19 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-
BH05	**BH05_1.0**	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
	BH05_1.5	**Normal**	**19 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-
BH06	**BH06_0.2**	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
	BH06_0.5	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH07	**BH07_0.5**	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
	BH07_1.5	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH08	**BH08_0.2**	**Normal**	**20 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-
	BH08_0.5	**Normal**	**20 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH09	**BH09_0.1**	**Normal**	**21 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-
BH11	**BH11_0.1**	**Normal**	**21 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH12	**BH12_0.1**	**Normal**	**21 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH14	**BH14_0.2**	**Normal**	**20 Dec 2022**	**SE241126**	0.2	0.2	<0.1	0.2	0.1	0.1	<0.1	0.1	<0.2	0.2	<0.3	1.5
	BH14_1.3	**Normal**	**20 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
	BH14_1.5	**Normal**	**20 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-
BH15	**BH15_0.2**	**Normal**	**20 Dec 2022**	**SE241126**	0.5	0.5	0.2	0.7	0.6	0.5	0.1	0.5	0.9	0.9	0.9	6.9
	BH15_0.5	**Normal**	**20 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-
	BH15_1.4	**Normal**	**20 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	**Field_D**	**20 Dec 2022**	**SE241126**	0.4	0.4	0.2	0.5	0.4	0.2	<0.1	0.2	0.5	0.6	0.6	5.3
	QC400	**Interlab_D**	**20 Dec 2022**	**957232**	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	1.2
BH16	**BH16_0.2**	**Normal**	**21 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH17	**BH17_0.2**	**Normal**	**21 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-
	BH17_0.9	**Normal**	**21 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH18	**BH18_0.2**	**Normal**	**21 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH19	**BH19_0.2**	**Normal**	**21 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
	BH19_0.5	**Normal**	**21 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH20	**BH20_0.2**	**Normal**	**21 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-
	BH20_1.5	**Normal**	**21 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH21	**BH21_0.8**	**Normal**	**21 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH22	**BH22_0.1**	**Normal**	**21 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-
BH23	**BH23_0.1**	**Normal**	**21 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH24	**BH24_0.2**	**Normal**	**21 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH25	**BH25_0.2**	**Normal**	**20 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH26	**BH26_0.2**	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
BH27	**BH27_0.1-0.2**	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
	BH27_0.5	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
	BH27_1.5	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
	QA200	**Field_D**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
	QC200	**Interlab_D**	**19 Dec 2022**	**957232**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
BH28	**BH28_0.2**	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
	BH28_1.0	**Normal**	**19 Dec 2022**	**SE241126**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
HA101	**HA101-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-
HA102	**HA102-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-
	HA102_0.3	**Normal**	**25 Jan 2023**	**SE242288B**	-	-	-	-	-	-	-	-	-	-	-	-
HA103	**HA103-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-
				SE242288A	-	-	-	-	-	-	-	-	-	-	-	-
	HA103_0.3	**Normal**	**25 Jan 2023**	**SE242288B**	-	-	-	-	-	-	-	-	-	-	-	-
HA104	**HA104-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-
	HA104_0.3	**Normal**	**25 Jan 2023**	**SE242288B**	-	-	-	-	-	-	-	-	-	-	-	-
HA105	**HA105-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-
HA106	**HA106-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-
	QA100	**Field_D**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-
	QC100	**Interlab_D**	**25 Jan 2023**	**960232**	-	-	-	-	-	-	-	-	-	-	-	-
HA107	**HA107-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-
HA108	**HA108-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-
	HA108_0.3	**Normal**	**25 Jan 2023**	**SE242288B**	-	-	-	-	-	-	-	-	-	-	-	-
HA109	**HA109-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-
	HA109_0.3	**Normal**	**25 Jan 2023**	**SE242288B**	-	-	-	-	-	-	-	-	-	-	-	-
HA110	**HA110-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-
HA111	**HA111-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-
	HA111_0.3	**Normal**	**25 Jan 2023**	**SE242288B**	-	-	-	-	-	-	-	-	-	-	-	-

Stantec

Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					PAH												
					Benz[a]anthracene	Chrysene	Benzo(k)fluoranthene	Benzo(b+j)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Benzo(a)pyrene TEQ (Zero LOR)	Benzo(a)pyrene TEQ (Half LOR)_1	Benzo(a)pyrene TEQ (Full LOR)	PAHs (Sum of total)
					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	0.1	0.1	0.1	0.5	0.5	0.5	0.5
NEPM 2013 HIL, Residential A													3	3	3	300
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																
NEPM 2013 ESL UR/POS, Coarse Soil									0.7							
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-
	QC200	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
HA202	DUP1	Field_D	03 Feb 2023	SE242738	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
	HA202 0.1	Normal	03 Feb 2023	SE242738	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.8
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					PAH											
					Benz(a)anthracene	Chrysene	Benzo(k)fluoranthene	Benzo(b+j)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Benzo(a)pyrene TEQ (Zero LOR)	Benzo(a)pyrene TEQ (Half LOR)_1	Benzo(a)pyrene TEQ (Full LOR)	PAHs (Sum of total)
					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	0.1	0.1	0.1	0.5	0.5	0.5	0.5
NEPM 2013 HIL, Residential A													3	3	3	300
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																
NEPM 2013 ESL UR/POS, Coarse Soil									0.7							
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					PAH												
					Benz(a)anthracene	Chrysene	Benzo(k)fluoranthene	Benzo(b+j)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene	Benzo(a)pyrene TEQ (Zero LOR)	Benzo(a)pyrene TEQ (Half LOR)_1	Benzo(a)pyrene TEQ (Full LOR)	PAHs (Sum of total)
					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	0.1	0.1	0.1	0.5	0.5	0.5	0.5
NEPM 2013 HIL, Residential A													3	3	3	300
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																
NEPM 2013 ESL UR/POS, Coarse Soil									0.7							
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Phenols										Halogenated Phenols						
					2,4-dimethylphenol	2,4-dinitrophenol	2-methylphenol	2-nitrophenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexylphenol	4-chloro-3-methylphenol	4-nitrophenol	Cresol (Total)	Phenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	Pentachlorophenol	tetrachlorophenols
					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					0.5	2	0.2	0.5	5	20	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	10
NEPM 2013 HIL, Residential A													400	3,000						100	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																					
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																					
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																					
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																					
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																					
NEPM 2013 ESL UR/POS, Coarse Soil																					
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**																	
AHA101	AHA101 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA102	AHA102 0-0.01	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA103	AHA103 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA103 0.35-0.4	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA104	AHA104 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA105	AHA105 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA105 0.2-0.25	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA106	AHA106 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA107	AHA107 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP1	Field_D	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip1	Interlab_D	22 Apr 2024	SE264540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA108	AHA108 0.02-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA109	AHA109 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA110	AHA110 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip4	Interlab_D	24 Apr 2024	SE264540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP4	Field_D	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA111	AHA111 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA112	AHA112 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA113	AHA113 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA113 0.1-0.2	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	TP1 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP1 0.6-0.7	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2	TP2 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP2 0.2-0.3	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP3	TP3 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
TP4	TP4 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP4 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5	TP5 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP5 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP5 1.4-1.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP5 2.2-2.3	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP6	TP6 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP6 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP7	TP7 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
TP8	TP8 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP8 0.9-1	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP9	TP9 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
TP10	TP10 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP10 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP10 0.7-0.8	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11	TP11 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
TP12	TP12 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP12 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13	TP13 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP13 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14	TP14 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
TP15	TP15 0-0.1	Normal	23 Apr 2024	1091634	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Phenols										Halogenated Phenols						
					2,4-dimethylphenol	2,4-dinitrophenol	2-methylphenol	2-nitrophenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexylphenol	4-chloro-3-methylphenol	4-nitrophenol	Cresol (Total)	Phenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	Pentachlorophenol	tetrachlorophenols
					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					0.5	2	0.2	0.5	5	20	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	10
NEPM 2013 HIL, Residential A													400	3,000						100	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																					
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																					
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																					
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																					
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																					
NEPM 2013 ESL UR/POS, Coarse Soil																					
TP16																					
	TP16 0-0.1	**Normal**	**23 Apr 2024**	**1091634**	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
TP17																					
	TP17 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<5	<0.5	<1	<5	<20	<1	<5	<1	1.9	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP17 0.5-0.6	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP17 1-1.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18																					
	TP18 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP18 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19																					
	TP19 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP19 0.3-0.4	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP19 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP19 0.8-0.9	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP2	**Field_D**	**24 Apr 2024**	**1091634**	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	Trip2	**Interlab_D**	**24 Apr 2024**	**SE264540**	<0.5	<2	<0.5	<0.5	-	-	<2	<1	<1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
TP20																					
	TP20 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
	TP20 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21																					
	TP21 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<5	<0.2	<1	<5	<20	<1	<5	<0.5	<0.5	<1	<1	<0.5	<0.5	<0.5	<1	<10
TP/HA22																					
	TP/HA22 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP/HA22 0.2-0.3	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP3	**Field_D**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip3	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Phenols										Halogenated Phenols						
					2,4-dimethylphenol	2,4-dinitrophenol	2-methylphenol	2-nitrophenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexylphenol	4-chloro-3-methylphenol	4-nitrophenol	Cresol (Total)	Phenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	Pentachlorophenol	tetrachlorophenols
					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					0.5	2	0.2	0.5	5	20	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	10
NEPM 2013 HIL, Residential A													400	3,000						100	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																					
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																					
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																					
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																					
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CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																					
NEPM 2013 ESL UR/POS, Coarse Soil																					
BH01	BH01_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH01_0.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03	BH03_0.3	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH03_0.8-1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH03_1.3-1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04	BH04_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05	BH05_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH05_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06	BH06_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH06_0.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH07	BH07_0.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH07_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH08	BH08_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH08_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH09	BH09_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11	BH11_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH12	BH12_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH14	BH14_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH14_1.3	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH14_1.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	BH15_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH15_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH15_1.4	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Field_D	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC400	Interlab_D	20 Dec 2022	957232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH16	BH16_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH17	BH17_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH17_0.9	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18	BH18_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH19	BH19_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH19_0.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20	BH20_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH20_1.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH21	BH21_0.8	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22	BH22_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23	BH23_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24	BH24_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25	BH25_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH26	BH26_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH27	BH27_0.1-0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH27_0.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH27_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC200	Interlab_D	19 Dec 2022	957232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH28	BH28_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH28_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA101	HA101-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA102	HA102-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA102_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA103	HA103-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				SE242288A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA103_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA104	HA104-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA104_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA105	HA105-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA106	HA106-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA100	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC100	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA107	HA107-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA108	HA108-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA108_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA109	HA109-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA109_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA110	HA110-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA111	HA111-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA111_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Remediation Action Plan

					Phenols										Halogenated Phenols						
					2,4-dimethylphenol	2,4-dinitrophenol	2-methylphenol	2-nitrophenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexylphenol	4-chloro-3-methylphenol	4-nitrophenol	Cresol (Total)	Phenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	Pentachlorophenol	tetrachlorophenols
					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					0.5	2	0.2	0.5	5	20	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	10
NEPM 2013 HIL, Residential A													400	3,000						100	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																					
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																					
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																					
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																					
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																					
NEPM 2013 ESL UR/POS, Coarse Soil																					
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC200	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA202	DUP1	Field_D	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA202 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Phenols										Halogenated Phenols						
					2,4-dimethylphenol	2,4-dinitrophenol	2-methylphenol	2-nitrophenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexylphenol	4-chloro-3-methylphenol	4-nitrophenol	Cresol (Total)	Phenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	Pentachlorophenol	tetrachlorophenols
					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					0.5	2	0.2	0.5	5	20	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	10
NEPM 2013 HIL, Residential A													400	3,000						100	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																					
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																					
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																					
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																					
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																					
NEPM 2013 ESL UR/POS, Coarse Soil																					
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Phenols										Halogenated Phenols						
					2,4-dimethylphenol	2,4-dinitrophenol	2-methylphenol	2-nitrophenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexylphenol	4-chloro-3-methylphenol	4-nitrophenol	Cresol (Total)	Phenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	Pentachlorophenol	tetrachlorophenols
					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					0.5	2	0.2	0.5	5	20	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	10
NEPM 2013 HIL, Residential A													400	3,000						100	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																					
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																					
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																					
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																					
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																					
NEPM 2013 ESL UR/POS, Coarse Soil																					
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

											Organochlorine Pesticides											
							Other organochlorine pesticides (WRG621	Organochlorine pesticides (WRG621	2,4-DDT	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	gamma-Chlordane	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD
							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	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05
NEPM 2013 HIL, Residential A													6		50							240
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																						
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																					180	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**																		
AHA101	**AHA101 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA102	**AHA102 0-0.01**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA103	**AHA103 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA103 0.35-0.4	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA104	**AHA104 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA105	**AHA105 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA105 0.2-0.25	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA106	**AHA106 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA107	**AHA107 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP1	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip1	**Interlab_D**	**22 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA108	**AHA108 0.02-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA109	**AHA109 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA110	**AHA110 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip4	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP4	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA111	**AHA111 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA112	**AHA112 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA113	**AHA113 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA113 0.1-0.2	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	**TP1 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
	TP1 0.6-0.7	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2	**TP2 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
	TP2 0.2-0.3	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP3	**TP3 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
TP4	**TP4 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
	TP4 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5	**TP5 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
	TP5 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP5 1.4-1.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP5 2.2-2.3	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP6	**TP6 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
	TP6 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP7	**TP7 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
TP8	**TP8 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
	TP8 0.9-1	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP9	**TP9 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
TP10	**TP10 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
	TP10 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP10 0.7-0.8	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11	**TP11 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
TP12	**TP12 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
	TP12 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13	**TP13 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
	TP13 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14	**TP14 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		
TP15	**TP15 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05		

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organochlorine Pesticides																
					Other organochlorine pesticides (WRG621	Organochlorine pesticides (WRG621	2,4-DDT	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	gamma-Chlordane	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD
					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	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05
NEPM 2013 HIL, Residential A											6		50							240
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																				
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																			180	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
TP16	**TP16 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05
TP17	**TP17 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	-	<1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<1	-	-	-	<0.5	<0.5	<0.5	<0.5
	TP17 0.5-0.6	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP17 1-1.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18	**TP18 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05
	TP18 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19	**TP19 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05
	TP19 0.3-0.4	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP19 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP19 0.8-0.9	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP2	**Field_D**	**24 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05
	Trip2	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
TP20	**TP20 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05
	TP20 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21	**TP21 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	-	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05
TP/HA22	**TP/HA22 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP/HA22 0.2-0.3	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP3	**Field_D**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip3	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organochlorine Pesticides																
					Other organochlorine pesticides (WRG621	Organochlorine pesticides (WRG621	2,4-DDT	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	gamma-Chlordane	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD
					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	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05
NEPM 2013 HIL, Residential A											6		50							240
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																				
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																			180	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
BH01	BH01_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH01_0.5	Normal	19 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
BH03	BH03_0.3	Normal	19 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
	BH03_0.8-1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH03_1.3-1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04	BH04_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05	BH05_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH05_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06	BH06_0.2	Normal	19 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
	BH06_0.5	Normal	19 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
BH07	BH07_0.5	Normal	19 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
	BH07_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH08	BH08_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH08_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH09	BH09_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11	BH11_0.1	Normal	21 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
BH12	BH12_0.1	Normal	21 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
BH14	BH14_0.2	Normal	20 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
	BH14_1.3	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH14_1.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	BH15_0.2	Normal	20 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
	BH15_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH15_1.4	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Field_D	20 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
	QC400	Interlab_D	20 Dec 2022	957232	<1	<1	-	<0.5	<0.5	<0.5	<0.5	<0.5	<1	-	-	-	<0.5	<0.5	<0.5	<0.5
BH16	BH16_0.2	Normal	21 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
BH17	BH17_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH17_0.9	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18	BH18_0.2	Normal	21 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
BH19	BH19_0.2	Normal	21 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
	BH19_0.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20	BH20_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH20_1.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH21	BH21_0.8	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22	BH22_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23	BH23_0.1	Normal	21 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
BH24	BH24_0.2	Normal	21 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
BH25	BH25_0.2	Normal	20 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
BH26	BH26_0.2	Normal	19 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
BH27	BH27_0.1-0.2	Normal	19 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
	BH27_0.5	Normal	19 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
	BH27_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	19 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
	QC200	Interlab_D	19 Dec 2022	957232	<0.1	<0.1	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	-	<0.05	<0.05	<0.05	<0.05
BH28	BH28_0.2	Normal	19 Dec 2022	SE241126	-	<1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	-
	BH28_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA101	HA101-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA102	HA102-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA102_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA103	HA103-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				SE242288A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA103_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA104	HA104-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA104_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA105	HA105-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA106	HA106-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA100	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC100	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA107	HA107-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA108	HA108-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA108_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA109	HA109-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA109_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA110	HA110-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA111	HA111-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA111_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Stantec

Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organochlorine Pesticides															
					Other organochlorine pesticides (WRG621	Organochlorine pesticides (WRG621	2,4-DDT	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	gamma-Chlordane	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD
					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	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05
NEPM 2013 HIL, Residential A											6		50							240
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																				
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																			180	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC200	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA202	DUP1	Field_D	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA202 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organochlorine Pesticides															
					Other organochlorine pesticides (WRG621	Organochlorine pesticides (WRG621	2,4-DDT	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	gamma-Chlordane	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD
					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	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05
NEPM 2013 HIL, Residential A											6		50							240
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																				
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																			180	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organochlorine Pesticides																
					Other organochlorine pesticides (WRG621	Organochlorine pesticides (WRG621	2,4-DDT	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	gamma-Chlordane	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD
					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	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05
NEPM 2013 HIL, Residential A											6		50							240
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																				
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																			180	
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

						Organochlorine Pesticides															
						Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	o,p-DDD	o,p'-DDE	Toxaphene	trans-Nonachlor
						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						0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.5	0.1
NEPM 2013 HIL, Residential A										10				6		10	300			20	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																					
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																					
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																					
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																					
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																					
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																					
NEPM 2013 ESL UR/POS, Coarse Soil																					
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**																	
AHA101	**AHA101 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA102	**AHA102 0-0.01**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA103	**AHA103 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA103 0.35-0.4	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA104	**AHA104 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA105	**AHA105 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA105 0.2-0.25	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA106	**AHA106 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA107	**AHA107 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP1	**Field_D**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip1	**Interlab_D**	**22 Apr 2024**	**SE264540**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA108	**AHA108 0.02-0.1**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA109	**AHA109 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA110	**AHA110 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip4	**Interlab_D**	**24 Apr 2024**	**SE264540**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP4	**Field_D**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA111	**AHA111 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA112	**AHA112 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA113	**AHA113 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA113 0.1-0.2	**Normal**	**22 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	**TP1 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	TP1 0.6-0.7	**Normal**	**23 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2	**TP2 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	TP2 0.2-0.3	**Normal**	**23 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP3	**TP3 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
TP4	**TP4 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	TP4 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5	**TP5 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	TP5 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP5 1.4-1.5	**Normal**	**23 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP5 2.2-2.3	**Normal**	**23 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP6	**TP6 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	TP6 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP7	**TP7 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
TP8	**TP8 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	TP8 0.9-1	**Normal**	**23 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP9	**TP9 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
TP10	**TP10 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	TP10 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP10 0.7-0.8	**Normal**	**23 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11	**TP11 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
TP12	**TP12 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	TP12 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13	**TP13 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	TP13 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14	**TP14 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
TP15	**TP15 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organochlorine Pesticides															
					Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	o,p-DDD	o,p'-DDE	Toxaphene	trans-Nonachlor
					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					0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.5	0.1
NEPM 2013 HIL, Residential A									10				6		10	300			20	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																				
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
TP16	**TP16 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
TP17	**TP17 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<10	-
	TP17 0.5-0.6	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP17 1-1.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18	**TP18 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	TP18 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19	**TP19 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	TP19 0.3-0.4	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP19 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP19 0.8-0.9	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP2	**Field_D**	**24 Apr 2024**	**1091634**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	Trip2	**Interlab_D**	**24 Apr 2024**	**SE264540**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
TP20	**TP20 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
	TP20 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21	**TP21 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
TP/HA22	**TP/HA22 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP/HA22 0.2-0.3	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP3	**Field_D**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip3	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organochlorine Pesticides															
					Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	o,p-DDD	o,p'-DDE	Toxaphene	trans-Nonachlor
					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					0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.5	0.1
NEPM 2013 HIL, Residential A									10				6		10	300			20	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																				
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
BH01	**BH01_0.2**	**Normal**	**20 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH01_0.5	**Normal**	**19 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
BH03	**BH03_0.3**	**Normal**	**19 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
	BH03_0.8-1.0	**Normal**	**19 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH03_1.3-1.5	**Normal**	**19 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04	**BH04_0.2**	**Normal**	**19 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05	**BH05_1.0**	**Normal**	**19 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH05_1.5	**Normal**	**19 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06	**BH06_0.2**	**Normal**	**19 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
	BH06_0.5	**Normal**	**19 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
BH07	**BH07_0.5**	**Normal**	**19 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
	BH07_1.5	**Normal**	**19 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH08	**BH08_0.2**	**Normal**	**20 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH08_0.5	**Normal**	**20 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH09	**BH09_0.1**	**Normal**	**21 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11	**BH11_0.1**	**Normal**	**21 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
BH12	**BH12_0.1**	**Normal**	**21 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
BH14	**BH14_0.2**	**Normal**	**20 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
	BH14_1.3	**Normal**	**20 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH14_1.5	**Normal**	**20 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	**BH15_0.2**	**Normal**	**20 Dec 2022**	**SE241126**	0.6	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
	BH15_0.5	**Normal**	**20 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH15_1.4	**Normal**	**20 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	**Field_D**	**20 Dec 2022**	**SE241126**	0.7	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
	QC400	**Interlab_D**	**20 Dec 2022**	**957232**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<10	-
BH16	**BH16_0.2**	**Normal**	**21 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
BH17	**BH17_0.2**	**Normal**	**21 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH17_0.9	**Normal**	**21 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18	**BH18_0.2**	**Normal**	**21 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
BH19	**BH19_0.2**	**Normal**	**21 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
	BH19_0.5	**Normal**	**21 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20	**BH20_0.2**	**Normal**	**21 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH20_1.5	**Normal**	**21 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH21	**BH21_0.8**	**Normal**	**21 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22	**BH22_0.1**	**Normal**	**21 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23	**BH23_0.1**	**Normal**	**21 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
BH24	**BH24_0.2**	**Normal**	**21 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
BH25	**BH25_0.2**	**Normal**	**20 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
BH26	**BH26_0.2**	**Normal**	**19 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
BH27	**BH27_0.1-0.2**	**Normal**	**19 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
	BH27_0.5	**Normal**	**19 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
	BH27_1.5	**Normal**	**19 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	**Field_D**	**19 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
	QC200	**Interlab_D**	**19 Dec 2022**	**957232**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.5	-
BH28	**BH28_0.2**	**Normal**	**19 Dec 2022**	**SE241126**	<0.2	<0.2	<0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1
	BH28_1.0	**Normal**	**19 Dec 2022**	**SE241126**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA101	**HA101-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA102	**HA102-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA102_0.3	**Normal**	**25 Jan 2023**	**SE242288B**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA103	**HA103-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				SE242288A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA103_0.3	**Normal**	**25 Jan 2023**	**SE242288B**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA104	**HA104-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA104_0.3	**Normal**	**25 Jan 2023**	**SE242288B**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA105	**HA105-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA106	**HA106-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA100	**Field_D**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC100	**Interlab_D**	**25 Jan 2023**	**960232**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA107	**HA107-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA108	**HA108-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA108_0.3	**Normal**	**25 Jan 2023**	**SE242288B**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA109	**HA109-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA109_0.3	**Normal**	**25 Jan 2023**	**SE242288B**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA110	**HA110-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA111	**HA111-0.1**	**Normal**	**25 Jan 2023**	**SE242288**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA111_0.3	**Normal**	**25 Jan 2023**	**SE242288B**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organochlorine Pesticides															
					Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	o,p-DDD	o,p'-DDE	Toxaphene	trans-Nonachlor
					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					0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.5	0.1
NEPM 2013 HIL, Residential A									10				6		10	300			20	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																				
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC200	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA202	DUP1	Field_D	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA202 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Stantec

Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organochlorine Pesticides															
					Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	o,p-DDD	o,p'-DDE	Toxaphene	trans-Nonachlor
					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					0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.5	0.1
NEPM 2013 HIL, Residential A									10				6		10	300			20	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																				
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organochlorine Pesticides															
					Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	o,p-DDD	o,p'-DDE	Toxaphene	trans-Nonachlor
					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					0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.5	0.1
NEPM 2013 HIL, Residential A									10				6		10	300			20	
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																				
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																				
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																				
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																				
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																				
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																				
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																				
NEPM 2013 ESL UR/POS, Coarse Soil																				
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organophosphorous Pesticides																	
					Azinophos methyl	Bolstar (Sulprofos)	Bromophos-ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion
					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					0.05	0.2	0.05	0.05	0.05	0.05	0.1	0.2	0.2	0.05	0.05	0.05	0.1	0.05	0.2	0.1	0.2	0.05
NEPM 2013 HIL, Residential A									160													
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																						
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**																		
AHA101	**AHA101 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA102	**AHA102 0-0.01**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA103	**AHA103 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA103 0.35-0.4	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA104	**AHA104 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA105	**AHA105 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA105 0.2-0.25	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA106	**AHA106 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA107	**AHA107 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP1	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip1	**Interlab_D**	**22 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA108	**AHA108 0.02-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA109	**AHA109 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA110	**AHA110 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip4	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP4	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA111	**AHA111 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA112	**AHA112 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA113	**AHA113 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA113 0.1-0.2	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	**TP1 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP1 0.6-0.7	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2	**TP2 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP2 0.2-0.3	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP3	**TP3 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP4	**TP4 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP4 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5	**TP5 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP5 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP5 1.4-1.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP5 2.2-2.3	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP6	**TP6 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP6 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP7	**TP7 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP8	**TP8 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP8 0.9-1	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP9	**TP9 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP10	**TP10 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP10 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP10 0.7-0.8	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11	**TP11 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP12	**TP12 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP12 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13	**TP13 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP13 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14	**TP14 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP15	**TP15 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organophosphorous Pesticides																	
					Azinophos methyl	Bolstar (Sulprofos)	Bromophos-ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion
					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					0.05	0.2	0.05	0.05	0.05	0.05	0.1	0.2	0.2	0.05	0.05	0.05	0.1	0.05	0.2	0.1	0.2	0.05
NEPM 2013 HIL, Residential A									160													
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																						
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
TP16																						
	TP16 0-0.1	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP17																						
	TP17 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	-	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP17 0.5-0.6	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP17 1-1.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18																						
	TP18 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP18 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19																						
	TP19 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP19 0.3-0.4	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP19 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP19 0.8-0.9	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP2	**Field_D**	**24 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Trip2	**Interlab_D**	**24 Apr 2024**	**SE264540**	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
TP20																						
	TP20 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP20 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21																						
	TP21 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP/HA22																						
	TP/HA22 0-0.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP/HA22 0.2-0.3	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP3	**Field_D**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip3	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organophosphorous Pesticides																	
					Azinophos methyl	Bolstar (Sulprofos)	Bromophos-ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion
					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					0.05	0.2	0.05	0.05	0.05	0.05	0.1	0.2	0.2	0.05	0.05	0.05	0.1	0.05	0.2	0.1	0.2	0.05
NEPM 2013 HIL, Residential A									160													
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																						
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
BH01	BH01_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH01_0.5	Normal	19 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
BH03	BH03_0.3	Normal	19 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
	BH03_0.8-1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH03_1.3-1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04	BH04_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05	BH05_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH05_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06	BH06_0.2	Normal	19 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
	BH06_0.5	Normal	19 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
BH07	BH07_0.5	Normal	19 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
	BH07_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH08	BH08_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH08_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH09	BH09_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11	BH11_0.1	Normal	21 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
BH12	BH12_0.1	Normal	21 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
BH14	BH14_0.2	Normal	20 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
	BH14_1.3	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH14_1.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	BH15_0.2	Normal	20 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
	BH15_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH15_1.4	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Field_D	20 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
	QC400	Interlab_D	20 Dec 2022	957232	<0.5	<0.5	-	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH16	BH16_0.2	Normal	21 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
BH17	BH17_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH17_0.9	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18	BH18_0.2	Normal	21 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
BH19	BH19_0.2	Normal	21 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
	BH19_0.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20	BH20_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH20_1.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH21	BH21_0.8	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22	BH22_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23	BH23_0.1	Normal	21 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
BH24	BH24_0.2	Normal	21 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
BH25	BH25_0.2	Normal	20 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
BH26	BH26_0.2	Normal	19 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
BH27	BH27_0.1-0.2	Normal	19 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
	BH27_0.5	Normal	19 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
	BH27_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	19 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
	QC200	Interlab_D	19 Dec 2022	957232	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH28	BH28_0.2	Normal	19 Dec 2022	SE241126	<0.2	-	<0.2	-	<0.2	-	-	-	-	<0.5	<0.5	<0.5	-	<0.2	-	<0.2	-	-
	BH28_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA101	HA101-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA102	HA102-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA102_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA103	HA103-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				SE242288A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA103_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA104	HA104-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA104_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA105	HA105-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA106	HA106-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA100	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC100	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA107	HA107-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA108	HA108-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA108_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA109	HA109-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA109_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA110	HA110-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA111	HA111-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA111_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organophosphorous Pesticides																	
					Azinophos methyl	Bolstar (Sulprofos)	Bromophos-ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion
					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					0.05	0.2	0.05	0.05	0.05	0.05	0.1	0.2	0.2	0.05	0.05	0.05	0.1	0.05	0.2	0.1	0.2	0.05
NEPM 2013 HIL, Residential A									160													
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
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CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC200	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA202	DUP1	Field_D	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA202 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organophosphorous Pesticides																	
					Azinophos methyl	Bolstar (Sulprofos)	Bromophos-ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion
					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					0.05	0.2	0.05	0.05	0.05	0.05	0.1	0.2	0.2	0.05	0.05	0.05	0.1	0.05	0.2	0.1	0.2	0.05
NEPM 2013 HIL, Residential A									160													
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																						
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organophosphorous Pesticides																	
					Azinophos methyl	Bolstar (Sulprofos)	Bromophos-ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion
					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					0.05	0.2	0.05	0.05	0.05	0.05	0.1	0.2	0.2	0.05	0.05	0.05	0.1	0.05	0.2	0.1	0.2	0.05
NEPM 2013 HIL, Residential A									160													
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																						
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organophosphorous Pesticides													
					Malathion	Merphos	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Phorate	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos
					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					0.05	0.2	0.1	0.1	0.1	0.2	0.2	2	0.1	0.2	0.1	0.2	0.2	0.2
NEPM 2013 HIL, Residential A																		
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																		
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																		
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																		
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																		
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																		
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																		
NEPM 2013 ESL UR/POS, Coarse Soil																		
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**														
AHA101	**AHA101 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA102	**AHA102 0-0.01**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA103	**AHA103 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA103 0.35-0.4	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA104	**AHA104 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA105	**AHA105 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA105 0.2-0.25	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA106	**AHA106 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA107	**AHA107 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP1	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip1	**Interlab_D**	**22 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA108	**AHA108 0.02-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA109	**AHA109 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA110	**AHA110 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip4	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP4	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA111	**AHA111 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA112	**AHA112 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA113	**AHA113 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA113 0.1-0.2	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	**TP1 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP1 0.6-0.7	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2	**TP2 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP2 0.2-0.3	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP3	**TP3 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP4	**TP4 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP4 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5	**TP5 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP5 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP5 1.4-1.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP5 2.2-2.3	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP6	**TP6 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP6 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP7	**TP7 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP8	**TP8 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP8 0.9-1	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP9	**TP9 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP10	**TP10 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP10 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP10 0.7-0.8	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11	**TP11 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP12	**TP12 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP12 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13	**TP13 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP13 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14	**TP14 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP15	**TP15 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organophosphorous Pesticides														
					Malathion	Merphos	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Phorate	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos
					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					0.05	0.2	0.1	0.1	0.1	0.2	0.2	2	0.1	0.2	0.1	0.2	0.2	0.2
NEPM 2013 HIL, Residential A																		
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																		
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																		
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																		
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																		
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																		
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																		
NEPM 2013 ESL UR/POS, Coarse Soil																		
TP16	**TP16 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP17	**TP17 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.5	<0.5	-	<0.5	<0.5	<5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	TP17 0.5-0.6	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP17 1-1.1	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18	**TP18 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP18 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19	**TP19 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP19 0.3-0.4	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP19 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP19 0.8-0.9	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP2	**Field_D**	**24 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Trip2	**Interlab_D**	**24 Apr 2024**	**SE264540**	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
TP20	**TP20 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	TP20 0.4-0.5	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21	**TP21 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP/HA22	**TP/HA22 0-0.1**	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP/HA22 0.2-0.3	**Normal**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP3	**Field_D**	**24 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip3	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organophosphorous Pesticides														
					Malathion	Merphos	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Phorate	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos
					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					0.05	0.2	0.1	0.1	0.1	0.2	0.2	2	0.1	0.2	0.1	0.2	0.2	0.2
NEPM 2013 HIL, Residential A																		
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																		
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																		
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																		
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																		
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CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																		
NEPM 2013 ESL UR/POS, Coarse Soil																		
BH01	BH01_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH01_0.5	Normal	19 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
BH03	BH03_0.3	Normal	19 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
	BH03_0.8-1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH03_1.3-1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04	BH04_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05	BH05_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH05_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06	BH06_0.2	Normal	19 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
	BH06_0.5	Normal	19 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
BH07	BH07_0.5	Normal	19 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
	BH07_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH08	BH08_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH08_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH09	BH09_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11	BH11_0.1	Normal	21 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
BH12	BH12_0.1	Normal	21 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
BH14	BH14_0.2	Normal	20 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
	BH14_1.3	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH14_1.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	BH15_0.2	Normal	20 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
	BH15_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH15_1.4	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Field_D	20 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
	QC400	Interlab_D	20 Dec 2022	957232	<0.5	<0.5	-	<0.5	<0.5	<5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH16	BH16_0.2	Normal	21 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
BH17	BH17_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH17_0.9	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18	BH18_0.2	Normal	21 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
BH19	BH19_0.2	Normal	21 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
	BH19_0.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20	BH20_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH20_1.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH21	BH21_0.8	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22	BH22_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23	BH23_0.1	Normal	21 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
BH24	BH24_0.2	Normal	21 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
BH25	BH25_0.2	Normal	20 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
BH26	BH26_0.2	Normal	19 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
BH27	BH27_0.1-0.2	Normal	19 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
	BH27_0.5	Normal	19 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
	BH27_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	19 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
	QC200	Interlab_D	19 Dec 2022	957232	<0.2	<0.2	-	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH28	BH28_0.2	Normal	19 Dec 2022	SE241126	<0.2	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
	BH28_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA101	HA101-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA102	HA102-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA102_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA103	HA103-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				SE242288A	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA103_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA104	HA104-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA104_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA105	HA105-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA106	HA106-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA100	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC100	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA107	HA107-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA108	HA108-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA108_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA109	HA109-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA109_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA110	HA110-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA111	HA111-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA111_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-

					Organophosphorous Pesticides														
					Malathion	Merphos	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Phorate	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos
					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					0.05	0.2	0.1	0.1	0.1	0.2	0.2	2	0.1	0.2	0.1	0.2	0.2	0.2
NEPM 2013 HIL, Residential A																		
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																		
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																		
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																		
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																		
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																		
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																		
NEPM 2013 ESL UR/POS, Coarse Soil																		
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC200	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA202	DUP1	Field_D	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA202 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Stantec

Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Organophosphorous Pesticides														
					Malathion	Merphos	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Phorate	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos
					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					0.05	0.2	0.1	0.1	0.1	0.2	0.2	2	0.1	0.2	0.1	0.2	0.2	0.2
NEPM 2013 HIL, Residential A																		
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																		
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																		
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																		
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																		
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																		
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																		
NEPM 2013 ESL UR/POS, Coarse Soil																		
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-

					Organophosphorous Pesticides														
					Malathion	Merphos	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Phorate	Pyrazophos	Ronnel	Terbufos	Trichloronate	Tetrachlorvinphos
					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					0.05	0.2	0.1	0.1	0.1	0.2	0.2	2	0.1	0.2	0.1	0.2	0.2	0.2
NEPM 2013 HIL, Residential A																		
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																		
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																		
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																		
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																		
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																		
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																		
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																		
NEPM 2013 ESL UR/POS, Coarse Soil																		
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Herbicides	Insecticides	Pesticides						
					Dinoseb	Tokuthion	Scheduled chemicals (total, NSW Waste 2014)	Moderately harmful pesticides (total)	Fenamiphos	Isodrin	Mirex	Parathion	Pirimiphos-methyl
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					20	0.2			0.05	0.1	0.1	0.1	0.2
NEPM 2013 HIL, Residential A											10		
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand													
NEPM 2013 Sch B1 Table 7 Asbestos HSLs													
PFAS NEMP 2.0 Table 2 Health Residential accessible soil													
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses													
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses													
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND													
NEPM 2013 ESL UR/POS, Coarse Soil													
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**									
AHA101	AHA101 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
AHA102	AHA102 0-0.01	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
AHA103	AHA103 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	AHA103 0.35-0.4	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
AHA104	AHA104 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
AHA105	AHA105 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	AHA105 0.2-0.25	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
AHA106	AHA106 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
AHA107	AHA107 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	DUP1	Field_D	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	Trip1	Interlab_D	22 Apr 2024	SE264540	-	-	-	-	-	-	-	-	-
AHA108	AHA108 0.02-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
AHA109	AHA109 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
AHA110	AHA110 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	Trip4	Interlab_D	24 Apr 2024	SE264540	-	-	-	-	-	-	-	-	-
	DUP4	Field_D	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
AHA111	AHA111 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
AHA112	AHA112 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
AHA113	AHA113 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	AHA113 0.1-0.2	Normal	22 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP1	TP1 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	TP1 0.6-0.7	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP2	TP2 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	TP2 0.2-0.3	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP3	TP3 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
TP4	TP4 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	TP4 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP5	TP5 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	TP5 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	TP5 1.4-1.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	TP5 2.2-2.3	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP6	TP6 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	TP6 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP7	TP7 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
TP8	TP8 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	TP8 0.9-1	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP9	TP9 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
TP10	TP10 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	TP10 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	TP10 0.7-0.8	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP11	TP11 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
TP12	TP12 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	TP12 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP13	TP13 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	TP13 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP14	TP14 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
TP15	TP15 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2

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Project: 304100928
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Remediation Action Plan

					Herbicides	Insecticides	Pesticides						
					Dinoseb	Tokuthion	Scheduled chemicals (total, NSW Waste 2014)	Moderately harmful pesticides (total)	Fenamiphos	Isodrin	Mirex	Parathion	Pirimiphos-methyl
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					20	0.2			0.05	0.1	0.1	0.1	0.2
NEPM 2013 HIL, Residential A											10		
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand													
NEPM 2013 Sch B1 Table 7 Asbestos HSLs													
PFAS NEMP 2.0 Table 2 Health Residential accessible soil													
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses													
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses													
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND													
NEPM 2013 ESL UR/POS, Coarse Soil													
TP16	TP16 0-0.1	Normal	23 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
TP17	TP17 0-0.1	Normal	24 Apr 2024	1091634	<20	<0.5	-	-	-	-	-	<0.5	<0.5
	TP17 0.5-0.6	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	TP17 1-1.1	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP18	TP18 0-0.1	Normal	24 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	TP18 0.4-0.5	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP19	TP19 0-0.1	Normal	24 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	TP19 0.3-0.4	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	TP19 0.4-0.5	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	TP19 0.8-0.9	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	DUP2	Field_D	24 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	Trip2	Interlab_D	24 Apr 2024	SE264540	-	-	-	-	-	<0.1	<0.1	<0.2	-
TP20	TP20 0-0.1	Normal	24 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
	TP20 0.4-0.5	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
TP21	TP21 0-0.1	Normal	24 Apr 2024	1091634	<20	<0.2	-	-	-	-	-	<0.2	<0.2
TP/HA22	TP/HA22 0-0.1	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	TP/HA22 0.2-0.3	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	DUP3	Field_D	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-
	Trip3	Interlab_D	24 Apr 2024	SE264540	-	-	-	-	-	-	-	-	-

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					Herbicides	Insecticides	Pesticides						
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					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					20	0.2			0.05	0.1	0.1	0.1	0.2
NEPM 2013 HIL, Residential A											10		
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand													
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PFAS NEMP 2.0 Table 2 Health Residential accessible soil													
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PFAS NEMP 2020 Ecological Direct exposure - All Land Uses													
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged													
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NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND													
NEPM 2013 ESL UR/POS, Coarse Soil													
BH01	BH01_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
	BH01_0.5	Normal	19 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
BH03	BH03_0.3	Normal	19 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
	BH03_0.8-1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
	BH03_1.3-1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
BH04	BH04_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
BH05	BH05_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
	BH05_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
BH06	BH06_0.2	Normal	19 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
	BH06_0.5	Normal	19 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
BH07	BH07_0.5	Normal	19 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
	BH07_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
BH08	BH08_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
	BH08_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
BH09	BH09_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
BH11	BH11_0.1	Normal	21 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
BH12	BH12_0.1	Normal	21 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
BH14	BH14_0.2	Normal	20 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
	BH14_1.3	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
	BH14_1.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
BH15	BH15_0.2	Normal	20 Dec 2022	SE241126	-	-	0.6	0	-	<0.1	<0.1	<0.2	-
	BH15_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
	BH15_1.4	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
	QA400	Field_D	20 Dec 2022	SE241126	-	-	0.7	0	-	<0.1	<0.1	<0.2	-
	QC400	Interlab_D	20 Dec 2022	957232	-	<0.5	0	0	-	-	-	<0.5	<0.5
BH16	BH16_0.2	Normal	21 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
BH17	BH17_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
	BH17_0.9	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
BH18	BH18_0.2	Normal	21 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
BH19	BH19_0.2	Normal	21 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
	BH19_0.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
BH20	BH20_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
	BH20_1.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
BH21	BH21_0.8	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
BH22	BH22_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
BH23	BH23_0.1	Normal	21 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
BH24	BH24_0.2	Normal	21 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
BH25	BH25_0.2	Normal	20 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
BH26	BH26_0.2	Normal	19 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
BH27	BH27_0.1-0.2	Normal	19 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
	BH27_0.5	Normal	19 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
	BH27_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
	QA200	Field_D	19 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
	QC200	Interlab_D	19 Dec 2022	957232	-	<0.2	0	0	-	-	-	<0.2	<0.2
BH28	BH28_0.2	Normal	19 Dec 2022	SE241126	-	-	0	0	-	<0.1	<0.1	<0.2	-
	BH28_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-
HA101	HA101-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
HA102	HA102-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
	HA102_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-
HA103	HA103-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
				SE242288A	-	-	-	-	-	-	-	-	-
	HA103_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-
HA104	HA104-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
	HA104_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-
HA105	HA105-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
HA106	HA106-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
	QA100	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
	QC100	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-
HA107	HA107-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
HA108	HA108-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
	HA108_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-
HA109	HA109-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
	HA109_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-
HA110	HA110-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
HA111	HA111-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
	HA111_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-

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Project: 304100928
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Remediation Action Plan

					Herbicides	Insecticides	Pesticides						
					Dinoseb	Tokuthion	Scheduled chemicals (total, NSW Waste 2014)	Moderately harmful pesticides (total)	Fenamiphos	Isodrin	Mirex	Parathion	Pirimiphos-methyl
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					20	0.2			0.05	0.1	0.1	0.1	0.2
NEPM 2013 HIL, Residential A											10		
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand													
NEPM 2013 Sch B1 Table 7 Asbestos HSLs													
PFAS NEMP 2.0 Table 2 Health Residential accessible soil													
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses													
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses													
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND													
NEPM 2013 ESL UR/POS, Coarse Soil													
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-
	QA200	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
	QC200	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-
HA202	DUP1	Field_D	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-
	HA202 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-

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					Herbicides	Insecticides	Pesticides						
					Dinoseb	Tokuthion	Scheduled chemicals (total, NSW Waste 2014)	Moderately harmful pesticides (total)	Fenamiphos	Isodrin	Mirex	Parathion	Pirimiphos-methyl
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					20	0.2			0.05	0.1	0.1	0.1	0.2
NEPM 2013 HIL, Residential A											10		
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand													
NEPM 2013 Sch B1 Table 7 Asbestos HSLs													
PFAS NEMP 2.0 Table 2 Health Residential accessible soil													
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses													
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses													
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT													
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND													
NEPM 2013 ESL UR/POS, Coarse Soil													
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-

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EQL					20	0.2			0.05	0.1	0.1	0.1	0.2
NEPM 2013 HIL, Residential A											10		
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NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND													
NEPM 2013 ESL UR/POS, Coarse Soil													
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Polychlorinated Biphenyls										SVOCs	Perfluorocarbons							
					Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Arochlor 1268	Aroclor 1262	PCBs (Sum of total)	EPN	8:2 Fluorotelomer sulfonate	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	Perfluorobutanoic acid (PFBA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexane sulfonic acid (PFHxS)
					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	0.2	0.2	0.1	0.2	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
NEPM 2013 HIL, Residential A														1								
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						0.01
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																						
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**																		
AHA101	**AHA101 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA102	**AHA102 0-0.01**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA103	**AHA103 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA103 0.35-0.4	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA104	**AHA104 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA105	**AHA105 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA105 0.2-0.25	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA106	**AHA106 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA107	**AHA107 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP1	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip1	**Interlab_D**	**22 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA108	**AHA108 0.02-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA109	**AHA109 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA110	**AHA110 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip4	**Interlab_D**	**24 Apr 2024**	**SE264540**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP4	**Field_D**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA111	**AHA111 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA112	**AHA112 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AHA113	**AHA113 0-0.1**	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	AHA113 0.1-0.2	**Normal**	**22 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP1	**TP1 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	-
	TP1 0.6-0.7	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP2	**TP2 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
	TP2 0.2-0.3	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP3	**TP3 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
TP4	**TP4 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
	TP4 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP5	**TP5 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
	TP5 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP5 1.4-1.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP5 2.2-2.3	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP6	**TP6 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
	TP6 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP7	**TP7 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
TP8	**TP8 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
	TP8 0.9-1	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP9	**TP9 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
TP10	**TP10 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
	TP10 0.4-0.5	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP10 0.7-0.8	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11	**TP11 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	-
TP12	**TP12 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
	TP12 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP13	**TP13 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	-
	TP13 0.5-0.6	**Normal**	**23 Apr 2024**	**1091634**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14	**TP14 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
TP15	**TP15 0-0.1**	**Normal**	**23 Apr 2024**	**1091634**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Polychlorinated Biphenyls										SVOCs	Perfluorocarbons						
					Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Arochlor 1268	Aroclor 1262	PCBs (Sum of total)	EPN	8:2 Fluorotelomer sulfonate	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	Perfluorobutanoic acid (PFBA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexane sulfonic acid (PFHxS)
					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	0.2	0.2	0.1	0.2	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
NEPM 2013 HIL, Residential A														1								
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						0.01
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																						
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
TP16	TP16 0-0.1	Normal	23 Apr 2024	1091634	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
TP17	TP17 0-0.1	Normal	24 Apr 2024	1091634	<1	<1	<1	<1	<1	<1	<1	-	-	<1	<0.5	-	-	-	-	-	-	<0.005
	TP17 0.5-0.6	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP17 1-1.1	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP18	TP18 0-0.1	Normal	24 Apr 2024	1091634	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
	TP18 0.4-0.5	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP19	TP19 0-0.1	Normal	24 Apr 2024	1091634	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
	TP19 0.3-0.4	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP19 0.4-0.5	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP19 0.8-0.9	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP2	Field_D	24 Apr 2024	1091634	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	-
	Trip2	Interlab_D	24 Apr 2024	SE264540	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
TP20	TP20 0-0.1	Normal	24 Apr 2024	1091634	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
	TP20 0.4-0.5	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP21	TP21 0-0.1	Normal	24 Apr 2024	1091634	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	<0.005
TP/HA22	TP/HA22 0-0.1	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TP/HA22 0.2-0.3	Normal	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	DUP3	Field_D	24 Apr 2024	1091634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Trip3	Interlab_D	24 Apr 2024	SE264540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Polychlorinated Biphenyls										SVOCs	Perfluorocarbons						
					Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Arochlor 1268	Aroclor 1262	PCBs (Sum of total)	EPN	8:2 Fluorotelomer sulfonate	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	Perfluorobutanoic acid (PFBA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexane sulfonic acid (PFHxS)
					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	0.2	0.2	0.1	0.2	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
NEPM 2013 HIL, Residential A														1								
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						0.01
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																						
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
BH01	BH01_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH01_0.5	Normal	19 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
BH03	BH03_0.3	Normal	19 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
	BH03_0.8-1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH03_1.3-1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04	BH04_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05	BH05_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH05_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06	BH06_0.2	Normal	19 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
	BH06_0.5	Normal	19 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
BH07	BH07_0.5	Normal	19 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
	BH07_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH08	BH08_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH08_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH09	BH09_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH11	BH11_0.1	Normal	21 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
BH12	BH12_0.1	Normal	21 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
BH14	BH14_0.2	Normal	20 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
	BH14_1.3	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH14_1.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH15	BH15_0.2	Normal	20 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
	BH15_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH15_1.4	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Field_D	20 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
	QC400	Interlab_D	20 Dec 2022	957232	<1	<1	<1	<1	<1	<1	<1	-	-	<1	<0.5	-	-	-	-	-	-	-
BH16	BH16_0.2	Normal	21 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
BH17	BH17_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH17_0.9	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH18	BH18_0.2	Normal	21 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
BH19	BH19_0.2	Normal	21 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
	BH19_0.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH20	BH20_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	BH20_1.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH21	BH21_0.8	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22	BH22_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23	BH23_0.1	Normal	21 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
BH24	BH24_0.2	Normal	21 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
BH25	BH25_0.2	Normal	20 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
BH26	BH26_0.2	Normal	19 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
BH27	BH27_0.1-0.2	Normal	19 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
	BH27_0.5	Normal	19 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
	BH27_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	19 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
	QC200	Interlab_D	19 Dec 2022	957232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.2	-	-	-	-	-	-	-
BH28	BH28_0.2	Normal	19 Dec 2022	SE241126	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
	BH28_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA101	HA101-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA102	HA102-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA102_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA103	HA103-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				SE242288A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA103_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA104	HA104-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA104_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA105	HA105-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA106	HA106-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA100	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC100	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA107	HA107-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA108	HA108-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA108_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA109	HA109-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA109_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA110	HA110-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA111	HA111-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA111_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Stantec

Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Polychlorinated Biphenyls										SVOCs	Perfluorocarbons						
					Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Arochlor 1268	Aroclor 1262	PCBs (Sum of total)	EPN	8:2 Fluorotelomer sulfonate	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	Perfluorobutanoic acid (PFBA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexane sulfonic acid (PFHxS)
					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	0.2	0.2	0.1	0.2	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
NEPM 2013 HIL, Residential A														1								
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						0.01
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																						
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QC200	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA202	DUP1	Field_D	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	HA202 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Polychlorinated Biphenyls										SVOCs	Perfluorocarbons						
					Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Arochlor 1268	Aroclor 1262	PCBs (Sum of total)	EPN	8:2 Fluorotelomer sulfonate	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	Perfluorobutanoic acid (PFBA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexane sulfonic acid (PFHxS)
					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	0.2	0.2	0.1	0.2	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
NEPM 2013 HIL, Residential A														1								
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						0.01
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																						
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Polychlorinated Biphenyls										SVOCs	Perfluorocarbons						
					Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Arochlor 1268	Aroclor 1262	PCBs (Sum of total)	EPN	8:2 Fluorotelomer sulfonate	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanoic acid (PFHxA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	Perfluorobutanoic acid (PFBA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorohexane sulfonic acid (PFHxS)
					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	0.2	0.2	0.1	0.2	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016	0.0016
NEPM 2013 HIL, Residential A														1								
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand																						
NEPM 2013 Sch B1 Table 7 Asbestos HSLs																						
PFAS NEMP 2.0 Table 2 Health Residential accessible soil																						0.01
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses																						
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses																						
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT																						
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND																						
NEPM 2013 ESL UR/POS, Coarse Soil																						
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Perfluorocarbons					
					Perfluorooctane sulfonic acid (PFOS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Sum of PFHxS and PFOS	6:2 Fluorotelomer Sulfonate (6:2 FtS)	Perfluorooctanoate (PFOA)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.0016	0.0016	0.0016	0.0016	0.01	0.0008
NEPM 2013 HIL, Residential A										
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand										
NEPM 2013 Sch B1 Table 7 Asbestos HSLs										
PFAS NEMP 2.0 Table 2 Health Residential accessible soil					0.01			0.01		0.1
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses					0.01					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses					1			20		50
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND										
NEPM 2013 ESL UR/POS, Coarse Soil										
Location Code	**Field ID**	**Sample Type**	**Date**	**Lab Report Number**						
AHA101	AHA101 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
AHA102	AHA102 0-0.01	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
AHA103	AHA103 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
	AHA103 0.35-0.4	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
AHA104	AHA104 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
AHA105	AHA105 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
	AHA105 0.2-0.25	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
AHA106	AHA106 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
AHA107	AHA107 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
	DUP1	Field_D	22 Apr 2024	1091634	-	-	-	-	-	-
	Trip1	Interlab_D	22 Apr 2024	SE264540	-	-	-	-	-	-
AHA108	AHA108 0.02-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
AHA109	AHA109 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
AHA110	AHA110 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
	Trip4	Interlab_D	24 Apr 2024	SE264540	-	-	-	-	-	-
	DUP4	Field_D	22 Apr 2024	1091634	-	-	-	-	-	-
AHA111	AHA111 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
AHA112	AHA112 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
AHA113	AHA113 0-0.1	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
	AHA113 0.1-0.2	Normal	22 Apr 2024	1091634	-	-	-	-	-	-
TP1	TP1 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
	TP1 0.6-0.7	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
TP2	TP2 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
	TP2 0.2-0.3	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
TP3	TP3 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
TP4	TP4 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
	TP4 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
TP5	TP5 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
	TP5 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
	TP5 1.4-1.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
	TP5 2.2-2.3	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
TP6	TP6 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
	TP6 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
TP7	TP7 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
TP8	TP8 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
	TP8 0.9-1	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
TP9	TP9 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
TP10	TP10 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
	TP10 0.4-0.5	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
	TP10 0.7-0.8	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
TP11	TP11 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
TP12	TP12 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
	TP12 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
TP13	TP13 0-0.1	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
	TP13 0.5-0.6	Normal	23 Apr 2024	1091634	-	-	-	-	-	-
TP14	TP14 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
TP15	TP15 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005

					Perfluorocarbons					
					Perfluorooctane sulfonic acid (PFOS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Sum of PFHxS and PFOS	6:2 Fluorotelomer Sulfonate (6:2 FtS)	Perfluorooctanoate (PFOA)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.0016	0.0016	0.0016	0.0016	0.01	0.0008
NEPM 2013 HIL, Residential A										
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand										
NEPM 2013 Sch B1 Table 7 Asbestos HSLs										
PFAS NEMP 2.0 Table 2 Health Residential accessible soil					0.01			0.01		0.1
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses					0.01					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses					1			20		50
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND										
NEPM 2013 ESL UR/POS, Coarse Soil										
TP16	TP16 0-0.1	Normal	23 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
TP17	TP17 0-0.1	Normal	24 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
	TP17 0.5-0.6	Normal	24 Apr 2024	1091634	-	-	-	-	-	-
	TP17 1-1.1	Normal	24 Apr 2024	1091634	-	-	-	-	-	-
TP18	TP18 0-0.1	Normal	24 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
	TP18 0.4-0.5	Normal	24 Apr 2024	1091634	-	-	-	-	-	-
TP19	TP19 0-0.1	Normal	24 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
	TP19 0.3-0.4	Normal	24 Apr 2024	1091634	-	-	-	-	-	-
	TP19 0.4-0.5	Normal	24 Apr 2024	1091634	-	-	-	-	-	-
	TP19 0.8-0.9	Normal	24 Apr 2024	1091634	-	-	-	-	-	-
	DUP2	Field_D	24 Apr 2024	1091634	-	-	-	-	-	-
	Trip2	Interlab_D	24 Apr 2024	SE264540	-	-	-	-	-	-
TP20	TP20 0-0.1	Normal	24 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
	TP20 0.4-0.5	Normal	24 Apr 2024	1091634	-	-	-	-	-	-
TP21	TP21 0-0.1	Normal	24 Apr 2024	1091634	<0.005	-	-	<0.005	<0.01	<0.005
TP/HA22	TP/HA22 0-0.1	Normal	24 Apr 2024	1091634	-	-	-	-	-	-
	TP/HA22 0.2-0.3	Normal	24 Apr 2024	1091634	-	-	-	-	-	-
	DUP3	Field_D	24 Apr 2024	1091634	-	-	-	-	-	-
	Trip3	Interlab_D	24 Apr 2024	SE264540	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Perfluorocarbons					
					Perfluorooctane sulfonic acid (PFOS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Sum of PFHxS and PFOS	6:2 Fluorotelomer Sulfonate (6:2 FtS)	Perfluorooctanoate (PFOA)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.0016	0.0016	0.0016	0.0016	0.01	0.0008
NEPM 2013 HIL, Residential A										
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand										
NEPM 2013 Sch B1 Table 7 Asbestos HSLs										
PFAS NEMP 2.0 Table 2 Health Residential accessible soil					0.01			0.01		0.1
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses					0.01					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses					1			20		50
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND										
NEPM 2013 ESL UR/POS, Coarse Soil										
BH01	BH01_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-
	BH01_0.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
BH03	BH03_0.3	Normal	19 Dec 2022	SE241126	<0.0016	<0.0016	<0.0016	<0.0016	-	<0.0008
	BH03_0.8-1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
	BH03_1.3-1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
BH04	BH04_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
BH05	BH05_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
	BH05_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
BH06	BH06_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
	BH06_0.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
BH07	BH07_0.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
	BH07_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
BH08	BH08_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-
	BH08_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-
BH09	BH09_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
BH11	BH11_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
BH12	BH12_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
BH14	BH14_0.2	Normal	20 Dec 2022	SE241126	<0.0016	<0.0016	<0.0016	<0.0016	-	<0.0008
	BH14_1.3	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-
	BH14_1.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-
BH15	BH15_0.2	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-
	BH15_0.5	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-
	BH15_1.4	Normal	20 Dec 2022	SE241126	-	-	-	-	-	-
	QA400	Field_D	20 Dec 2022	SE241126	-	-	-	-	-	-
	QC400	Interlab_D	20 Dec 2022	957232	-	-	-	-	-	-
BH16	BH16_0.2	Normal	21 Dec 2022	SE241126	<0.0016	<0.0016	<0.0016	<0.0016	-	<0.0008
BH17	BH17_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
	BH17_0.9	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
BH18	BH18_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
BH19	BH19_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
	BH19_0.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
BH20	BH20_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
	BH20_1.5	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
BH21	BH21_0.8	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
BH22	BH22_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
BH23	BH23_0.1	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
BH24	BH24_0.2	Normal	21 Dec 2022	SE241126	-	-	-	-	-	-
BH25	BH25_0.2	Normal	20 Dec 2022	SE241126	<0.0016	<0.0016	<0.0016	<0.0016	-	<0.0008
BH26	BH26_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
BH27	BH27_0.1-0.2	Normal	19 Dec 2022	SE241126	<0.0016	<0.0016	<0.0016	<0.0016	-	<0.0008
	BH27_0.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
	BH27_1.5	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
	QA200	Field_D	19 Dec 2022	SE241126	-	-	-	-	-	-
	QC200	Interlab_D	19 Dec 2022	957232	-	-	-	-	-	-
BH28	BH28_0.2	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
	BH28_1.0	Normal	19 Dec 2022	SE241126	-	-	-	-	-	-
HA101	HA101-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
HA102	HA102-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
	HA102_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-
HA103	HA103-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
				SE242288A	-	-	-	-	-	-
	HA103_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-
HA104	HA104-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
	HA104_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-
HA105	HA105-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
HA106	HA106-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
	QA100	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-
	QC100	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-
HA107	HA107-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
HA108	HA108-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
	HA108_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-
HA109	HA109-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
	HA109_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-
HA110	HA110-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
HA111	HA111-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
	HA111_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Perfluorocarbons					
					Perfluorooctane sulfonic acid (PFOS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Sum of PFHxS and PFOS	6:2 Fluorotelomer Sulfonate (6:2 FtS)	Perfluorooctanoate (PFOA)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.0016	0.0016	0.0016	0.0016	0.01	0.0008
NEPM 2013 HIL, Residential A										
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand										
NEPM 2013 Sch B1 Table 7 Asbestos HSLs										
PFAS NEMP 2.0 Table 2 Health Residential accessible soil					0.01			0.01		0.1
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses					0.01					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses					1			20		50
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND										
NEPM 2013 ESL UR/POS, Coarse Soil										
HA112	HA112-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
	HA112_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-
	QA200	Field_D	25 Jan 2023	SE242288	-	-	-	-	-	-
	QC200	Interlab_D	25 Jan 2023	960232	-	-	-	-	-	-
HA113	HA113-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
HA114	HA114-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
HA115	HA115-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
HA116	HA116-0.1	Normal	25 Jan 2023	SE242288	-	-	-	-	-	-
	HA116_0.3	Normal	25 Jan 2023	SE242288B	-	-	-	-	-	-
HA201	HA201 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-
HA202	DUP1	Field_D	03 Feb 2023	SE242738	-	-	-	-	-	-
	HA202 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-
HA203	HA203 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-
HA204	HA204 0.1	Normal	03 Feb 2023	SE242738	-	-	-	-	-	-
HA301	HA301_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA302	HA302_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA303	HA303_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA304	HA304_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA305	HA305_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA306	HA306_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA307	HA307_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA308	HA308_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA309	HA309_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA310	HA310_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA311	HA311_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
	QA111	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-
HA312	HA312_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA313	HA313_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA314	HA314_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA315	HA315_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA316	HA316_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA317	HA317_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA318	HA318_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA319	HA319_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA320	HA320_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
	QA112	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-
HA321	HA321_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA322	HA322_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA323	HA323_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA324	HA324_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA325	HA325_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
	QA113	Field_D	10 Feb 2023	SE243062	-	-	-	-	-	-
HA326	HA326_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA327	HA327_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA328	HA328_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA329	HA329_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA330	HA330_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
HA331	HA331_0.1	Normal	10 Feb 2023	SE243062	-	-	-	-	-	-
QC111	QC111	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-
QC112	QC112	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-
QC113	QC113	Interlab_D	10 Feb 2023	964020	-	-	-	-	-	-
VAL_B01	VAL_B01	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-
VAL_B02	VAL_B02	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-
VAL_B03	VAL_B03	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-
VAL_B04	VAL_B04	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-
VAL_B05	VAL_B05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-
VAL_B06	VAL_B06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-
VAL_B07	VAL_B07	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-
VAL_W01	VAL_W01_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-
VAL_W02	VAL_W02_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-
VAL_W03	VAL_W03_0.3	Normal	17 Apr 2023	ES2312555-AA	-	-	-	-	-	-
VAL_W04	VAL_W04	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-
VAL_W05	VAL_W05	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-
VAL_W06	VAL_W06	Normal	18 Apr 2023	ES2312724	-	-	-	-	-	-
VAL_W07	VAL_W07	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-
VAL_W08	VAL_W08	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-

					Perfluorocarbons					
					Perfluorooctane sulfonic acid (PFOS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Sum of PFHxS and PFOS	6:2 Fluorotelomer Sulfonate (6:2 FtS)	Perfluorooctanoate (PFOA)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.0016	0.0016	0.0016	0.0016	0.01	0.0008
NEPM 2013 HIL, Residential A										
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand										
NEPM 2013 Sch B1 Table 7 Asbestos HSLs										
PFAS NEMP 2.0 Table 2 Health Residential accessible soil					0.01			0.01		0.1
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses					0.01					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses					1			20		50
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND										
NEPM 2013 ESL UR/POS, Coarse Soil										
VAL_W09	VAL_W09	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-
VAL_W10	VAL_W10	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-
VAL_W11	VAL_W11	Normal	17 Apr 2023	ES2312724	-	-	-	-	-	-
VAL-B08	VAL-B08	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VAL-B09	VAL-B09	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VAL-B10	VAL-B10	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALC-B01	QA100	Field_D	19 Apr 2023	982613	-	-	-	-	-	-
	QA200	Interlab_D	19 Apr 2023	321513	-	-	-	-	-	-
	VALC-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-B02	VALC-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-B03	VALC-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-B04	VALC-B04	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-B05	QA300	Field_D	19 Apr 2023	982613	-	-	-	-	-	-
	QA400	Normal	19 Apr 2023	321513	-	-	-	-	-	-
	VALC-B05	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-B06	VALC-B06	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-B07	VALC-B07	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-B08	VALC-B08	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-B09	VALC-B09	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-B10	VALC-B10	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W01	VALC-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W02	VALC-W02-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W04	VALC-W04-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W05	VALC-W05-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W06	VALC-W06-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W07	VALC-W07-0.4	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W08	VALC-W08-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W09	VALC-W09-0.45	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W10	VALC-W10-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W11	VALC-W11-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W12	VALC-W12-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W13	VALC-W13-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W14	VALC-W14-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W15	VALC-W15-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALC-W16	VALC-W16-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALE-B01	VALE-B01	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-B02	VALE-B02	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-B03	VALE-B03	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-B04	VALE-B04	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-W01	VALE-W01-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-W02	VALE-W02-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-W03	VALE-W03-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-W04	VALE-W04-0.4	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-W05	VALE-W05-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-W06	VALE-W06-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-W07	VALE-W07-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-W08	VALE-W08-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-W09	VALE-W09-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-

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Table 1: Soil Analytical Results

Project: 304100928
Site: Gillieston Public School
Remediation Action Plan

					Perfluorocarbons					
					Perfluorooctane sulfonic acid (PFOS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Sum of PFHxS and PFOS	6:2 Fluorotelomer Sulfonate (6:2 FtS)	Perfluorooctanoate (PFOA)
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.0016	0.0016	0.0016	0.0016	0.01	0.0008
NEPM 2013 HIL, Residential A										
NEPM 2013 Soil HSL Residential A&B, for Vapour Intrusion, Sand										
NEPM 2013 Sch B1 Table 7 Asbestos HSLs										
PFAS NEMP 2.0 Table 2 Health Residential accessible soil					0.01			0.01		0.1
PFAS NEMP 2020 Ecological indirect exposure - All Land Uses					0.01					
PFAS NEMP 2020 Ecological Direct exposure - All Land Uses					1			20		50
CRCCARE 2011 Soil HSL for Direct Contact, HSL-A Residential										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Sandy to gravelly SILT										
NEPM 2013 EIL UR/POS, low pH, CEC, clay content - aged - Clayey to gravelly SAND										
NEPM 2013 ESL UR/POS, Coarse Soil										
VALE-W10	VALE-W10-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-W11	VALE-W11-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALE-W12	VALE-W12-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VALN-B01	VALN-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALN-B02	QA500	Field_D	19 Apr 2023	982613	-	-	-	-	-	-
	QA600	Normal	19 Apr 2023	321513	-	-	-	-	-	-
	VALN-B02	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALN-B03	VALN-B03	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALN-W01	VALN-W01-0.3	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALN-W02	VALN-W02-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALN-W03	VALN-W03-0.1	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALN-W04	VALN-W04-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALN-W05	VALN-W05-0.35	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALN-W06	VALN-W06-0.15	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALN-W07	VALN-W07-0.25	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALS-B01	QA700	Field_D	19 Apr 2023	982613	-	-	-	-	-	-
	QA800	Normal	19 Apr 2023	321513	-	-	-	-	-	-
	VALS-B01	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VALS-W01	VALS-W01-0.2	Normal	19 Apr 2023	982613	-	-	-	-	-	-
VAL-W12	VAL-W12-0.3	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VAL-W13	VAL-W13-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VAL-W14	VAL-W14-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VAL-W15	VAL-W15-0.35	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VAL-W16	VAL-W16-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VAL-W17	VAL-W17-0.1	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VAL-W18	VAL-W18-0.2	Normal	19 Apr 2023	982292	-	-	-	-	-	-
VAL-W19	VAL-W19-0.25	Normal	19 Apr 2023	982292	-	-	-	-	-	-

Appendix G – WASTE TRACKING TEMPLATE

Appendix G – Waste Tracking Template

Table 21-1 Example Waste Tracking Template

Waste Classification Certificate Reference	Waste Category	Site Area	Stockpile ID	Volume (T)	Date Disposed	Truck Rego	Disposal Facility	EPL	Date Received	Tonnage Received

Appendix H – XREF METHODOLOGY

FIELD PORTABLE X-RAY FLUORESCENCE SPECTROMETRY FOR THE DETERMINATION OF ELEMENTAL CONCENTRATIONS IN SOIL AND SEDIMENT

SW-846 is not intended to be an analytical training manual. Therefore, method procedures are written based on the assumption that they will be performed by analysts who are formally trained in at least the basic principles of chemical analysis and in the use of the subject technology.

In addition, SW-846 methods, with the exception of required method use for the analysis of method-defined parameters, are intended to be guidance methods which contain general information on how to perform an analytical procedure or technique which a laboratory can use as a basic starting point for generating its own detailed Standard Operating Procedure (SOP), either for its own general use or for a specific project application. The performance data included in this method are for guidance purposes only, and are not intended to be and must not be used as absolute QC acceptance criteria for purposes of laboratory accreditation.

1.0 SCOPE AND APPLICATION

1.1 This method is applicable to the in situ and intrusive analysis of the 26 analytes listed below for soil and sediment samples. Some common elements are not listed in this method because they are considered "light" elements that cannot be detected by field portable x-ray fluorescence (FPXRF). These light elements are: lithium, beryllium, sodium, magnesium, aluminum, silicon, and phosphorus. Most of the analytes listed below are of environmental concern, while a few others have interference effects or change the elemental composition of the matrix, affecting quantitation of the analytes of interest. Generally elements of atomic number 16 or greater can be detected and quantitated by FPXRF. The following RCRA analytes have been determined by this method:

Analytes	CAS Registry No.
Antimony (Sb)	7440-36-0
Arsenic (As)	7440-38-0
Barium (Ba)	7440-39-3
Cadmium (Cd)	7440-43-9
Chromium (Cr)	7440-47-3
Cobalt (Co)	7440-48-4
Copper (Cu)	7440-50-8
Lead (Pb)	7439-92-1
Mercury (Hg)	7439-97-6
Nickel (Ni)	7440-02-0
Selenium (Se)	7782-49-2
Silver (Ag)	7440-22-4
Thallium (Tl)	7440-28-0
Tin (Sn)	7440-31-5

Analytes	CAS Registry No.
Vanadium (V)	7440-62-2
Zinc (Zn)	7440-66-6

In addition, the following non-RCRA analytes have been determined by this method:

Analytes	CAS Registry No.
Calcium (Ca)	7440-70-2
Iron (Fe)	7439-89-6
Manganese (Mn)	7439-96-5
Molybdenum (Mo)	7439-93-7
Potassium (K)	7440-09-7
Rubidium (Rb)	7440-17-7
Strontium (Sr)	7440-24-6
Thorium (Th)	7440-29-1
Titanium (Ti)	7440-32-6
Zirconium (Zr)	7440-67-7

1.2 This method is a screening method to be used with confirmatory analysis using other techniques (e.g., flame atomic absorption spectrometry (FLAA), graphite furnance atomic absorption spectrometry (GFAA), inductively coupled plasma-atomic emission spectrometry, (ICP-AES), or inductively coupled plasma-mass spectrometry, (ICP-MS)). This method's main strength is that it is a rapid field screening procedure. The method's lower limits of detection are typically above the toxicity characteristic regulatory level for most RCRA analytes. However, when the obtainable values for precision, accuracy, and laboratory-established sensitivity of this method meet project-specific data quality objectives (DQOs), FPXRF is a fast, powerful, cost effective technology for site characterization.

1.3 The method sensitivity or lower limit of detection depends on several factors, including the analyte of interest, the type of detector used, the type of excitation source, the strength of the excitation source, count times used to irradiate the sample, physical matrix effects, chemical matrix effects, and interelement spectral interferences. Example lower limits of detection for analytes of interest in environmental applications are shown in Table 1. These limits apply to a clean spiked matrix of quartz sand (silicon dioxide) free of interelement spectral interferences using long (100 -600 second) count times. These sensitivity values are given for guidance only and may not always be achievable, since they will vary depending on the sample matrix, which instrument is used, and operating conditions. A discussion of performance-based sensitivity is presented in Sec. 9.6.

1.4 Analysts should consult the disclaimer statement at the front of the manual and the information in Chapter Two for guidance on the intended flexibility in the choice of methods, apparatus, materials, reagents, and supplies, and on the responsibilities of the analyst for demonstrating that the techniques employed are appropriate for the analytes of interest, in the matrix of interest, and at the levels of concern.

In addition, analysts and data users are advised that, except where explicitly specified in a regulation, the use of SW-846 methods is *not* mandatory in response to Federal testing requirements. The information contained in this method is provided by EPA as guidance to be used by the analyst and the regulated community in making judgments necessary to generate results that meet the data quality objectives for the intended application.

1.5 Use of this method is restricted to use by, or under supervision of, personnel appropriately experienced and trained in the use and operation of an XRF instrument. Each analyst must demonstrate the ability to generate acceptable results with this method.

2.0 SUMMARY OF METHOD

2.1 The FPXRF technologies described in this method use either sealed radioisotope sources or x-ray tubes to irradiate samples with x-rays. When a sample is irradiated with x-rays, the source x-rays may undergo either scattering or absorption by sample atoms. This latter process is known as the photoelectric effect. When an atom absorbs the source x-rays, the incident radiation dislodges electrons from the innermost shells of the atom, creating vacancies. The electron vacancies are filled by electrons cascading in from outer electron shells. Electrons in outer shells have higher energy states than inner shell electrons, and the outer shell electrons give off energy as they cascade down into the inner shell vacancies. This rearrangement of electrons results in emission of x-rays characteristic of the given atom. The emission of x-rays, in this manner, is termed x-ray fluorescence.

Three electron shells are generally involved in emission of x-rays during FPXRF analysis of environmental samples. The three electron shells include the K, L, and M shells. A typical emission pattern, also called an emission spectrum, for a given metal has multiple intensity peaks generated from the emission of K, L, or M shell electrons. The most commonly measured x-ray emissions are from the K and L shells; only metals with an atomic number greater than 57 have measurable M shell emissions.

Each characteristic x-ray line is defined with the letter K, L, or M, which signifies which shell had the original vacancy and by a subscript alpha (α), beta (β), or gamma (γ) etc., which indicates the higher shell from which electrons fell to fill the vacancy and produce the x-ray. For example, a K_α line is produced by a vacancy in the K shell filled by an L shell electron, whereas a K_β line is produced by a vacancy in the K shell filled by an M shell electron. The K_α transition is on average 6 to 7 times more probable than the K_β transition; therefore, the K_α line is approximately 7 times more intense than the K_β line for a given element, making the K_α line the choice for quantitation purposes.

The K lines for a given element are the most energetic lines and are the preferred lines for analysis. For a given atom, the x-rays emitted from L transitions are always less energetic than those emitted from K transitions. Unlike the K lines, the main L emission lines (L_α and L_β) for an element are of nearly equal intensity. The choice of one or the other depends on what interfering element lines might be present. The L emission lines are useful for analyses involving elements of atomic number (Z) 58 (cerium) through 92 (uranium).

An x-ray source can excite characteristic x-rays from an element only if the source energy is greater than the absorption edge energy for the particular line group of the element, that is, the K absorption edge, L absorption edge, or M absorption edge energy. The absorption edge energy is somewhat greater than the corresponding line energy. Actually, the K absorption edge energy is approximately the sum of the K, L, and M line energies of the particular element, and the L absorption edge energy is approximately the sum of the L and M line energies. FPXRF is more sensitive to an element with an absorption edge energy close to but less than

the excitation energy of the source. For example, when using a cadmium-109 source, which has an excitation energy of 22.1 kiloelectron volts (keV), FPXRF would exhibit better sensitivity for zirconium which has a K line energy of 15.77 keV than to chromium, which has a K line energy of 5.41 keV.

2.2 Under this method, inorganic analytes of interest are identified and quantitated using a field portable energy-dispersive x-ray fluorescence spectrometer. Radiation from one or more radioisotope sources or an electrically excited x-ray tube is used to generate characteristic x-ray emissions from elements in a sample. Up to three sources may be used to irradiate a sample. Each source emits a specific set of primary x-rays that excite a corresponding range of elements in a sample. When more than one source can excite the element of interest, the source is selected according to its excitation efficiency for the element of interest.

For measurement, the sample is positioned in front of the probe window. This can be done in two manners using FPXRF instruments, specifically, in situ or intrusive. If operated in the in situ mode, the probe window is placed in direct contact with the soil surface to be analyzed. When an FPXRF instrument is operated in the intrusive mode, a soil or sediment sample must be collected, prepared, and placed in a sample cup. The sample cup is then placed on top of the window inside a protective cover for analysis.

Sample analysis is then initiated by exposing the sample to primary radiation from the source. Fluorescent and backscattered x-rays from the sample enter through the detector window and are converted into electric pulses in the detector. The detector in FPXRF instruments is usually either a solid-state detector or a gas-filled proportional counter. Within the detector, energies of the characteristic x-rays are converted into a train of electric pulses, the amplitudes of which are linearly proportional to the energy of the x-rays. An electronic multichannel analyzer (MCA) measures the pulse amplitudes, which is the basis of qualitative x-ray analysis. The number of counts at a given energy per unit of time is representative of the element concentration in a sample and is the basis for quantitative analysis. Most FPXRF instruments are menu-driven from software built into the units or from personal computers (PC).

The measurement time of each source is user-selectable. Shorter source measurement times (30 seconds) are generally used for initial screening and hot spot delineation, and longer measurement times (up to 300 seconds) are typically used to meet higher precision and accuracy requirements.

FPXRF instruments can be calibrated using the following methods: internally using fundamental parameters determined by the manufacturer, empirically based on site-specific calibration standards (SSCS), or based on Compton peak ratios. The Compton peak is produced by backscattering of the source radiation. Some FPXRF instruments can be calibrated using multiple methods.

3.0 DEFINITIONS

3.1 FPXRF -- Field portable x-ray fluorescence.

3.2 MCA -- Multichannel analyzer for measuring pulse amplitude.

3.3 SSCS -- Site-specific calibration standards.

3.4 FP -- Fundamental parameter.

3.5 ROI -- Region of interest.

3.6 SRM -- Standard reference material; a standard containing certified amounts of metals in soil or sediment.

3.7 eV -- Electron volt; a unit of energy equivalent to the amount of energy gained by an electron passing through a potential difference of one volt.

3.8 Refer to Chapter One, Chapter Three, and the manufacturer's instructions for other definitions that may be relevant to this procedure.

4.0 INTERFERENCES

4.1 The total method error for FPXRF analysis is defined as the square root of the sum of squares of both instrument precision and user- or application-related error. Generally, instrument precision is the least significant source of error in FPXRF analysis. User- or application-related error is generally more significant and varies with each site and method used. Some sources of interference can be minimized or controlled by the instrument operator, but others cannot. Common sources of user- or application-related error are discussed below.

4.2 Physical matrix effects result from variations in the physical character of the sample. These variations may include such parameters as particle size, uniformity, homogeneity, and surface condition. For example, if any analyte exists in the form of very fine particles in a coarser-grained matrix, the analyte’s concentration measured by the FPXRF will vary depending on how fine particles are distributed within the coarser-grained matrix. If the fine particles "settle" to the bottom of the sample cup (i.e., against the cup window), the analyte concentration measurement will be higher than if the fine particles are not mixed in well and stay on top of the coarser-grained particles in the sample cup. One way to reduce such error is to grind and sieve all soil samples to a uniform particle size thus reducing sample-to-sample particle size variability. Homogeneity is always a concern when dealing with soil samples. Every effort should be made to thoroughly mix and homogenize soil samples before analysis. Field studies have shown heterogeneity of the sample generally has the largest impact on comparability with confirmatory samples.

4.3 Moisture content may affect the accuracy of analysis of soil and sediment sample analyses. When the moisture content is between 5 and 20 percent, the overall error from moisture may be minimal. However, moisture content may be a major source of error when analyzing samples of surface soil or sediment that are saturated with water. This error can be minimized by drying the samples in a convection or toaster oven. Microwave drying is not recommended because field studies have shown that microwave drying can increase variability between FPXRF data and confirmatory analysis and because metal fragments in the sample can cause arcing to occur in a microwave.

4.4 Inconsistent positioning of samples in front of the probe window is a potential source of error because the x-ray signal decreases as the distance from the radioactive source increases. This error is minimized by maintaining the same distance between the window and each sample. For the best results, the window of the probe should be in direct contact with the sample, which means that the sample should be flat and smooth to provide a good contact surface.

4.5 Chemical matrix effects result from differences in the concentrations of interfering elements. These effects occur as either spectral interferences (peak overlaps) or as x-ray absorption and enhancement phenomena. Both effects are common in soils contaminated with heavy metals. As examples of absorption and enhancement effects; iron (Fe) tends to absorb copper (Cu) x-rays, reducing the intensity of the Cu measured by the detector, while chromium (Cr) will be enhanced at the expense of Fe because the absorption edge of Cr is slightly lower in energy than the fluorescent peak of iron. The effects can be corrected mathematically through the use of fundamental parameter (FP) coefficients. The effects also can be compensated for using SSCS, which contain all the elements present on site that can interfere with one another.

4.6 When present in a sample, certain x-ray lines from different elements can be very close in energy and, therefore, can cause interference by producing a severely overlapped spectrum. The degree to which a detector can resolve the two different peaks depends on the energy resolution of the detector. If the energy difference between the two peaks in electron volts is less than the resolution of the detector in electron volts, then the detector will not be able to fully resolve the peaks.

The most common spectrum overlaps involve the K_β line of element Z-1 with the K_α line of element Z. This is called the K_α/K_β interference. Because the K_α:K_β intensity ratio for a given element usually is about 7:1, the interfering element, Z-1, must be present at large concentrations to cause a problem. Two examples of this type of spectral interference involve the presence of large concentrations of vanadium (V) when attempting to measure Cr or the presence of large concentrations of Fe when attempting to measure cobalt (Co). The V K_α and K_β energies are 4.95 and 5.43 keV, respectively, and the Cr K_α energy is 5.41 keV. The Fe K_α and K_β energies are 6.40 and 7.06 keV, respectively, and the Co K_α energy is 6.92 keV. The difference between the V K_β and Cr K_α energies is 20 eV, and the difference between the Fe K_β and the Co K_α energies is 140 eV. The resolution of the highest-resolution detectors in FPXRF instruments is 170 eV. Therefore, large amounts of V and Fe will interfere with quantitation of Cr or Co, respectively. The presence of Fe is a frequent problem because it is often found in soils at tens of thousands of parts per million (ppm).

4.7 Other interferences can arise from K/L, K/M, and L/M line overlaps, although these overlaps are less common. Examples of such overlap involve arsenic (As) K_α/lead (Pb) L_α and sulfur (S) K_α/Pb M_α. In the As/Pb case, Pb can be measured from the Pb L_β line, and As can be measured from either the As K_α or the As $K_ß$ line; in this way the interference can be corrected. If the As K_β line is used, sensitivity will be decreased by a factor of two to five times because it is a less intense line than the As K_α line. If the As K_α line is used in the presence of Pb, mathematical corrections within the instrument software can be used to subtract out the Pb interference. However, because of the limits of mathematical corrections, As concentrations cannot be efficiently calculated for samples with Pb:As ratios of 10:1 or more. This high ratio of Pb to As may result in reporting of a "nondetect" or a "less than" value (e.g., <300 ppm) for As, regardless of the actual concentration present.

No instrument can fully compensate for this interference. It is important for an operator to understand this limitation of FPXRF instruments and consult with the manufacturer of the FPXRF instrument to evaluate options to minimize this limitation. The operator’s decision will be based on action levels for metals in soil established for the site, matrix effects, capabilities of the instrument, data quality objectives, and the ratio of lead to arsenic known to be present at the site. If a site is encountered that contains lead at concentrations greater than ten times the concentration of arsenic it is advisable that all critical soil samples be sent off site for confirmatory analysis using other techniques (e.g., flame atomic absorption spectrometry (FLAA), graphite furnance atomic absorption spectrometry (GFAA), inductively coupled plasma-

atomic emission spectrometry, (ICP-AES), or inductively coupled plasma-mass spectrometry, (ICP-MS)).

4.8 If SSCS are used to calibrate an FPXRF instrument, the samples collected must be representative of the site under investigation. Representative soil sampling ensures that a sample or group of samples accurately reflects the concentrations of the contaminants of concern at a given time and location. Analytical results for representative samples reflect variations in the presence and concentration ranges of contaminants throughout a site. Variables affecting sample representativeness include differences in soil type, contaminant concentration variability, sample collection and preparation variability, and analytical variability, all of which should be minimized as much as possible.

4.9 Soil physical and chemical effects may be corrected using SSCS that have been analyzed by inductively coupled plasma (ICP) or atomic absorption (AA) methods. However, a major source of error can be introduced if these samples are not representative of the site or if the analytical error is large. Another concern is the type of digestion procedure used to prepare the soil samples for the reference analysis. Analytical results for the confirmatory method will vary depending on whether a partial digestion procedure, such as Method 3050, or a total digestion procedure, such as Method 3052, is used. It is known that depending on the nature of the soil or sediment, Method 3050 will achieve differing extraction efficiencies for different analytes of interest. The confirmatory method should meet the project-specific data quality objectives (DQOs).

XRF measures the total concentration of an element; therefore, to achieve the greatest comparability of this method with the reference method (reduced bias), a total digestion procedure should be used for sample preparation. However, in the study used to generate the performance data for this method (see Table 8), the confirmatory method used was Method 3050, and the FPXRF data compared very well with regression correlation coefficients (r often exceeding 0.95, except for barium and chromium). The critical factor is that the digestion procedure and analytical reference method used should meet the DQOs of the project and match the method used for confirmation analysis.

4.10 Ambient temperature changes can affect the gain of the amplifiers producing instrument drift. Gain or drift is primarily a function of the electronics (amplifier or preamplifier) and not the detector as most instrument detectors are cooled to a constant temperature. Most FPXRF instruments have a built-in automatic gain control. If the automatic gain control is allowed to make periodic adjustments, the instrument will compensate for the influence of temperature changes on its energy scale. If the FPXRF instrument has an automatic gain control function, the operator will not have to adjust the instrument's gain unless an error message appears. If an error message appears, the operator should follow the manufacturer's procedures for troubleshooting the problem. Often, this involves performing a new energy calibration. The performance of an energy calibration check to assess drift is a quality control measure discussed in Sec. 9.2.

If the operator is instructed by the manufacturer to manually conduct a gain check because of increasing or decreasing ambient temperature, it is standard to perform a gain check after every 10 to 20 sample measurements or once an hour whichever is more frequent. It is also suggested that a gain check be performed if the temperature fluctuates more than 10° F. The operator should follow the manufacturer's recommendations for gain check frequency.

5.0 SAFETY

5.1 This method does not address all safety issues associated with its use. The user is responsible for maintaining a safe work environment and a current awareness file of OSHA regulations regarding the safe handling of the chemicals listed in this method. A reference file of material safety data sheets (MSDSs) should be available to all personnel involved in these analyses.

NOTE: No MSDS applies directly to the radiation-producing instrument because that is covered under the Nuclear Regulatory Commission (NRC) or applicable state regulations.

5.2 Proper training for the safe operation of the instrument and radiation training should be completed by the analyst prior to analysis. Radiation safety for each specific instrument can be found in the operator's manual. Protective shielding should never be removed by the analyst or any personnel other than the manufacturer. The analyst should be aware of the local state and national regulations that pertain to the use of radiation-producing equipment and radioactive materials with which compliance is required. There should be a person appointed within the organization that is solely responsible for properly instructing all personnel, maintaining inspection records, and monitoring x-ray equipment at regular intervals.

Licenses for radioactive materials are of two types, specifically: (1) a general license which is usually initiated by the manufacturer for receiving, acquiring, owning, possessing, using, and transferring radioactive material incorporated in a device or equipment, and (2) a specific license which is issued to named persons for the operation of radioactive instruments as required by local, state, or federal agencies. A copy of the radioactive material license (for specific licenses only) and leak tests should be present with the instrument at all times and available to local and national authorities upon request.

X-ray tubes do not require radioactive material licenses or leak tests, but do require approvals and licenses which vary from state to state. In addition, fail-safe x-ray warning lights should be illuminated whenever an x-ray tube is energized. Provisions listed above concerning radiation safety regulations, shielding, training, and responsible personnel apply to x-ray tubes just as to radioactive sources. In addition, a log of the times and operating conditions should be kept whenever an x-ray tube is energized. An additional hazard present with x-ray tubes is the danger of electric shock from the high voltage supply, however, if the tube is properly positioned within the instrument, this is only a negligible risk. Any instrument (x-ray tube or radioisotope based) is capable of delivering an electric shock from the basic circuitry when the system is inappropriately opened.

5.3 Radiation monitoring equipment should be used with the handling and operation of the instrument. The operator and the surrounding environment should be monitored continually for analyst exposure to radiation. Thermal luminescent detectors (TLD) in the form of badges and rings are used to monitor operator radiation exposure. The TLDs or badges should be worn in the area of maximum exposure. The maximum permissible whole-body dose from occupational exposure is 5 Roentgen Equivalent Man (REM) per year. Possible exposure pathways for radiation to enter the body are ingestion, inhaling, and absorption. The best precaution to prevent radiation exposure is distance and shielding.

6.0 EQUIPMENT AND SUPPLIES

The mention of trade names or commercial products in this manual is for illustrative purposes only, and does not constitute an EPA endorsement or exclusive recommendation for

use. The products and instrument settings cited in SW-846 methods represent those products and settings used during method development or subsequently evaluated by the Agency. Glassware, reagents, supplies, equipment, and settings other than those listed in this manual may be employed provided that method performance appropriate for the intended application has been demonstrated and documented.

6.1 FPXRF spectrometer -- An FPXRF spectrometer consists of four major components: (1) a source that provides x-rays; (2) a sample presentation device; (3) a detector that converts x-ray-generated photons emitted from the sample into measurable electronic signals; and (4) a data processing unit that contains an emission or fluorescence energy analyzer, such as an MCA, that processes the signals into an x-ray energy spectrum from which elemental concentrations in the sample may be calculated, and a data display and storage system. These components and additional, optional items, are discussed below.

6.1.1 Excitation sources -- FPXRF instruments use either a sealed radioisotope source or an x-ray tube to provide the excitation source. Many FPXRF instruments use sealed radioisotope sources to produce x-rays in order to irradiate samples. The FPXRF instrument may contain between one and three radioisotope sources. Common radioisotope sources used for analysis for metals in soils are iron Fe-55 (^{55}Fe), cadmium Cd-109 (^{109}Cd), americium Am-241 (^{241}Am), and curium Cm-244 (^{244}Cm). These sources may be contained in a probe along with a window and the detector; the probe may be connected to a data reduction and handling system by means of a flexible cable. Alternatively, the sources, window, and detector may be included in the same unit as the data reduction and handling system.

The relative strength of the radioisotope sources is measured in units of millicuries (mCi). All other components of the FPXRF system being equal, the stronger the source, the greater the sensitivity and precision of a given instrument. Radioisotope sources undergo constant decay. In fact, it is this decay process that emits the primary x-rays used to excite samples for FPXRF analysis. The decay of radioisotopes is measured in "half-lives." The half-life of a radioisotope is defined as the length of time required to reduce the radioisotopes strength or activity by half. Developers of FPXRF technologies recommend source replacement at regular intervals based on the source's half-life. This is due to the ever increasing time required for the analysis rather than a decrease in instrument performance. The characteristic x-rays emitted from each of the different sources have energies capable of exciting a certain range of analytes in a sample. Table 2 summarizes the characteristics of four common radioisotope sources.

X-ray tubes have higher radiation output, no intrinsic lifetime limit, produce constant output over their lifetime, and do not have the disposal problems of radioactive sources but are just now appearing in FPXRF instruments. An electrically-excited x-ray tube operates by bombarding an anode with electrons accelerated by a high voltage. The electrons gain an energy in electron volts equal to the accelerating voltage and can excite atomic transitions in the anode, which then produces characteristic x-rays. These characteristic x-rays are emitted through a window which contains the vacuum necessary for the electron acceleration. An important difference between x-ray tubes and radioactive sources is that the electrons which bombard the anode also produce a continuum of x-rays across a broad range of energies in addition to the characteristic x-rays. This continuum is weak compared to the characteristic x-rays but can provide substantial excitation since it covers a broad energy range. It has the undesired property of producing background in the spectrum near the analyte x-ray lines when it is scattered by the sample. For this reason a filter is often used between the x-ray tube and the sample to suppress the continuum radiation while passing the characteristic x-rays from the anode. This filter is sometimes incorporated into the window of the x-ray tube. The choice of

accelerating voltage is governed both by the anode material, since the electrons must have sufficient energy to excite the anode, which requires a voltage greater than the absorption edge of the anode material and by the instrument's ability to cool the x-ray tube. The anode is most efficiently excited by voltages 2 to 2.5 times the edge energy (most x-rays per unit power to the tube), although voltages as low as 1.5 times the absorption edge energy will work. The characteristic x-rays emitted by the anode are capable of exciting a range of elements in the sample just as with a radioactive source. Table 3 gives the recommended operating voltages and the sample elements excited for some common anodes.

6.1.2 Sample presentation device -- FPXRF instruments can be operated in two modes: in situ and intrusive. If operated in the in situ mode, the probe window is placed in direct contact with the soil surface to be analyzed. When an FPXRF instrument is operated in the intrusive mode, a soil or sediment sample must be collected, prepared, and placed in a sample cup. For FPXRF instruments operated in the intrusive mode, the probe may be rotated so that the window faces either upward or downward. A protective sample cover is placed over the window, and the sample cup is placed on top of the window inside the protective sample cover for analysis.

6.1.3 Detectors -- The detectors in the FPXRF instruments can be either solid-state detectors or gas-filled, proportional counter detectors. Common solid-state detectors include mercuric iodide (HgI_2), silicon pin diode and lithium-drifted silicon Si(Li). The HgI_2 detector is operated at a moderately subambient temperature controlled by a low power thermoelectric cooler. The silicon pin diode detector also is cooled via the thermoelectric Peltier effect. The Si(Li) detector must be cooled to at least -90 °C either with liquid nitrogen or by thermoelectric cooling via the Peltier effect. Instruments with a Si(Li) detector have an internal liquid nitrogen dewar with a capacity of 0.5 to 1.0 L. Proportional counter detectors are rugged and lightweight, which are important features of a field portable detector. However, the resolution of a proportional counter detector is not as good as that of a solid-state detector. The energy resolution of a detector for characteristic x-rays is usually expressed in terms of full width at half-maximum (FWHM) height of the manganese K_α peak at 5.89 keV. The typical resolutions of the above mentioned detectors are as follows: HgI_2-270 eV; silicon pin diode-250 eV; Si(Li)–170 eV; and gas-filled, proportional counter-750 eV.

During operation of a solid-state detector, an x-ray photon strikes a biased, solid-state crystal and loses energy in the crystal by producing electron-hole pairs. The electric charge produced is collected and provides a current pulse that is directly proportional to the energy of the x-ray photon absorbed by the crystal of the detector. A gas-filled, proportional counter detector is an ionization chamber filled with a mixture of noble and other gases. An x-ray photon entering the chamber ionizes the gas atoms. The electric charge produced is collected and provides an electric signal that is directly proportional to the energy of the x-ray photon absorbed by the gas in the detector.

6.1.4 Data processing units -- The key component in the data processing unit of an FPXRF instrument is the MCA. The MCA receives pulses from the detector and sorts them by their amplitudes (energy level). The MCA counts pulses per second to determine the height of the peak in a spectrum, which is indicative of the target analyte's concentration. The spectrum of element peaks are built on the MCA. The MCAs in FPXRF instruments have from 256 to 2,048 channels. The concentrations of target analytes are usually shown in ppm on a liquid crystal display (LCD) in the instrument. FPXRF instruments can store both spectra and from 3,000 to 5,000 sets of numerical analytical results. Most FPXRF instruments are menu-driven from software built into the

units or from PCs. Once the data–storage memory of an FPXRF unit is full or at any other time, data can be downloaded by means of an RS-232 port and cable to a PC.

6.2 Spare battery and battery charger.

6.3 Polyethylene sample cups -- 31 to 40 mm in diameter with collar, or equivalent (appropriate for FPXRF instrument).

6.4 X-ray window film -- Mylar™, Kapton™, Spectrolene™, polypropylene, or equivalent; 2.5 to 6.0 µm thick.

6.5 Mortar and pestle -- Glass, agate, or aluminum oxide; for grinding soil and sediment samples.

6.6 Containers -- Glass or plastic to store samples.

6.7 Sieves -- 60-mesh (0.25 mm), stainless-steel, Nylon, or equivalent for preparing soil and sediment samples.

6.8 Trowels -- For smoothing soil surfaces and collecting soil samples.

6.9 Plastic bags -- Used for collection and homogenization of soil samples.

6.10 Drying oven -- Standard convection or toaster oven, for soil and sediment samples that require drying.

7.0 REAGENTS AND STANDARDS

7.1 Reagent grade chemicals must be used in all tests. Unless otherwise indicated, it is intended that all reagents conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

7.2 Pure element standards -- Each pure, single-element standard is intended to produce strong characteristic x-ray peaks of the element of interest only. Other elements present must not contribute to the fluorescence spectrum. A set of pure element standards for commonly sought analytes is supplied by the instrument manufacturer, if designated for the instrument; not all instruments require the pure element standards. The standards are used to set the region of interest (ROI) for each element. They also can be used as energy calibration and resolution check samples.

7.3 Site-specific calibration standards -- Instruments that employ fundamental parameters (FP) or similar mathematical models in minimizing matrix effects may not require SSCS. If the FP calibration model is to be optimized or if empirical calibration is necessary, then SSCSs must be collected, prepared, and analyzed.

7.3.1 The SSCS must be representative of the matrix to be analyzed by FPXRF. These samples must be well homogenized. A minimum of 10 samples spanning the concentration ranges of the analytes of interest and of the interfering elements must be obtained from the site. A sample size of 4 to 8 ounces is recommended, and standard glass sampling jars should be used.

7.3.2 Each sample should be oven-dried for 2 to 4 hr at a temperature of less than 150 °C. If mercury is to be analyzed, a separate sample portion should be dried at ambient temperature as heating may volatilize the mercury. When the sample is dry, all large, organic debris and nonrepresentative material, such as twigs, leaves, roots, insects, asphalt, and rock should be removed. The sample should be homogenized (see Sec. 7.3.3) and then a representative portion ground with a mortar and pestle or other mechanical means, prior to passing through a 60-mesh sieve. Only the coarse rock fraction should remain on the screen.

7.3.3 The sample should be homogenized by using a riffle splitter or by placing 150 to 200 g of the dried, sieved sample on a piece of kraft or butcher paper about 1.5 by 1.5 feet in size. Each corner of the paper should be lifted alternately, rolling the soil over on itself and toward the opposite corner. The soil should be rolled on itself 20 times. Approximately 5 g of the sample should then be removed and placed in a sample cup for FPXRF analysis. The rest of the prepared sample should be sent off site for ICP or AA analysis. The method use for confirmatory analysis should meet the data quality objectives of the project.

7.4 Blank samples -- The blank samples should be from a "clean" quartz or silicon dioxide matrix that is free of any analytes at concentrations above the established lower limit of detection. These samples are used to monitor for cross-contamination and laboratory-induced contaminants or interferences.

7.5 Standard reference materials -- Standard reference materials (SRMs) are standards containing certified amounts of metals in soil or sediment. These standards are used for accuracy and performance checks of FPXRF analyses. SRMs can be obtained from the National Institute of Standards and Technology (NIST), the U.S. Geological Survey (USGS), the Canadian National Research Council, and the national bureau of standards in foreign nations. Pertinent NIST SRMs for FPXRF analysis include 2704, Buffalo River Sediment; 2709, San Joaquin Soil; and 2710 and 2711, Montana Soil. These SRMs contain soil or sediment from actual sites that has been analyzed using independent inorganic analytical methods by many different laboratories. When these SRMs are unavailable, alternate standards may be used (e.g., NIST 2702).

8.0 SAMPLE COLLECTION, PRESERVATION, AND STORAGE

Sample handling and preservation procedures used in FPXRF analyses should follow the guidelines in Chapter Three, "Inorganic Analytes."

9.0 QUALITY CONTROL

9.1 Follow the manufacturer’s instructions for the quality control procedures specific to use of the testing product. Refer to Chapter One for additional guidance on quality assurance (QA) and quality control (QC) protocols. Any effort involving the collection of analytical data should include development of a structured and systematic planning document, such as a Quality Assurance Project Plan (QAPP) or a Sampling and Analysis Plan (SAP), which translates project objectives and specifications into directions for those that will implement the project and assess the results.

9.2 Energy calibration check -- To determine whether an FPXRF instrument is operating within resolution and stability tolerances, an energy calibration check should be run. The energy calibration check determines whether the characteristic x-ray lines are shifting,

which would indicate drift within the instrument. As discussed in Sec. 4.10, this check also serves as a gain check in the event that ambient temperatures are fluctuating greatly (more than 10 °F).

9.2.1 The energy calibration check should be run at a frequency consistent with manufacturer's recommendations. Generally, this would be at the beginning of each working day, after the batteries are changed or the instrument is shut off, at the end of each working day, and at any other time when the instrument operator believes that drift is occurring during analysis. A pure element such as iron, manganese, copper, or lead is often used for the energy calibration check. A manufacturer-recommended count time per source should be used for the check.

9.2.2 The instrument manufacturer's manual specifies the channel or kiloelectron volt level at which a pure element peak should appear and the expected intensity of the peak. The intensity and channel number of the pure element as measured using the source should be checked and compared to the manufacturer's recommendation. If the energy calibration check does not meet the manufacturer's criteria, then the pure element sample should be repositioned and reanalyzed. If the criteria are still not met, then an energy calibration should be performed as described in the manufacturer's manual. With some FPXRF instruments, once a spectrum is acquired from the energy calibration check, the peak can be optimized and realigned to the manufacturer's specifications using their software.

9.3 Blank samples -- Two types of blank samples should be analyzed for FPXRF analysis, specifically, instrument blanks and method blanks.

9.3.1 An instrument blank is used to verify that no contamination exists in the spectrometer or on the probe window. The instrument blank can be silicon dioxide, a polytetraflurorethylene (PTFE) block, a quartz block, "clean" sand, or lithium carbonate. This instrument blank should be analyzed on each working day before and after analyses are conducted and once per every twenty samples. An instrument blank should also be analyzed whenever contamination is suspected by the analyst. The frequency of analysis will vary with the data quality objectives of the project. A manufacturer-recommended count time per source should be used for the blank analysis. No element concentrations above the established lower limit of detection should be found in the instrument blank. If concentrations exceed these limits, then the probe window and the check sample should be checked for contamination. If contamination is not a problem, then the instrument must be "zeroed" by following the manufacturer's instructions.

9.3.2 A method blank is used to monitor for laboratory-induced contaminants or interferences. The method blank can be "clean" silica sand or lithium carbonate that undergoes the same preparation procedure as the samples. A method blank must be analyzed at least daily. The frequency of analysis will depend on the data quality objectives of the project. If the method blank does not contain the target analyte at a level that interferes with the project-specific data quality objectives then the method blank would be considered acceptable. In the absence of project-specific data quality objectives, if the blank is less than the lowest level of detection or less than 10% of the lowest sample concentration for the analyte, whichever is greater, then the method blank would be considered acceptable. If the method blank cannot be considered acceptable, the cause of the problem must be identified, and all samples analyzed with the method blank must be reanalyzed.

9.4 Calibration verification checks -- A calibration verification check sample is used to check the accuracy of the instrument and to assess the stability and consistency of the analysis for the analytes of interest. A check sample should be analyzed at the beginning of each working day, during active sample analyses, and at the end of each working day. The frequency of calibration checks during active analysis will depend on the data quality objectives of the project. The check sample should be a well characterized soil sample from the site that is representative of site samples in terms of particle size and degree of homogeneity and that contains contaminants at concentrations near the action levels. If a site-specific sample is not available, then an NIST or other SRM that contains the analytes of interest can be used to verify the accuracy of the instrument. The measured value for each target analyte should be within ±20 percent (%D) of the true value for the calibration verification check to be acceptable. If a measured value falls outside this range, then the check sample should be reanalyzed. If the value continues to fall outside the acceptance range, the instrument should be recalibrated, and the batch of samples analyzed before the unacceptable calibration verification check must be reanalyzed.

9.5 Precision measurements -- The precision of the method is monitored by analyzing a sample with low, moderate, or high concentrations of target analytes. The frequency of precision measurements will depend on the data quality objectives for the data. A minimum of one precision sample should be run per day. Each precision sample should be analyzed 7 times in replicate. It is recommended that precision measurements be obtained for samples with varying concentration ranges to assess the effect of concentration on method precision. Determining method precision for analytes at concentrations near the site action levels can be extremely important if the FPXRF results are to be used in an enforcement action; therefore, selection of at least one sample with target analyte concentrations at or near the site action levels or levels of concern is recommended. A precision sample is analyzed by the instrument for the same field analysis time as used for other project samples. The relative standard deviation (RSD) of the sample mean is used to assess method precision. For FPXRF data to be considered adequately precise, the RSD should not be greater than 20 percent with the exception of chromium. RSD values for chromium should not be greater than 30 percent. If both in situ and intrusive analytical techniques are used during the course of one day, it is recommended that separate precision calculations be performed for each analysis type.

The equation for calculating RSD is as follows:

$$RSD = (SD/Mean\ Concentration) \times 100$$

where:

RSD = Relative standard deviation for the precision measurement for the analyte
SD = Standard deviation of the concentration for the analyte
Mean concentration = Mean concentration for the analyte

The precision or reproducibility of a measurement will improve with increasing count time, however, increasing the count time by a factor of 4 will provide only 2 times better precision, so there is a point of diminishing return. Increasing the count time also improves the sensitivity, but decreases sample throughput.

9.6 The lower limits of detection should be established from actual measured performance based on spike recoveries in the matrix of concern or from acceptable method performance on a certified reference material of the appropriate matrix and within the appropriate calibration range for the application. This is considered the best estimate of the true method sensitivity as opposed to a statistical determination based on the standard deviation of

replicate analyses of a low-concentration sample. While the statistical approach demonstrates the potential data variability for a given sample matrix at one point in time, it does not represent what can be detected or most importantly the lowest concentration that can be calibrated. For this reason the sensitivity should be established as the lowest point of detection based on acceptable target analyte recovery in the desired sample matrix.

9.7 Confirmatory samples -- The comparability of the FPXRF analysis is determined by submitting FPXRF-analyzed samples for analysis at a laboratory. The method of confirmatory analysis must meet the project and XRF measurement data quality objectives. The confirmatory samples must be splits of the well homogenized sample material. In some cases the prepared sample cups can be submitted. A minimum of 1 sample for each 20 FPXRF-analyzed samples should be submitted for confirmatory analysis. This frequency will depend on project-specific data quality objectives. The confirmatory analyses can also be used to verify the quality of the FPXRF data. The confirmatory samples should be selected from the lower, middle, and upper range of concentrations measured by the FPXRF. They should also include samples with analyte concentrations at or near the site action levels. The results of the confirmatory analysis and FPXRF analyses should be evaluated with a least squares linear regression analysis. If the measured concentrations span more than one order of magnitude, the data should be log-transformed to standardize variance which is proportional to the magnitude of measurement. The correlation coefficient (r) for the results should be 0.7 or greater for the FPXRF data to be considered screening level data. If the r is 0.9 or greater and inferential statistics indicate the FPXRF data and the confirmatory data are statistically equivalent at a 99 percent confidence level, the data could potentially meet definitive level data criteria.

10.0 CALIBRATION AND STANDARDIZATION

10.1 Instrument calibration -- Instrument calibration procedures vary among FPXRF instruments. Users of this method should follow the calibration procedures outlined in the operator's manual for each specific FPXRF instrument. Generally, however, three types of calibration procedures exist for FPXRF instruments, namely: FP calibration, empirical calibration, and the Compton peak ratio or normalization method. These three types of calibration are discussed below.

10.2 Fundamental parameters calibration -- FP calibration procedures are extremely variable. An FP calibration provides the analyst with a "standardless" calibration. The advantages of FP calibrations over empirical calibrations include the following:

- No previously collected site-specific samples are necessary, although site-specific samples with confirmed and validated analytical results for all elements present could be used.

- Cost is reduced because fewer confirmatory laboratory results or calibration standards are necessary.

However, the analyst should be aware of the limitations imposed on FP calibration by particle size and matrix effects. These limitations can be minimized by adhering to the preparation procedure described in Sec. 7.3. The two FP calibration processes discussed below are based on an effective energy FP routine and a back scatter with FP (BFP) routine. Each FPXRF FP calibration process is based on a different iterative algorithmic method. The calibration procedure for each routine is explained in detail in the manufacturer's user manual for each FPXRF instrument; in addition, training courses are offered for each instrument.

10.2.1 Effective energy FP calibration -- The effective energy FP calibration is performed by the manufacturer before an instrument is sent to the analyst. Although SSCS can be used, the calibration relies on pure element standards or SRMs such as those obtained from NIST for the FP calibration. The effective energy routine relies on the spectrometer response to pure elements and FP iterative algorithms to compensate for various matrix effects.

Alpha coefficients are calculated using a variation of the Sherman equation, which calculates theoretical intensities from the measurement of pure element samples. These coefficients indicate the quantitative effect of each matrix element on an analyte's measured x-ray intensity. Next, the Lachance Traill algorithm is solved as a set of simultaneous equations based on the theoretical intensities. The alpha coefficients are then downloaded into the specific instrument.

The working effective energy FP calibration curve must be verified before sample analysis begins on each working day, after every 20 samples are analyzed, and at the end of sampling. This verification is performed by analyzing either an NIST SRM or an SSCS that is representative of the site-specific samples. This SRM or SSCS serves as a calibration check. A manufacturer-recommended count time per source should be used for the calibration check. The analyst must then adjust the y-intercept and slope of the calibration curve to best fit the known concentrations of target analytes in the SRM or SSCS.

A percent difference (%D) is then calculated for each target analyte. The %D should be within ±20 percent of the certified value for each analyte. If the %D falls outside this acceptance range, then the calibration curve should be adjusted by varying the slope of the line or the y-intercept value for the analyte. The SRM or SSCS is reanalyzed until the %D falls within ±20 percent. The group of 20 samples analyzed before an out-of-control calibration check should be reanalyzed.

The equation to calibrate %D is as follows:

$$\%D = ((C_s - C_k) / C_k) \times 100$$

where:

%D = Percent difference
C_k = Certified concentration of standard sample
C_s = Measured concentration of standard sample

10.2.2 BFP calibration -- BFP calibration relies on the ability of the liquid nitrogen-cooled, Si(Li) solid-state detector to separate the coherent (Compton) and incoherent (Rayleigh) backscatter peaks of primary radiation. These peak intensities are known to be a function of sample composition, and the ratio of the Compton to Rayleigh peak is a function of the mass absorption of the sample. The calibration procedure is explained in detail in the instrument manufacturer's manual. Following is a general description of the BFP calibration procedure.

The concentrations of all detected and quantified elements are entered into the computer software system. Certified element results for an NIST SRM or confirmed and validated results for an SSCS can be used. In addition, the concentrations of oxygen and silicon must be entered; these two concentrations are not found in standard metals analyses. The manufacturer provides silicon and oxygen concentrations for typical soil types. Pure element standards are then analyzed using a manufacturer-recommended

count time per source. The results are used to calculate correction factors in order to adjust for spectrum overlap of elements.

The working BFP calibration curve must be verified before sample analysis begins on each working day, after every 20 samples are analyzed, and at the end of the analysis. This verification is performed by analyzing either an NIST SRM or an SSCS that is representative of the site-specific samples. This SRM or SSCS serves as a calibration check. The standard sample is analyzed using a manufacturer-recommended count time per source to check the calibration curve. The analyst must then adjust the y-intercept and slope of the calibration curve to best fit the known concentrations of target analytes in the SRM or SSCS.

A %D is then calculated for each target analyte. The %D should fall within ±20 percent of the certified value for each analyte. If the %D falls outside this acceptance range, then the calibration curve should be adjusted by varying the slope of the line the y-intercept value for the analyte. The standard sample is reanalyzed until the %D falls within ±20 percent. The group of 20 samples analyzed before an out-of-control calibration check should be reanalyzed.

10.3 Empirical calibration -- An empirical calibration can be performed with SSCS, site-typical standards, or standards prepared from metal oxides. A discussion of SSCS is included in Sec. 7.3; if no previously characterized samples exist for a specific site, site-typical standards can be used. Site-typical standards may be selected from commercially available characterized soils or from SSCS prepared for another site. The site-typical standards should closely approximate the site's soil matrix with respect to particle size distribution, mineralogy, and contaminant analytes. If neither SSCS nor site-typical standards are available, it is possible to make gravimetric standards by adding metal oxides to a "clean" sand or silicon dioxide matrix that simulates soil. Metal oxides can be purchased from various chemical vendors. If standards are made on site, a balance capable of weighing items to at least two decimal places is necessary. Concentrated ICP or AA standard solutions can also be used to make standards. These solutions are available in concentrations of 10,000 parts per million, thus only small volumes have to be added to the soil.

An empirical calibration using SSCS involves analysis of SSCS by the FPXRF instrument and by a conventional analytical method such as ICP or AA. A total acid digestion procedure should be used by the laboratory for sample preparation. Generally, a minimum of 10 and a maximum of 30 well characterized SSCS, site-typical standards, or prepared metal oxide standards are necessary to perform an adequate empirical calibration. The exact number of standards depends on the number of analytes of interest and interfering elements. Theoretically, an empirical calibration with SSCS should provide the most accurate data for a site because the calibration compensates for site-specific matrix effects.

The first step in an empirical calibration is to analyze the pure element standards for the elements of interest. This enables the instrument to set channel limits for each element for spectral deconvolution. Next the SSCS, site-typical standards, or prepared metal oxide standards are analyzed using a count time of 200 seconds per source or a count time recommended by the manufacturer. This will produce a spectrum and net intensity of each analyte in each standard. The analyte concentrations for each standard are then entered into the instrument software; these concentrations are those obtained from the laboratory, the certified results, or the gravimetrically determined concentrations of the prepared standards. This gives the instrument analyte values to regress against corresponding intensities during the modeling stage. The regression equation correlates the concentrations of an analyte with its net intensity.

The calibration equation is developed using a least squares fit regression analysis. After the regression terms to be used in the equation are defined, a mathematical equation can be developed to calculate the analyte concentration in an unknown sample. In some FPXRF instruments, the software of the instrument calculates the regression equation. The software uses calculated intercept and slope values to form a multiterm equation. In conjunction with the software in the instrument, the operator can adjust the multiterm equation to minimize interelement interferences and optimize the intensity calibration curve.

It is possible to define up to six linear or nonlinear terms in the regression equation. Terms can be added and deleted to optimize the equation. The goal is to produce an equation with the smallest regression error and the highest correlation coefficient. These values are automatically computed by the software as the regression terms are added, deleted, or modified. It is also possible to delete data points from the regression line if these points are significant outliers or if they are heavily weighing the data. Once the regression equation has been selected for an analyte, the equation can be entered into the software for quantitation of analytes in subsequent samples. For an empirical calibration to be acceptable, the regression equation for a specific analyte should have a correlation coefficient of 0.98 or greater or meet the DQOs of the project.

In an empirical calibration, one must apply the DQOs of the project and ascertain critical or action levels for the analytes of interest. It is within these concentration ranges or around these action levels that the FPXRF instrument should be calibrated most accurately. It may not be possible to develop a good regression equation over several orders of analyte concentration.

10.4 Compton normalization method -- The Compton normalization method is based on analysis of a single, certified standard and normalization for the Compton peak. The Compton peak is produced from incoherent backscattering of x-ray radiation from the excitation source and is present in the spectrum of every sample. The Compton peak intensity changes with differing matrices. Generally, matrices dominated by lighter elements produce a larger Compton peak, and those dominated by heavier elements produce a smaller Compton peak. Normalizing to the Compton peak can reduce problems with varying matrix effects among samples. Compton normalization is similar to the use of internal standards in organics analysis. The Compton normalization method may not be effective when analyte concentrations exceed a few percent.

The certified standard used for this type of calibration could be an NIST SRM such as 2710 or 2711. The SRM must be a matrix similar to the samples and must contain the analytes of interests at concentrations near those expected in the samples. First, a response factor has to be determined for each analyte. This factor is calculated by dividing the net peak intensity by the analyte concentration. The net peak intensity is gross intensity corrected for baseline reading. Concentrations of analytes in samples are then determined by multiplying the baseline corrected analyte signal intensity by the normalization factor and by the response factor. The normalization factor is the quotient of the baseline corrected Compton K_{α} peak intensity of the SRM divided by that of the samples. Depending on the FPXRF instrument used, these calculations may be done manually or by the instrument software.

11.0 PROCEDURE

11.1 Operation of the various FPXRF instruments will vary according to the manufacturers' protocols. Before operating any FPXRF instrument, one should consult the manufacturer's manual. Most manufacturers recommend that their instruments be allowed to warm up for 15 to 30 minutes before analysis of samples. This will help alleviate drift or energy calibration problems later during analysis.

11.2 Each FPXRF instrument should be operated according to the manufacturer's recommendations. There are two modes in which FPXRF instruments can be operated: in situ and intrusive. The in situ mode involves analysis of an undisturbed soil sediment or sample. Intrusive analysis involves collection and preparation of a soil or sediment sample before analysis. Some FPXRF instruments can operate in both modes of analysis, while others are designed to operate in only one mode. The two modes of analysis are discussed below.

11.3 For in situ analysis, remove any large or nonrepresentative debris from the soil surface before analysis. This debris includes rocks, pebbles, leaves, vegetation, roots, and concrete. Also, the soil surface must be as smooth as possible so that the probe window will have good contact with the surface. This may require some leveling of the surface with a stainless-steel trowel. During the study conducted to provide example performance data for this method, this modest amount of sample preparation was found to take less than 5 min per sample location. The last requirement is that the soil or sediment not be saturated with water. Manufacturers state that their FPXRF instruments will perform adequately for soils with moisture contents of 5 to 20 percent but will not perform well for saturated soils, especially if ponded water exists on the surface. Another recommended technique for in situ analysis is to tamp the soil to increase soil density and compactness for better repeatability and representativeness. This condition is especially important for heavy element analysis, such as barium. Source count times for in situ analysis usually range from 30 to 120 seconds, but source count times will vary among instruments and depending on the desired method sensitivity. Due to the heterogeneous nature of the soil sample, in situ analysis can provide only “screening” type data.

11.4 For intrusive analysis of surface or sediment, it is recommended that a sample be collected from a 4- by 4-inch square that is 1 inch deep. This will produce a soil sample of approximately 375 g or 250 cm^3, which is enough soil to fill an 8-ounce jar. However, the exact dimensions and sample depth should take into consideration the heterogeneous deposition of contaminants and will ultimately depend on the desired project-specific data quality objectives. The sample should be homogenized, dried, and ground before analysis. The sample can be homogenized before or after drying. The homogenization technique to be used after drying is discussed in Sec. 4.2. If the sample is homogenized before drying, it should be thoroughly mixed in a beaker or similar container, or if the sample is moist and has a high clay content, it can be kneaded in a plastic bag. One way to monitor homogenization when the sample is kneaded in a plastic bag is to add sodium fluorescein dye to the sample. After the moist sample has been homogenized, it is examined under an ultraviolet light to assess the distribution of sodium fluorescein throughout the sample. If the fluorescent dye is evenly distributed in the sample, homogenization is considered complete; if the dye is not evenly distributed, mixing should continue until the sample has been thoroughly homogenized. During the study conducted to provide data for this method, the time necessary for homogenization procedure using the fluorescein dye ranged from 3 to 5 min per sample. As demonstrated in Secs. 13.5 and 13.7, homogenization has the greatest impact on the reduction of sampling variability. It produces little or no contamination. Often, the direct analysis through the plastic bag is possible without the more labor intensive steps of drying, grinding, and sieving given in Secs. 11.5 and 11.6. Of course, to achieve the best data quality possible all four steps should be followed.

11.5 Once the soil or sediment sample has been homogenized, it should be dried. This can be accomplished with a toaster oven or convection oven. A small aliquot of the sample (20 to 50 g) is placed in a suitable container for drying. The sample should be dried for 2 to 4 hr in the convection or toaster oven at a temperature not greater than 150 °C. Samples may also be air dried under ambient temperature conditions using a 10- to 20-g portion. Regardless of what drying mechanism is used, the drying process is considered complete when a constant sample weight can be obtained. Care should be taken to avoid sample cross-contamination and these measures can be evaluated by including an appropriate method blank sample along with any sample preparation process.

CAUTION: Microwave drying is not a recommended procedure. Field studies have shown that microwave drying can increase variability between the FPXRF data and confirmatory analysis. High levels of metals in a sample can cause arcing in the microwave oven, and sometimes slag forms in the sample. Microwave oven drying can also melt plastic containers used to hold the sample.

11.6 The homogenized dried sample material should be ground with a mortar and pestle and passed through a 60-mesh sieve to achieve a uniform particle size. Sample grinding should continue until at least 90 percent of the original sample passes through the sieve. The grinding step normally takes an average of 10 min per sample. An aliquot of the sieved sample should then be placed in a 31.0-mm polyethylene sample cup (or equivalent) for analysis. The sample cup should be one-half to three-quarters full at a minimum. The sample cup should be covered with a 2.5 µm Mylar (or equivalent) film for analysis. The rest of the soil sample should be placed in a jar, labeled, and archived for possible confirmation analysis. All equipment including the mortar, pestle, and sieves must be thoroughly cleaned so that any cross-contamination is below the established lower limit of detection of the procedure or DQOs of the analysis. If all recommended sample preparation steps are followed, there is a high probability the desired laboratory data quality may be obtained.

12.0 DATA ANALYSIS AND CALCULATIONS

Most FPXRF instruments have software capable of storing all analytical results and spectra. The results are displayed in ppm and can be downloaded to a personal computer, which can be used to provide a hard copy printout. Individual measurements that are smaller than three times their associated SD should not be used for quantitation. See the manufacturer's instructions regarding data analysis and calculations.

13.0 METHOD PERFORMANCE

13.1 Performance data and related information are provided in SW-846 methods only as examples and guidance. The data do not represent required performance criteria for users of the methods. Instead, performance criteria should be developed on a project-specific basis, and the laboratory should establish in-house QC performance criteria for the application of this method. These performance data are not intended to be and must not be used as absolute QC acceptance criteria for purposes of laboratory accreditation.

13.2 The sections to follow discuss three performance evaluation factors; namely, precision, accuracy, and comparability. The example data presented in Tables 4 through 8 were generated from results obtained from six FPXRF instruments (see Sec. 13.3). The soil samples analyzed by the six FPXRF instruments were collected from two sites in the United States. The soil samples contained several of the target analytes at concentrations ranging from "nondetect" to tens of thousands of mg/kg. These data are provided for guidance purposes only.

13.3 The six FPXRF instruments included the TN 9000 and TN Lead Analyzer manufactured by TN Spectrace; the X-MET 920 with a SiLi detector and X-MET 920 with a gas-filled proportional detector manufactured by Metorex, Inc.; the XL Spectrum Analyzer manufactured by Niton; and the MAP Spectrum Analyzer manufactured by Scitec. The TN 9000 and TN Lead Analyzer both have a HgI_2 detector. The TN 9000 utilized an Fe-55, Cd-109, and Am-241 source. The TN Lead Analyzer had only a Cd-109 source. The X-Met 920 with the SiLi detector had a Cd-109 and Am-241 source. The X-MET 920 with the gas-filled proportional detector had only a Cd-109 source. The XL Spectrum Analyzer utilized a silicon pin-diode

detector and a Cd-109 source. The MAP Spectrum Analyzer utilized a solid-state silicon detector and a Cd-109 source.

13.4 All example data presented in Tables 4 through 8 were generated using the following calibrations and source count times. The TN 9000 and TN Lead Analyzer were calibrated using fundamental parameters using NIST SRM 2710 as a calibration check sample. The TN 9000 was operated using 100, 60, and 60 second count times for the Cd-109, Fe-55, and Am-241 sources, respectively. The TN Lead analyzer was operated using a 60 second count time for the Cd-109 source. The X-MET 920 with the Si(Li) detector was calibrated using fundamental parameters and one well characterized site-specific soil standard as a calibration check. It used 140 and 100 second count times for the Cd-109 and Am-241 sources, respectively. The X-MET 920 with the gas-filled proportional detector was calibrated empirically using between 10 and 20 well characterized site-specific soil standards. It used 120 second times for the Cd-109 source. The XL Spectrum Analyzer utilized NIST SRM 2710 for calibration and the Compton peak normalization procedure for quantitation based on 60 second count times for the Cd-109 source. The MAP Spectrum Analyzer was internally calibrated by the manufacturer. The calibration was checked using a well-characterized site-specific soil standard. It used 240 second times for the Cd-109 source.

13.5 Precision measurements -- The example precision data are presented in Table 4. These data are provided for guidance purposes only. Each of the six FPXRF instruments performed 10 replicate measurements on 12 soil samples that had analyte concentrations ranging from "nondetects" to thousands of mg/kg. Each of the 12 soil samples underwent 4 different preparation techniques from in situ (no preparation) to dried and ground in a sample cup. Therefore, there were 48 precision data points for five of the instruments and 24 precision points for the MAP Spectrum Analyzer. The replicate measurements were taken using the source count times discussed at the beginning of this section.

For each detectable analyte in each precision sample a mean concentration, standard deviation, and RSD was calculated for each analyte. The data presented in Table 4 is an average RSD for the precision samples that had analyte concentrations at 5 to 10 times the lower limit of detection for that analyte for each instrument. Some analytes such as mercury, selenium, silver, and thorium were not detected in any of the precision samples so these analytes are not listed in Table 4. Some analytes such as cadmium, nickel, and tin were only detected at concentrations near the lower limit of detection so that an RSD value calculated at 5 to 10 times this limit was not possible.

One FPXRF instrument collected replicate measurements on an additional nine soil samples to provide a better assessment of the effect of sample preparation on precision. Table 5 shows these results. These data are provided for guidance purposes only. The additional nine soil samples were comprised of three from each texture and had analyte concentrations ranging from near the lower limit of detection for the FPXRF analyzer to thousands of mg/kg. The FPXRF analyzer only collected replicate measurements from three of the preparation methods; no measurements were collected from the in situ homogenized samples. The FPXRF analyzer conducted five replicate measurements of the in situ field samples by taking measurements at five different points within the 4-inch by 4-inch sample square. Ten replicate measurements were collected for both the intrusive undried and unground and intrusive dried and ground samples contained in cups. The cups were shaken between each replicate measurement.

Table 5 shows that the precision dramatically improved from the in situ to the intrusive measurements. In general there was a slight improvement in precision when the sample was dried and ground. Two factors caused the precision for the in situ measurements to be poorer. The major factor is soil heterogeneity. By moving the probe within the 4-inch by 4-inch square,

measurements of different soil samples were actually taking place within the square. Table 5 illustrates the dominant effect of soil heterogeneity. It overwhelmed instrument precision when the FPXRF analyzer was used in this mode. The second factor that caused the RSD values to be higher for the in situ measurements is the fact that only five instead of ten replicates were taken. A lesser number of measurements caused the standard deviation to be larger which in turn elevated the RSD values.

13.6 Accuracy measurements -- Five of the FPXRF instruments (not including the MAP Spectrum Analyzer) analyzed 18 SRMs using the source count times and calibration methods given at the beginning of this section. The 18 SRMs included 9 soil SRMs, 4 stream or river sediment SRMs, 2 sludge SRMs, and 3 ash SRMs. Each of the SRMs contained known concentrations of certain target analytes. A percent recovery was calculated for each analyte in each SRM for each FPXRF instrument. Table 6 presents a summary of this data. With the exception of cadmium, chromium, and nickel, the values presented in Table 6 were generated from the 13 soil and sediment SRMs only. The 2 sludge and 3 ash SRMs were included for cadmium, chromium, and nickel because of the low or nondetectable concentrations of these three analytes in the soil and sediment SRMs.

Only 12 analytes are presented in Table 6. These are the analytes that are of environmental concern and provided a significant number of detections in the SRMs for an accuracy assessment. No data is presented for the X-MET 920 with the gas-filled proportional detector. This FPXRF instrument was calibrated empirically using site-specific soil samples. The percent recovery values from this instrument were very sporadic and the data did not lend itself to presentation in Table 6.

Table 7 provides a more detailed summary of accuracy data for one particular FPXRF instrument (TN 9000) for the 9 soil SRMs and 4 sediment SRMs. These data are provided for guidance purposes only. Table 7 shows the certified value, measured value, and percent recovery for five analytes. These analytes were chosen because they are of environmental concern and were most prevalently certified for in the SRM and detected by the FPXRF instrument. The first nine SRMs are soil and the last 4 SRMs are sediment. Percent recoveries for the four NIST SRMs were often between 90 and 110 percent for all analytes.

13.7 Comparability -- Comparability refers to the confidence with which one data set can be compared to another. In this case, FPXRF data generated from a large study of six FPXRF instruments was compared to SW-846 Methods 3050 and 6010 which are the standard soil extraction for metals and analysis by inductively coupled plasma. An evaluation of comparability was conducted by using linear regression analysis. Three factors were determined using the linear regression. These factors were the y-intercept, the slope of the line, and the coefficient of determination (r^2).

As part of the comparability assessment, the effects of soil type and preparation methods were studied. Three soil types (textures) and four preparation methods were examined during the study. The preparation methods evaluated the cumulative effect of particle size, moisture, and homogenization on comparability. Due to the large volume of data produced during this study, linear regression data for six analytes from only one FPXRF instrument is presented in Table 8. Similar trends in the data were seen for all instruments. These data are provided for guidance purposes only.

Table 8 shows the regression parameters for the whole data set, broken out by soil type, and by preparation method. These data are provided for guidance purposes only. The soil types are as follows: soil 1--sand; soil 2--loam; and soil 3--silty clay. The preparation methods are as follows: preparation 1--in situ in the field; preparation 2--intrusive, sample collected and homogenized; preparation 3--intrusive, with sample in a sample cup but sample still wet and not

ground; and preparation 4–intrusive, with sample dried, ground, passed through a 40-mesh sieve, and placed in sample cup.

For arsenic, copper, lead, and zinc, the comparability to the confirmatory laboratory was excellent with r^2 values ranging from 0.80 to 0.99 for all six FPXRF instruments. The slopes of the regression lines for arsenic, copper, lead, and zinc, were generally between 0.90 and 1.00 indicating the data would need to be corrected very little or not at all to match the confirmatory laboratory data. The r^2 values and slopes of the regression lines for barium and chromium were not as good as for the other for analytes, indicating the data would have to be corrected to match the confirmatory laboratory.

Table 8 demonstrates that there was little effect of soil type on the regression parameters for any of the six analytes. The only exceptions were for barium in soil 1 and copper in soil 3. In both of these cases, however, it is actually a concentration effect and not a soil effect causing the poorer comparability. All barium and copper concentrations in soil 1 and 3, respectively, were less than 350 mg/kg.

Table 8 shows there was a preparation effect on the regression parameters for all six analytes. With the exception of chromium, the regression parameters were primarily improved going from preparation 1 to preparation 2. In this step, the sample was removed from the soil surface, all large debris was removed, and the sample was thoroughly homogenized. The additional two preparation methods did little to improve the regression parameters. This data indicates that homogenization is the most critical factor when comparing the results. It is essential that the sample sent to the confirmatory laboratory match the FPXRF sample as closely as possible.

Sec. 11.0 of this method discusses the time necessary for each of the sample preparation techniques. Based on the data quality objectives for the project, an analyst must decide if it is worth the extra time necessary to dry and grind the sample for small improvements in comparability. Homogenization requires 3 to 5 min. Drying the sample requires one to two hours. Grinding and sieving requires another 10 to 15 min per sample. Lastly, when grinding and sieving is conducted, time has to be allotted to decontaminate the mortars, pestles, and sieves. Drying and grinding the samples and decontamination procedures will often dictate that an extra person be on site so that the analyst can keep up with the sample collection crew. The cost of requiring an extra person on site to prepare samples must be balanced with the gain in data quality and sample throughput.

13.8 The following documents may provide additional guidance and insight on this method and technique:

13.8.1 A. D. Hewitt, "Screening for Metals by X-ray Fluorescence Spectrometry/Response Factor/Compton K_α Peak Normalization Analysis," American Environmental Laboratory, pp 24-32, 1994.

13.8.2 S. Piorek and J. R. Pasmore, "Standardless, In Situ Analysis of Metallic Contaminants in the Natural Environment With a PC-Based, High Resolution Portable X-Ray Analyzer," Third International Symposium on Field Screening Methods for Hazardous Waste and Toxic Chemicals, Las Vegas, Nevada, February 24-26, 1993, Vol 2, pp 1135-1151, 1993.

13.8.3 S. Shefsky, "Sample Handling Strategies for Accurate Lead-in-soil Measurements in the Field and Laboratory," *International Symposium of Field Screening Methods for Hazardous Waste and Toxic Chemicals*, Las Vegas, NV, January 29-31, 1997.

14.0 POLLUTION PREVENTION

14.1 Pollution prevention encompasses any technique that reduces or eliminates the quantity and/or toxicity of waste at the point of generation. Numerous opportunities for pollution prevention exist in laboratory operation. The EPA has established a preferred hierarchy of environmental management techniques that places pollution prevention as the management option of first choice. Whenever feasible, laboratory personnel should use pollution prevention techniques to address their waste generation. When wastes cannot be feasibly reduced at the source, the Agency recommends recycling as the next best option.

14.2 For information about pollution prevention that may be applicable to laboratories and research institutions consult *Less is Better: Laboratory Chemical Management for Waste Reduction* available from the American Chemical Society's Department of Government Relations and Science Policy, 1155 16th St., N.W. Washington, D.C. 20036, http://www.acs.org.

15.0 WASTE MANAGEMENT

The Environmental Protection Agency requires that laboratory waste management practices be conducted consistent with all applicable rules and regulations. The Agency urges laboratories to protect the air, water, and land by minimizing and controlling all releases from hoods and bench operations, complying with the letter and spirit of any sewer discharge permits and regulations, and by complying with all solid and hazardous waste regulations, particularly the hazardous waste identification rules and land disposal restrictions. For further information on waste management, consult *The Waste Management Manual for Laboratory Personnel* available from the American Chemical Society at the address listed in Sec. 14.2.

16.0 REFERENCES

1. Metorex, X-MET 920 User's Manual.

2. Spectrace Instruments, "Energy Dispersive X-ray Fluorescence Spectrometry: An Introduction," 1994.

3. TN Spectrace, Spectrace 9000 Field Portable/Benchtop XRF Training and Applications Manual.

4. Unpublished SITE data, received from PRC Environment Management, Inc.

17.0 TABLES, DIAGRAMS, FLOWCHARTS, AND VALIDATION DATA

The following pages contain the tables referenced by this method. A flow diagram of the procedure follows the tables.

TABLE 1

EXAMPLE INTERFERENCE FREE LOWER LIMITS OF DETECTION

Analyte	Chemical Abstract Series Number	Lower Limit of Detection in Quartz Sand (milligrams per kilogram)
Antimony (Sb)	7440-36-0	40
Arsenic (As)	7440-38-0	40
Barium (Ba)	7440-39-3	20
Cadmium (Cd)	7440-43-9	100
Calcium (Ca)	7440-70-2	70
Chromium (Cr)	7440-47-3	150
Cobalt (Co)	7440-48-4	60
Copper (Cu)	7440-50-8	50
Iron (Fe)	7439-89-6	60
Lead (Pb)	7439-92-1	20
Manganese (Mn)	7439-96-5	70
Mercury (Hg)	7439-97-6	30
Molybdenum (Mo)	7439-93-7	10
Nickel (Ni)	7440-02-0	50
Potassium (K)	7440-09-7	200
Rubidium (Rb)	7440-17-7	10
Selenium (Se)	7782-49-2	40
Silver (Ag)	7440-22-4	70
Strontium (Sr)	7440-24-6	10
Thallium (Tl)	7440-28-0	20
Thorium (Th)	7440-29-1	10
Tin (Sn)	7440-31-5	60
Titanium (Ti)	7440-32-6	50
Vanadium (V)	7440-62-2	50
Zinc (Zn)	7440-66-6	50
Zirconium (Zr)	7440-67-7	10

Source: Refs. 1, 2, and 3
These data are provided for guidance purposes only.

TABLE 2

SUMMARY OF RADIOISOTOPE SOURCE CHARACTERISTICS

Source	Activity (mCi)	Half-Life (Years)	Excitation Energy (keV)	Elemental Analysis Range	
Fe-55	20-50	2.7	5.9	Sulfur to Chromium Molybdenum to Barium	K Lines L Lines
Cd-109	5-30	1.3	22.1 and 87.9	Calcium to Rhodium Tantalum to Lead Barium to Uranium	K Lines K Lines L Lines
Am-241	5-30	432	26.4 and 59.6	Copper to Thulium Tungsten to Uranium	K Lines L Lines
Cm-244	60-100	17.8	14.2	Titanium to Selenium Lanthanum to Lead	K Lines L Lines

Source: Refs. 1, 2, and 3

TABLE 3

SUMMARY OF X-RAY TUBE SOURCE CHARACTERISTICS

Anode Material	Recommended Voltage Range (kV)	K-alpha Emission (keV)	Elemental Analysis Range	
Cu	18-22	8.04	Potassium to Cobalt Silver to Gadolinium	K Lines L Lines
Mo	40-50	17.4	Cobalt to Yttrium Europium to Radon	K Lines L Lines
Ag	50-65	22.1	Zinc to Technicium Ytterbium to Neptunium	K Lines L Lines

Source: Ref. 4

Notes: The sample elements excited are chosen by taking as the lower limit the same ratio of excitation line energy to element absorption edge as in Table 2 (approximately 0.45) and the requirement that the excitation line energy be above the element absorption edge as the upper limit (L2 edges used for L lines). K-beta excitation lines were ignored.

TABLE 4

EXAMPLE PRECISION VALUES

Analyte	Average Relative Standard Deviation for Each Instrument at 5 to 10 Times the Lower Limit of Detection					
	TN 9000	TN Lead Analyzer	X-MET 920 (SiLi Detector)	X-MET 920 (Gas-Filled Detector)	XL Spectrum Analyzer	MAP Spectrum Analyzer
Antimony	6.54	NR	NR	NR	NR	NR
Arsenic	5.33	4.11	3.23	1.91	12.47	6.68
Barium	4.02	NR	3.31	5.91	NR	NR
Cadmium	29.84[a]	NR	24.80[a]	NR	NR	NR
Calcium	2.16	NR	NR	NR	NR	NR
Chromium	22.25	25.78	22.72	3.91	30.25	NR
Cobalt	33.90	NR	NR	NR	NR	NR
Copper	7.03	9.11	8.49	9.12	12.77	14.86
Iron	1.78	1.67	1.55	NR	2.30	NR
Lead	6.45	5.93	5.05	7.56	6.97	12.16
Manganese	27.04	24.75	NR	NR	NR	NR
Molybdenum	6.95	NR	NR	NR	12.60	NR
Nickel	30.85[a]	NR	24.92[a]	20.92[a]	NA	NR
Potassium	3.90	NR	NR	NR	NR	NR
Rubidium	13.06	NR	NR	NR	32.69[a]	NR
Strontium	4.28	NR	NR	NR	8.86	NR
Tin	24.32[a]	NR	NR	NR	NR	NR
Titanium	4.87	NR	NR	NR	NR	NR
Zinc	7.27	7.48	4.26	2.28	10.95	0.83
Zirconium	3.58	NR	NR	NR	6.49	NR

These data are provided for guidance purposes only.
Source: Ref. 4

[a] These values are biased high because the concentration of these analytes in the soil samples was near the lower limit of detection for that particular FPXRF instrument.

NR Not reported.

NA Not applicable; analyte was reported but was below the established lower limit detection.

TABLE 5

EXAMPLES OF PRECISION AS AFFECTED BY SAMPLE PREPARATION

Analyte	Average Relative Standard Deviation for Each Preparation Method		
	In Situ-Field	Intrusive-Undried and Unground	Intrusive-Dried and Ground
Antimony	30.1	15.0	14.4
Arsenic	22.5	5.36	3.76
Barium	17.3	3.38	2.90
Cadmium[a]	41.2	30.8	28.3
Calcium	17.5	1.68	1.24
Chromium	17.6	28.5	21.9
Cobalt	28.4	31.1	28.4
Copper	26.4	10.2	7.90
Iron	10.3	1.67	1.57
Lead	25.1	8.55	6.03
Manganese	40.5	12.3	13.0
Mercury	ND	ND	ND
Molybdenum	21.6	20.1	19.2
Nickel[a]	29.8	20.4	18.2
Potassium	18.6	3.04	2.57
Rubidium	29.8	16.2	18.9
Selenium	ND	20.2	19.5
Silver[a]	31.9	31.0	29.2
Strontium	15.2	3.38	3.98
Thallium	39.0	16.0	19.5
Thorium	NR	NR	NR
Tin	ND	14.1	15.3
Titanium	13.3	4.15	3.74
Vanadium	NR	NR	NR
Zinc	26.6	13.3	11.1
Zirconium	20.2	5.63	5.18

These data are provided for guidance purposes only.
Source: Ref. 4
[a] These values may be biased high because the concentration of these analytes in the soil samples was near the lower limit of detection.
ND Not detected.
NR Not reported.

TABLE 6

EXAMPLE ACCURACY VALUES

Analyte	Instrument															
	TN 9000				TN Lead Analyzer				X-MET 920 (SiLi Detector)				XL Spectrum Analyzer			
	n	Range of % Rec.	Mean % Rec.	SD	n	Range of % Rec.	Mean % Rec.	SD	n	Range of % Rec.	Mean % Rec	SD	n	Range of % Rec.	Mean % Rec.	SD
Sb	2	100-149	124.3	NA	--	--	--	--	--	--	--	--	--	--	--	--
As	5	68-115	92.8	17.3	5	44-105	83.4	23.2	4	9.7-91	47.7	39.7	5	38-535	189.8	206
Ba	9	98-198	135.3	36.9	--	--	--	--	9	18-848	168.2	262	--	--	--	--
Cd	2	99-129	114.3	NA	--	--	--	--	6	81-202	110.5	45.7	--	--	--	--
Cr	2	99-178	138.4	NA	--	--	--	--	7	22-273	143.1	93.8	3	98-625	279.2	300
Cu	8	61-140	95.0	28.8	6	38-107	79.1	27.0	11	10-210	111.8	72.1	8	95-480	203.0	147
Fe	6	78-155	103.7	26.1	6	89-159	102.3	28.6	6	48-94	80.4	16.2	6	26-187	108.6	52.9
Pb	11	66-138	98.9	19.2	11	68-131	97.4	18.4	12	23-94	72.7	20.9	13	80-234	107.3	39.9
Mn	4	81-104	93.1	9.70	3	92-152	113.1	33.8	--	--	--	--	--	--	--	--
Ni	3	99-122	109.8	12.0	--	--	--	--	--	--	--	--	3	57-123	87.5	33.5
Sr	8	110-178	132.6	23.8	--	--	--	--	--	--	--	--	7	86-209	125.1	39.5
Zn	11	41-130	94.3	24.0	10	81-133	100.0	19.7	12	46-181	106.6	34.7	11	31-199	94.6	42.5

Source: Ref. 4. These data are provided for guidance purposes only.
n: Number of samples that contained a certified value for the analyte and produced a detectable concentration from the FPXRF instrument.
SD: Standard deviation; NA: Not applicable; only two data points, therefore, a SD was not calculated.
%Rec.: Percent recovery.
-- No data.

TABLE 7

EXAMPLE ACCURACY FOR TN 9000[a]

Standard Reference Material	Arsenic			Barium			Copper			Lead			Zinc		
	Cert. Conc.	Meas. Conc.	%Rec.	Cert. Conc.	Meas. Conc.	%Rec.	Cert. Conc.	Meas. Conc.	%Rec.	Cert. Conc.	Meas. Conc.	%Rec.	Cert. Conc.	Meas. Conc.	%Rec.
RTC CRM-021	24.8	ND	NA	586	1135	193.5	4792	2908	60.7	144742	149947	103.6	546	224	40.9
RTC CRM-020	397	429	92.5	22.3	ND	NA	753	583	77.4	5195	3444	66.3	3022	3916	129.6
BCR CRM 143R	--	--	--	--	--	--	131	105	80.5	180	206	114.8	1055	1043	99.0
BCR CRM 141	--	--	--	--	--	--	32.6	ND	NA	29.4	ND	NA	81.3	ND	NA
USGS GXR-2	25.0	ND	NA	2240	2946	131.5	76.0	106	140.2	690	742	107.6	530	596	112.4
USGS GXR-6	330	294	88.9	1300	2581	198.5	66.0	ND	NA	101	80.9	80.1	118	ND	NA
NIST 2711	105	104	99.3	726	801	110.3	114	ND	NA	1162	1172	100.9	350	333	94.9
NIST 2710	626	722	115.4	707	782	110.6	2950	2834	96.1	5532	5420	98.0	6952	6476	93.2
NIST 2709	17.7	ND	NA	968	950	98.1	34.6	ND	NA	18.9	ND	NA	106	98.5	93.0
NIST 2704	23.4	ND	NA	414	443	107.0	98.6	105	106.2	161	167	103.5	438	427	97.4
CNRC PACS-1	211	143	67.7	--	772	NA	452	302	66.9	404	332	82.3	824	611	74.2
SARM-51	--	--	--	335	466	139.1	268	373	139.2	5200	7199	138.4	2200	2676	121.6
SARM-52	--	--	--	410	527	128.5	219	193	88.1	1200	1107	92.2	264	215	81.4

Source: Ref. 4. These data are provided for guidance purposes only.
[a] All concentrations in milligrams per kilogram.
%Rec.: Percent recovery; ND: Not detected; NA: Not applicable.
-- No data.

TABLE 8

EXAMPLE REGRESSION PARAMETERS FOR COMPARABILITY[1]

	Arsenic				Barium				Copper			
	n	r^2	Int.	Slope	n	r^2	Int.	Slope	n	r^2	Int.	Slope
All Data	824	0.94	1.62	0.94	1255	0.71	60.3	0.54	984	0.93	2.19	0.93
Soil 1	368	0.96	1.41	0.95	393	0.05	42.6	0.11	385	0.94	1.26	0.99
Soil 2	453	0.94	1.51	0.96	462	0.56	30.2	0.66	463	0.92	2.09	0.95
Soil 3	—	—	—	—	400	0.85	44.7	0.59	136	0.46	16.60	0.57
Prep 1	207	0.87	2.69	0.85	312	0.64	53.7	0.55	256	0.87	3.89	0.87
Prep 2	208	0.97	1.38	0.95	315	0.67	64.6	0.52	246	0.96	2.04	0.93
Prep 3	204	0.96	1.20	0.99	315	0.78	64.6	0.53	236	0.97	1.45	0.99
Prep 4	205	0.96	1.45	0.98	313	0.81	58.9	0.55	246	0.96	1.99	0.96

	Lead				Zinc				Chromium			
	n	r^2	Int.	Slope	n	r^2	Int.	Slope	n	r^2	Int.	Slope
All Data	1205	0.92	1.66	0.95	1103	0.89	1.86	0.95	280	0.70	64.6	0.42
Soil 1	357	0.94	1.41	0.96	329	0.93	1.78	0.93	—	—	—	—
Soil 2	451	0.93	1.62	0.97	423	0.85	2.57	0.90	—	—	—	—
Soil 3	397	0.90	2.40	0.90	351	0.90	1.70	0.98	186	0.66	38.9	0.50
Prep 1	305	0.80	2.88	0.86	286	0.79	3.16	0.87	105	0.80	66.1	0.43
Prep 2	298	0.97	1.41	0.96	272	0.95	1.86	0.93	77	0.51	81.3	0.36
Prep 3	302	0.98	1.26	0.99	274	0.93	1.32	1.00	49	0.73	53.7	0.45
Prep 4	300	0.96	1.38	1.00	271	0.94	1.41	1.01	49	0.75	31.6	0.56

Source: Ref. 4. These data are provided for guidance purposes only.

[1] Log-transformed data

n: Number of data points; r^2: Coefficient of determination; Int.: Y-intercept

— No applicable data

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