



NSW Site Auditor Scheme

Site Audit Statement

A site audit statement summarises the findings of a site audit. For full details of the site auditor's findings, evaluations and conclusions, refer to the associated site audit report.

This form was approved under the *Contaminated Land Management Act 1997* on 12 October 2017.

For information about completing this form, go to Part IV.

Part I: Site audit identification

Site audit statement no. 0301-2522

This site audit is a:

- ☐ statutory audit
- ☒ **non-statutory audit**

within the meaning of the *Contaminated Land Management Act 1997*.

Site auditor details

(As accredited under the *Contaminated Land Management Act 1997*)

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Site details

Address	191 Miller Road		
	CHESTER HILL	NSW	Postcode 2162

Property description

(Attach a separate list if several properties are included in the site audit.)

Lot 82 DP 1282378

Local government area

City of Canterbury Bankstown

Area of site (include units, e.g. hectares)

6.5 Ha

Current zoning

E4 General Industrial

Regulation and notification

To the best of my knowledge:

- ☒ **the site is** the subject of a declaration, order, agreement, proposal or notice under the *Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985*, as follows: (provide the no. if applicable)

☒ Declaration no. 20231109

☐ Order no.

☐ Proposal no.

☐ Notice no.

- ☐ the site is not the subject of a declaration, order, proposal or notice under the *Contaminated Land Management Act 1997* or the *Environmentally Hazardous Chemicals Act 1985*.

To the best of my knowledge:

- ☒ the site **has** been notified to the EPA under section 60 of the *Contaminated Land Management Act 1997*
- ☐ the site has not been notified to the EPA under section 60 of the *Contaminated Land Management Act 1997*.

Site audit commissioned by

Name Athlene Kyle

Company LogiSPACE Group Pty Ltd

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Nature of statutory requirements (not applicable for non-statutory audits)

- ☐ Requirements under the *Contaminated Land Management Act 1997*
(e.g. management order; please specify, including date of issue)

- ☐ Requirements imposed by an environmental planning instrument
(please specify, including date of issue)

- ☐ Development consent requirements under the *Environmental Planning and Assessment Act 1979* (please specify consent authority and date of issue)

- ☐ Requirements under other legislation (please specify, including date of issue)

Purpose of site audit

- ☐ **A1** To determine land use suitability

Intended uses of the land:

OR

- ☐ **A2** To determine land use suitability subject to compliance with either an active or passive environmental management plan

Intended uses of the land:

OR

(Tick all that apply)

- ☐ **B1** To determine the nature and extent of contamination

- ☒ **B2 To determine the appropriateness of:**

☐ an investigation plan

☒ **a remediation plan**

☐ a management plan

- ☐ **B3** To determine the appropriateness of a **site testing plan** to determine if groundwater is safe and suitable for its intended use as required by the *Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017*

- ☐ **B4** To determine the compliance with an approved:

☐ **voluntary management proposal** or

☐ **management order** under the *Contaminated Land Management Act 1997*

- ☒ **B5** To determine if the land can be made suitable for a particular use (or uses) if the site is remediated or managed in accordance with a specified plan.

Intended uses of the land: Commercial/Industrial

Information sources for site audit

Consultancies which conducted the site investigations and/or remediation:

JBS&G Australia Pty Ltd

Titles of reports reviewed:

JBS&G Australia Pty Ltd. Data Gap Investigation, 191 Miller Road, Chester Hill, NSW. Report Ref: 70509 171,715 Rev A, dated 7 November 2025.

JBS&G Australia Pty Ltd. Remedial Action Plan, 191 Miller Road, Chester Hill, NSW. Report Ref: 70509 171,715 Rev A, dated 12 November 2025. (the 'RAP')

JBS&G Australia Pty Ltd. Human Health and Ecological Risk Assessment, 191 Miller Rd, Chester Hill NSW. Report ref: JBS&G 70509/167171 Rev A. Dated 7 November 2025.

JBS&G Australia Pty Ltd. Volatile Halogenated Compound Soil-Vapour Source Identification, 191 Miller Road, Chester Hill, NSW. Report Ref: 59369/135300 Rev-4. Dated 18 June 2021.

JBS&G Australia Pty Ltd. Detailed Site Investigation, 191 Miller Road, Chester Hill, NSW. Report Ref: 59369/136408 Rev-1. Dated 9 April 2021

Other information reviewed, including previous site audit reports and statements relating to the site:

JBS Environmental Pty Ltd. Supplementary Contamination Assessment, 191 Miller Road, Chester Hill, NSW. Report Ref: JBS 40414 - 11915 (Rev 0), dated 23 October 2007.

CH2MHILL Australia Pty Ltd (Ross MacFarland – Site Auditor). 191 Miller Road, Chester Hill, Site Assessment, Remediation, Validation and Ongoing Site Management-Summary Site Audit Report. Report ref: SSAR 2002/13, dated 30 August 2002.

Site audit report details

Title Site Audit Report, Site Audit Report, 191 Miller Road Chester Hill NSW

Report no. 600278_0301-2522

Date 15 December 2025

Part II: Auditor's findings

Please complete either Section A1, Section A2 or Section B, not more than one section.
(Strike out the irrelevant sections.)

- Use **Section A1** where site investigation and/or remediation has been completed and a conclusion can be drawn on the suitability of land uses **without the implementation** of an environmental management plan.
- Use **Section A2** where site investigation and/or remediation has been completed and a conclusion can be drawn on the suitability of land uses **with the implementation** of an active or passive environmental management plan.
- Use **Section B** where the audit is to determine:
 - (B1) the nature and extent of contamination, and/or
 - (B2) the appropriateness of an investigation, remediation or management plan¹, and/or
 - (B3) the appropriateness of a site testing plan in accordance with the *Temporary Water Restrictions Order for the Botany Sands Groundwater Source 2017*, and/or
 - (B4) whether the terms of the approved voluntary management proposal or management order have been complied with, and/or
 - (B5) whether the site can be made suitable for a specified land use (or uses) if the site is remediated or managed in accordance with the implementation of a specified plan.

¹ For simplicity, this statement uses the term 'plan' to refer to both plans and reports.

Section A1

~~I certify that, in my opinion:~~

The ~~site is suitable~~ for the following uses:

~~(Tick all appropriate uses and strike out those not applicable.)~~

- ☐ ~~Residential, including substantial vegetable garden and poultry~~
 - ☐ ~~Residential, including substantial vegetable garden, excluding poultry~~
 - ☐ ~~Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry~~
 - ☐ ~~Day care centre, preschool, primary school~~
 - ☐ ~~Residential with minimal opportunity for soil access, including units~~
 - ☐ ~~Secondary school~~
 - ☐ ~~Park, recreational open space, playing field~~
 - ☐ ~~Commercial/industrial~~
 - ☐ ~~Other (please specify):~~
-

OR

- ☐ ~~I certify that, in my opinion, the **site is not suitable** for any use due to the risk of harm from contamination.~~

Overall comments:

Section A2

~~I certify that, in my opinion:~~

~~Subject to compliance with the **attached** environmental management plan² (EMP), the site is suitable for the following uses:~~

~~(Tick all appropriate uses and strike out those not applicable.)~~

- ☐ ~~Residential, including substantial vegetable garden and poultry~~
 - ☐ ~~Residential, including substantial vegetable garden, excluding poultry~~
 - ☐ ~~Residential with accessible soil, including garden (minimal home-grown produce contributing less than 10% fruit and vegetable intake), excluding poultry~~
 - ☐ ~~Day care centre, preschool, primary school~~
 - ☐ ~~Residential with minimal opportunity for soil access, including units~~
 - ☐ ~~Secondary school~~
 - ☐ ~~Park, recreational open space, playing field~~
 - ☐ ~~Commercial/industrial~~
 - ☐ ~~Other (please specify):~~
-

~~EMP details~~

~~Title~~ _____

~~Author~~ _____

~~Date~~ _____ ~~No. of pages~~ _____

~~EMP summary~~

~~This EMP (attached) is required to be implemented to address residual contamination on the site.~~

~~The EMP: (Tick appropriate box and strike out the other option.)~~

- ☐ ~~requires operation and/or maintenance of active control systems³~~
- ☐ ~~requires maintenance of passive control systems only³~~

² Refer to Part IV for an explanation of an environmental management plan.

³ Refer to Part IV for definitions of active and passive control systems.

Purpose of the EMP:

Description of the nature of the residual contamination:

Summary of the actions required by the EMP:

How the EMP can reasonably be made to be legally enforceable:

How there will be appropriate public notification:

Overall comments:

Section B

Purpose of the plan⁴ which is the subject of this audit:

To remediate the site to render it suitable for the proposed use commercial/industrial use.

I certify that, in my opinion:

~~(B1)~~

- ☐ ~~The nature and extent of the contamination has been appropriately determined~~
- ☐ ~~The nature and extent of the contamination has not been appropriately determined~~

~~AND/OR (B2)~~

- ☒ The investigation, **remediation** ~~or management plan~~ **is** appropriate for the purpose stated above
- ☐ ~~The investigation, remediation or management plan is not appropriate for the purpose stated above~~

~~AND/OR (B3)~~

- ☐ ~~The site testing plan:~~
 - ☐ ~~is appropriate to determine~~
 - ☐ ~~is not appropriate to determine~~
- ~~if groundwater is safe and suitable for its intended use as required by the Temporary Water Restrictions Order for the Botany Sands Groundwater Resource 2017~~

~~AND/OR (B4)~~

- ☐ ~~The terms of the approved voluntary management proposal* or management order** (strike out as appropriate):~~
 - ☐ ~~have been complied with~~
 - ☐ ~~have not been complied with.~~

~~*voluntary management proposal no.~~

~~**management order no.~~

~~AND/OR (B5)~~

The site **can be made suitable** for the following uses:

(Tick all appropriate uses and strike out those not applicable.)

- ☐ ~~Residential, including substantial vegetable garden and poultry~~
- ☐ ~~Residential, including substantial vegetable garden, excluding poultry~~
- ☐ ~~Residential with accessible soil, including garden (minimal home grown produce contributing less than 10% fruit and vegetable intake), excluding poultry~~
- ☐ ~~Day care centre, preschool, primary school~~

⁴ For simplicity, this statement uses the term 'plan' to refer to both plans and reports.

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- ☐ Residential with minimal opportunity for soil access, including units
- ☐ Secondary school
- ☐ Park, recreational open space, playing field
- ☒ **Commercial/industrial**
- ☐ Other (please specify):

IF the site is remediated/~~managed~~* in accordance with the following plan (**attached**):

*Strike out as appropriate

Plan title Remedial Action Plan, 191 Miller Road, Chester Hill, NSW

Croydon Park NSW.

Plan author JBS&G Australia Pty Ltd

Plan date 12 November 2025

No. of pages. 185

SUBJECT to compliance with the following condition(s):

Overall comments:

During demolition all hazardous building materials that potentially contain asbestos are to be removed in accordance with the appropriate WorkCover requirements and in accordance with the conditions of the approved Development Application.

Part III: Auditor's declaration

I am accredited as a site auditor by the NSW Environment Protection Authority (EPA) under the *Contaminated Land Management Act 1997*.

Accreditation no. 0301

I certify that:

- I have completed the site audit free of any conflicts of interest as defined in the *Contaminated Land Management Act 1997*, and
- with due regard to relevant laws and guidelines, I have examined and am familiar with the reports and information referred to in Part I of this site audit, and
- on the basis of inquiries I have made of those individuals immediately responsible for making those reports and obtaining the information referred to in this statement, those reports and that information are, to the best of my knowledge, true, accurate and complete, and
- this statement is, to the best of my knowledge, true, accurate and complete.

I am aware that there are penalties under the *Contaminated Land Management Act 1997* for wilfully making false or misleading statements.

Signed



Date 15 December 2025

Part IV: Explanatory notes

To be complete, a site audit statement form must be issued with all four parts.

How to complete this form

Part I

Part I identifies the auditor, the site, the purpose of the audit and the information used by the auditor in making the site audit findings.

Part II

Part II contains the auditor's opinion of the suitability of the site for specified uses or of the appropriateness of an investigation, or remediation plan or management plan which may enable a particular use. It sets out succinct and definitive information to assist decision-making about the use or uses of the site or a plan or proposal to manage or remediate the site.

The auditor is to complete either Section A1 or Section A2 or Section B of Part II, **not** more than one section.

Section A1

In Section A1 the auditor may conclude that the land is *suitable* for a specified use or uses OR *not suitable* for any beneficial use due to the risk of harm from contamination.

By certifying that the site is *suitable*, an auditor declares that, at the time of completion of the site audit, no further investigation or remediation or management of the site was needed to render the site fit for the specified use(s). **Conditions must not be** imposed on a Section A1 site audit statement. Auditors may include **comments** which are key observations in light of the audit which are not directly related to the suitability of the site for the use(s). These observations may cover aspects relating to the broader environmental context to aid decision-making in relation to the site.

Section A2

In Section A2 the auditor may conclude that the land is *suitable* for a specified use(s) subject to a condition for implementation of an environmental management plan (EMP).

Environmental management plan

Within the context of contaminated sites management, an EMP (sometimes also called a 'site management plan') means a plan which addresses the integration of environmental mitigation and monitoring measures for soil, groundwater and/or hazardous ground gases throughout an existing or proposed land use. An EMP succinctly describes the nature and location of contamination remaining on site and states what the objectives of the plan are, how contaminants will be managed, who will be responsible for the plan's implementation and over what time frame actions specified in the plan will take place.

By certifying that the site is suitable subject to implementation of an EMP, an auditor declares that, at the time of completion of the site audit, there was sufficient information satisfying guidelines made or approved under the *Contaminated Land Management Act 1997*

(CLM Act) to determine that implementation of the EMP was feasible and would enable the specified use(s) of the site and no further investigation or remediation of the site was needed to render the site fit for the specified use(s).

Implementation of an EMP is required to ensure the site remains suitable for the specified use(s). The plan should be legally enforceable: for example, a requirement of a notice under the CLM Act or a development consent condition issued by a planning authority. There should also be appropriate public notification of the plan, e.g. on a certificate issued under s.149 of the *Environmental Planning and Assessment Act 1979*.

Active or passive control systems

Auditors must specify whether the EMP requires operation and/or maintenance of active control systems or requires maintenance of passive control systems only. Active management systems usually incorporate mechanical components and/or require monitoring and, because of this, regular maintenance and inspection are necessary. Most active management systems are applied at sites where if the systems are not implemented an unacceptable risk may occur. Passive management systems usually require minimal management and maintenance and do not usually incorporate mechanical components.

Auditor's comments

Auditors may also include **comments** which are key observations in light of the audit which are not directly related to the suitability of the site for the use(s). These observations may cover aspects relating to the broader environmental context to aid decision-making in relation to the site.

Section B

In Section B the auditor draws conclusions on the nature and extent of contamination, and/or suitability of plans relating to the investigation, remediation or management of the land, and/or the appropriateness of a site testing plan in accordance with the *Temporary Water Restrictions Order for the Botany Sands Groundwater Source 2017*, and/or whether the terms of an approved voluntary management proposal or management order made under the CLM Act have been complied with, and/or whether the site can be made suitable for a specified land use or uses if the site is remediated or managed in accordance with the implementation of a specified plan.

By certifying that a site *can be made suitable* for a use or uses if remediated or managed in accordance with a specified plan, the auditor declares that, at the time the audit was completed, there was sufficient information satisfying guidelines made or approved under the CLM Act to determine that implementation of the plan was feasible and would enable the specified use(s) of the site in the future.

For a site that *can be made suitable*, any **conditions** specified by the auditor in Section B should be limited to minor modifications or additions to the specified plan. However, if the auditor considers that further audits of the site (e.g. to validate remediation) are required, the auditor must note this as a condition in the site audit statement. The condition must not specify an individual auditor, only that further audits are required.

Auditors may also include **comments** which are observations in light of the audit which provide a more complete understanding of the environmental context to aid decision-making in relation to the site.

Part III

In **Part III** the auditor certifies their standing as an accredited auditor under the CLM Act and makes other relevant declarations.

Where to send completed forms

In addition to furnishing a copy of the audit statement to the person(s) who commissioned the site audit, statutory site audit statements must be sent to

- the **NSW Environment Protection Authority**:
nswauditors@epa.nsw.gov.au or as specified by the EPA

AND

- the **local council** for the land which is the subject of the audit.



191 Miller Road, Chester Hill, NSW

LogiSPACE

Remedial Action Plan

JBS&G 70509 | 171,715 Rev A

12 November 2025





We acknowledge the Traditional Custodians of Country throughout Australia and their connections to land, sea and community.

We pay respect to Elders past and present and in the spirit of reconciliation, we commit to working together for our shared future.

Caring for Country The Journey of JBS&G
Artist: Patrick Caruso, Eastern Arrernte

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Figure 5b: Asbestos Detections in Soils

Figure 6: Location of Impacts

Abbreviations

Term	Definition
AFFF	Aqueous film forming foam
bgs	below ground surface
CFM	Chloroform
cis-1,2-DCE	cis-1,2-dichloroethene
CHC	Chlorinated Hydrocarbons
CLM Act	Contaminated Lands Management Act 1997
COPC	Constituent of Potential Concern
CSM	Conceptual site model
CTC	Carbon tetrachloride
1,2-DCA	1,2-dichloroethane
DNAPL	Dense non-aqueous phase liquid
DO	Dissolved oxygen
DQIs	Data Quality Indicators
Eh	redox potential
ESA	Environmental Site Assessment
LNAPL	Light Non-Aqueous Phase Liquid
MAHs	Monocyclic aromatic hydrocarbons
NSW DPE	Department of Planning and Environment
NSW EPA	NSW Environment Protection Authority
PCE	Tetrachloroethene
PFAS	Per- and poly-fluoroalkyl substances
PAHs	Polycyclic aromatic hydrocarbons
RAP	Remedial Action Plan
SAQP	Sampling, Analysis and Quality Plan
SVOC	Semi volatile organic compounds
1,1,1-TCA	1,1,1-trichloroethane
1,1,2-TCA	1,1,2-trichloroethane
TDS	Total dissolved solids
TRH	Total recoverable hydrocarbons
TCE	Trichloroethene
trans-1,2-DCE	trans-1,2-dichloroethene
US EPA RSL	US EPA Region 9 Regional Screening Levels
VC	Vinyl chloride
VOCs	Volatile organic compounds
VMP	Voluntary Management Proposal

1. Introduction

JBS&G Australia Pty Ltd (JBS&G) was previously engaged by MREP VILLAWOOD PTY LIMITED ATF MREP VILLAWOOD TRUST and Evolution Trustees Limited ATF LAM1 Prop Trust. (the client) to complete environmental investigations at the property located at 191 Miller Road, Chester Hill NSW (the site) to determine the site contamination status. The site comprises of an approximately 6.4 Hectare (Ha) parcel of land and is legally identified as Lot 82 in Deposited Plan (DP) 1282378. The site location and extent are shown in **Figure 1**.

The site has a long and complex history including its use for manufacturing of fertilizers, metal fabrication, materials importation and NSW Environmental Protection Authority (EPA) involvement regarding site contamination.

The environmental investigations completed at the site, as detailed in **Section 2.10**, including a detailed site investigation (DSI) (JBS&G 2021a)¹ a data gap investigation (DGI) (JBS&G 2025a)² and human health and ecological risk assessment (JBS&G 2025b)³ have reported that soil, groundwater and soil-vapour at the site are impacted to varying degrees with contaminants of potential concern (COPCs) including asbestos as asbestos fines/friable asbestos (AF/FA) and asbestos containing material (ACM), volatile chlorinated hydrocarbons (CHCs) and petroleum hydrocarbons inclusive of xylenes.

The site has been declared as Significantly Contaminated by the NSW EPA under the *Contaminated Land Management Act 1997*. The basis of the declaration is contamination of soil vapour and groundwater below the site with CHCs including trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (DCA) and vinyl chloride (VC). The sources of CHC impacts are identified by the EPA as former solvent drum storage, former wash down bays and “the dome tank”.

The site is now proposed to be redeveloped for commercial/industrial land use as a warehouse logistics estate. A Remedial Action Plan (RAP) (JBS&G 2021c)⁴ was previously prepared that presented a framework for addressing the identified contamination on the site and adjoining property of 149 Orchard Road Chester Hill in order to make the site (and adjoining property) suitable for commercial / industrial use. The RAP included a requirement for a data gap investigation (DGI) to allow the final extent of remediation to be defined in an addendum RAP. JBS&G has been since engaged to prepare an RAP for the current proposed redevelopment.

The current RAP has been prepared as following the completion of the DGI (JBS&G 2025a) and HHERA (JBS&G 2025b) and is specific to the current extent of contamination that has been confirmed as present on the site, poses a potentially unacceptable health and/or ecological risk and that requires to be remediated to make the site suitable for the proposed redevelopment of the site for a warehouse logistics estate.

This RAP has been prepared in accordance with NEPC (2013)⁵, guidelines made or approved by the NSW EPA and relevant Australian Standards.

¹ Detailed Site Investigation – 191 Miller Road Chester Hill NSW, 6 April 2021, 59369/136408 Rev 0 (JBS&G 2021a)

² Data Gap Investigation – LogisSPACE 191 Miller Road, Chester Hill, NSW, 7 November 2025, 70509/171715 Rev A (JBS&G 2025a)

³ Human Health and Ecological Risk Assessment – LogisSPACE 191 Miller Road, Chester Hill, NSW, 7 November 2025, 70509/167171 Rev A (JBS&G 2025b)

⁴ Remedial Action Plan – 191 Miller Road and 149 Orchard Road Chester Hill NSW, 14 September 2021, 59369/140591 Rev 0 (JBS&G 2021c)

⁵ National Environmental Protection (Assessment of Site Contamination) Measure 2013. National Environment Protection Council, 2013 (NEPC 2013).

1.1 Objectives

The objective of this RAP is to document the procedures and standards to be followed to remove the risks posed by the identified contamination issues, such that the site is made suitable for redevelopment while ensuring the protection of human health and the surrounding environment. A secondary objective of the RAP is to select remediation / management options that are consistent with the principles of ecologically sustainable development (ESD).

1.2 Previous Assessments

A range of previous assessments have been completed for the site. Background information has been sourced from these documents and is summarised throughout this report. A substantial dataset of soil, surface water and groundwater data has also been collected across these investigations and is provided as **Appendix A**. Previous sample locations are shown on **Figures 3-5**. Previous reports relied upon in preparing this data include:

- *Site Management Plan – 191 Miller Road, Chester Hill NSW*, 22 August 2002, HLA-Enviroscience Pty Limited (HLA 2002)
- *Summary Site Audit Report (SSAR 2002/13) – 191 Miller Road, Chester Hill*, August 2002, CH2M HILL (CH2M 2002)
- *Auditor Review of Groundwater Monitoring Report – 191 Miller Road, Chester Hill*, 2004, CH2M HILL (CH2M 2004)
- *Material Classification – 191 Miller Street, Chester Hill, NSW*, 30 May 2007, Ref: JBS 40299-11573, JBS (JBS 2007a);
- *Supplementary Contamination Assessment - 191 Miller Road, Chester Hill*, October 2007, Ref: JBS 40414 – 11915, JBS (JBS 2007b);
- *Lease Baseline Contamination Assessment – Part Lot 8 DP1039882, 191 Miller Road, Chester Hill, NSW*, 9 December 2008, Ref: JBS 40705 – 12797, JBS (JBS 2008);
- *Characterisation of Excavated Material for Disposal – Part 191 Miller Road, Chester Hill, NSW*, 7 August 2009, Ref: JBS40898-13577, JBS (JBS 2009);
- *Preliminary Contamination Assessment*, 14 November 2014, Ref: 13263-IDF-1, Ideal Civil Test (Ideal 2014);
- *Lease Baseline Contamination Assessment – Part Lot 8 in DP DP1039882, 191 Miller Road Chester Hill, NSW*, 12 January 2015, Ref: JBS&G (50419-60498), JBS&G (JBS&G 2015)
- *Discharge Impact Assessment – 191 Miller Road, Chester Hill, NSW*, 3 May 2017, Ref: JBS&G (52401-108586), JBS&G (JBS&G 2017);
- *Detailed Site Investigation – 191 Miller Road, Chester Hill*, 9 April 2021, Ref: 59369/136408, JBS&G (JBS&G 2021a);
- *Volatile Halogenated Compound Soil-vapour Source Identification - 191 Miller Road, Chester Hill, NSW*, 18 June 2021, Ref: JBS&G 59369-135300, JBS&G (JBS&G 2021b);
- *Remediation Action Plan – 191 Miller Road and 149 Orchard Road Chester Hill NSW*, 14 September 2021, Ref: 59369/140591 Rev 0, JBS&G (JBS&G 2021c);
- *Groundwater Monitoring Event, May 2023 – 191 Miller Road, Chester Hill NSW*, (date unknown), JBS&G (JBS&G 2023);

- *Data Gap Investigation – LogisSPACE 191 Miller Road, Chester Hill, NSW rev A, 7 November 2025* (JBS&G 2025a); and
- *Human Health and Ecological Risk Assessment – LogisSPACE 191 Miller Road, Chester Hill, NSW Rev A, 7 November 2025, (JBS&G 2025b).*

1.3 Proposed Development

The site will be redeveloped as warehousing with two large buildings constructed over the northern and southern portions of the site with access driveways and car parking dividing. The warehouses are further proposed to be internally divided into two tenancies for the southern building and four tenancies for the northern building.

Of particular note is an area of flood storage, which is proposed to be located in the south-western portion of the site. Based on the recent development present within the adjoining property to the south (149 Orchard Road), it is likely that the building in this area will be constructed on piers (with sub-slab void) to address the required flood storage capacity.

2. Site Condition and Surrounding Environment

2.1 Site Identification

The site location is shown on **Figure 1** and the site extent is shown on **Figures 1** and **2**. The extent of the site is summarised in **Table 2.1** following.

Table 2.1: Site Identification

Site Feature	Description
Address	191 Miller Road, Chester Hill NSW 2162
Lot and DP	Lot 82 DP 1282378
Site Area	6.46 Hectares (ha)
Zoning	E4 General Industrial (Canterbury-Bankstown Local Environmental Plan 2023)
Local Government Area	City of Canterbury Bankstown
Coordinates	314559 E; 6248862 N

2.2 Site Description and Operations

A site inspection was undertaken on 8 October 2025 by one of JBS&G's trained and experienced environmental consultants. Operations within the site primarily comprised of a waste processing and recycling facility which will cease operations in December 2025. The current site layout is shown on **Figure 2b**. Existing structures (proposed to be demolished) include the following:

- Building A (650 m²) – Offices and amenities. This building is of concrete, brick and sheet metal construction and used as part of the waste processing facility. The buildings exhibited minor dilapidation;
- Building B (500 m²) – Engineering/mechanical workshop. This building is of steel frame and metal sheet construction, with a cinder block facade. The entire building is constructed on a concrete slab in generally good condition. It is understood the building was used for parts storage and mechanical repair for machinery associated with the waste processing facility and is currently not in use; and
- Building C (3500 m²) – Warehouse/distribution centre and offices/amenities. This building is of steel frame and sheet metal construction. The entire warehouse is constructed on a concrete slab in good condition. The building was used for storage and distribution of materials.

Of further note, the three large stockpiles (SP01, SP02 and SP03) as previously described in JBS&G (2021c) were observed to still be present and appeared undisturbed, with extensive vegetation now present across the surfaces. In addition, various stockpiles of soil materials were noted within the waste processing yard (in central portion) and in the southern portion. It is unknown at this point, whether the current operators will remove these stockpiles prior (except SP01-SP03 which will remain) to redevelopment of the site – as such, these stockpiled materials have not been assessed in previous investigations completed for the site – but provision is provided in this RAP to assess these materials if they are still present on site when remedial works commence / tenancies cease.

2.3 Surrounding Land-Uses

A review of the information via ePlanning (NSW 2025⁶) has been undertaken of surrounding land-uses and are as follows:

- North: The site is bound to the north by the Bankstown Line and Inner West & Leppington Line. Further north is a combination of light commercial, residential and public recreational spaces. Chester Hill Fire Station is located approximately 50 m north of the site boundary;
- East: The site is bound to the east by 161 and 173 Orchard Road. Further east lies a combination of high to low density residential buildings;
- South: The southern boundary of the site adjoins 149 Orchard Road (recently developed following remediation works) followed by 127 Orchard Road (downgradient to the site which was previously declared as a significantly contaminated land but was later repealed post-remediation and validation works); and
- West: the site is bounded to the west by Miller Road.

2.4 Topography

Reference to the eSPADE NSW Soil and Land Information database (DPIE 2025⁷) indicates that the regional landscape is characterised by gently undulating rises, local relief to 30 m with slopes typically greater than 5 %. Broad rounded crests and ridges with gently inclined slopes are anticipated.

The site is situated at approximately 20 m Australian Height Datum (AHD) and slopes downward to the southwest, toward a constructed concrete drainage line ('Byrnes Creek Channel').

JBS&G (2017⁸) presents details of the drainage infrastructure at 191 Miller Road, based on a stormwater report prepared by LP Consulting Australia (LP 2016⁹) and a local stormwater design report (Civic 2008¹⁰). Within 191 Miller Road, two stormwater discharge points were identified. Excess overland water flow is directed by site topography into onsite stormwater and discharges into municipal infrastructure, eventually leading to Byrnes Creek Channel.

⁶ NSW Planning Portal Spatial Viewer, NSW Government. Accessed 28 October 2025. (NSW 2025)

<https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address>

⁷ eSPADE 2.2, NSW Department of Planning, Industry and Environment. Accessed 28 October 2025 (DPIE 2025)

<https://espade.environment.nsw.gov.au/>

⁸ *Discharge Impact Assessment – 191 Miller Street Chester Hill NSW*. JBS&G Australia Pty Ltd dated 5 May 2017 reference 52401-107609 Revision 1. JBS&G (2017)

⁹ *Site Stormwater Audit Report for WasteOp, 191 Miller Road, Chester Hill, NSW*. LP Consulting Australia Pty Ltd dated 19 October 2016. LP (2016)

¹⁰ *Bankstown City Council Villawood Drain Works-As-Executed Study*. Civic Design, July 2008

2.5 Geology

Reference to Penrith 1:100,000 Geological Series Sheet 9030 (DME 199110) indicates the Site is underlain by Bringelly Shale.

In reference to DPIE (2025⁷), the site is underlain by Blacktown Residual Soils, which are described as shallow to moderately deep (>100 cm) hard setting mottled texture soils, red and brown podzolic soils on crests, grading to yellow podzolic soils on lower slopes and drainage lines. Lithological conditions encountered during previous intrusive investigations reported that the Site is underlain by fill material across the majority of its footprint, which is generally shallow (<1 m) with some deeper pockets (4.5 m). Fill materials and natural soils on the site have been reported to be generally clay based. Observations of natural soils and lithology at the Site were in general concordance with the regional geological (DME 1991) and soil landscape indicated by DPIE (2025).

2.6 Hydrogeology

Based on extensive investigation works on the site the groundwater conditions are summarised following:

- **Aquifers:** shallow groundwater is present at depths ranging from 0.5-2.5 m bgl. It occurs as an unconfined aquifer within fill based soils and natural silty clay materials in which the aquifer thickness is approximately 5 m. Significant vertical migration of groundwater is mitigated by underlying shale bedrock, where a deeper semi-confined/confined aquifer is present. The depth to competent shale rock varies from 1-6 m bgl across the site.
- **Groundwater Elevation:** Standing groundwater levels (corrected to m AHD) and interpolated groundwater contours of the shallow aquifer are shown on **Figures 3a-i** and **3a-ii**. Groundwater levels range from 19-23 m AHD with flow occurring in a west/south-westerly direction towards the box culvert/open stormwater channel (Byrnes Creek Channel). There is some localised groundwater mounding in the vicinity of MW07, which suggest this is an area of localised groundwater recharge, where the site has been observed to flood in periods of heavy rainfall.
- **Hydraulic Conductivity:** Hydraulic conductivity was assessed by bail down testing within two monitoring wells (screening shallow aquifer) in the south-western portion of the site. The average conductivity has been calculated at 7.54×10^{-2} m/day. This low value is consistent with the relatively high hydraulic gradient across the site and is indicative of a low potential for significant groundwater migration.
- **Geochemical Properties:** Shallow groundwater within the site is generally characterised as slightly acidic to neutral (pH ranges from 6.45 to 7.11), brackish to saline (EC ranged from 5.3 mS/cm to 21.7 mS/cm) and anaerobic (dissolved oxygen levels range from 0.02-0.84 mg/L). The salinity of the groundwater is consistent with the aquifer materials (marine origin) as well as the low hydraulic conductivity of the aquifer and implies low recharge/low groundwater flow.
- **Beneficial Uses:** There are no registered bores within proximity of the site.

2.7 Meteorology

The Bureau of Meteorology hosts local climate statistics for Australian locations. A review of statistics presented for the nearby station of Bankstown Airport (1.3 km from the Site) indicated the following relevant information (BOM 2025¹¹):

- The region is characterised as humid, subtropical, with mild winters and warm summers;
- Temperature minimums range from 5.3 °C to 18.3 °C, and maximums from 17.5 °C to 28.5 °C; and
- Mean rainfall ranges from 44.3 mm to 111.9 mm per month. The highest rainfall occurs in late Summer and early Autumn.

2.8 Acid Sulfate Soils

Based on a review of the Liverpool Acid Sulfate Soils Risk Map from DLWC (1997¹²), the site is located in the area with no known occurrence of ASS.

2.9 Site History

A review of site history has been undertaken via review of previous investigations and historical aerial photographs provided in JBS&G (2021a). A summarised site history is provided as **Table 2.2** following. Refer to **Figure 2a** for the location of key historical site features.

Table 2.2: Site History Summary

Timing	Historical Records
1930	The site is an undeveloped portion of land, intersected by numerous earthen tracks. Vegetation was observed across the majority of the site footprint, comprising a mixture of larger flora (trees/shrubs) and likely grassed surfaces.
1942-1943	The Villawood Explosives Factory was established and commenced operations in 1942. Portions of these operations occurred within the site, noting that the main operational acid production was undertaken in the central portion of 149 Orchard Road. Activities on site included Oleum from sulfur and nitric acid production (from sodium nitrate and by ammonia oxidation). The factory was progressively decommissioned after 18 months of operation. During operation, the site contained numerous features including oleum plant, dilute oil of vitriol (DOV) tank, acid storage tanks, cooling towers, compressor houses, sulfur and coal dumps and other amenities and buildings. The Dome (used as a neutralisation tank adjacent to the water treatment plant) was visible on historical aerial images adjacent to the central southern border.
1946	The site was leased to Australian Fertilisers Limited (AFL) including onsite facilities. Nitrogen-based production changed to sulfur-based processed due to increased demand.
1948	Four above ground storage tanks (AGSTs) north of the DOV tank farm were present.
1951	Contact acid plant was extended to include an absorption tower and a second converter.
1955	Gas producer plant was removed from the site.
1957	Ownership was transferred to AFL.

¹¹ Climate Statistics for Australian Locations – Monthly Climate Statistics – Bankstown Airport AWS. Bureau of Meteorology. Accessed 29th October 2025. BOM (2025) http://www.bom.gov.au/climate/averages/tables/cw_066137.shtml

¹² 1:25000 Liverpool Acid Sulfate Soil Risk Map – Edition Two. NSW Department of Land and Water Conservation dated December 1997. DLWC (1997)

Timing	Historical Records
1961-1965	Part of the property was occupied by The George Shirley company. The contact acid plant was in operation, and battery acid was produced by dilution of sulfuric acid stored in the DOV tank farm. The layout of site appeared similar to the previous (1951) aerial image, with the exception of the demolition of a structure adjacent to the current day Building B, and the addition of a new large warehouse/shed structure in the central portion of the property.
1966-1970	Shirley Fertilisers Pty Ltd took over management of operations, excluding the transport division in the northern site portion. Some building modification was undertaken.
1969	Storage of waste material (in the form of drums in stockpiles) generated by the production of ethylene dichloride or dichloroethylene (therein referred to as 'EDC') from the ICI Botany Plant was present onsite. No further information was made available to the year at which these drums were removed offsite.
1991	Building A was present on the west site extent, in addition to the surrounding current day car park. An external structure had been added to Building C. A central warehouse structure had also been demolished since the previous aerial image (1986).
1996-2002	Building C erected and was used to store liquid chemicals in <200 L drums, including flammable liquids and solids, powdered chlorine and corrosives (Class 3, Class 4, Class 5 and Class 8). Demolition of the former oleum plant. A flammable liquids store was constructed adjacent to the DOV tank farm.
2002	Removal and validation of UST (70 kL) in the northwestern portion of the Site. Remediation and validation of the Dome whereby contaminated water (solvent impacted liquid) and associated waste in the form of sludge) were removed from site. Noting, that the surrounding brick walls and concrete base had been penetrated through. The Dome was backfilled with fill material with identified asbestos impacts and covered with clean imported material (CH2M 2002). Statutory Site Audit Statement (CH2M 2002) issued confirmed the site was suitable for continued commercial/ industrial use subject to a Site Management Plan (HLA 2002).
2009	The central portion of the property was observed to be occupied by numerous soil and material stockpiles. Building C appeared to have been re-roofed. Containers were present throughout the east and north of the property. An EPL (13198) was issued to Number 1 Demolition & Excavation (NSW) Pty Limited (N1DE) on 21 December 2009 for the storage and non-thermal processing of waste at 191 Miller Road. Permissible activities included storage and processing of wastes, as defined in Schedule 1 of the POEO Act: building and demolition wastes (B&D), virgin excavated natural material (VENM), asphalt waste, garden waste; and wood waste.
2010	Cleanup notice (Notice number: 1113830 and 1114514) issued by the EPA in 2010 to N1DE for stockpiles of soil with intermixed building and demolition wastes including asbestos located central south and northeastern section of the site. Another cleanup notice (Notice Number: 1518066) was issued to N1DE following an onsite fire for the migration of fire water from the burning stockpile flowing into stormwater drains.
2011	SP02 was observed to be pushed in the southerly direction to make space for the existing shipping container yard in the north-western portion of the Site.
2013	N1DE's EPL was revoked in December 2013 after 3 years in liquidation.
2014	An EPL (20421) was issued to Builders Recycling Operations Pty Limited on 9 July 2014 for the storage and non-thermal processing of waste at the Site. Permissible activities included storage and processing of wastes, as defined in Schedule 1 of the POEO Act included B&D and VENM.

Timing	Historical Records
2017	SP03 was observed to be building up from material brought onto site and/ or existing material.
2020	A diesel above ground storage tank (AGST) was used on the northern portion of the waste processing area in the central south-western portion of the site located on bare earth. It was understood that occasional small spills have occurred in the area whilst refuelling. An area of the property was used as a wash bay which free drained onto bare earth. The wash bay was used to clean vehicles, plant and tools at the Site.
2021	EPA was notified of the contamination by the landowner of 191 Miller Road Chester Hill under s60 of the Contaminated Land Management Act 1997 (CLM Act).
2023	EPA declared the Site as significantly contaminated land under section 11 of the <i>Contaminated Land Management Act 1997</i> (Declaration No. 20231109; Area No. 3566). The land is reported to be contaminated with TCE, cis-1,2-DCE, 1,1-DCE, 1,1-DCA and VC. The contamination is reported to occur within soil vapour and groundwater.
2025	The EPL 20421 (licensee: Builders Recycling Operation Pty Ltd) was surrendered and operations has ceased.

2.10 Previous Investigations

A review of all the available previous investigations as listed in **Section 1.2** has been summarised in **Table 2.3** below.

Table 2.3: Summary of Previous Investigations

Date	Assessment Findings
2002	Removal and validation of the UST (70 kL) and its associated pipework in the northwestern portion of the site. Impacted proximal soils were excavated, stockpiled and land farmed. Validation sampling for the excavation and land farmed material indicated that concentrations of TPH, BTEX and PAHs were less than the adopted soil investigations levels (SILs). HLA Envirosiences Pty Ltd (2002) prepared a Site Management Plan (SMP) for PacLib Management Pty Ltd, summarising the relevant environmental/human health controls to manage residual contamination on the Site. Part of the SMP was to summarise the historical reports (not made available to JBS&G) dating back to 1992 including a series of soil and groundwater investigations. Main COPCs identified included exceedances for soil media in lead, sulfur, asbestos, B(a)P, TPH, PAH, TCE and DCE; for groundwater media in sulfate and heavy metals (lead, copper and zinc). Remediation and validation of the Dome whereby contaminated water (solvent impacted liquid) and associated waste in the form of dark liquid with a strong organic odour) were removed from site. Noting, that the surrounding brick walls and concrete base had been penetrated through. The Dome was backfilled with fill material with identified asbestos and covered with clean imported material (CH2M 2002). Statutory Site Audit Statement (CH2M 2002) issued confirmed the site was suitable for continued commercial/ industrial use subject to a SMP (HLA 2002).
2004	CH2M (2004) provided an auditor review of the Groundwater Monitoring Report by HLA (2004) which was not made available to JBS&G. HLA (2004) reported that the primary (the Dome) source of onsite groundwater contamination has been removed prior to the date of the memorandum, and estimated hydraulic conductivity to be between 0.013 and 1.3 m per year, based on the soils permeability and hydraulic gradient (0.025 m/m). The auditor agreed that the sources had been removed and that the contaminants were naturally attenuating within the boundary of the site. They did not identify the need to continue monitoring

Date	Assessment Findings
	the groundwater status and deemed the groundwater contamination not posing any adverse impact at the site for its continued commercial use provided that the SMP protocols continued to be implemented.
2005-2008	CMA Corporation Pty Ltd occupied the site as a small (< 30,000 tonne p.a.) scrap metal transfer facility. The main operations included separation of certain components from scrap (e.g. engines), stockpiling scrap material and loading for offsite disposal. JBS (2007) was engaged by TH & TH Chung to undertake soil and groundwater contamination studies to inform the environmental status of the entire site prior to divestment. The works included a desktop review of the site, soil sampling via test pitting, groundwater monitoring at three well locations to the south of the Site. In soils, there were elevated TPH were identified at the surficial levels at TP1, TP3, TP6, TP7, TP17 with elevated B(a)P at TP3, TP5, TP17. In groundwater, there were elevated levels of zinc and 1,2-dichloroethane at MWS10 (south of the site). The groundwater was observed to be of low dissolved oxygen, neutral pH and of brackish salinity. JBS (2008) was engaged by CMA Corporation Pty Ltd to complete a lease baseline contamination assessment via systematic test pits on the central south-western and eastern portion of the Site. Samples were analysed for heavy metals, total petroleum hydrocarbon, BTEX, PAHs, OCPs/ PCBs, VOCs and asbestos. Elevated levels of lead, zinc, TPH C₁₀-C₃₆ and PAHs were reported.
2009	The current day SP02 (estimated to be 8000 tonnes) was characterised for offsite disposal by JBS (2009). The materials were reported to be excavated from the north-eastern extent of the site during levelling for other construction works. The stockpiled material was observed to be of sandy gravelly clay, silty clay, and silty sand fill material of grey, brown, grey and medium brown in colour. Demolition rubble inclusions (brick, concrete, tile fragments, fibreglass, wire, and rubber) and ACM were found throughout the stockpile. The material was classified as General Solid Wast Special (Asbestos). JBS suggested that an ongoing management plan should applied for retaining the onsite material or a RAP be developed to facilitate the offsite disposal of the asbestos impacted materials.
2014	Ideal Civil Test (2014) prepared a preliminary contamination assessment for Wasteop. The assessment included a desktop review, site inspection and sampling of stormwater residue. The objective of the assessment was to provide an indication of how hardened residues present within site stormwater assets. The location of the sample was not provided in the report, however, it was identified to be 100% sulfur.
2015	JBS&G (2015) was engaged by TH & TH Chung for a lease baseline assessment of Builder Recycling Properties Pty Ltd who proposed to operate a recycling business on Site under an EPL. The soil sampling works included 16 test pits across the entire Site to a depth of 2.0 mbgs, whereby soil samples were analysed across heavy metals, PAH, TRH/BTEX, VOCs, Asbestos, OCPs/PCBs and sulfur. A stormwater sample and a yellow mineral solid from the stormwater drain was additionally collected and analysed for similar but relevant COPCs. Fibrous asbestos/ asbestos fines were found to be in six locations ranging from 0-1 mbgs exceeding the commercial/ industrial health screening levels criteria. The groundwater sample exceeded heavy metal concentrations (copper, lead, nickel and zinc) ASC NEPM freshwater groundwater investigation levels. The yellow mineral was found to contain high concentrations of sulfur. JBS&G recommended implementing an asbestos management plan.
2017	JBS&G (2017) was engaged by Builders Recycling Operations to undertake an assessment of potential impacts of stormwater and groundwater discharge from the Site. The works included installation and sampling of nine new wells (MW01-MW09), sampling of two surface water discharge points offsite and one up-gradient location. The samples were analysed for Heavy Metals, PAH, TRH/ BTEX, VOCs, OCP/ OPPs, SVOC, Phthalates, Phenols, EC, pH and TSS. The groundwater parameters were consistent with historical findings. MW03 (upgradient well) had numerous heavy metals exceedances to the ANZECC (2000) screening criteria but was associated to be urban geological conditions. MW08 (downgradient well) had a trichloroethene (TCE) detect above assessment guidelines. For the surface water samples, chemical analysis was generally found to have below laboratory reporting limit (LOR) or below the adopted assessment screening criteria, however, the TSS and heavy metal (zinc, chromium, copper) levels were found to exceed the screening guideline. JBS&G (2017)

Date	Assessment Findings
	recommended implementation of management to remove gross pollutants from water and a program of ongoing stormwater monitoring to verify its success.
2021	JBS&G (2021a) was engaged by Minter Ellison on behalf of TH & TH Chung to complete a DSI to inform the potential contamination issues for a development application. The works involved a desktop review of historical reports and, site conditions and its surrounds, and an intrusive investigation program including the analysis of soil, groundwater and soil vapour samples. <u>Soil:</u> Fill material was observed at almost every in-situ location followed by natural clays (and at times, sand) underlain by natural shale. SP01, SP02 and SP03 were characterised as fill material of mixed clay, silt and sand intermixed with anthropogenic and organic waste. The presence of asbestos via AF/FA and ACM in SP01 and SP02, and within the fill material via northeast site corner (JBSG2015_TP06, JBSG2015_TP09, JBSG2015_TP17, JBSG2015_TP18 and JBSG2015_TP20) were found to be potentially unacceptable for future site users. <u>Groundwater:</u> The groundwater had a slightly acidic to neutral pH (6.45 to 7.11), brackish to saline (5.3 to 21.7 mS/cm), generally low dissolved oxygen (0.02 to 2.08 and 4.92 mg/L) and a range of redox potentials (-141 to 136 mV). Several ecological screening level exceedances in both up and downgradient with elevated heavy metals concentrations being associated as background. Health based exceedances for TCE in two downgradient wells (JBBH59/MW06 – 3.5 mg/L and JBBH45/MW07 – 4.3 mg/L) and two cross gradient wells (JBBH64/MW15 – 0.42 mg/L and JBBH65/MW16 – 2.2 mg/L) <u>Soil Vapour:</u> PID responses generally captured between 2-4 ppm with an elevated reading of 50 ppm (JBSV41). Methane was detected at 6 locations (up to 38 %v/v) generally around the south/south-western fringe of SP01 and one isolated spot north-west of Building A. Elevated CO₂ (>1.5% v/v) was observed to be in majority sub-surface conditions of the site. Several CHCs (cis-1,2-DCE, TCE, VC) exceeded the ASC NEPM HIL-D criterion; these were located in two hotspots: (1) north-west portion of the site (JBSV32 and JBSV34); and (2) immediately west of SP01 in the storage yard (JBSV45 and JBSV47). It was noted that the groundwater impacts may not be representing as a source to the soil vapour impact. Indoor air sampled within the Building B was not impacted by CHCs at levels exceeding the adopted indoor air assessment criteria. This indicates that vapour intrusion from the sub-surface into site structures does not represent an unacceptable risk to current site users. JBS&G recommended that future remediation and management be implemented to consider the soil, groundwater and soil vapour-based impacts. There were several data gaps that were required to be addressed prior to/ during remediation including the: • Characterisation: ○ Of the soils underlying the existing building footprints; ○ Of the residual soils within the waste processing yard and the eastern portion of site; ○ Of the soils underlying the transformer within the northeast site portion; ○ Of the soils within the containers on the periphery of the waste processing yard. • Assessment: ○ Of groundwater impacts north and west of the historical Dome; • Confirm: ○ the presence of a potential UST south of Building A; ○ the source and significance of hazardous ground gases (HGGs) detected west of SP01. A potential trigger for the notification of groundwater contamination was advised on the basis of CHCs exceeding the human health and ecological assessment criteria for the site in soil vapour and groundwater.

Date	Assessment Findings
2021	JBS&G (2021b) was engaged by Minter Ellison on behalf of TH & TH Chung to further complete an additional soil vapour evaluation of the mid-gradient portion of the site for the presence of potential soil-based sources of CHCs. The scope of works included the installation and sampling of 81 soil vapour probes of which included a combination of individual and nested probes, and vapour pins; comparison of the collected data against criteria and infer a volume/ area of the CHC source material. Out of the 67 locations samples (as the balance of the probes were inundated with water), ten locations were exceeding in the health risk assessment for CHCs. There were three identified hotspots of chlorinated hydrocarbon impact: (1) north-west of the assessment area at SV101; (2) central east from SV114 across to SV135; (3) south from SV165 to SV162. There were high concentrations of methane identified on the western fringe of SP01, likely associated with the microbial degradation of organic material. The source mass of each CHC component was estimated to be cis-1,2-DCE (24.4g), PCE (3.35g), TCE (8.36g) and VC (0.103g). The indicative quantity of impacted soil was estimated to be 6454 tonnes. There were several data gaps coming out of this investigation: • Lateral extents of impacts at SV101, SV157 and SV162; • 14 locations central west of the assessment area was inundated with water and therefore, no assessment was conducted; • No vapour sampling has been conducted underneath the stockpiles (SP01 and SP02) due to access issues; however, adjacent groundwater wells indicated their locations were not affected significantly by CHCs.
2021	JBS&G (2021c) was engaged by Minter Ellison on behalf of TH & TH Chung to complete a combined RAP for 191 Miller Road and 149 Orchard Road, Chester Hill NSW. The COPCs summarised by JBS&G (2021c) relevant to the site included asbestos as asbestos fines/friable asbestos (AF/FA) and asbestos containing material (ACM) and CHCs. Remediation of site impacts was proposed to be addressed via a combination of remediation methodologies: <i>ex-situ</i> CHC stripping from soil, <i>in-situ</i> bioremediation of CHC impacted groundwater, cap and containment of asbestos impacted soils, and provision of vapour barriers to future structures.
2023	No formalised reports were identified, however, data was presented (also utilised in this report) showing a groundwater monitoring event undertaken during May 2023 of the (9) historical wells. The data shows exceedances of: • Copper (up to 0.027 mg/L) and zinc (up to 0.042 mg/L) attributed to background concentrations for majority of the groundwater wells; and • 1,1-DCE (up to 1.1 mg/L), cis-1,2-DCE (up to 1.9 mg/L), TCE (up to 4 mg/L) and VC (up to 0.14 mg/L) generally occurring at JBBH45/MW07 and MW07(south-western portion of the site).
2025	A DGI and HHERA have been completed for the site in 2025 (JBS&G 2025a and 2025b) to support preparation of this RAP to make the site suitable for the proposed redevelopment. The DGI has reported: • Chlorinated hydrocarbon (CHC) impacts in groundwater had been delineated to largely non-detect levels at off-site locations located a short distance hydrogeologically downgradient of the site. The CHC impacts in shallow groundwater were not found to be correlated with soil vapour impacts; • CHC impacts in soil vapour within the south-western portion were considered likely to be associated with historical releases to the stormwater pits / pipes (refer to Figure 2b) in this area; • Hazardous ground gas (HGG) monitoring was completed herein and the reported conditions were consistent with 'very low risk' and 'low risk conditions' as defined in EPA (2020). Further monitoring is required to confirm these preliminary findings; and

Date	Assessment Findings
	- Organic matter was observed to be within stockpiled soils (SP01 and SP02) and were considered likely to be a potential source of methane / associated HGG. The HHERA has considered the fill environmental dataset available for the site. It was reported: - Site impact does not pose a potential ecological risk where site soils are not proposed to be used as growing media / top soils; - The maximum levels of CHCs in soil vapour, typically present to the west of the central portion of the site, pose a potentially unacceptable health risk by vapour intrusion; and - The maximum level of xylene in soil vapour, present at the south-western portion of the site, poses a potentially unacceptable aesthetic hazard by vapour intrusion to cause detectable levels of xylene odours. The HHERA did not consider asbestos or HGG.

3. Conceptual Site Model

A conceptual site model (CSM) has been prepared for the site to identify potential contamination sources, pathways, and receptors, consistent with NEPC (2013) ASC NEPM. The ASC NEPM states that a CSM should identify complete and potential pathways between known or potential source(s) and receptor(s), referred to herein as SPR linkages. To identify SPR linkages, the following essential elements are required:

- Known and potential sources of contamination, including contaminants of concern, and the mechanism(s) of contamination;
- Potentially affected media;
- Human and ecological receptors; and
- Potential and complete exposure pathways.

3.1 Known and Potential Sources of Contamination

Potential sources of contamination exist at the site, resultant from its historical and ongoing usage for industrial purposes. The known and potential sources presented in **Table 3.1** and is based on the extent of investigations conducted at the site. By consideration of the mechanisms of contamination associated with known or potential contamination sources, both primary and ancillary media which may be affected by contamination are documented.

3.2 Potential Human Receptors and Exposure Pathways

A summary of potential receptors and associated exposure pathways for the site, based on the range of exposure scenarios that may occur with the potential future redevelopment of the site are presented in Error! Reference source not found.2 following. Commentary with respect to whether any particular exposure pathway is complete is also included with the table.

There are no identified groundwater uses on site or within proximity of the site. Potential maintenance workers within Miller Rd have been included as the shallowest depth to groundwater reported here is less than 1 m bgs and potentially at a similar depth to sub-surface services.

3.3 Data Gaps

It is considered that sufficient data was available to present a robust CSM to inform the required remedial planning for the site. Notwithstanding, there are some data gaps that will require consideration as part of development of the RAP as detailed following:

- **AEC 1:** Quantification of ACM within contaminated portions of SP01 and SP02. This may be considered warranted should these portions of SP01 and SP02 be proposed for retention on the site without the requirement for remediation and/or long-term management;
- **AEC 3:** Delineation of the extent of contaminated soil and/or soil-vapour within the northern portion of the site;
- **AEC 4:** Delineation of the extent of *in-situ* fill soils containing AF/FA at various locations across the site.
- **AEC 5:** Assessment for the potential presence of residual disused petroleum storage infrastructure south of Building A, and evaluation of potential localised/proximal media impacts;
- **AEC 6:** Assessment of the character of soils underlying current building footprints and infrastructure;
- **AEC 7:** Assessment of soils underlying former soil stockpiles;
- **AEC 8:** Confirmation that hazardous ground gas conditions are consistent with low risk conditions;

- **AEC 9:** Assessment of the character of soils underlying SP01; and
- **AEC 10:** Assessment of soils within shipping containers.

These data gaps will be addressed with targeted pre-remedial investigations following the removal of existing tenancies from the site and/or with validation data anticipated at the known extent of remediation.

Table 3.1: Summary of Contamination Sources

Source and Mechanism of Contamination	Location and Depth/ Volume	Primary Medium	Ancillary Media	COPCs	Anticipated Distribution	Status
Known Contamination Sources						
AEC 1A (Source 1A, JBS&G 2021a) Contaminated soils present within stockpile 1 (SP01)	Figure 2a Stockpile volume: 27 900 m ³ Contaminated soil estimated range: 2000 m ³	Stockpiled Soils	None known	Asbestos as ACM, and anthropogenic materials	Heterogeneous within stockpile profile.	Known – Investigation conducted as part of JBS&G (2021a) confirmed the presence of ACM and other anthropogenic material inclusions within SP01.
AEC 1B (Source 1B, JBS&G 2021a) Contaminated soils present within stockpile 2 (SP02)	Figure 2a Stockpile volume: 12 200 m ³ Contaminated soil estimated range: 2000 m ³	Stockpiled Soils	None known	Asbestos as ACM and anthropogenic materials	Heterogeneous within stockpile profile.	Known – Investigation conducted as part of JBS&G (2021a) confirmed the presence of anthropogenic material inclusions within SP02.
AEC 1C (Source 1C, JBS&G 2021a) Impacted soils present within stockpile 3 (SP03)	Figure 2a Stockpile volume: 20 m ³	Stockpiled Soils	None known	Anthropogenic materials	Heterogeneous within stockpile profile.	Known – Investigation conducted as part of JBS&G (2021a) confirmed the presence of anthropogenic material inclusions within SP03.
AEC 2A (Source 2, JBS&G 2021a) CHCs in site soils within the waste processing yard. Likely resultant from historical site infrastructure and residual soil impacts.	Figures 4 Estimated ~2300 m ³ of contaminated soil.	Soils	Groundwater Soil-vapour	CHCs (1,2-DCA, 1,1-DCE, PCE, TCE and vinyl chloride)	Heterogeneous within contaminated soil zone.	Known – Investigation conducted as part of JBS&G (2021a and 2021b) confirmed the presence of CHCs at elevated concentrations in soil-vapour, with soil being considered the primary source.
AEC 2B (Source 2, JBS&G 2021a) CHCs in groundwater, resultant from historical site operations and ongoing percolation from soil-source zone (2A) or dissolution of soil adsorbed CHCs below the water table.	Figures 3 Extent of plume has been delineated.	Groundwater	Soil-vapour	CHCs (1,2-DCA, 1,1-DCE, PCE, TCE and vinyl chloride)	Plume originating from site.	Known – Investigation conducted as part of JBS&G (2021a) confirmed the presence of CHCs at elevated concentrations in groundwater originating from site and migrating over the western boundary.
AEC 3 (Source 14, JBS&G 2021a) CHCs in soil-vapour in the northern site portion.	Figures 4. Localised impacts within vadose zone.	Soil-vapour	None	CHCs (1,2-DCA, TCE and vinyl chloride)	Heterogeneous within contaminated soil zone.	Known – Investigation conducted as part of JBS&G (2021a) confirmed the presence of CHCs at elevated concentrations in soil-vapour. However, the extent appears to be localised and within the vadose zone.
AEC 4 (Source 5, JBS&G 2020c) Localised instances of <i>In-situ</i> fill soils containing AF/FA	Figures 5. Lateral extent unknown, limited to depth of fill [Data Gap]	Fill soils	None known	Asbestos as AF/FA	Heterogenous within fill soil profile	Known – Investigation conducted as part of JBS&G (2021a) confirmed the presence of AF/FA at elevated concentrations in soil at various locations.
Potential Contamination Sources						
AEC 5 (Source 3, JBS&G 2021a)	Presence and/or location of historical tank unknown. [Data Gap]	Soil	None Known	Petroleum hydrocarbons	Top-down impact.	Potential – The presence of the UST has been inferred from SafeWork NSW records. No site media impact proximal to the location has

Source and Mechanism of Contamination	Location and Depth/ Volume	Primary Medium	Ancillary Media	COPCs	Anticipated Distribution	Status
Potential top-down liquid chemical spills from a underground storage tank (UST) south of Building A						been detected, indicating that any media impact is likely to be small/localised.
AEC 6 (Source 6, 8 and 12, JBS&G 2021a) <i>In-situ</i> soils underlying/proximal to current building footprints and site infrastructure.	Buildings and services Figure 2a. The extent and depth of potential impacts is unknown. [Data Gap]	Soils	None known	TBC	TBC	Potential –Impacts proximal to/underlying site buildings and infrastructure may exist which are not able to be practically assessed prior to demolition. [Data Gap]
AEC 7 (Source 11, JBS&G 2021a) Potential impacts to site media during interim soil importation and processing	Soil processing yard (west); Waste processing yard (central)	Shallow soils	None known	Heavy metals Asbestos as ACM Asbestos as AF/FA	Top down impact	Potential –Impacts proximal to/underlying site portions used for material handling/processing in the period intervening site investigation and remediation. [Data Gap]
AEC 8 (Source 15, JBS&G 2021a) Potential presence of HGG generation sources (JBSV51, JBSV52, JBSV103, JBSV123, JBSV128, JBSV156 and JBSV157)	Various locations Figures 4.	Shallow soils	Ground Gas Enclosed air	Methane and trace gases	Attenuating outward from source	Potential – Preliminary HGG data is indicative of low risk conditions. Source of methane within SP01 and SP02 also likely to be organic material. Worst-case conditions unlikely to have been captured as part of current monitoring. [Data Gap]
AEC 9 (Source 6, JBS&G 2021a) Potential localised impacts underlying SP01	Underlying SP01	Soil	Soil-vapour Groundwater	CHCs, BTEXN and HGGs	Unknown	Potential – The character of soils / soil-vapour underlying the stockpile has not been subject to detailed characterisation. [Data Gap]
AEC 10 (Source 13, JBS&G 2021a) Potentially contaminated soils within metal containers on the periphery of the waste processing yard and within waste processing yard.	Figure 2a	Soil	None known	Asbestos, heavy metals, PAHs, TRHs, BTEXN, PFAS, OCPs and PCBs	Heterogeneous within contained soils	Potential – The character of soils within containers and within waste processing yard has not been subject to characterisation. [Data Gap]

Table 3.2: Assessment of Potential Human and Ecological Exposures

Receptor	Location	Media	Potential Exposure Pathways	Status
On-site Receptors				
Future commercial/industrial users	Within Future Buildings	Soils	Inhalation (vapours and gases)	Potentially complete as a result of CHC, benzene, xylene and MAH compounds reported in vapour (primarily in the south-western portion of the site). Isolated CHC impacts have further been reported in the north-western portion.
		Groundwater	Inhalation (vapours and gases)	Potentially complete as a result of CHC impacts in the south-western portion. It is noted however, that the primary source of CHC impacts detected in vapour in this area is likely sourced from the vadose zone (and not groundwater) as detailed in Section 8.
	Outdoor Areas	Soils	Inhalation (particulates) Oral ingestion Dermal contact	Potentially complete as a result of asbestos impacted soils. Future hardstand, proposed across the large majority of the site footprint as part of redevelopment, will eliminate this exposure pathway.
Construction worker or intrusive maintenance worker (short duration)	Construction areas/excavations	Soils	Inhalation (vapours, gases and particulates/fibres) Oral ingestion Dermal contact	Potentially complete, as consistent with the above (i.e. soils in outdoor areas posing a potentially unacceptable risk to future commercial / industrial users). Vapours may potentially be generated from the most highly impacted soils.
		Groundwater	Inhalation (vapours and particulates/fibres) Oral (infiltrating seepage water) Dermal (infiltrating seepage water)	Various CHCs were reported in groundwater in which there are no tier 1 screening criteria and require further assessment (via HHRA) to determine if they pose a risk via these exposures.
Current / Future Vegetation on site (limited to existing trees on northern/north-western boundary)	Landscaped Areas	Soils	Contaminant uptake	Potentially complete as a result of heavy metal concentrations in shallow soils – exceeding conservative criteria protective of ecological receptors. The results indicate the soils are likely not appropriate for use as a growing medium and therefore likely not appropriate for use in future landscape zones.
Off-site Receptors				

Receptor	Location	Media	Potential Exposure Pathways	Status
Off-site Maintenance Workers	Byrnes Creek Channel	Surface water	Inhalation (vapours). Potential for reduced ventilation within drain trench and accumulation. Oral (direct contact to surface water) Oral (direct contact to surface water)	Not complete based on the groundwater sampling results within Miller Road and surface water sampling within Byrnes Creek.
	Miller Rd services	Groundwater (as infiltrating seepage water to excavation)	Inhalation (vapours). Potential for reduced ventilation within drain trench and accumulation. Oral (direct contact to seepage water) Oral (direct contact to seepage water)	Low levels of cis,1-2-DCE and TCE were reported in groundwater at isolated locations within Miller Road. Incomplete.
Off-site Commercial / Industrial users	Within buildings or outdoor areas.	Soils and/or groundwater	Inhalation (vapours, gases and particulates/fibres)	Unlikely to be complete based on surrounding land-use. In addition, CHC impacts in groundwater do not appear to be contributing to soil vapour impacts.
Recreational users of Georges River	Surface waters downgradient of the site	Surface Water as potentially affected by site groundwater	Various	Not complete based on the groundwater sampling results within Miller Road and surface water sampling within Byrnes Creek.
Ecological Receptors within Byrnes Creek channel and Georges River	Surface waters downgradient of the site	Surface Water as potentially affected by site groundwater	Various	Not complete based on the groundwater sampling results within Miller Road and surface water sampling within Byrnes Creek.

3.4 Extent of Impacts Requiring Remediation

From review of the CSM presented in **Tables 3.1** and **3.2** and the findings of JBS&G (2025a and 2025b) the following site contamination issues have been identified which will require to be addressed by the RAP (as shown on **Figure 6**):

- Trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE) impacted soils (SV249, SV251 and SV253) located to the west of the central portion of the site as considered most likely to be associated with soils in close proximity of a stormwater pipe / pits in this area of the site;
- Removal of remaining stormwater infrastructure within the site extent of the site;
- Removal of petroleum infrastructure;
- Xylene impacted soils (SV217) located at the south-western portion of the site;
- Asbestos impacts present in stockpiled soils as present on the site and referred to as SP01 (JBPT01, JBTP02, JBTP05, JBTP20, JBPT27, JBTP32, TP17, TP18, TP19 and TP20) and SP02 (TP05, TP06 and TP07);
- Asbestos impacts as present within in-situ soils at the north-eastern and south-western portions of the site (TP09 and TP16); and
- Potential putrescible materials that are mixed with predominant soil material that is held within SP01 and SP02. This is not strictly remediation being undertaken for the purpose of environmental contamination, but instead to prepare a geotechnically suitable material for re-use on the site. Reference is made to the scope here as it referred to in the completion of the pre-remedial investigations in the following section.

3.5 Pre-Remedial Investigations

A range of additional investigations are required to be undertaken on the site to allow a characterisation of the site to finalise the remedial quantities that warrant remediation. The pre-remedial investigations are further intended to address the data gaps identified in **Section 3.3**. Each of the proposed additional investigations are summarised in **Table 3.3** following. It is noted that for some of the works some of the preceding remedial works may need to be completed to allow the assessment to be completed.

Sample collection methods to be adopted are reported in detail in **Section 6**.

It is anticipated that there will be a refinement of remedial quantities following the completion of the investigations. This will be implemented through the application of the RAP by simply expanding the scope of remedial works / remedial methods to the additional areas of contamination. The results of the assessments will be documented in the Validation Report prepared for the site.

Table 3.3: Proposed Pre-Remedial Investigations

Description	Site Location	Preceding Remedial Works?	Assessment Scope
Assessment of any remaining Stockpiles (tenant areas)	All stockpiles that are not cleared following the termination of site leases.	None, all stockpiles will be readily accessible.	Collection of samples at frequency as per Table 3 or 4 advised to NSW EPA <i>Sampling Design Guidelines for Contaminated Land (Part 1: Application, 2022)</i> for chemical based analytes, and Table 5 for collection of samples for the assessment of asbestos, with a minimum of three samples per stockpile. Analysis of samples for As, Cd, Cr, Cu, Pb, Hg, Ni, Zn, total recoverable hydrocarbons (TRH), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs), per- and poly-fluoroalkyl substances (PFAS), soil pH and asbestos (field quantification per 10 L sample and 500 ml sample for analysis).
Detailed assessment of SP01 and SP02 for asbestos	SP01 and SP02 as shown on Figure 2B .	Processing of SP01 and SP02 to remove putrescible materials.	Licensed Asbestos Assessor (LAA) / Asbestos competent person observation of stockpile processing works to remove putrescible materials to identify presence of asbestos containing materials (ACM)
Potential petroleum infrastructure south of Building A	Adjoining and to the south of Building A	None, area assumed to be accessible following removal of tenants.	Ground penetrating radar survey in area to the south and adjoining Building A to identified indicators of potential sub-surface petroleum infrastructure. Testpitting to inspect / confirm any detections of potential sub-surface infrastructure.
HGG's at north-western portion of site	To north of location of SP02	None, area accessible now. However partial removal of SP02 prior to works preferred.	Previous investigations identified hazardous ground gas (HGG) at the site, however, there is insufficient data available to identify the potential risk to occupants of current and future buildings from the HGG. Additional investigation of HGG is required to properly quantify the actual risk. NSW EPA (2020) recommends a four-stage risk assessment approach, considered sequentially following a preliminary screening assessment. The results of a review at the completion of each stage determines the need to proceed to the next stage. The level of risk assessment undertaken should be limited to that necessary to support an appropriate remedial solution or to justify a decision that no action is required. The process is summarised as follows: • Preliminary screening assessment - using a simple risk model developed from the CSM; • Level 1 – qualitative risk analysis and assessment based on identifying hazards and assessing probability;

Description	Site Location	Preceding Remedial Works?	Assessment Scope
			- Level 2 – semi-quantitative risk analysis and assessment, with consideration given to an alternate approach for low-risk sites (as identified during the Level 1 assessment); and - Level 3 – full quantitative risk analysis modelling that predicts a numerical estimate of risk. A scope for a Level 2 style assessment is proposed, in response to the elevated carbon dioxide levels measured. It is proposed to install four shallow gas monitoring wells within the north-western portion of the site with screened sections located at depth of between 1 and 2 m bgs. Gas wells will be constructed with 1 m screened section placed at the base of each well. The wells will be subject to at least two rounds of discrete monitoring to assess the potential source of HGG, using a calibrated landfill gas meter. Existing serviceable wells within the extent of the site will also be assessed at same time to develop a detailed characterisation of the relative levels of instantaneous HGG (Figure 3A-II). Two continuous gas analysers will be deployed in the installed wells that report the highest levels of HGG with the discrete events to assess potential HGG flow rates to collect high resolution HGG data. The analysers shall be set to sample at approximately 1-hour high frequency intervals 24 hours per day for a six week monitoring period to capture maximum and minimum gas concentrations and provide correlations between gas drivers (i.e. pressure) to better define the gas regime onsite. The Gas Flux units will record methane, carbon dioxide, oxygen, carbon monoxide, hydrogen sulphide, flow rate, gauge and barometric pressure and humidity. The high resolution HGG data will be analysed at this time to determine what an appropriate CS for the site is.
Soils underlying Buildings	Underlying Buildings A, B, C and adjoining infrastructure (i.e. wash bay)	Demolition of buildings and removal of surface infrastructure.	Inspection of soils to identify potential for ACM to be present. Collection of surface samples on a 10 m grid with at least two samples per feature (i.e. two samples at the wash bay). Assessment of samples for asbestos (field quantification per 10 L sample and 500 ml sample for analysis).

Description	Site Location	Preceding Remedial Works?	Assessment Scope
Soils underlying large stockpiles	Underlying SP01 and SP02	Processing and relocation of stockpiles with removal of putrescible material.	Inspection of soils to identify potential for ACM to be present. Collection of surface samples on a 10 m grid with at least two samples per feature (i.e. two samples at the wash bay). Assessment of samples for asbestos (field quantification per 10 L sample and 500 ml sample for analysis). Installation of soil vapour probes to a typical depth of 1 m on a 15 m grid. Developing and sampling of soil vapour probe. Assessment of soil vapour probe during purging for HGG's. Analysis of soil vapour sample for TRH and VOCs.

4. Remediation Options

4.1 Guidelines and Legislation

The RAP has been prepared with reference to the following guidelines and legislation:

- DECC (2007), Guidelines for the Assessment and Management of Groundwater Contamination, DECC March 2007.
- SEPP (Resilience and Hazards 2021) State and Environmental Planning Policy 2021;
- EPA (2020), Assessment and Management of Hazardous Ground Gases, NSW EPA 2020;
- EPA (2022), Contaminated Land Guidelines: Sampling Design Part 1 – application;
- EPA (2014a) Best Practice Note: Landfarming. NSW Environment Protection Authority;
- EPA (2014b) Waste Classification Guidelines – Part 1: Classifying Waste. NSW Environment Protection Authority dated 2014;
- EPA (2017) Contaminated Land Management Guidelines for the NSW Site Auditor Scheme (3rd edition). NSW Environment Protection Authority dated October 2017;
- EPA (2020) Consultants Reporting on Contaminated Land Contaminated Land Guidelines, NSW Environment Protection Authority dated April 2020;
- Heads of EPAs (2025) PFAS National Environmental Management Plan Version 3.0;
- Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019 under the Protection of Environment Operations Act 1997 (UPSS Regulation);
- SWA (2020a) How to Safely Remove Asbestos - Code of Practice. Safe Work Australia, 2020;
- SWA (2020b) How to Manage and Control Asbestos in the Workplace - Code of Practice. Safe Work Australia, 2020; and
- WHS Act and Work Health and Safety Regulation 2017.

4.2 Remediation Objectives

Redundant infrastructure, contaminated stockpiles and contaminated environmental media are present at the site which require remediation for the site to be considered suitable for the proposed land uses. This is consequent of:

- The presence of asbestos which requires management as per the provisions of the WHS Act;
- A range of constituents in site soils which render the materials not suitable for use as growing medium in landscaped zones;
- Chlorinated ethenes (TCE and cis-1,2-DCE) and xylene in soil vapour which pose an unacceptable health and/or aesthetic risk to potential future site users via vapour intrusion into buildings constructed as slab on grade;
- Potential aesthetic issues associated with asbestos containing materials (ACM) fragments in soils; and
- Any additional localised areas of the same contaminants as identified following the removal of remaining plant infrastructure.

It is noted that further assessment has been proposed for HGG's in **Section 3.5**. It is considered highly unlikely that HGG's will be identified as requiring remediation / management following these additional assessment works, and this has not been included in the scope of remedial works.

Overall, the objective of the remediation is to remove risks (to human health and the environment) posed by the identified contamination issues, such that the site is made suitable for the proposed development. It is a further objective to undertake works, in accordance with applicable guidelines and legislation, in a manner which is concordant with the principles of ESD.

4.3 Remediation Quantities

Based on the CSM (refer to **Section 3**) and without pre-empting the range of available remedial options as evaluated in **Section 4.4**, the anticipated extent of the proposed remedial works includes:

- Estimated 2000 m³ of asbestos impacted soils with SP01 as consisting of hot-spots identified by sampling and analysis;
- Estimated 2000 m³ of asbestos impacted soils with SP02 as consisting of hot-spots identified by sampling and analysis and present from a near surface depth to an estimated depth of 2 m bgs;
- Estimated 1000 m³ of TCE and cis-1,2-DCE impacted soils adjoining the stormwater pipe to the west of the central portion of the site;
- Estimated 500 m³ of xylene impacted soils at the south-western portion of the site and present from a near surface depth to an estimated depth of 2 m bgs; and
- Estimated 500 m³ of in-situ asbestos impacted soils at the north-eastern and south-west of the central portion of the site as present from a near surface depth and present over a vertical extent of impact of 0.5 m.

Remedial quantities were estimated by comparison of reported levels of impact to adopted validation criteria as derived for the site and by assuming half distance of impact to the nearest sample location (with levels of impact below criteria). It is noted that remedial works are proposed to be undertaken by an inside-out approach and actual remedial quantities will be determined by the program of validation sampling completed following these works.

4.4 Assessment of Remedial Options

The approach adopted in this RAP is consistent with the preferred hierarchy of options for site clean-up and/or management provided in NEPC (2013) and (EPA 2017), which are listed as follows:

- On-site treatment so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level;
- Off-site treatment of excavated soil so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level, after which the soil is returned to the site; or

if the above is not practicable,

- Consolidation and isolation of the soil on-site by containment within a properly designed barrier; and
- Removal of contaminated soil to an approved site or facility, followed where necessary, by replacement with appropriate material;

or

- Where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

In addition, it is also a requirement that remediation should not proceed in the event that it is likely to cause a greater adverse effect than leaving the site undisturbed. And, where there are large quantities of soil with low levels of contamination, alternative strategies are required to be considered or developed (EPA 2017).

Remedial options have been assessed for the site as detailed in **Table 4.1** following. The remedial options assessment has considered:

- Asbestos impacts in soils;
- Chlorinated hydrocarbon impacts in soils; and
- Petroleum hydrocarbon impacts in soils as currently restricted to the elevated levels of xylene measured, but likely to include additional localised areas of petroleum hydrocarbon impact in proximity of identified infrastructure.

Remedial options have been considered specific to each of the site contamination issues identified as requiring to be addressed by this RAP.

Table 4.1: Remedial Options Assessment

Remedial Option	Applicability	Assessment
1. On-site treatment so that the contaminants are either destroyed or the associated hazards are reduced to an acceptable level.	<u>Asbestos</u> There are no practical means by which to destroy asbestos contamination present in soils. Further where asbestos occurs as friable / fibre-based impact there is no known means to separate the asbestos impact from the soils.	<u>Asbestos</u> Not considered further as not applicable.
	<u>Chlorinated Hydrocarbons</u> Treatment of chlorinated hydrocarbons is most commonly undertaken by a process to cause volatilisation of chlorinated ethenes from the soils, and capture and treatment / destruction of the volatilised chlorinated hydrocarbons. Treatment may also occur by co-bioremediation of chlorinated hydrocarbon impacted soils where bioremediation of petroleum hydrocarbon based impacts is occurring at the same time.	<u>Chlorinated Hydrocarbons</u> This is the preferred option noting the availability of a significant quantity of xylene impacted soils known to be present, additional localised petroleum hydrocarbon impacted soils that will also be identified in close proximity of petroleum based infrastructure and the demonstrated success of this method of other JBS&G remediation projects.
	<u>Petroleum Hydrocarbons</u> Hydrocarbon impacts in soils can be addressed by bioremediation / landfarming of the impacted soils. There is sufficient space on site to address the likely volume of petroleum hydrocarbon impacted soils.	<u>Petroleum Hydrocarbons</u> The preferred option for the petroleum hydrocarbon impacted soil.

Remedial Option	Applicability	Assessment
2. Off-site treatment so that the contaminants are either destroyed or the associated hazards are reduced to an acceptable level, after which the material is returned to the site.	<u>Asbestos</u> There are no practical means by which to destroy asbestos contamination present in soils. Further where asbestos occurs as friable / fibre-based impact there is no known means to separate the asbestos impact from the soils.	<u>Asbestos</u> Not considered further as no off-site facility known or available to receive and treat asbestos affected soils.
	<u>Chlorinated Hydrocarbons</u> Facilities are available at Altona (Vic) and Dandenong (Vic) to treat chlorinated hydrocarbon impacted soils by thermal processes.	<u>Chlorinated Hydrocarbons</u> The environmental impacts of the cartage of a large volume of soils to Victoria for treatment is not a preferred remedial method compared to the options considered preceding and following – for the extent of soils that pose a potential vapour intrusion risk. Previous recent experience of JBS&G further indicates that the transport would require to occur over several weeks due to the absence of available road tippers that are appropriate to cart contaminated soils over interstate distances. Vic EPA permits are also unlikely as disposal facilities are available in NSW for the materials.
	<u>Petroleum Hydrocarbons</u> Hydrocarbon impacts in soils can be addressed by bioremediation / landfarming of the impacted soils. However an off-site facility is not readily available in proximity of the site which holds appropriate licenses / permits to undertake the treatment.	<u>Petroleum Hydrocarbons</u> This option has been considered, as facilities are available in NSW which can receive petroleum hydrocarbon impacted soils for treatment. However this option is not preferred as remediation can occur on-site.
3. On-site management of the impact by physical separation	<u>Asbestos</u> This option provides for the retention of asbestos impacted material on-site beneath a physical barrier such that there are no complete exposure pathways available between the contaminated material and human receptors. Across the site, the barrier will mostly comprise the hardstand surface under the proposed development scheme. In area between buildings a shallow layer of non-impacted soils can be placed over the asbestos impacted soils.	<u>Asbestos</u> This is the preferred option for asbestos impacted soils. The ‘capping layer’ will be readily available across the majority of the site with the hardstand / pavement that will be anticipated with the site development. This option minimizes the amount of waste produced from the proposed development works and is therefore consistent with ecological sustainable development (ESD) principles.

Remedial Option	Applicability	Assessment
	In such instances, an asbestos register/asbestos management plan (AMP) would be required at the site to document the presence/location of bonded asbestos materials. This is typically incorporated in a long-term Environmental Management Plan.	
	<u>Chlorinated Hydrocarbons</u> The potentially complete exposure pathway identified for the substantial majority of chlorinated hydrocarbon impacts has been identified as potential vapour intrusion to future buildings. This is able to be controlled by construction of future buildings overlying vapour barriers. Vapour barriers require to be effectively impermeable to potential advective or diffusive movement of chlorinated hydrocarbon vapours.	<u>Chlorinated Hydrocarbons</u> This option is not preferred as other options are available which are higher in the NSW EPA hierarchy.
	<u>Petroleum Hydrocarbons</u> As per the discussion for chlorinated hydrocarbons.	<u>Petroleum Hydrocarbons</u> As per the discussion for chlorinated hydrocarbons this option is not preferred option for the areas of petroleum hydrocarbon / xylene impacted soils.
4. Excavation and off-site removal of the impacted material.	<u>Asbestos</u> Asbestos impacted soils are able to be classified as per NSW EPA waste classification guidelines and disposed at EPA licensed waste facilities typically located within 50 km of the site.	<u>Asbestos</u> This option is not preferred owing to the substantial volume of asbestos impacted soils that have been identified as likely to be present across the extent of the site.
	<u>Chlorinated Hydrocarbons</u> Chlorinated hydrocarbon impacted soils are able to be classified as NSW EPA waste classification guidelines and disposed at EPA licensed waste facilities typically located within 50 km of the site.	<u>Chlorinated Hydrocarbons</u> This option is applicable and could be undertaken. This is an option where bioremediation of the chlorinated hydrocarbon impacted soils is not successful.
	<u>Petroleum Hydrocarbons</u> Similarly to as discussed for impacted fill, waste facilities are available which can receive petroleum hydrocarbon impacted soils from the site. This method is	<u>Petroleum Hydrocarbons</u> This option is applicable and could be undertaken. This is an option where bioremediation of the petroleum hydrocarbon impacted soils is not successful.

Remedial Option	Applicability	Assessment
	not preferred as it will result in waste generation that can otherwise be avoided by on-site treatment.	

4.5 Preferred Remedial Options

On the basis of the assessment completed in **Table 4.1**, the preferred remedial options for the site are:

- Long term management of asbestos impacted soils on the site by containment; and
- On-site treatment of chlorinated and petroleum hydrocarbon impacted soils by bioremediation (landfarming) adopting a co-remediation approach.

4.6 Assessment of Bioremediation

Best Practice Note: Landfarming, April 2014, NSW EPA (EPA 2014) has been issued by the NSW EPA to control the bioremediation of hydrocarbon impacted soils. NSW EPA (2014) nominates several factors that affect the potential suitability of contaminants and soils to be remediated by bioremediation (referred to as landfarming in the guideline). Each of the factors has been assessed for the site in **Table 4.2** as applicable to the preferred remedial approach of bioremediation of soils to remove chlorinated and petroleum hydrocarbons.

On the basis of the assessment undertaken, landfarming / bioremediation is considered an appropriate remediation method to be attempted at the site. As with all bioremediation projects, there is noted to be some uncertainty. To this extent, appropriate environmental monitoring, tracking of the progress of bioremediation and monitoring of environmental emissions will require to be undertaken. Contingency actions to be undertaken where bioremediation cannot be undertaken in accordance with EPA (2014a) will also need to be documented.

Table 4.2: Assessment of Factors Affecting Bioremediation / Landfarming Suitability

EPA 2014 Factor	Assessment
Contaminant types	Landfarming is nominated as a suitable treatment method for petroleum hydrocarbons in soils. Biodegradation is nominated as causing the reduction of petroleum hydrocarbons in landfarmed soils. EPA (2014) reports that landfarming is not a suitable method for chlorinated hydrocarbons, consequent of these constituents inhibiting microbial degradation of contaminants. However, degradation of chlorinated ethenes (and other chlorinated hydrocarbons) is known to occur in the presence of petroleum hydrocarbons. It is considered that the limitations with respect to microbial growth will be overcome where the chlorinated constituent impacted soils are mixed with petroleum hydrocarbon impacted soils. Increased microbial growth as caused by the presence of petroleum hydrocarbons will be anticipated to co-metabolise chlorinated hydrocarbons that are also present in the soils. This same process has been demonstrated to be effective on two recent large scale remedial projects completed by JBS&G with a similar geology to the Chester Hill site.
Contaminant concentrations	A screening criterion of 8% total petroleum hydrocarbon concentrations (80 000 mg/kg) is a nominated screening for suitability of soils for landfarming. The maximum levels of petroleum hydrocarbons in soils on the site have been measured to be well below this level – noting that the impact is related to historical sources as associated with industrial activity that has occurred over a period from 50 years prior.

EPA 2014 Factor	Assessment
	Levels of chlorinated ethenes in soils, where measured, are generally well below the maximum levels of petroleum hydrocarbons, and would not be sufficient to block pore spaces in soils as nominated by EPA (2014). It is noted that soils are potentially malodorous, and where potentially offensive odours are detected at the site boundary, then air emissions management will be required for the soils.
Volume of contaminated soils	It is unlikely that large volumes of soils will require bioremediation. An estimated maximum quantity of 2500 m³ of petroleum and chlorinated hydrocarbon impacted soils is nominated for on-site remediation which is insignificant when considered with the overall extent of the site.
Site area	The site area exceeds the 0.5-hectare threshold nominated in EPA (2014).
Site topography	EPA (2014) reports sites with steep gradients are not suitable for landfarming. The site is relatively level, as consistent with the general topography of the Chester Hill suburb.
Local geology	An excellent understanding of the local geology is available for the site through the extensive investigations undertaken by JBS&G. It is noted that impacted soils will potentially consist of silty clays, clays and potentially weathered shale horizons. Test excavations have been recently completed on the site. The hard clays and weathered rock have been observed to readily break down / 'powderise' on excavation. It is highly likely that formation within a bioremediation area will cause soil surfaces to be amenable to bioremediation. Clays will be required to be spread and disaggregated to allow the same exposure of soil particle surfaces. It is noted that these works are required regardless to facilitate the assessment of these soils for the presence of asbestos. Soils on the site are relatively non-permeable, and there is considered to be no basis for the inclusion of liners underlying bioremediation areas. Notwithstanding it is likely that significant areas of site pavement will be available to facilitate the bioremediation of the most impacted soils if required.
Hydrogeology	Groundwater underlying the site is not considered to be potentially vulnerable. Groundwater is located at a significant depth and underlying generally impermeable clay based soils.
Meteorology	Sydney has a humid climate that is mild with no dry season, constantly moist (year-round rainfall). Summers are hot and muggy with thunderstorms. Winters are mild. Seasonality is moderate. The temperatures vary throughout the year, with high summer temperatures, sometimes peaking above 40 °C and colder temperatures of in winter with typical nighttime lows of 6 °C. Rainfall occurs throughout the year with typically 90-100 rain days a year.
Distance to sensitive receptors	The site is located within a historical commercial / industrial area, and substantial distances are present to potentially sensitive receptors as may be associated with historical residential areas as located a significant distance to the east.
Time	EPA (2014) reports that timeframes associated with bioremediation will potentially vary. Provision has been made in the RAP for remedial timeframes to be between one and six months. Where bioremediation cannot be achieved in these timeframes, contingency actions are available to allow the soils to be disposed off-site.

EPA 2014 Factor	Assessment
Cost	EPA (2014) notes that landfarming should not be considered a cheap remedial option and costs may become prohibitive to undertake landfarming properly. To this extent, it is considered that the cost to undertake landfarming is typically a function of the site area available to undertake the landfarming works and the resources required to control environmental emissions from the works. A substantial site area is available on the site in a location that is not in close proximity to potentially sensitive receptors. Landfarming / bioremediation will be a cost effective option for the site.

Of particular note, JBS&G has recently completed substantial programs of remedial works at the former Boral asphalt manufacturing facility as located at Butu Wargun Dr Pemulwuy and at the former Castrol Guildford Oil refinery located at McCredie Rd Guildford. The sites are located in relatively close proximity to the Chester Hill site and are further observed to have similar clay type soils present.

The Boral facility was impacted with an approximate volume of 30 000 m³ of soils impacted with chlorinated ethenes (from the historical use of trichloroethene as a solvent on the site) and semi- and non-volatile petroleum hydrocarbons (as associated with the historical manufacture of asphalt / bitumen). The Castrol facility had relatively similar quantities of petroleum hydrocarbon and chlorinated impacted soils that were combined together.

The petroleum hydrocarbon impacted soils were mixed with the chlorinated ethene impacted soils prior to the commencement of the bioremediation. This volume of soils was able to be successfully bioremediated by landfarming to a standard that facilitated an unrestricted residential use of the site (Boral site) and a commercial / industrial use on the Guildford site. This was inclusive of a validation program inclusive of a soil vapour survey of the reinstated bioremediated soils on both sites.

The bioremediation / landfarming works on both sites were able to be undertaken in a manner that produced no observable environmental emissions, either present as petroleum based odours or otherwise detections through PID and VOC monitoring undertaken at the extent of the landfarm. It was proposed before the works commenced, and demonstrated by the completion of the works, that favourable conditions to biodegradation as caused by the occurrence of the petroleum hydrocarbon impact would similarly cause the remediation of co-occurring chlorinated ethene impact.

5. Remediation Works

5.1 Approvals, Licences and Notifications

State Environment Planning Policy (Resilience and Hazards) 2021

From review of the proposed activities, the remediation works are classified as Category 2 Remediation Works as per the meaning provided in *State Environment Planning Policy (Resilience and Hazards) 2021* (SEPP-RH) and will require notification 30 days prior to the commencement of remedial works.

Environment Planning and Assessment Regulation 2000 – Schedule 3 Designated Development

The extent of contamination as assessed laterally is less than 3 hectares. The estimated volume of contaminated soils is well below the threshold of 30 000 m³. On this basis the remedial works are not classified as designated development.

Protection of the Environment Operations Act 1997

All potential discharges from the remediation works will require to be maintained below applicable assessment criteria/threshold guidelines during the remediation works. This would apply to potential emissions in air and water. Levels of discharges are typically assessed at a site boundary.

Site specific environmental management plans, as prepared and maintained by remedial contractor, will require to ensure appropriate controls and monitoring criteria to assess compliance with these aspects protective of on- and off-site receptors during the works.

The proposed remediation/validation activities are not required to be licensed under the *Protection of the Environment Operation Act 1997* (POEO Act) as the extent and quantities are well below the licensing thresholds.

Contaminated Land Management Act 1997

The site is currently regulated under the Act as contaminated land. A Voluntary Management Proposal (VMP) is currently being agreed with the NSW EPA to detail the extent of remedial and validation works required to remove the notification of contamination. The VMP will be adopted as consistent with the agreed and finalised form of this RAP.

Water Management Act 2000

No dewatering is anticipated with the remedial works. A dewatering licence will not be required for the remedial works to proceed.

If rainwater accumulates at the site and requires removal from the site, any discharge is required to be in accordance with the POEO Act. These requirements will potentially be nominated in an EPL for the works. Where deemed suitable, collected / accumulated runoff may be discharged to the site surface to allow for re-infiltration to the subsurface (i.e. not discharged from the site).

If any water is required to be discharged from site to sewer as part of the remedial works scope, approval from the asset owner (Sydney Water/Council) will be required. Sydney Water's and/or Canterbury Bankstown Council's approval conditions will require to be upheld by the Principal/Remediation Remedial Contractor and demonstration thereof.

Protection of the Environment Operations (Waste) Regulation 2014

The POEO (Waste) Regulation makes requirements relating to non-licensed waste activities and waste transporting. The proposed works on the site will not require to be licensed. Section 48 of the Regulation requires that wastes are stored in an environmentally safe manner. It is also stipulated that vehicles used to transport waste must be appropriately licensed and covered when loaded with impacted materials. For transport activities this regulation also details additional tracking requirements for vehicles carrying Special (asbestos) waste if material is fill-based soils are required to be removed from the site (presumed to contain asbestos following waste classification activities).

Provision is provided in the Regulation and EPA (2014) guidelines for the NSW EPA to approve the immobilisation of contaminants in waste (if required with unexpected finds) and regulation of other waste classification such as VENM.

Waste Classification Guidelines

All wastes generated and proposed to be disposed off-site shall be assessed, classified and managed in accordance with EPA (2014). Further discussion of waste management has been included as Section 6.

Asbestos Works

Asbestos impacted fill-based soils have been reported in historical investigations. The asbestos has been identified in both friable and bonded form. Given that the proposed remediation works will result in the disturbance of these materials, there is a requirement for the Remedial Contractor, or their nominated sub-contractor, to notify SafeWork NSW five business days before commencing works. Further, the works must be undertaken by a Class A Licensed Asbestos Contractor.

Remediation works shall not commence until all required approvals, licences and notifications have been granted and/or received.

5.2 Site Establishment

All safety and environmental controls are to be implemented as the first stage of remediation works. These controls will include, but are not limited to:

- Locate and isolate all required underground utilities within the site such that excavation works can safely proceed;
- Assess the potential impacts of the excavation works to neighbouring properties. It is recommended that a suitably qualified engineer be consulted prior to any excavation works, such that appropriate controls (if required) can be implemented;
- Assess need for traffic controls;
- Work area security fencing;
- Site signage and contact numbers;
- Sediment fencing as appropriate to mitigate sediment laden runoff from the site;
- Identification of haulage routes for material movement;
- Provision of site utilities inclusive of provision for personnel decontamination; and
- Physical identified of the extents of proposed intrusive remedial works.

The proposed remedial works are outlined following as specific to each contaminant type / grouping that has been identified in **Sections 3.4** and **4.5** as requiring remediation.

5.3 Pavement / Concrete

Pavement is present across the site inclusive of overlying remedial areas. Pavement shall be removed as needed to access remedial areas. Pavement shall require chemical characterisation prior to preparation of a waste classification and anticipated off-site disposal. The pre-classification of pavement as General Solid Waste is not available on a historical industrial site.

5.4 Soil Treatment Compound

A Soil Treatment Compound requires to be established prior to the commencement of excavation of impacted soils and/or removal of USTs (if identified by the pre-remedial investigations). The Soil Treatment Compound is proposed to be initially established to the north of the central portion of the site. The Soil Treatment Compound shall require:

- Security to prevent unauthorised entry;
- Sediment controls at the extent of the Compound, and internally partitioned within the Compound as consistent with the proposal to treat soils with different combination of contaminants separately within the Compound; and
- Provision for drainage so that potential water discharges from the Treatment Compound are transferred to the existing site drainage system for collection at the Settlement Pond.

5.5 Site Infrastructure

Each item of petroleum infrastructure shall be degassed where it is present as an underground storage tank (UST). Degassing of the USTs shall be undertaken by the demolition contractor and confirmed by a WPCG accredited Permit Officer. There are no (current) known USTs present on the site, however there are anticipated to be USTs and associated in-ground petroleum infrastructure identified by the pre-remedial investigations.

Following degassing, USTs shall be removed from the sub-surface and scrapped on-site. Scrap metal shall be disposed off-site for recycling. Petroleum / product transfer lines shall be removed from the site surface as moving outwards from the location of each UST to chase out the pipework. Recovered pavement and steel from removed in-ground petroleum infrastructure shall be disposed off-site for recycling.

USTs and associated petroleum lines on-site have generally been used for the storage of petroleum products. With this, where potential historical uncontrolled releases have occurred, aesthetic indicators of petroleum hydrocarbon impact will be present and readily observable. Following any observations of aesthetically impacts, these impacted soils shall be chased out by excavation conducted in an 'inside-out' manner until (aesthetic and health) validation criteria are achieved.

Above ground storage (AST's) shall be similarly decommissioned and removed.

As reported in JBS&G (2025a) stormwater lines within the site are anticipated to have been acting as preferential pathways for contaminant migration. Chlorinated ethene impacted soils described in the following section are restricted to the immediate proximity of site stormwater. It is proposed to decommission and remove all stormwater lines within the site to prevent any further potential of a preferential pathway. Impacted soils shall be excavated and removed at the same time, as consistent with the method described in the following section, if identified.

Petroleum hydrocarbon / chlorinated hydrocarbon impacted soils are proposed to be remediated by on-site treatment as per **Section 5.8**.

5.6 Chlorinated Ethene Impacted Soils

An extent of TCE and cis-1,2-DCE impacted soils (shown on **Figure 6** as SV249, SV251 and SV253) is located to the west of the central portion of the site, adjoining a stormwater alignment. A requirement to remove the stormwater pipe is detailed in **Section 5.5**, and at this portion of the stormwater pipe removal, soils will require to be excavated and transferred to the Soil Treatment Compound.

The excavation shall be undertaken in an inside out manner using a photo-ionisation detector (PID) to guide the extent of the remediation. The level of the chlorinated ethenes measured are very high and will be readily detected on the PID.

It is likely that chlorinated ethene impacted soils will continue along backfill material to the stormwater trench. Excavation shall occur to remove these additional materials and similarly be transferred to the Soil Treatment Compound.

5.7 Xylene Impacted Soils

A location of xylene impacted soils (shown on **Figure 6** as SV217) is present underlying Building B at the south-western portion of the site. Following demolition of Building B and removal of pavement, this hot-spot shall be excavated as working in an inside out manner from the location of the historical exceedance. The soils will be readily identified by xylene odours – however the excavation will be further guided by the PID.

Excavated soils shall be transferred to the Soil Treatment Compound.

5.8 Petroleum and Chlorinated Hydrocarbon Impacted Soils Treatment

Petroleum hydrocarbon and chlorinated hydrocarbons will be generated by the remedial works described in **Sections 5.5** to **5.7**. It is proposed to treat these soils on-site through bioremediation.

Bioremediation will be undertaken by landfarming within the Soil Treatment Compound as installed prior to the commencement of the construction works. Monitoring of the landfarms shall be undertaken to ensure optimum conditions for bioremediation are maintained. This shall include:

- Assessment of soil pH to ensure that soil pH is maintained between pH 6 and 8. Based on previous experience, slightly acidic conditions are more likely than alkaline conditions. Soils shall be mixed where possible to create soils mixtures with the desired pH levels. Gypsum shall be mixed with soils where required to address soils acidity;
- Soil nutrients may be added where bioremediation is not occurring within sufficient timeframes, or otherwise to minimise bioremediation durations. This shall include addition of manure to landfarmed soils, or otherwise complete chemical fertilisers; and
- Maintaining of soils moisture between 12 and 30%. Noting the landfarming may be undertaken on hardstand areas, excessive soil moistures are more likely (rain water gets retained in the stockpiled soils as it cannot discharge / infiltrate through the sub-surface). Regular turning / aeration of the soils will require to be undertaken to ensure that moisture levels are reduced. This will particularly need to be undertaken following substantial rainfall events.

5.9 On-site Containment of Asbestos

The preferred remedial option for the asbestos impacted stockpile and fill-based soils is management on-site by long term containment. Discrete areas of asbestos impacted soils are located within Stockpiles SP01 and SP02 (see sample locations shown on **Figure 6** within stockpile extents) and at two hotspot locations shown as TP09 and TP16 on **Figure 6**.

The impacted material shall be initially excavated, in the case of the stockpiled soils initially processed to remove putrescible material (undertaken for geotechnical purposes) and then transferred to a controlled stockpiling location. The extent of excavation shall be determined by observation of the anthropogenic inclusions at the known location of impact and removal of adjoining material as characterised by the same anthropogenic inclusions. Validation assessment shall confirm the extent of excavation.

The asbestos impacted soils shall be transferred to a controlled location prior to burial on-site and long-term retention / containment.

The following documented procedures will be implemented to ensure that environmental/health risks associated with the retention of these soils are appropriately controlled.

5.9.1 Overview

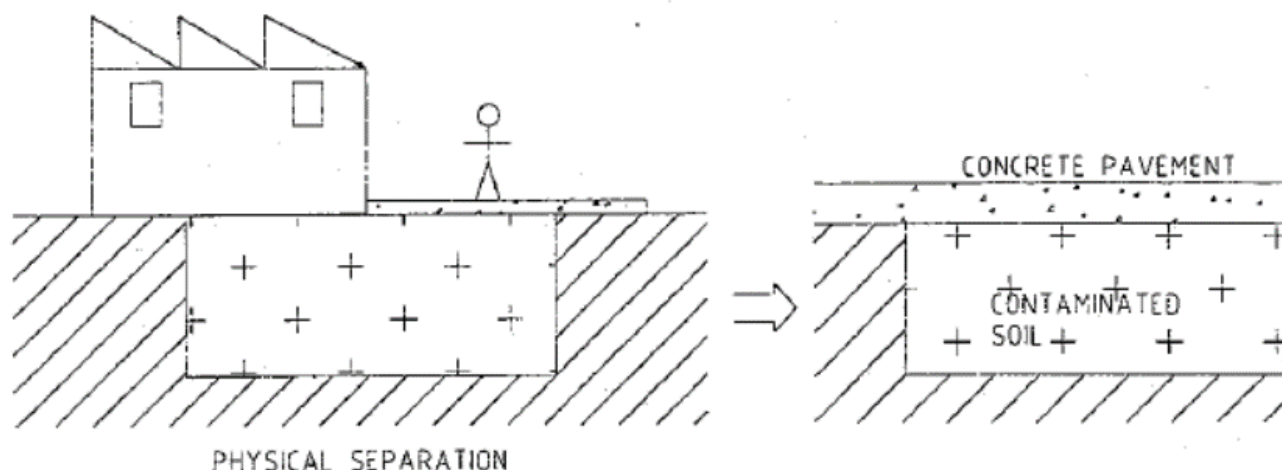
The extent of asbestos Impacted soils within the extent of the site will be managed to the extent achievable via containment and the implementation of permanent physical separation which eliminates the inhalation exposure pathway for airborne asbestos fibres. Impacted materials will be consolidated and managed below a physical separation layer.

The location of the containment shall be determined following consolidation of all asbestos impacted materials. It is noted that an area of hardstand as shown at the south-eastern portion of the site in proposed development plans as **Appendix B**. This area is currently preferred. The final agreed containment / retention location for the asbestos impacted soils shall require to be agreed with the Site Auditor prior to progression of the remedial works.

The minimum requirements for the physical separation to be adopted in remediation of the site include:

- A minimum soil cover thickness of 0.5 m in landscaped or mass planting/shallow landscaped areas and 1.5 m in tree pit zones which is underlain by a visual “marker layer” in unpaved areas, i.e., planter boxes in landscaped areas etc.; or
- Permanent concrete floor/ground slabs as underlain by a 0.1 m minimum thickness “capping layer” and visual “marker layer”, i.e., underlying buildings, roads, pathways or otherwise the area designed as ‘hardstand’; or
- Top (concrete) of pile foundations (no marker layer required for below pile foundations).

A conceptual sketch, sourced from ANZECC 1999, is shown following:



The marker layer shall consist of a bright orange coloured non-woven polyester continuous filament or PET (such as nonwoven geotextiles) or similar with a minimum density of approximately 150 grams per square metre (or equivalent). The marker layer must:

- Be easily recognisable within soils (i.e., bright orange in colour);
- Be durable as a long-term marker layer (i.e., > 140 grams per square metre); and
- Maintain integrity during remedial/civil works such as capping layer insulation and road/building construction.

Additionally, the marker layer must meet geotechnical and civil specifications where required.

The specific details of the marker layer are required to be included in the site validation report and long-term Environmental Management Plan (LTEMP) documents in addition to surveyed plans showing the extent of the capped area (**Section 6.13**).

5.9.2 Specific Capping Arrangements

The following capping procedures will be applied to each of the potential exposure scenarios across the site, prior to completion of construction works:

- Beneath permanent concrete structures, the installation of a marker layer over contaminated fill material with capping layer consisting of a minimum thickness of 0.1 m environmentally suitable materials below the permanent concrete slab as the physical barrier;
- Below elevated structures / buildings constructed on piers / stilts, the installation of a marker layer over contaminated fill material with a robust geotextile or similar placed over to maintain the condition of the marker layer. The overlying geotextile should be secure to be ground with pegs / pins or similar to ensure stability during any future potential flood event;
- Permanent hardstand structures (i.e., concrete slabs, pile caps or asphaltic concrete or similar, footpaths, but not bricks or pavers) – installation of a marker layer overlying potentially contaminated material followed by sub-grade material validated as environmentally suitable materials for human exposure and then the permanent structure (e.g., exterior concrete footpaths, asphaltic roads, etc.);
- Mass planting / shallow landscaping areas – installation of the marker layer at a minimum depth of 500 mm below the final finished site levels, with a capping layer consisting of environmentally suitable materials for potential human and/or ecological exposure;
- New tree pit zones / deep landscaping zones – installation of the marker layer at a minimum depth of 1.5 m below the final finished site levels, with a capping layer consisting of environmentally suitable materials for potential human and/or ecological exposure, noting that the marker layer should extend

the depth required for installation of the new tree's existing root ball or otherwise consistent with the anticipated root zone of the deep landscaping area;

- Within underground services trenches / services – service infrastructure will require remediation to 150 mm below the depth of services, with a marker layer and capping layer installed consisting of environmentally suitable materials for potential human and/or ecological exposure; and
- Flood affected areas – there is a likelihood that open areas of the site will be retained without improvements due to potential flooding. These areas would be anticipated to be grassed and should be provided with a minimum 0.3 m thick capping layer over the marker layer

Material above the marker layer extending to the final finished ground level will be required to be an environmentally suitable material for human and/or ecological exposure (as appropriate) as discussed further in **Sections 5.11** and **6.5**.

Validation of the capping arrangements will be required as outlined in **Section 6**, including inspections by the Environmental Consultant, a survey plan prepared by a registered surveyor showing the level and lateral extent of the impacted soils, marker layer, and capping in relation to the site boundaries.

5.10 Excavation Backfilling

Excavations shall be backfilled using site available treated materials, or otherwise imported soils as sufficient to make the excavation 'safe'. Where treated soils are used – it shall be ensured that the treated soils have been validated as consistent with **Section 6** as specific to the particular contaminants as were present. Backfilling is required to be undertaken to the extent to make site excavations 'safe'.

It is preferred that backfill material is geotechnically similar to materials present on-site, but alternate materials may be used.

Backfill materials shall be re-instated in 300 mm layers with each layer track-rolled by the excavator undertaking filling works. A complete extent of track rolling shall be confirmed by visual observation of a uniform surface level prior to placement of the next 300 mm layer. Backfilling shall be completed to an extent to make excavations safe.

5.11 Material Importation

Based on the scope of remedial works described herein, it is anticipated that if materials are required to be imported to site, it will generally be as a result of construction requirements or otherwise to establish appropriate capping materials and ensure appropriate growing media are established within the planter boxes / garden areas as proposed on the site.

Prior to importation of all material, appropriate assessment of such materials must be completed to demonstrate the material is both fit for purpose and suitable from a contamination viewpoint. In accordance with EPA requirements, the extent of assessment will be determined by the type of material proposed to be imported.

Where material proposed to be imported is Virgin Excavated Natural Material (VENM), an assessment must demonstrate that the material is compliant with the definition of VENM as presented in the POEO Act 1997, adopting in the minimum requirements for characterisation of fill material as presented in EPA (1995).

Where material proposed to be imported has been characterised under the Resource Recovery Framework (Order/Exemption), the material must firstly be demonstrated by the supplier as suitable for use in accordance with the requirements of the Order via provision of a statement of compliance. Suitable materials are anticipated to comprise but will not necessarily be limited to excavated natural material – ENM, recycled aggregate, basalt fines, compost, mixed organic waste, pasteurised garden organics and recovered fines, with reference to the list of current orders and exemptions on the NSW EPA website.

In addition to the testing completed by the supplier, given the low frequency of compliance testing required under these Exemptions, the specific material proposed to be imported will require an additional compliance assessment prior to approval to import. The additional assessment is required to ensure that the incoming material does not pose an unacceptable risk to human health and/or environment at the placement site and is therefore suitable for use. It is anticipated that such assessment activities will include visual inspections, representative sampling and laboratory analysis of material to demonstrate the material meets the requirements of this RAP. Analysis shall be inclusive of asbestos. As for VENM assessments, it is considered suitable to define such requirements on a specific site basis given the potential variability of project site requirements.

Material tracking records in addition to the import assessment report are required to be included in the final validation report for the site.

5.12 Environmental Management

A Remediation Environmental Management Plan (REMP) will be prepared prior to commencement of works to detail the measures to be put in place to eliminate or otherwise mitigate potential environmental emissions from the remedial works as per **Section 8.2**. Of specific relevance to the staging of the remedial works is the management of potential odours associated with the storage and handling of the xylene impacted soils, and the control of potential asbestos fibre emissions.

5.13 Validation

Validation of the remedial works will be conducted by the Environmental Consultant to demonstrate the remediation/management objectives have been achieved and to document the final condition of the site on the completion of works such that conclusions may be drawn on the end use suitability of the site for the proposed development. Details of the validation program are provided in **Section 6**.

It is noted that the proposed remediation works will require to occur in stages (noting requirements for preceding remedial works for pre-remedial investigations as outlined in **Section 3.5**) and therefore the final validation of the site will only occur on completion of all aspects as outlined herein.

Staged validation assessments may be issued consistent with a staged implementation of remedial works.

5.14 Site Dis-establishment

On completion of the remediation works all plant/equipment and safety/environmental controls shall be removed from the site. Details are provided in the Site Management Plan in **Section 8**.

5.15 Long Term Site Environmental Management Plan

A long-term Environmental Management Plan (LTEMP) will be prepared for the site to ensure the retention of barriers as anticipated to be installed at the site to control potential exposures to asbestos. The LTEMP will additionally be adopted as the means to manage any potential aesthetically impacted soils / materials as retained on the site. The LTEMP will be prepared in accordance with EPA (2017), EPA (2020) and EPA (2022b).

The LTEMP will define:

- The location, extent and nature of residual contamination at the site;
- The extent of the management area (including areas that are fenced where management controls have been unable to be fully implemented);
- Risk management and control measures to prevent potential exposures to soil contamination (including asbestos related controls required to be implemented during site redevelopment and post development works);

- Risk management and control measures to prevent potential exposures to asbestos impact;
- Contact persons for potentially affected persons to seek further information / assistance;
- Definition of roles and responsibilities in the implementation of the LTEMP;
- Requirements for reporting; and
- Actions to be undertaken in the instances where the containment layer / barrier requires to be breached that may include future piling works (during site development), deep excavations (to install underground services or other infrastructure) and/or future maintenance activities.

The LTEMP is intended to be a live document that will be revised / updated consistent with the progress of the site redevelopment works and revisions to the site design / construction in the future.

The LTEMP shall be made legally enforceable through the anticipated Development Consent for the site redevelopment requiring the engagement of a Site Auditor and preparation of a Site Audit Statement (as consistent with all other projects observed in the Canterbury Bankstown LGA). The LTEMP will be included with the Site Audit Statement as prepared for the site.

The LTEMP will be required to additionally manage the retention of asbestos impacted soils. The LTEMP shall be sufficient to control potential exposures to the soils and meet relevant requirements as specific to the management of asbestos in a workplace as advised to the *Work Health and Safety Act 2011*. This shall be inclusive of an Asbestos Management Plan and an Asbestos Register.

6. Validation Sampling, Analysis and Quality Plan

6.1 Data Quality Objectives

Data quality objectives (DQO) were prepared for the validation works and are detailed following.

1 State the problem – assemble an effective planning team, describe the problem and examine the resources for investigating the problem.	
1.1 Write a brief summary of the contamination problem;	The site has historically operated for the bulk storage and handling of a range of hydrocarbon based materials as well as more recently as a material processing facility. Chlorinated hydrocarbon and petroleum hydrocarbon impacts have been identified in soils and found to be causing elevated levels of the same constituents in soil vapour. Asbestos impacts have been identified in stockpiled soils present on the site and within in-situ fill materials. Redundant petroleum infrastructure is present on the site. A potential for elevated levels of hazardous ground gases (HGG's) has been identified in the north-western portion of the site. There is a likelihood that a range of soil based materials will be left on site following cessation of current site tenancies. The site currently regulated by the NSW EPA under the <i>Contaminated Land Management Act 1997</i> and a Voluntary Management Proposal (VMP) is currently being agreed with the NSW EPA to facilitate the removal of the regulation. The site requires to be made environmentally suitable for a future commercial / industrial development.
1.2 Identify members of the planning team;	Primary members of the planning team and additional stakeholders comprise: • LogiSPACE (site owner); • JBS&G Australia Pty Ltd (environmental consultant); • The Contaminated Land Auditor (CLA) (Mr James Davis of EnviroView Pty Ltd); and • Canterbury Bankstown City Council (Planning authority and Regulator). • NSW EPA (Regulator)
1.3 Develop/refine the conceptual site model (CSM), including a summary of the exposure scenarios; and	The most recent CSM is provided in Section 3. Potentially complete exposure scenarios that require to be considered with a potential future redevelopment of the site include: • Direct exposures of commercial / industrial workers to site soils present at surface depths; • Direct exposures of potential future sub-surface maintenance workers to soils and groundwater present at surface and depths over the extent of potential future excavations; • Potential inhalation exposures of commercial / industrial and sub-surface maintenance workers within indoor environments following volatilisation of constituents; and • Potential exposures within Byrnes Creek Channel and/or potentially sensitive receptors in proximity of the site to chlorinated hydrocarbon impacted groundwater caused to potentially discharge from the site.
1.4 Specify the available resources and constraints, such as relevant deadlines for the study, budget, availability of personnel and schedules	<u>Resources</u> • JBS&G's project team, comprising various environmental professionals inclusive of members accredited as CEnvP (SC); and • JBS&G's subcontractors including remediation works and environmental testing. <u>Constraints</u> • Availability of personnel to conduct investigation and remediation works. • Budgetary constraints imposed by the client; and • All works must be undertaken in accordance with the RWP and agreed VMP.

2	Identify the goals of the study – identify the principal study question(s), identify potential alternative actions with implications, and combine these to make statements on the decision or estimation problem.
2.1 Identify the principal study question(s);	The following study questions have been identified with respect to achieving validation for the site: • Study Question 1: Has all petroleum infrastructure and associated sub-surface infrastructure as potentially affected by site constituents been appropriately decommissioned and removed? • Study Question 2: Have all petroleum and chlorinated hydrocarbon impacted soils been excavated and treated to reduce levels of constituents below site validation criteria? • Study Question 3: Have all asbestos affected soils been identified, excavated and reinstated within a controlled containment / retention or otherwise disposed off-site? • Study Question 4: Are levels of HGG's below a level that would indicate a gas screening value that requires ongoing management? • Study Question 5: Is validation data generated by the remedial works appropriately reliable to be used to validate the site? • Study Question 6: Have all surplus materials been appropriately disposed from the site?
2.2 Identify the alternative outcomes or actions that could result from resolution of the principal study question(s);	Study Question 1: • Infrastructure required to service ongoing operation of the site required to be retained. Study Question 2: • Additional impacted soil beyond that anticipated requiring additional excavation / treatment. • Proposed co-treatment method for chlorinated hydrocarbons with petroleum hydrocarbons ineffective at reducing levels of chlorinated hydrocarbons. Study Question 3: • Quantity of asbestos impacted soils beyond that which can be retained within the extent of appropriate retention areas within the site. Study Question 4: • Ground gas controls are required for future buildings. Study Question 5: • Data fails assessment of quality assurance / quality control. Study Question 6: • Illegal dumping.
2.3 For decision problems, combine the principal study questions and the alternative actions into decision statements; and	Study Question 1 <i>If:</i> All site excavations and surface are clear of indicators of potential sub-surface / stormwater infrastructure at the completion of the project works <i>Then:</i> No further demolition / decommissioning works are required. <i>Else:</i> Service has to be retained on the site. Use non-destructive drilling / excavation methods to characterise soils along extent of service as consistent with the validation requirements that are required otherwise. Study Question 2 <i>If:</i> The COPC concentrations are validated below the validation criterion protective of human health and the soils are free of 'strong' indicators of aesthetic impacts at the extent of remedial excavation and for treated soils. <i>Then:</i> No further petroleum / chlorinated hydrocarbon remedial excavations and/or soils treatment are required. <i>Else:</i> Undertake additional excavation and treatment until validation achieved. If treatment fails (particularly with respect to levels of chlorinated hydrocarbon vapours) then dispose impacted soils off-site. Study Question 3

2	Identify the goals of the study – identify the principal study question(s), identify potential alternative actions with implications, and combine these to make statements on the decision or estimation problem.
	<i>If:</i> Levels of asbestos as identified at hot-spots during remedial works or otherwise by the pre-remediation investigation are excavated to remove all asbestos. <i>Then:</i> No further asbestos remediation is required. <i>Else:</i> Undertake additional excavation until validation criterion achieved. If excessive quantities are produced, then consider off-site disposal instead of on-site retention. Or consider potential multiple dedicated containment cells as subject to ongoing management. Study Question 4 <i>If:</i> Levels of HGG's as determined by continuous monitoring generate a gas screening value (GSV) greater than 2. <i>Then:</i> HGG controls will be required with future site buildings. <i>Else:</i> HGG's do not pose a potential unacceptable risk to site buildings. Study Question 5 <i>If:</i> Data quality indicators are achieved by a qualitative assessment of compliance with each of quality checks. <i>Then:</i> Data can be used to validate the site. <i>Else:</i> Repeat validation data collection will be required. Study Question 6 <i>If:</i> Waste classifications are available for all surplus materials, material tracking is available for all surplus materials, receipt facility documentation is available for all disposed materials and receipt facilities were legally able to receive the waste type. <i>Then:</i> No further action. <i>Else:</i> Investigate potential illegal dumping.

3 Identify information inputs – identify the information needed to formulate and investigate the problem and confirm that appropriate sampling and analytical methods are available.	
3.1 <i>Identify the information that will be required to resolve the decision statements/estimation, including existing information and new environmental data, and identify the sources for each item of information required;</i>	Inputs identified to validate the site will include: • The CSM; • Observations during demolition / remedial works; • Data gathered during pre-remedial investigations; • Validation data at excavation extents; • Validation data of treated materials; • Data quality indicators as determined by an assessment of quality assurance / quality control (QA/QC) as detailed in Section 6.2; and • Waste classifications, material tracking and tip receipts.
3.2 <i>Identify the information needed to establish the action level; and</i>	Validation criteria as summarised to Section 6.10 . Decision rules to assess to each of the validation criterion have been established.
3.3 <i>Confirm that appropriate sampling and analytical methods exist to provide the necessary data.</i>	Sampling and analytical methods will be consistent with relevant NSW EPA prepared and endorsed guidelines and JBS&G Standard Operating Procedures (SOPs). Analytical laboratories shall be NATA accredited and use analytical methods undertaken as specific to the target COPCs and the nominated validation criterion.

4 Define the boundaries of the study - define the target population, the spatial and temporal boundaries associated with the population, examine any practical constraints to collecting data, and factors that affect the selection of the unit which defines the scale of sampling and the scale of decision making or estimation.	
4.1 <i>Define the target subject area of interest and its relevant spatial boundaries;</i>	The subject area of interest is 191 Miller Road, Chester Hill NSW (the site) and is legally identified as Lot 82 in Deposited Plan (DP) 1282378. The boundaries of the study area comprise: • Lateral – the site and other offsite areas to answer the study questions including discharges attributable to the remedial works to Brynes Creek Channel; and • Vertical – the vertical extent of the assessment is to a maximum anticipated depth of 3 m below ground level (bgl) as consistent with the anticipated depth of excavation to remove impacted soils and extend to the base of any inground petroleum infrastructure.
4.2 <i>Define what constitutes a sampling unit; and</i>	Samples to be utilised in the assessment include: • Observation of a site area to confirm removal of petroleum related infrastructure; • Observation of an area of soils to quantify the potential aesthetic impact that is (if) present; • Analysis of soil samples from extent of remedial excavation; • Analysis of soil samples from treated soils; • Analysis of soil vapours present within soils at extent of excavation; and • Analysis of soil vapour present within treated soils following treatment.
4.3 <i>Specify the smallest unit on which decisions or estimates will be made.</i>	Individual sample unit. In practice, where individual sample units affect decision outcomes additional data will be collected to reduce decision error potential (i.e. increased sampling frequency in proximity of the sampling unit).

5 Develop the analytic (statistical) approach - develop a logical “if ..., then ..., else ...” statement that defines the conditions that would cause the decision maker to choose among alternative actions.	
5.1 <i>Specify the statistical parameter that characterises the subject area of interest, such as Mann-Kendall analysis. Where systematic sampling is required, the likely size and shape of the hotspots to be detected should also be defined and justified;</i>	Validation data shall consist of observation data and analytical data. The characterisation of each data set to assess to a validation criterion is nominated following: • Every observation will require to meet criteria as based on observations (i.e. removal of petroleum related infrastructure); and • The 95 % confidence level (as calculated by use of the statistical assessment software ProUCL) shall be assessed to criteria provided as protective of human health. Comparison shall be further made to the maximum concentration as compared to 2.5 times of the criterion and the standard deviation as compared top 0.5 times of the criterion. Data sets shall be formed from an area of remediation.
5.2 <i>Specify the action level for the decision;</i>	Analytical data as characterised by the statistical parameter nominated in the previous step shall be compared directly to the validation criterion for each specific COPC. Observational data, such as that relating to aesthetic issues identified at the site, was assessed qualitatively.
5.3 <i>Confirm that measurement detection will allow reliable comparisons with the action level; and</i>	Samples will be collected and submitted to NATA accredited laboratories. The analytical methods chosen generally provided laboratory Limits of Reporting (LORs) which are less than the adopted site assessment criteria. Site observations shall be undertaken by appropriately trained and experienced environmental scientists and engineers as familiar in undertaking works on from chemical manufacturing and petroleum sites. All persons on-site shall be further accredited as an LAA, or otherwise asbestos competent.
5.4 <i>Combine the outputs from the previous DQOs steps and develop an “if ..., then ..., else ...” theoretical decision rule based on the chosen action level.</i>	For each distinct source-pathway-receptor linkage identified, which is subject to quantitative statistical assessment, the following decision rule will be followed: If the statistical parameters of the data exceeded the adopted criteria, then a potentially unacceptable risk was identified; and: • Further assessment is required to reduce uncertainty around the extent of potential risks; or • Further remediation and/or management is required to reduce the identified potentially unacceptable risk to low and acceptable levels. If the statistical parameters were below adopted criteria, then no potentially unacceptable risks are identified with relation to the source-pathway-receptor linkage assessed.

6 Specify performance or acceptance criteria - to specify probability limits for false rejection and false acceptance decision errors.	
6.1 Specify the decision rule as a statistical hypothesis test;	Null hypothesis: contaminated site media present at the site represents an unacceptable risk to future site users. Alternative hypothesis: no contaminated media is present at the site which represents an unacceptable risk to future site users.
6.2 Examine consequences of making incorrect decisions from the test; and	Possible decision errors include: • Type I Error: Deciding that the site is not contaminated when it is (i.e. incorrectly rejecting the null hypothesis); and • Type II Error: Deciding that the site is contaminated when it is not (i.e. incorrectly accepting the null hypothesis). Type I errors may result in the materialisation of unacceptable levels of risk to future site users under the proposed land use. Type II errors may result in unnecessary additional assessment, remediation and/or ongoing management at the site. Type II errors generally unnecessary works, indicating that site remediation has not been completed in accordance with the RWP.
6.3 Place acceptable limits on the likelihood of making decision errors, including acceptable alpha (α) and beta (β) risk levels. Methods to determine if sufficient numbers of samples have been collected, and to assess if the assumed hotspot size and shape are justifiable, should also be documented.	Acceptable limits on the likelihood of making decision errors, an alpha risk (Type I error) of $\alpha = 0.05$, and a beta risk (Type II error) of $\beta = 0.2$ will be applied. For data sets where individual sample results were reported to exceed a site assessment criterion, qualitative analysis will be used to estimate the statistical confidence level required to ensure the acceptable limits on decision error have been achieved. Alternately where a large grid based sampling design is available, the relationship as advised to AS4482.1-2005 (Appendix C) which is based on the α and β errors defined earlier shall be used to determine whether sufficient samples are available within the validation dataset to allow the decision to meet the limits on decision error.

7 Optimise the design for obtaining data – to identify a resource effective sampling and analysis design for generating data that are expected to satisfy the DQOs.	
7.1 Document the final sampling and analysis design, along with a discussion of the key assumptions underlying this design;	This has been documented in the remainder of Section 6 .
7.2 Detail how the design should be implemented, together with contingency plans for unexpected events;	This has been documented in the remainder of Section 6 .
7.3 Determine the quality assurance and quality control (QA/QC) procedures that would be performed to detect and correct problems to ensure defensible results; and	This has been documented in the remainder of Section 6 .
7.4 Document the operational details and theoretical assumptions of the selected design in the sampling, analysis and quality plan (SAQP).	This has been documented in the remainder of Section 6 .

6.2 Validation of Excavations formed by Infrastructure Removal

Soil samples are proposed to be collected to validate the extent of excavations formed by petroleum / drainage infrastructure removal.

Sampling requirements under each infrastructure type on the site shall be undertaken consistent with:

- Drainage lines / pits associated with site stormwater system – One sample under each pit sump and 1/20 m for other lines / drains with at least one sample per each length of pipe between pits / sumps. Sampling undertaken adjoining features in the case where drainage lines / pits are retained;
- Underground Storage Tanks (USTs) – Tank base and one sample per each of four excavation walls for tanks <20 kL. Two tank base samples and two samples along the longest walls, one sample along each of the shortest walls for tanks >20 kL. Assessment of tank backfill / fill sands at 1/25 m³;
- Petroleum lines – 1/5 m for lines <10 m in length, 1/10 m for lines >10 m in length;
- Above ground storage tanks / process vessels – One sample per tank / vessel base;
- Any stockpiles of backfill / tank sands as required to be excavated to allow the infrastructure item to be removed – samples at 1/25 m³ of soils.

Notwithstanding the requirements summarised, validation samples will not be required for areas of infrastructure where excavation / remedial works are undertaken underlying and adjoining the infrastructure following removal. Instead validation shall be undertaken on the basis of the excavation as per the guidance to **Section 6.3**.

6.3 Validation of Excavations formed by Soils Excavation

Soil samples shall be collected at all excavations, and soil and soil vapour samples collected at excavations where chlorinated hydrocarbon impact was present for the purposes of validating that an appropriate extent of excavation has been undertaken.

Soil samples, and/or installation of soil vapour probes to facilitate collection of soil vapour validation samples, shall be collected at the following frequencies for validation of excavations:

- Excavations less than 100 m² in extent – Base samples at 1/25 m², wall samples at 1/5 m and collection of wall samples at a vertical frequency of 1/1.5 m wall height; and
- Excavations greater than 100 m² in extent – Base samples at 1/100 m², wall samples at 1/10 m and collection of wall samples at a vertical frequency of 1/1.5 m wall height.

6.4 Validation of Treated Materials

Soils treatment is anticipated with the bioremediation of petroleum hydrocarbon / chlorinated hydrocarbon impacted soils.

Bioremediated soils shall be initially sampled at a frequency of 4/100 m³ and samples assessed in the field by use of a photo-ionisation detection (PID). Of each group of four samples, the sample that reports the highest PID reading shall be submitted for laboratory analysis.

An additional validation step is required for petroleum / chlorinated hydrocarbon impacted treated soils to confirm that levels of soil vapours are below the validation criteria. This shall consist of collection of vapour samples from at least each 100 m³ (treatment) stockpile and assessed by field screening. Following re-instatement of these treated soils, a soil vapour survey shall be required over the completed excavation surface with soil vapour probes installed on a 10 m spacing.

6.5 Validation of Imported Materials

Sampling of the imported VENM (if required) will be undertaken at a minimum rate of one sample per 100 m³ subject to a consideration of the source of the material, potential for contamination and homogeneity. The sampling rate may be required to be increased (i.e. 1 sample per 25 m³) where potential indicators of contamination and/or heterogeneity are observed. Soil samples will be analysed for TRH, BTEX, PAHs, heavy metals, OCPs, PCBs and asbestos.

Sampling of imported ENM will be undertaken in accordance with the requirements of the *POEO (Waste) Regulation 2005 – General Exemption* under Part 6, Clause 51 and 51A for *Excavated Natural Material Exemption* (DECCW, NSW, 2009). Similarly if recycled fines, or another NSW EPA exempted product, are received on the site, the materials will require to have been sampled in accordance with the relevant exemption.

Reliance can be made to sampling and analysis undertaken of the material prior to receipt on site where the Environmental Scientist confirms:

- Via an inspection of material on receipt at the site that the material is consistent with the physical description provided to the off-site characterisation description;
- Via an inspection of material on receipt at the site the material is free of anthropogenic materials or other indicators of contamination; and
- Sampling and analysis of the material (TRH, BTEX, PAHs, heavy metals, OCPs, PCBs and asbestos) confirms levels of constituents similar to those reported in the off-site characterisation documentation. Sampling shall be undertaken at a minimum frequency of one sample per 250 m³ with at least three samples collected for material from each source site.

6.6 Validation of Stockpile Bases / Soil Treatment Compound

Impacted soils will be handled in the Soil Treatment Compound in areas which will potentially be present as unsealed ground. At the completion of these remedial works, surface samples shall require to be collected to verify that no contaminated material is still present in the treatment area, and further that contamination of the underlying soils has not occurred.

Samples shall be collected at a frequency of one sample per 10 m spacing (same as excavation base) and assessed for all contaminants that were present in the soils treatment undertaken within.

Any location of interim stockpiling, as present adjoining an excavation or otherwise, shall be similarly assessed following the stockpiling works at a sampling frequency of one sample per 5 m spacing.

6.7 Collection of Soil Validation Samples

Soil samples shall be collected by transfer directly to a laboratory supplied sample jar. Where hand trowels, or otherwise the excavator bucket, is required to facilitate collection of samples, soil sample shall be collected so that it has not contacted the sampling implement. All samples shall be additionally assessed in the field by a PID and visually assessed for the inclusion of any anthropogenic inclusions.

Asbestos quantification shall be undertaken by inspection of a 10 L sample from each relevant stratum (or for each 1 m increment) of the sample location in areas where asbestos is being remediated, or otherwise in response to soils where significant anthropogenic inclusions have been observed. Coarse grained fill materials will be passed through a 7 mm sieve in the field over a new plastic sheet. The material captured by the sieve will be inspected for visible asbestos. Where visible asbestos is found, it will be placed in a labelled zip-lock bag. A representative 500 mL volume of soil sample material that passes through the 7 mm sieve will be collected in a labelled zip-lock bag. The quantification procedure will also be repeated for fill materials that are not appropriate to be passed through a sieve.

Assessment of the aesthetic indicators of petroleum hydrocarbon impact, to make a determination as to whether the site aesthetic criteria have been exceeded, will include:

- Inspection of soils to identify whether ACM is present;
- Inspection of soils to determine whether visual indicators of petroleum hydrocarbons are present (i.e. sheens, discolouration etc);
- Assessment of soils using the PID and confirmation that an elevated reading (i.e. >10 ppm) is not reported; and
- Initial assessment of soils to determine whether petroleum odours can be recognised. If odours can be recognised, the collection of a further approximate 500 ml sample of soils, placement at 2 m from the Field Scientist / Engineer in an outdoor location and by standing downwind determining whether petroleum odours can be recognised. The assessment shall further be taken away / upwind of any significant sources of petroleum odours on the site. Where no recognition, odours are not strong (or otherwise at a level considered below that which is considered offensive) and the aesthetic criteria are achieved.

The Field Scientist shall be permitted to undertake the '2 m' assessment test on a maximum of three samples at any time. A 'rest time' of at least 10 minutes shall be undertaken between the conduct of each test event to prevent any fatigue of the assessing Field Scientist.

Samples for assessment of petroleum hydrocarbon aesthetic impacts shall be collected as consistent with at least the sampling density as otherwise nominated for excavations and/or treated materials in **Sections 6.2 to 6.4**.

6.8 Collection of Soil Vapour Validation Samples

Soil vapour validation samples are required in all instances where chlorinated hydrocarbon impacted soils have been required to be remediated. Specific soil vapour samples are required as the detection limits for the hazardous chlorinated hydrocarbon constituents (TCE) are not sufficiently low enough to be protective of potentially hazardous levels of soil vapour.

The method of soil vapour validation sampling at each area / stage of the remedial works is discussed in **Sections 6.8.1 to 6.8.6** following.

6.8.1 Excavations

Soil vapour validation samples shall require to be collected from the base of an excavation in instances where unsaturated soils are present and adjoining the walls of an excavation. The soil vapour samples shall be collected by the installation of a soil vapour probe to a typical depth of 1 m (potentially shallower if placed at the base of an excavation and able to be sealed to prevent leakage). Soil vapour probes for wall validation shall be installed at a spacing of 2 m outwards from the wall of the excavation within undisturbed soils. The soil vapour probe:

- Shall be installed within a 100 mm diameter borehole;
- Be constructed of 6 mm diameter LDPE tubing as provided with a stainless steel gauze at the end of the tubing;
- By backfilled with washed 1-2 mm sand adjoining the end of the tubing, a shallow depth of bentonite granules and completed with a bentonite based grout; and
- Be allowed to stabilise for a period of 24 hours prior to sampling.

For the collection of wall vapour validation samples, it is noted that the base of the soil vapour probe shall not extend below the base of the overall excavation. This will only be relevant for the case of shallow excavations.

It is noted that following successful wall validation of excavations, excavations may require to be battered to allow safe worker entry to complete base validation. Alternately soil vapour probes may also be installed within the battered / excavated wall surface.

6.8.2 Treated Soils

A steel probe shall be constructed of an approximate length of 2 m and consisting of a screened section at the lower 0.3 m. The probe shall be driven into a stockpile of treated soils by the use a slam bar and the vapour sample drawn from the top of the steel probe. The sample can be collected immediately following

Laboratory analysis is not strictly required for these samples for validation purposes – as formal vapour validation will be undertaken on the basis of these soils within a backfilled excavation as described following. Samples will be assessed by PID.

6.8.3 Backfilled Excavations

Excavations that have been backfilled with bioremediated soils shall require to be validated to confirm that levels of chlorinated hydrocarbon vapours in the backfilled soils will not pose a potential vapour intrusion risk. Soil vapour probes shall be installed over the backfilled excavation area on a 10 m spacing as installed to a depth of 1.5 m (or otherwise limited to within the depth of the backfilled treated soils if the excavation was shallower than 1.5 m) and consistent with the installation methodology nominated for excavation walls / bases. The soil vapour probes shall be allowed to stabilise for 24 hours prior to sampling.

6.8.4 Pre-Screening of Vapour Validation Locations

On the basis of the comparison of field measurements undertaken using a PID and laboratory analysis of vapour samples as completed with similar remedial projects a PID screening level of 10 ppm shall be adopted for field assessment of the soil vapour probes. In general, a validation sample for laboratory analysis should not be collected unless the screening criteria of 10 ppm has been achieved.

6.8.5 Collection of Soil Vapour Sample

Soil vapour samples shall be collected from installed soil vapour probes or otherwise the steel probe to stockpiles (if required to confirm field screening readings). The following sampling methodology shall be adopted:

- The top of the soil vapour tubing / steel pole will be connected to a three-way valve (set to the 'off' position) via a piece of silicon;
- The three-way valve will be 'opened' and a syringe used to check for water held below the slab. If the probe is flooded, it will be removed and re-installed nearby;
- Purging of each pin using a Landfill Gas Meter (GA5000 meter with dedicated methane sensor, also measuring oxygen, carbon dioxide, carbon monoxide, hydrogen sulfide and instantaneous flow) and PID until stabilisation of readings;
- Following purging, a leak detection test will be completed via placement of an isopropyl alcohol-soaked rag near to the vapour probe, and the system closed by a large plastic tub / shroud. A long piece of silicon will be connected to the three-way valve to allow sampling outside the shroud. The PID reading inside the shroud will be recorded, and measured from the vapour pin again. Where VOC concentrations were significantly altered (greater than 10 % different) from the stabilised level, this would indicate there to be a leak, and the soil vapour probe will be reinstalled until the leak detection test is passed;
- Following the leak detection test, a 6 L soil vapour sample will be collected using a calibrated low-flow air pump over a period of 30 minutes. A glass tube containing carbon sorbent media (carbon tube) will be fixed to the end of the nylon tubing and the low flow air pump attached to the rear end of the

carbon tube. The air pump will be pre-calibrated and set to withdraw soil vapour at the required flow rate (0.2 L/min) through the carbon tube to allow adsorption of VOCs onto the carbon tube;

- Carbon tube samples will be immediately sealed with end-caps, labelled and stored in individually labelled zip-lock bags (away from sunlight). Carbon tube samples will be transferred with chain of custody documentation to the receiving lab in a small sealed esky at room temperature; and
- A repeat measurement shall be undertaken of the soil vapour probe using the PID following collection of the sample and further using a multi-gas meter. The PID measured levels of volatile, as well as fixed gases including oxygen, carbon dioxide, carbon monoxide, methane and hydrogen sulphide shall be reported.

6.8.6 Field Equipment

Requirements for assessment of validation samples with field equipment, inclusive of the use of a PID, has been identified through the validation sampling descriptions. Multi-gas meters are further proposed to be used with soil vapour sample collection. It shall be ensured that all field instruments are calibrated in accordance with manufacturer specifications with regular calibration checks undertaken during use. All calibration documentation shall require to be included with validation reporting.

6.9 Validation Analyte Selection

Table 6.2 following summarises the selection of validation analytes for each validation stage required by the site works.

Table 6.2: Remediation / Validation Sampling Analyte Selection per Remedial Work Stage

Remedial / Validation Stage Description	Media and Analyte Selection
Site petroleum infrastructure removal (throughout site)	Soils: TRH/TPH and VOCs
Excavation to remove chlorinated or xylene impacted soils	Soils: TRH/TPH and VOCs Soil Vapour: TRH (C6-C16) and VOCs
Petroleum / chlorinated hydrocarbon treated soils	Soils: TRH/TPH and VOCs Soil Vapour: TRH (C6-C16) and VOCs
Asbestos hot-spots within stockpiles and in-situ fill	Asbestos (field quantification and 500 ml sample analysis)
All stages	Aesthetics

6.10 Validation Criteria

Validation criteria are summarised following in Table 6.3 for each of the analytes and media listed in **Table 6.3**.

Table 6.3: Summary of Validation Criteria

Constituent	Soil (mg/kg)	Soil Vapour (mg/m ³)	Source
Trichloroethene	<LOR	4.7	JBS&G (2025b)
Cis-1,2-dichloroethene	<LOR	17	JBS&G (2025b)
TRH C6-C10	310	130 000	NEPC (2013) HIL D, clay soils
TRH C10-C16	NL	NL	NEPC (2013) HIL D, clay soils
TRH C16-C34	27 000	-	CRCCARE (2011), commercial / industrial worker direct contact
TRH C34-C40	38 000	-	
Benzene	4	5	NEPC (2013) HIL D, clay soils
Toluene	NL	6500	NEPC (2013) HIL D, clay soils
Ethylbenzene	NL	1800	NEPC (2013) HIL D, clay soils
Xylenes	NL	220	NEPC (2013) HIL D, clay soils and JBS&G (2025b)
Naphthalene	NL	4	NEPC (2013) HIL D, clay soils
Asbestos	Detection	-	Work Health Safety Act 2011

Note: <LOR, below laboratory limit of reporting

NL – non limiting

6.10.1 Aesthetics

A range of aesthetic impacts have been identified on the site as described in the CSM and previous investigations generally described as:

- Occurrence of visible asbestos containing material (ACM) in retained soils; and
- Petroleum hydrocarbon odours, sheens, staining, soils discolouration as consequent of petroleum hydrocarbon impact.

NEPC (2013) does advise that aesthetic issues generally relate to the presence of low-concern or non-hazardous inert foreign material (refuse) in soil or fill resulting from human activity. Sites that have been assessed as being acceptable from a human health and environmental perspective may still contain such foreign material. Other sites may have some soil discolouration from relatively inert chemical waste (for example, ferric metals) or residual odour.

Instances of aesthetic issues that may occur on a site that are nominated by NEPC (2013) and potentially applicable to site as requiring further assessment include:

- Highly malodorous soils (e.g. strong residual petroleum hydrocarbon odours / xylene odours); and
- Hydrocarbon sheen on surface water.

NEPC (2013) further advises that surface soils on a site (to a depth of 150 mm) should be free of visible ACM.

It is considered that some tolerance of aesthetically impacted materials in the sub-surface can be anticipated on an commercial / industrial site. And there is further the potential of a substantial remedial scope on the Chester Hill site being required by a strict aesthetic standard in relation to generally non-hazardous heavy end petroleum hydrocarbons, subject to the findings of the pre-remedial investigations. This is not consistent with the ecologically sustainable development and waste minimisation objectives of the project. On the basis of these considerations, an aesthetic validation criterion of:

- No strong hydrocarbon odours;
- No hydrocarbon sheens; and
- No hydrocarbon based discolouration,

has been adopted for the validation of the site. This remedial / validation standard is considered consistent with the exclusion of soils that would be potentially classified as offensive.

Surface soils will further require to be free of asbestos impacts.

Strong hydrocarbon odours have been assessed in the first instance by qualitative descriptors provided to borelogs prepared by others. In practice this shall be assessed as recognition of a petroleum odour occurring at a distance of 2 m from a sample of the affected soils in an outdoor area and soils with a PID screening level below 10 ppm. Sheens and discolouration are more readily assessed.

6.11 Material Tracking

The movement of all impacted materials (subject to long term containment) on the site is required to be subject to a Material Tracking Plan (MTP). The MTP (as included with preparation of the RWP) shall be administered by the environmental consultant with the provision of all required information by the remediation contractor and will generally contain the following elements:

- Date (yyyy/mm/dd);
- Site figure showing source (cut) and placement (fill);
- Estimated volume (cubic metres);
- Type of material (asbestos, petroleum hydrocarbon impacted, VENM etc);
- Depth of source (RL);
- Depth of placement (RL);
- Source (from) information in terms of MGA56 co-ordinates as established by site GPS and/or survey;
- Placement (to) information in terms of MGA56 co-ordinates as established by site GPS and/or survey;
- Source (from) information in terms of site feature (e.g. Building X);
- Placement (to) information in terms of site feature (e.g. under future garden / landscaped zone);
- Reference document (where necessary, i.e. virgin excavated natural material / excavated natural material classification);
- Purpose of placement (i.e. containment, surplus to site requirements etc); and
- Comments (when required).

6.12 Asbestos Impacted Soil Containment

The preferred remedial method for the asbestos affected soils is long term retention on the site. This shall be undertaken as per a long-term containment strategy. The containment is proposed to be applied to a discrete extent of the site.

The validation of the long-term management of the soils to control potential health risks will be dependent on the two validation components including:

- Installation of a marker layer; and
- Installation of a capping layer.

The validation of each component is discussed further following.

6.12.1 Marker Layer

Visual inspection will be undertaken by the Environmental Consultant to verify the installation of the marker layer across the complete extent of the site where asbestos containment is undertaken. Photographic records and a survey prepared by the Project Surveyor of the marker layer installation, including vertical and lateral extents will be retained for inclusion in the Validation Report.

6.12.2 Capping Layer

Material to be used as a capping layer (other than concrete pavement) must be validated by the Environmental Consultant to be environmentally suitable, consisting of VENM, ENM, suitable on-site materials (i.e. materials from another portion of the development site that are non-impacted) or material considered suitable for beneficial reuse via a resource recovery exemption issued by NSW EPA. Additionally, contaminant concentrations in any capping layer material must not exceed the adopted site validation criteria for soils.

The capping layer must be placed at the thicknesses specified for each capping scenario as detailed in **Section 5.9.2**.

Photographic records and a survey of the capping layer installation, which details the final thicknesses of the capping layer, including the vertical and lateral extents prepared by the Contractor will be retained for inclusion in the Validation Report. This shall also make reference to the requirements for landscaping soils and zones as consistent with the final development plans (to be prepared).

6.12.3 Ground Surface Validation (Aesthetics)

Prior to the completion of remedial works and following placement of the marker layer, the ground surface of the containment area shall be thoroughly inspected by the environmental consultant to confirm the absence of visual ACM. Should any observable ACM be identified, the area should be emu-picked or capped with 100 mm of environmentally validated soil prior to re-inspection by the environmental consultant.

6.13 Quality Assurance / Quality Control

The pre-determined DQIs established for the project are discussed below in relation to precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS parameters), and are shown in Table 6.4.

- **Precision** - measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percent Difference (RPD¹³) of duplicate samples.
- **Accuracy** - measures the bias in a measurement system. The accuracy of the laboratory data that are generated during this study is a measure of the closeness of the analytical results obtained by a method to the 'true' value. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards.
- **Representativeness** –expresses the degree which sample data accurately and precisely represent a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy.
- **Comparability** - expresses the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in techniques used to collect samples; ensuring analysing laboratories use consistent analysis techniques and reporting methods.
- **Completeness** – is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal is set at there being sufficient valid data generated during the study.
- **Sensitivity** – expresses the appropriateness of the chosen laboratory methods, including the limits of reporting, in producing reliable data in relation to the adopted criteria.

If any of the DQIs are not met, further assessment of the data set is required in order to determine whether the non-conformance has significant effects on the usefulness of the data. Corrective action to correct an adverse impact on the reliability of the dataset may include, but is not limited to, the request of further information from samplers and/or analytical laboratories, downgrading of the quality of the data or alternatively, re-collection of the data.

Table 6.4: Data Quality Indicators

Data Quality Objective	Frequency	Data Quality Indicator
Precision		
Blind duplicates (intra laboratory)	1 / 20 samples	<50% RPD ¹
	1 / 10 samples for PFAS	<50% RPD ¹
Blind duplicates (inter laboratory)	1 / 20 samples	<50% RPD ¹
	1 / 10 samples for PFAS	<50% RPD ¹
Accuracy		
Laboratory duplicates	1 / 20 samples	<50% RPD ¹
Surrogate spikes	All organic samples	70-130%
Laboratory control samples	1 per lab batch	70-130%

¹³ C_o = analyte concentration of the original sample, C_d = analyte concentration of the duplicate sample

$$RPD(\%) = \frac{|C_o - C_d|}{C_o + C_d} \times 200$$

Data Quality Objective	Frequency	Data Quality Indicator
Matrix spikes	1 per lab batch	70-130%
Representativeness		
Sampling appropriate for media and analytes		-
Laboratory blanks	1 per lab batch	<LOR
Samples extracted and analysed within holding times.	-	14 days for principal COPCs
Trip spike (for volatiles)	1/sampling event	70-130% recovery
Trip blank (for volatiles)	1/sampling event	<LOR
Rinsate blank	Daily for reusable equipment	<LOR
Leak Detection (soil vapour)	All soil vapour sample locations	Leak detection compound <10% of concentration achieved in shroud
Comparability		
Standard operating procedures for sample collection & handling	All samples	All samples
Standard analytical methods used for all analyses	All samples	All samples
Consistent field conditions, sampling staff and laboratory analysis	All samples	All samples
Limits of reporting appropriate and consistent	All samples	All samples
Completeness		
Sample description and COCs completed and appropriate	All samples	All samples
Appropriate documentation	All samples	All samples
Satisfactory frequency and result for QC samples	All QA/QC samples	-
Data from critical samples is considered valid	-	Critical samples valid
Sensitivity		
Analytical methods and limits of recovery appropriate for media and adopted Site assessment criteria	All samples	LOR ≤ Site assessment criteria Asbestos: sample size greater than 500ml to enable LOR to be less than or equal to adopted site assessment criteria (where relevant)

¹ If the RPD between duplicates is greater than the pre-determined data quality indicator, a judgment will be made as to whether the excess is critical in relation to the validation of the data set or unacceptable sampling error is occurring in the field.

² Recoveries to also be assessed against laboratory adopted limits.

To summarise the anticipated elements of the QA/QC program that will require to be incorporated with the field works:

- Preparation of blind and split duplicates in the field at a frequency of one duplicate per 20 primary samples respectively for each of the media and primary analytes assessed. Consistent with the guidance in HEPA (2020) adoption of an increased rate of duplicate sample collection and analysis for PFAS of one duplicate per 10 primary samples;
- Inclusion of trip spike samples in sample batches containing sample analysis for VOCs;
- Inclusion of trip blank samples in a representative number of analytical batches and analysis for relevant analytes as specific to the batch; and

- Preparation of rinsate blanks in any instance where non-disposable / non laboratory supplied equipment / containers are used.

6.13.1 Laboratories

All laboratories used will require to be National Association of Testing Authorities (NATA) registered for the relevant analyses. In addition, the laboratories are required to meet JBS&G's internal QA/QC requirements summarised earlier.

6.14 Validation Report

At the completion of remedial works, a validation report will be prepared in general accordance with the Consultants Reporting on Contaminated Land Contaminated Land Guidelines (EPA 2020), documenting the works as completed. The report will contain information including:

- Details of the remediation works conducted;
- Information demonstrating that the objectives of this RAP have been achieved, in particular the validation sample results and assessment of the data against both the pre-defined DQO and the remediation acceptance (validation) criteria;
- Any variations to the strategy undertaken during the implementation of the remedial works;
- Results of all environmental monitoring undertaken during the course of the remedial works;
- Details of any environmental incidents occurring during the course of the remedial works and the actions undertaken in response to these incidents;
- Verification of regulatory compliance;
- Details on waste classification, tracking and off-site disposal including landfill dockets;
- Survey plans as relevant to the site, marker and capping layer extents;
- Photographic records of applicable remediation work;
- Construction records demonstrating adequate containment / retention measures installed overlying asbestos impacted soils;
- The extent of impacted materials as retained with the site and subject to the long-term management provisions; and
- Clear statement of the suitability of the site with respect to permissible land uses with specific reference to the LTEMP to be applied for the ongoing management of the extent of impacted materials as characterised at the completion of the construction works.

The report will serve to document the remediation works for future reference. It is noted that due to site access and/or construction constraints, that the remediation and validation works may occur in stages. Any works that occur at the site following validation of an area will be completed in accordance with the proposed LTEMP as per **Section 5.15**.

Discrete stage-based validation reports may be issued where the remediation and validation works are undertaken as per a staged approach. The lateral extent of each validation stage shall require to be defined by formal survey and advised to the Validation Report.

7. Contingencies

A review has been undertaken of potential contingency scenarios that may be identified during the remedial works. The following scenarios have been identified:

- Unexpected finds, particularly inclusive of historical tanks / sumps / pits that may have additionally been used to historically dispose of hazardous substances;
- Excessive levels of HGG's measured at north-western portion of site;
- Excessive quantities of asbestos impacted soils;
- Excessive quantity of chlorinated ethene impacted soil; and
- Emissions / pollution complaints during storage and handling of high-level chlorinated hydrocarbon / petroleum hydrocarbon / asbestos contaminated soils.

The proposed response to each contingency scenario is detailed following.

7.1 Unexpected Finds

The possibility exists for hazards that have not been identified to date to be present within fill materials or underlying pavements/building on the site. The nature of hazards which may be present, and which may be discovered at the site are generally detectable through visual or olfactory means, for example:

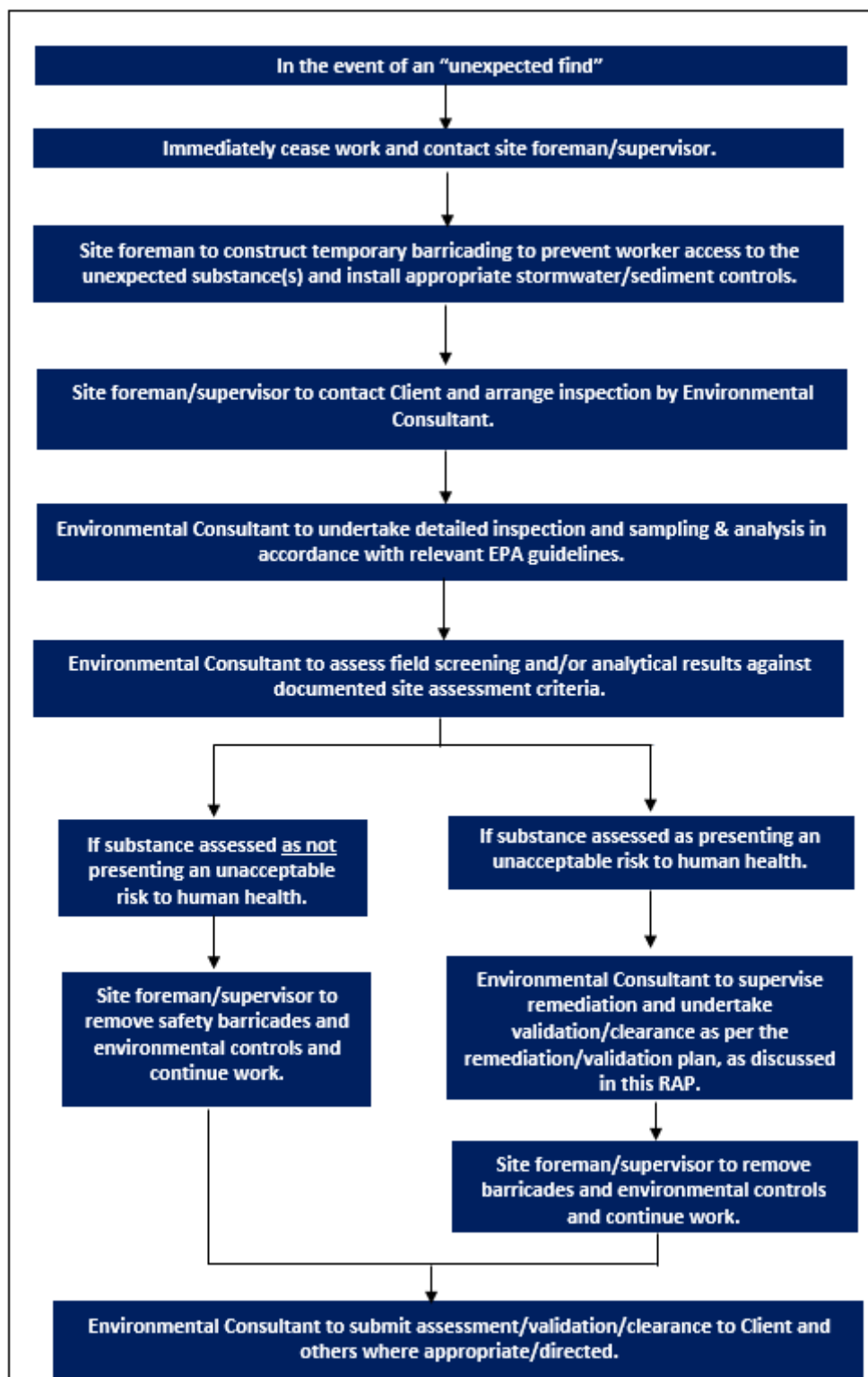
- Excessive quantities of construction/demolition waste that represents an aesthetics issue beyond that reported to date (visible); and/or
- Hydrocarbon (petroleum/chlorinated)/chemical impacted materials beyond that reported to date, including NAPL; and/or
- Drums, waste pits (visible) particularly in proximity of the former dry cleaner; and/or
- Oily Ash and/or oily slag contaminated soils/fill materials (visible/odorous); and/or
- Tarry like impacted soil/fill material (visible/odorous).

As a precautionary measure to ensure the protection of the workforce and surrounding community, should any of the abovementioned substances (or any other unexpected potentially hazardous substance) be identified, the procedure summarised in **Flow Chart 7.1** is to be followed.

An enlarged version of the Unexpected Finds Protocol, suitable for use on the site, should be posted in the Site Office and referred to during the site-specific induction by the Principal Contractor.

The sampling strategy for each "unexpected find" shall be designed by the environmental consultant. The strategy will, however, be aimed at determining the nature of the substance – that is, is it hazardous and, if so, is it at concentrations which pose an unacceptable risk to human health or the environment.

Flow Chart 7.1 Unexpected Finds Protocol



7.2 Excessive Levels of HGG's

An assessment is proposed to quantify the potential HGG risk at the north-western portion of the site. It is considered highly likely that no unacceptable level of HGG will be determined by this assessment in lieu of any previous of significant putrescible material or otherwise sub-surface conditions that are conducive to the generation of HGG's.

In the case that an alternate outcome is determined from the pre-remedial investigation, then it is proposed that the building design for this portion of the site will require to be modified to be inclusive of ground gas controls. This is a substantial revision to the RAP and the proposed redevelopment scheme and will warrant completion of an Addendum RAP to be agreed with the Site Auditor.

7.3 Excessive Quantities of Asbestos Impacted Soils

Based substantially on the findings of the JBS&G (2021) investigations, asbestos impacts have been assumed to be present as discrete hot-spots within the stockpiled soils and in-situ fill materials. There is a potential of greater asbestos impacted soils to be present on the site. The current anticipated volume of asbestos impacted soils is modest when compared to the extent of the site that is proposed for the long containment / retention. Additional asbestos impacted soils will be able to be retained in these areas with minor revisions to the emplacement extents.

Where further asbestos impacted soils are identified, then additional areas of the site will simply be nominated for an expanded extent of long containment. This is preferred to be undertaken in hardstand areas of the site outside of the extent of the building footprints. Containment will be preferred until not possible any more to ensure that waste minimisation objectives of the project are able to be met.

7.4 Chlorinated Ethene Impacted Soil

An area of elevated levels of chlorinated ethene vapour have been identified on the site (SV249, SV251 and SV253 shown on **Figure 6**) that are proposed to be remediated to reduce levels of impact. It is anticipated that the sources are associated with near surface soils – however TCE and cis-1,2-DCE are known to be heavy compounds and downward migration of chlorinated ethene NAPL may have occurred particularly noting the likely source of the impact to be discharges from a stormwater line present here. This may lead to an excessive depth of excavation occurring chasing the downward migration of chlorinated ethenes, and a substantially greater quantity of chlorinated ethene impacted soil than anticipated. The quantity may exceed that as what can otherwise be accommodated reasonably with an off-site disposal / treatment approach.

In this instance, two options are available:

- Construction of a lined containment cell as specific to chlorinated ethene impacted soils to mitigate the potential impacts of chlorinated ethene NAPLs / source material; or
- A decision to commit to off-site disposal of the excess quantities of chlorinated ethene impacted soils.

7.5 Emissions / Pollution

Due to the nature of the activities and type of contaminants identified within the site, there is a potential for complaints to be received from members of the public and/or occupants of surrounding properties relating to environmental emissions associated with remedial works, including:

- Odour emissions arising from handling of malodorous soil;
- Noise and vibration arising from remedial excavations or other works required for remediation; and/or
- Dust emissions arising from remedial excavation, material handling and placement.

Monitoring of potential environmental emissions from the site shall be undertaken during the remedial works as detailed in the REMP (discussed in **Section 8.2**) and appropriate actions taken to further control emissions following receipt of a complaint. The REMP will be specific to remedial works and not to construction works. The REMP shall contain provision for contingency actions where excessive emissions occur, however it is anticipated that one or more of the following actions will be considered:

- Increased application of odour screening/masking chemicals on odorous materials;
- Disturbance of soils during meteorologically favourable periods only; and/or
- Covering of impacted soils; and/or
- Implementation of alternate construction methods.

8. Site Management

8.1 Occupational Health and Safety

A Work Health and Safety Management Plan (WHSP) shall be prepared by the remedial contractor prior to commencement of remediation works. The objectives of the WHSP are:

- To apply standard procedures that minimises risks to site workers and the general public and adjacent residents resulting from the works;
- To ensure all employees are provided with appropriate training, equipment and support to consistently perform their duties in a safe manner; and
- To have procedures to protect other site workers and the general public.

These objectives will be achieved by:

- Assignment of responsibilities;
- An evaluation of hazards;
- Establishment of personal protection standards, mandatory safety practices and procedures;
- Monitoring of potential hazards and implementation of corrective measures; and
- Provision for contingencies that may arise while operations are being conducted at the site.

The WHSP will require to be sufficiently detailed to address the particular site hazards as associated with under/above ground services, use of plant and machinery within confined spaces (i.e. remedial excavations), contact with contaminated soil (chlorinated / petroleum hydrocarbon) including potential vapour inhalation, and heat stress particularly in respect of PPE.

Prior to commencement of remediation works, the remedial contractor is required to have the WHSP endorsed as acceptable by the environmental consultant, Site Auditor and client.

8.1.1 Asbestos

All asbestos works will require to be undertaken with the relevant requirements of *How to Manage and Control Asbestos in the Workplace Code of Practice*, July 2020, Safe Work Australia (SWA 2020). The works shall be undertaken by a SafeWork Class A Accredited Asbestos Removal Contractor.

During any remedial works which are inclusive of the disturbance of surface soils on the site, perimeter asbestos in air monitoring will be conducted at the applicable remedial works area boundary. Air monitoring will be conducted on a daily basis at relevant locations whilst disturbance of asbestos contaminated areas takes place.

Air monitoring will be conducted during any ground disturbance activities within the site to verify that implementation of appropriate control measures has been successful at managing the risk of air borne fibre generation. Air monitoring will be undertaken in accordance with the requirements of the *National Occupational Health and Safety Commission (NOHSC) Asbestos Code of Practice and Guidance Notes*, in particular the Guidance note for the estimation of airborne asbestos dust [NOHSC 3002:2005].

An Asbestos Register will require to be available for the site prior to the commencement of the remediation works and an Asbestos Management Plan incorporated into the Remediation Environmental Management Plan described in the following section.

8.2 Environmental

Prior to commencement of remediation works, a Remediation Environmental Management Plan (REMP) shall be prepared by the remedial contractor which documents the environmental monitoring and management measures required to be implemented during the remediation related activities associated with the construction of the site.

The REMP shall address each of the nominated items in **Table 8.1** following and shall include the Contingency Plan and Unexpected Finds Protocol, referred to in **Section 7.1**.

Table 8.1: REMP Requirements

Requirement	Inclusion in REMP
1. Dust and Airborne Hazard Control	Dust monitoring. Provisions for dust control based on monitoring results.
2. Flora and Fauna	As appropriate. Not anticipated to be significant noting historically urbanised location.
3. Heritage Archaeological	/ None anticipated. To be assessed as Unexpected Finds if identified.
4. Visual Impacts	Visual monitoring at site boundary Specific colour requirements for various controls/measures, including PPE (e.g., masks/coveralls).
5. Emergency Response	As appropriate. Procedures required for spill incident response including material storage breach.
6. Noise Control	Hours of operation, consistent with the consent conditions.
7. Traffic	Controls on vehicle movements on public roads. Controls on transport of impacted materials.
8. Protection of Adjoining Structures	Geotechnical supervision / instruction for excavation works in south-western portion of site in area of xylene hot-spot. Excavation extent may approach site boundary.
9. Odour Control	Management of all potential odour generating activities (i.e., excavation of chlorinated hydrocarbon contaminated soils) with appropriate odour controls incorporating safeguards and monitoring. Daily monitoring of odour levels at site boundary during handling of potentially malodorous materials. Procedures for addressing elevated odour monitoring results, including, but not limited to reduction in earthworks activities within odorous material areas during adverse meteorological conditions; application of odour masking solutions at the odour source or between identified source(s) and receptor(s).
10. Handling of Contaminated Soil and Groundwater	Soil and water management (stockpiling, site access, excavation pump out, reinstatement). During handling of contaminated soil and groundwater appropriate management of vapours will be required with appropriate controls to manage potential vapour inhalation. Procedures for addressing potentially elevated vapours including monitoring and implementation of appropriate PPE restricted exclusions zones.

Requirement	Inclusion in REMP
11. Storage/Placement Areas	Soil Soil and water management Stockpiling (including controls for stockpiling of asbestos, chlorinated ethene and xylene impacted soils, site access, reinstatement). Minimisation of requirement to stockpile by direct loading of road tippers with highly impacted materials where possible to proposed stockpiling / retention / treatment locations. Heavy vehicle/personnel decontamination. Site drainage requirements, incorporating clean/dirty areas and modifications to existing surface water and drainage controls beneath retained pavements. Monitoring as required.
12. Stockpiling	No stockpiles of soil or other materials shall be placed on footpaths or nature strips unless prior Council approval has been obtained. All stockpiles of soil or other materials shall be placed away from drainage lines gutters or stormwater pits or inlets. All stockpiles of soil or other materials likely to generate dust or odours shall be covered. All stockpiles of chemically contaminated soil shall be stored in a secure area and be covered if remaining more than 24 hours. Any (and all) stockpiles of asbestos contaminated soils shall be kept damp and covered to minimise potential particulate release, and if left for more than 24 hours, be stored in a secure area.
13. Sediment Control	Bunding. Collection/treatment/handling impacted sediments. Sediment controls to downgradient / downslope site boundaries that may potentially intercept run-off from the site, particularly noting the proposal to remove the site's in-ground stormwater infrastructure.
14. Operation of Site Office	Minimise waste generation.
15. Decontamination of Heavy Equipment	To be undertaken prior to movement out of contamination zones into site clean zones. Demarcation of site with Exclusions zones etc to allow interpretation of requirements.
16. Environmental Monitoring	Monitoring of noise, odour and particulates during excavation works. Additional monitoring for vibration during sheet pile installation works (if undertaken). Assessment to site environmental performance criteria. Monitoring as required for water / dewater releases from the site to confirm no pollution. Inspection checklists and field forms.
17. Environmental Criteria	To be prepared as specific to contaminant and potential media in which they occur. Must at least include speciated criteria for chemical constituents potentially present in air emissions.
18. Material Classification	To be detailed following the fill retention assessment and availability of proposed site cut – fill balance. Material classification required to inform waste classifications for surplus soils and opportunities for re-use.

Requirement	Inclusion in REMP
19. Ecologically sustainable development	To be substantially achieved through waste minimisation and resource conservation. Contaminated soils are the most significant source of waste with the project and the potential requirement to import fill materials is the most significant potential resource consumption.
20. Incident Reporting	As appropriate, including standard form/checklist.
21. Security and Signage	Secure site perimeter. Site boundary signage.
22. Training	All general requirements for construction / working in excavation. Site specific additional training will be required for potential exposures to asbestos, petroleum and chlorinated hydrocarbons.
23. Contact Details	Company/personnel details, including names/phone numbers for: - Principal Contractor - Remediation Consultant - Remediation Contractor - OH&S Compliance - Environmental Compliance

Prior to commencement of remediation works, the remedial contractor is required to have the REMP endorsed as acceptable by the environmental consultant, Site Auditor and client.

9. Conclusions and Recommendations

With reference to the limitations in **Section 10**, the following conclusions and recommendations are provided.

9.1 Conclusions

It is considered that the proposed actions outlined in this RAP conform to EPA requirements because they are: technically feasible; environmentally justifiable; and consistent with relevant laws, policies and guidelines endorsed by NSW EPA.

Subject to the successful implementation of the measures described in this RAP and the recommendations below, it is concluded that the risks posed by potential direct human contact pathways / potential exposure of contaminated soils can be managed in such a way as to be adequately protective of human health such that the land can be made suitable for the proposed land use. It is further concluded that any potential sources to on-going groundwater impacts will be appropriately addressed by the implementation of the remedial works documented herein.

9.2 Recommendations

It is recommended that the processes outlined in this RAP be implemented to ensure the risks and impacts during remediation and construction works are controlled in an appropriate manner. It is further recommended:

- The proposed development is reviewed following availability of detailed development plans to confirm the consistency with the nature of potential exposures as characterised with the generic development type consisted in this RAP and that which will confirm with the finalised site design;
- Continuing review of the appropriateness of the remedial strategy is undertaken by consultation with the Site Auditor
- A Work Health and Safety Management Plan (WHSP), Remediation Environmental Management Plan (REMP) inclusive of an Asbestos Management Plan and Community and Stakeholder Engagement Plan shall be prepared by the remedial contractor prior to commencement of remediation works; and
- An LTEMP requires to be prepared for the site to ensure the long-term integrity of the containment measure to cause preclusion of access to impacted soils retained underlying the site (asbestos). The LTEMP requires to be endorsed by the Site Auditor prior to occupation of the site.

10. Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties. The report has been prepared specifically for the client for the purposes of the commission, and no warranties, express or implied, are offered to any third parties and no liability will be accepted for use or interpretation of this report by any third party.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose. This report should not be amended in any way without prior approval by JBS&G, or reproduced other than in full including all attachments as originally provided to the client by JBS&G.

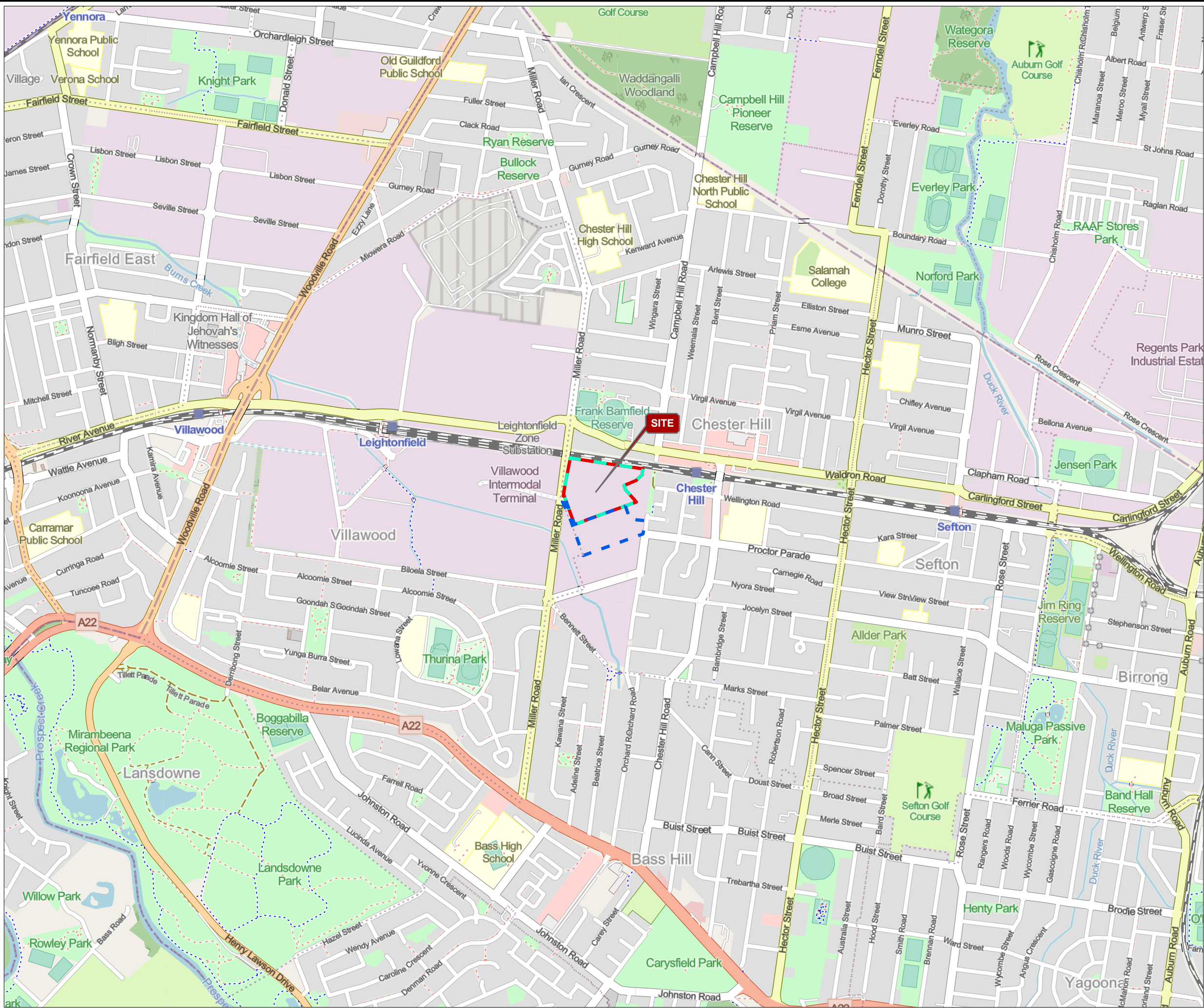
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements or agreed scope of work.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

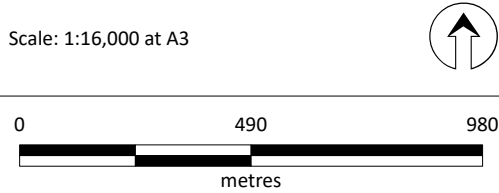
Figures



- Legend**
- Approximate Site Boundary
 - 191 Miller Road
 - 149 Orchard Road



Job No: 70509	
Client: LogiSPACE Pty Ltd	
Version: R03 Rev A	Date: 10-Nov-2025
Drawn By: JL	Checked By: MP

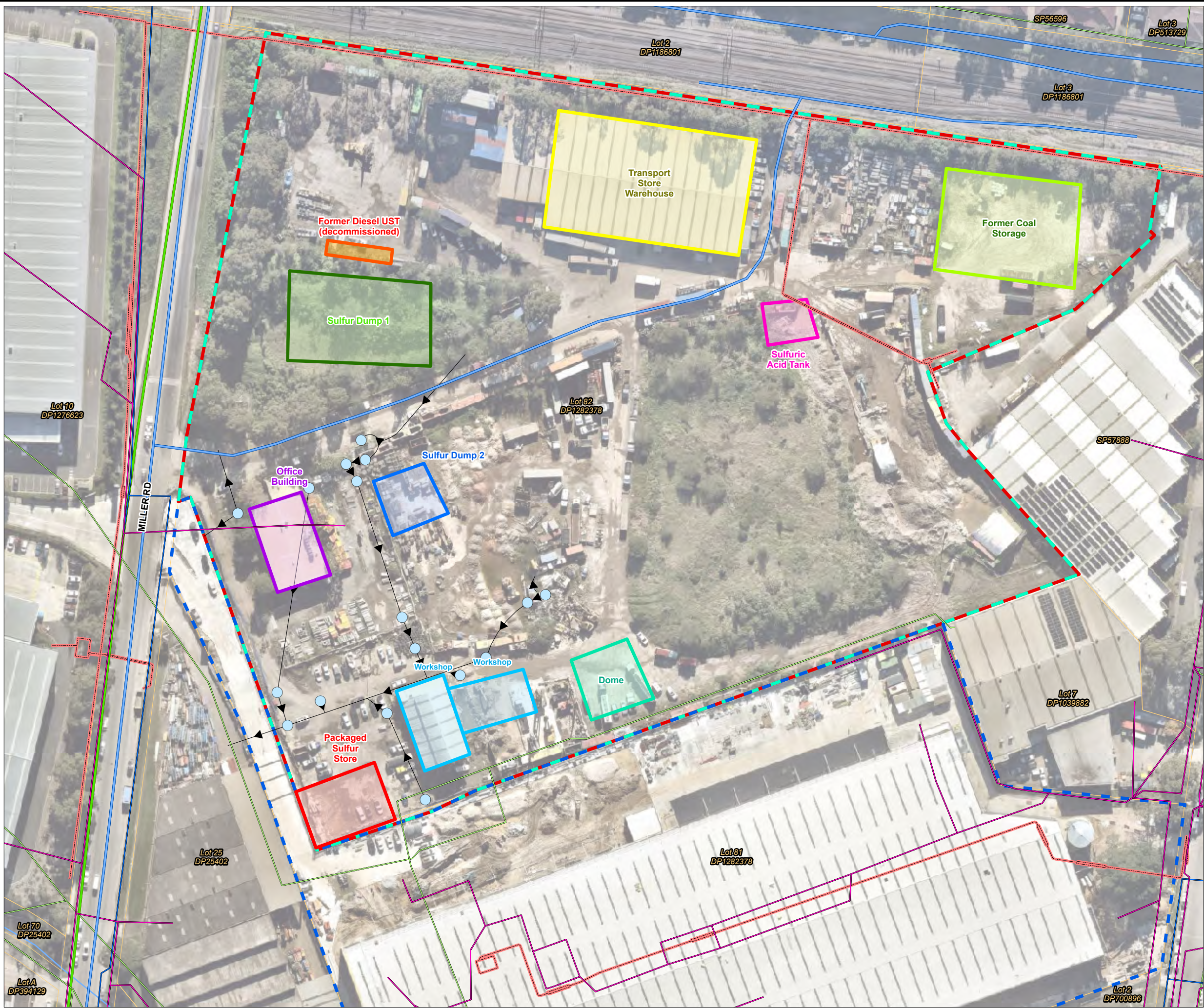


Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

SITE LOCATION

FIGURE 1



Legend

- Approximate Site Boundary
- 191 Miller Road
- 149 Orchard Road
- NSW Cadastre
- Historical Site Features
 - Dome
 - Former Coal Storage
 - Former Diesel UST (Decommissioned)
 - Office Building
 - Packaged Sulfur Store
 - Sulfur Dump 1
 - Sulfur Dump 2
 - Sulfuric Acid Tank
 - Transport Store Warehouse
 - Workshop
- Underground Services
 - Ausgrid
 - Gas
 - Sewer
 - Water
 - Telstra
 - NBN
 - Stormwater Pits
 - Stormwater Flow Direction

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Scale: 1:1,300 at A3

Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

HISTORICAL SITE LAYOUT AND UNDERGROUND SERVICES

FIGURE 2A



- Legend**
- Approximate Site Boundary
 - 191 Miller Road
 - 149 Orchard Road
 - Zones
 - NSW Cadastre
 - Site Features
 - Stockpile
 - Transformer
 - Soil in Containers
 - Waste Processing Area
 - Site Features
 - Underground Services
 - Ausgrid
 - Gas
 - Sewer
 - Water
 - Telstra
 - NBN
 - Stormwater Pits
 - Stormwater Flow Direction



Job No: 70509

Client: LogiSPACE Pty Ltd

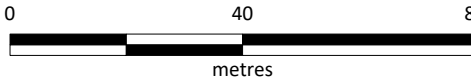
Version: R03 Rev A

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Drawn By: JL

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191 Miller Road,
Chester Hill, NSW

CURRENT SITE LAYOUT

FIGURE 2B



Legend

- Approximate Site Boundary
- 191 Miller Road
- 149 Orchard Road

Site Features

- Groundwater Contours (mAHD)
- Inferred Groundwater Flow Direction

Underground Services

- Stormwater Pits
- Stormwater Flow Direction

Sample Locations

- Groundwater Monitoring Well

Job No: 70509

Client: LogiSPACE Pty Ltd

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Date: 10-Nov-2025

Drawn By: JL

Checked By: MP

Scale: 1:1,800 at A3

050100

metres

Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

HISTORICAL GROUNDWATER LOCATIONS -
CONTOURS

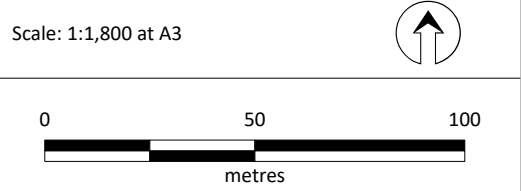
FIGURE 3A-1



- Legend**
- Approximate Site Boundary
 - 191 Miller Road
 - 149 Orchard Road
 - Site Features
 - Groundwater Contours (mAH)
 - Inferred Groundwater Flow Direction
 - Underground Services
 - Stormwater Pits
 - Stormwater Flow Direction
 - Sample Locations
 - Groundwater Monitoring Well
 - Combined Groundwater / Ground Gas Monitoring Well
 - Surface Water Locations



Job No: 70509	
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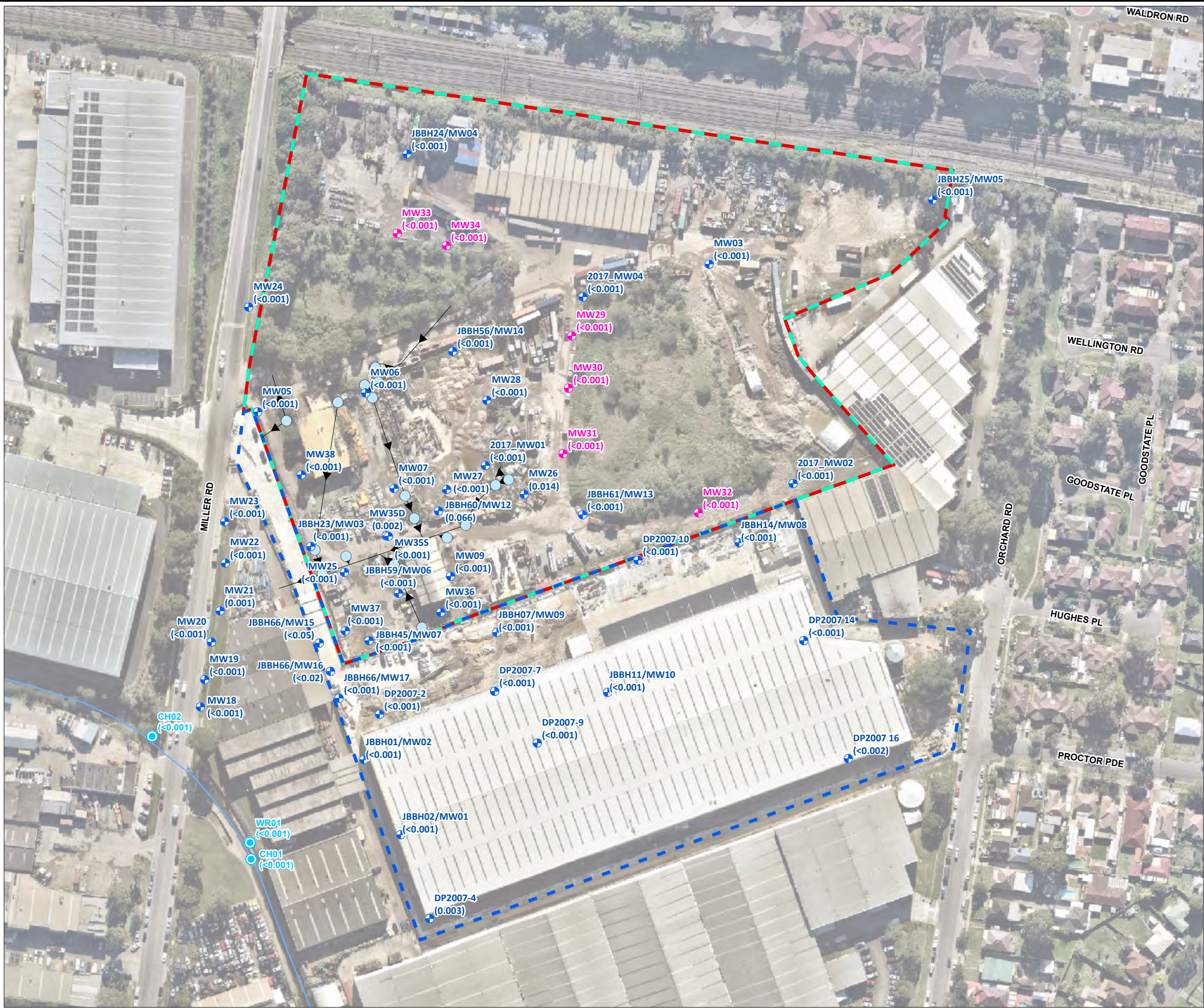


Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

**CURRENT GROUNDWATER LOCATIONS -
CONTOURS**

FIGURE 3A-II



- Legend**
- Approximate Site Boundary
 - 191 Miller Road
 - 149 Orchard Road
 - Underground Services
 - Stormwater Pits
 - Stormwater Flow Direction
 - Sample Locations
 - Groundwater Monitoring Well (PCE Concentration)
 - Combined Groundwater / Ground Gas Monitoring Well
 - Surface Water Locations

Exceedance Criteria
ADWG (2025) Recreation - 0.5 mg/L
ANZG (2018) Freshwater 95% - 0.07 mg/L



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Checked By: MP

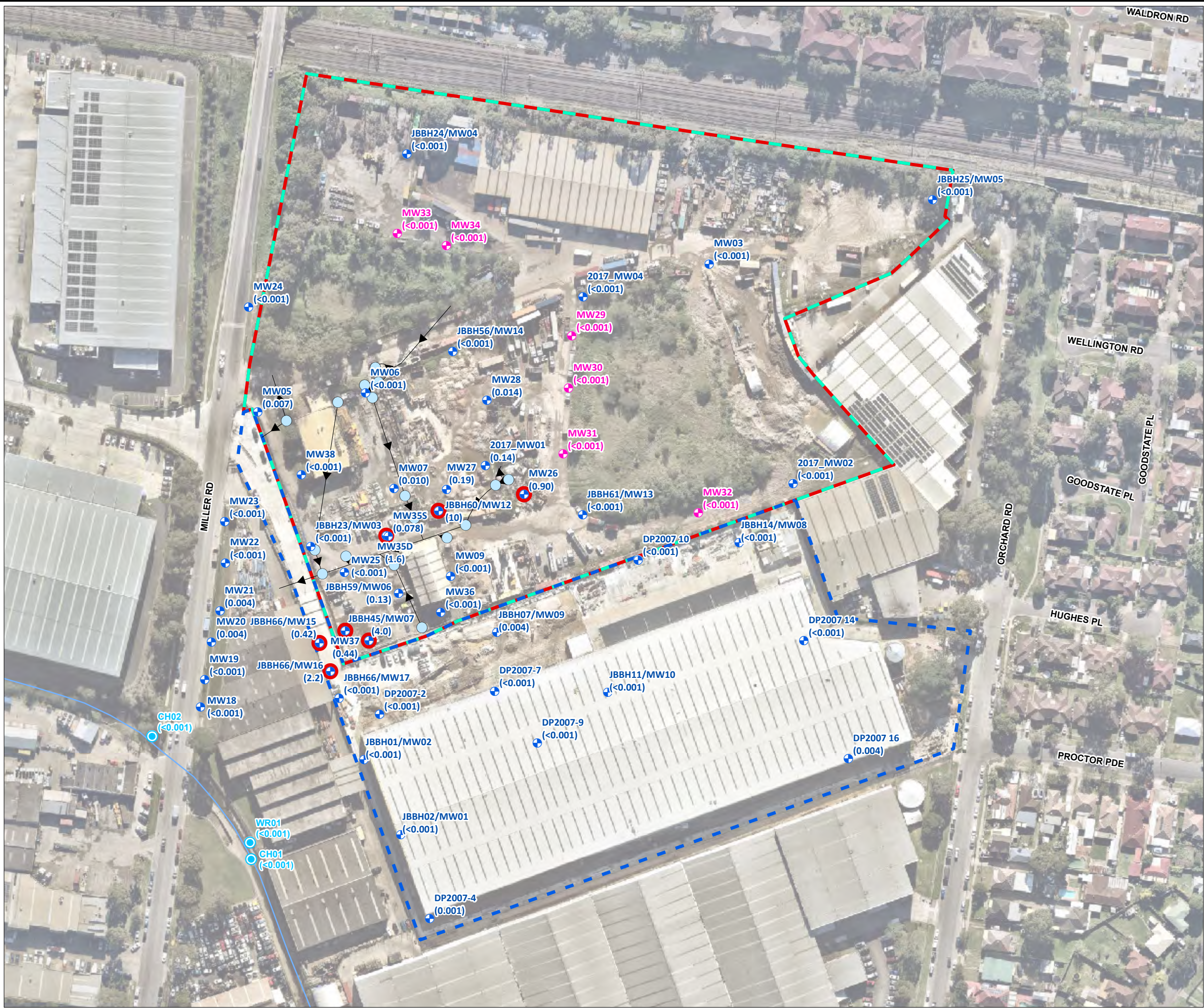
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Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

GROUNDWATER MONITORING WELL
(PCE CONCENTRATION IN mg/L)

FIGURE 3B



- Legend**
- Approximate Site Boundary
 - 191 Miller Road
 - 149 Orchard Road
 - Underground Services
 - Stormwater Pits
 - Stormwater Flow Direction
 - Sample Locations
 - Groundwater Monitoring Well (TCE Concentration)
 - Combined Groundwater / Ground Gas Monitoring Well
 - Surface Water Locations
 - Exceedance - ANZG (2018) Freshwater 95% - 0.33 mg/L

Exceedance Criteria
ADWG (2025) Recreation - no criteria
ANZG (2018) Freshwater 95% - 0.33 mg/L



Job No: 70509

Client: LogiSPACE Pty Ltd

Version: R03 Rev A

Date: 10-Nov-2025

Drawn By: JL

Checked By: MP

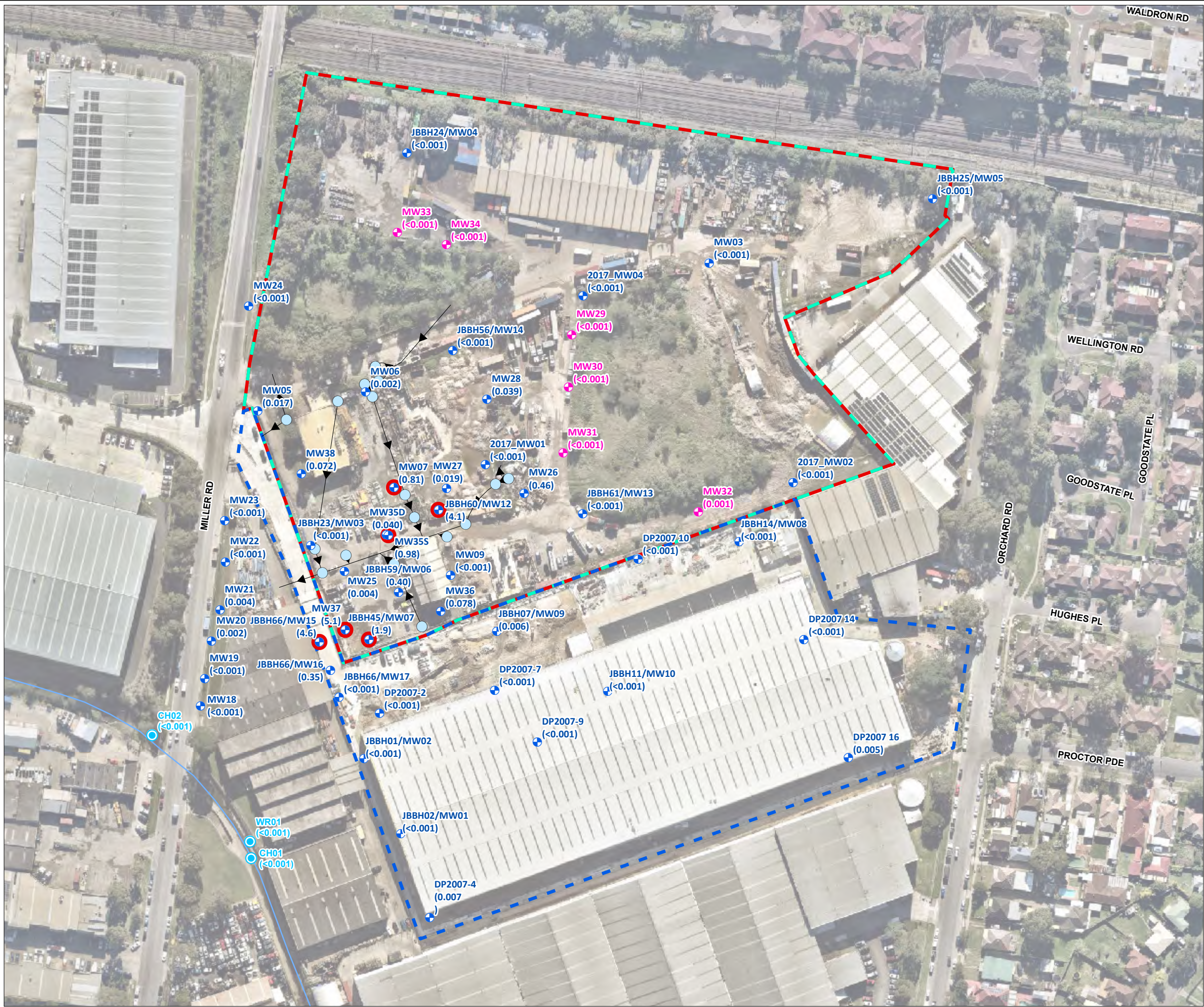
Scale: 1:1,800 at A3

Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

GROUNDWATER MONITORING WELL
(TCE CONCENTRATION IN mg/L)

FIGURE 3C

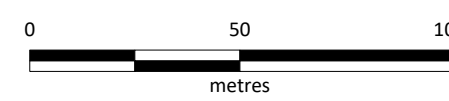


- Legend**
- Approximate Site Boundary
 - 191 Miller Road
 - 149 Orchard Road
 - Underground Services
 - Stormwater Pits
 - Stormwater Flow Direction
 - Sample Locations
 - Groundwater Monitoring Well (1,1-DCE Concentration)
 - Combined Groundwater / Ground Gas Monitoring Well
 - Surface Water Locations
 - Exceedance - ADWG (2025) Recreation - 0.6 mg/L



Job No: 70509	
Client: LogiSPACE Pty Ltd	
Version: R03 Rev A	Date: 10-Nov-2025
Drawn By: JL	Checked By: MP

Scale: 1:1,800 at A3

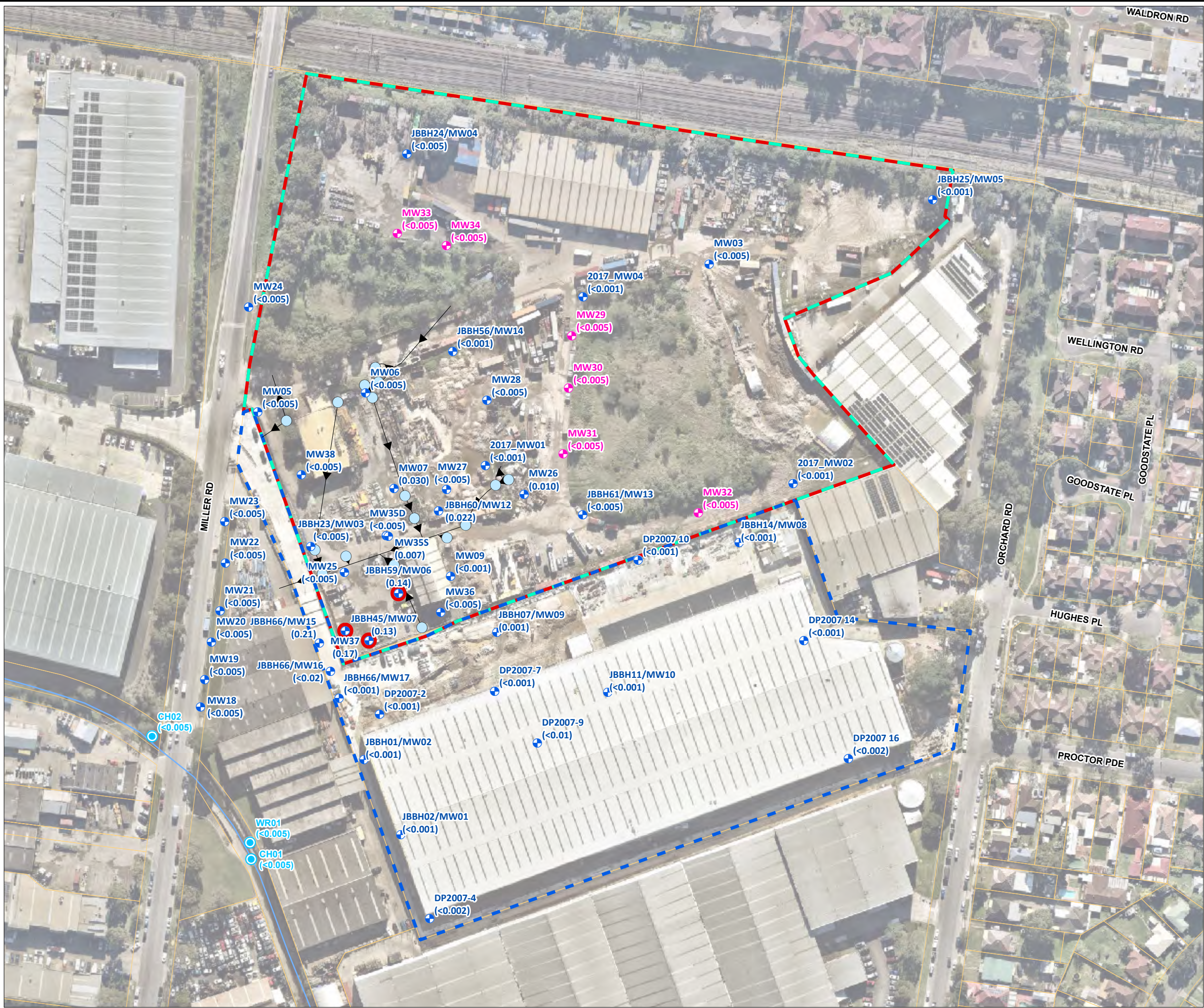


Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

GROUNDWATER MONITORING WELL
(1,2-DCE CONCENTRATION IN mg/L)

FIGURE 3D

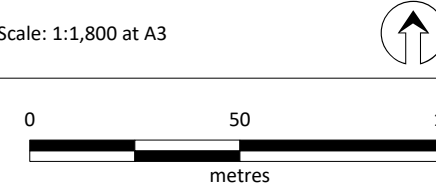


- Legend**
- Approximate Site Boundary
 - 191 Miller Road
 - 149 Orchard Road
 - Underground Services
 - Stormwater Pits
 - Stormwater Flow Direction
 - Sample Locations
 - Groundwater Monitoring Well (VC Concentration)
 - Combined Groundwater / Ground Gas Monitoring Well
 - Surface Water Locations
 - Exceedance - ANZG (2018) Freshwater 95% - 0.1 mg/L



Exceedance Criteria
ADWG (2025) Recreation- 0.003 mg/L
ANZG (2018) Freshwater 95% - 0.1 mg/L

Job No: 70509	
Client: LogiSPACE Pty Ltd	
Version: R03 Rev A	Date: 10-Nov-2025
Drawn By: JL	Checked By: MP



Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

GROUNDWATER MONITORING WELL
(VC CONCENTRATION IN mg/L)

FIGURE 3E



Legend

- Approximate Site Boundary
- 191 Miller Road
- 149 Orchard Road
- Underground Services
- Stormwater Pits
- Stormwater Flow Direction
- Sample Locations
- Historic Soil Vapour
- Current Soil Vapour
- Tier 1 Exceedances

Job No: 70509

Client: LogiSPACE Pty Ltd

Version: R03 Rev A	Date: 10-Nov-2025
Drawn By: JL	Checked By: MP

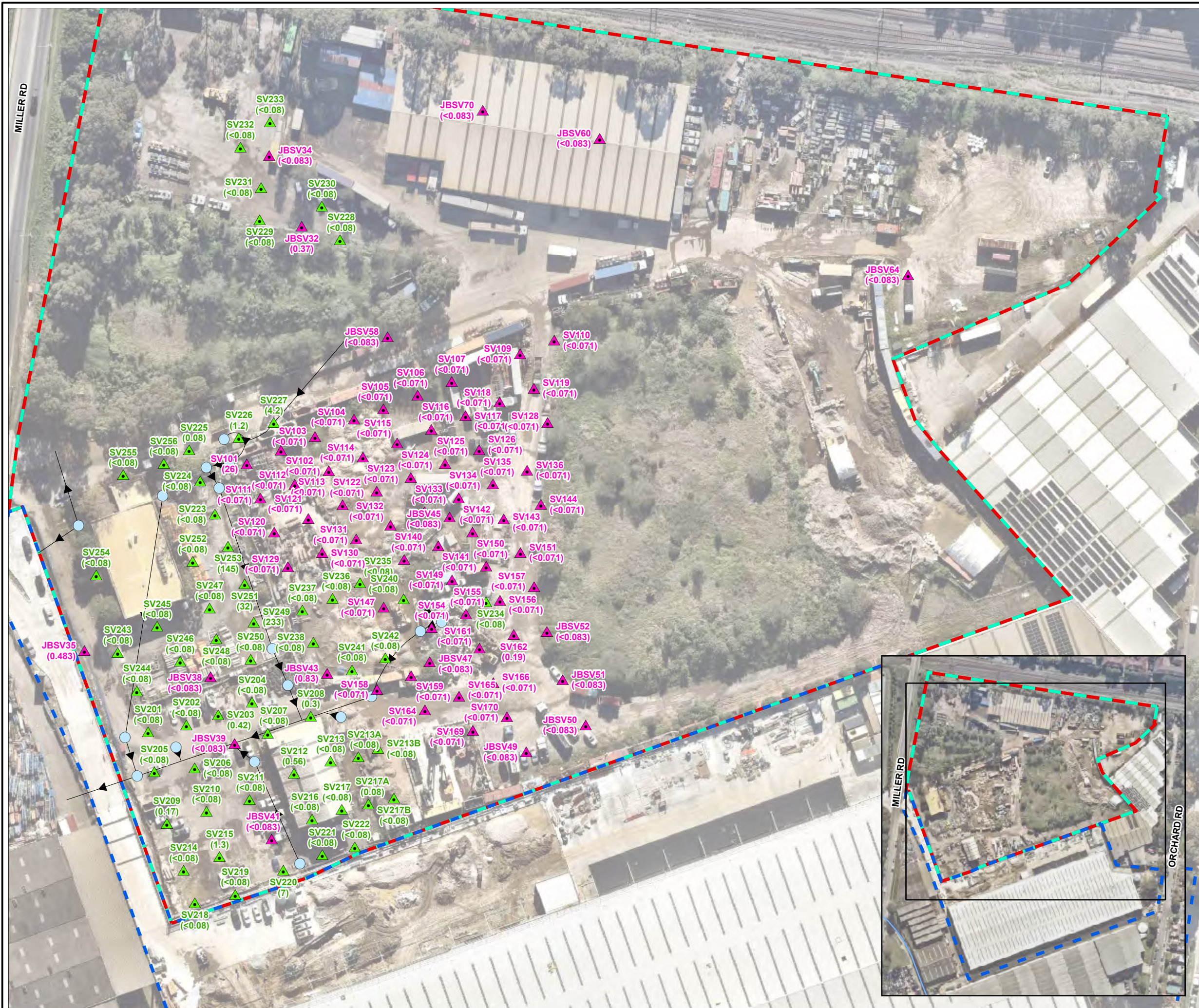
Scale: 1:1,100 at A3

Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

SOIL VAPOUR LOCATIONS - CURRENT AND HISTORICAL

FIGURE 4A



Legend

- Approximate Site Boundary
- 191 Miller Road
- 149 Orchard Road
- Underground Services
- Stormwater Pits
- Stormwater Flow Direction
- Sample Locations
 - Historic Soil Vapour
 - Current Soil Vapour

Exceedance Criteria

NEPM 2013 Table 1A(2) Comm/Ind D Soil Vap
VOCC HILs - 8 mg/m3

Job No: 70509

Client: LogiSPACE Pty Ltd

Version: R03 Rev A	Date: 10-Nov-2025
Drawn By: JL	Checked By: MP

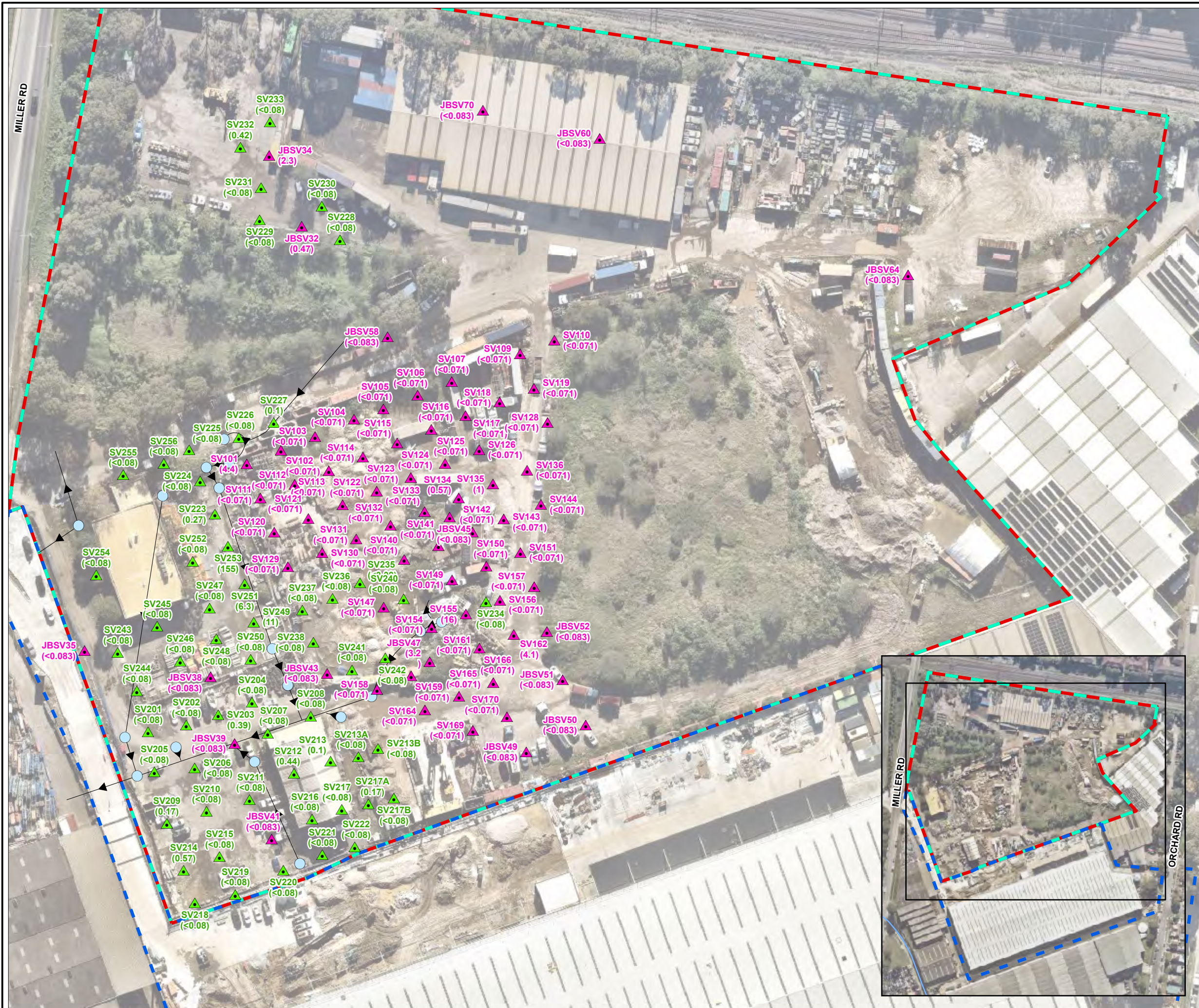
Scale: 1:1,100 at A3

Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

HISTORICAL SOIL VAPOUR
(PCE IN CONCENTRATION OF MG/M3),
CURRENT SOIL VAPOUR
(PCE IN CONCENTRATION OF MG/M3)

FIGURE 4B



Legend

- Approximate Site Boundary
- 191 Miller Road
- 149 Orchard Road
- Underground Services
 - Stormwater Pits
 - Stormwater Flow Direction
- Sample Locations
 - Historic Soil Vapour
 - Current Soil Vapour

Exceedance Criteria
NEPM 2013 Table 1A(2) Comm/Ind D Soil Vap
VOCC HILs - 0.08 mg/m3

Job No: 70509

Client: LogiSPACE Pty Ltd

Version: R03 Rev A	Date: 10-Nov-2025
Drawn By: JL	Checked By: MP

Scale: 1:1,100 at A3

Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

HISTORICAL SOIL VAPOUR
(TCE IN CONCENTRATION OF MG/M3),
CURRENT SOIL VAPOUR
(TCE IN CONCENTRATION OF MG/M3)

FIGURE 4C



Legend

- Approximate Site Boundary
- 191 Miller Road
- 149 Orchard Road
- Underground Services
- Stormwater Pits
- Stormwater Flow Direction
- Sample Locations
 - Historic Soil Vapour
 - Current Soil Vapour

Exceedance Criteria

NEPM 2013 Table 1A(2) Comm/Ind D Soil Vap
VOCC HILs - 0.3 mg/m3

Job No: 70509

Client: LogiSPACE Pty Ltd

Version: R03 Rev A	Date: 10-Nov-2025
Drawn By: JL	Checked By: MP

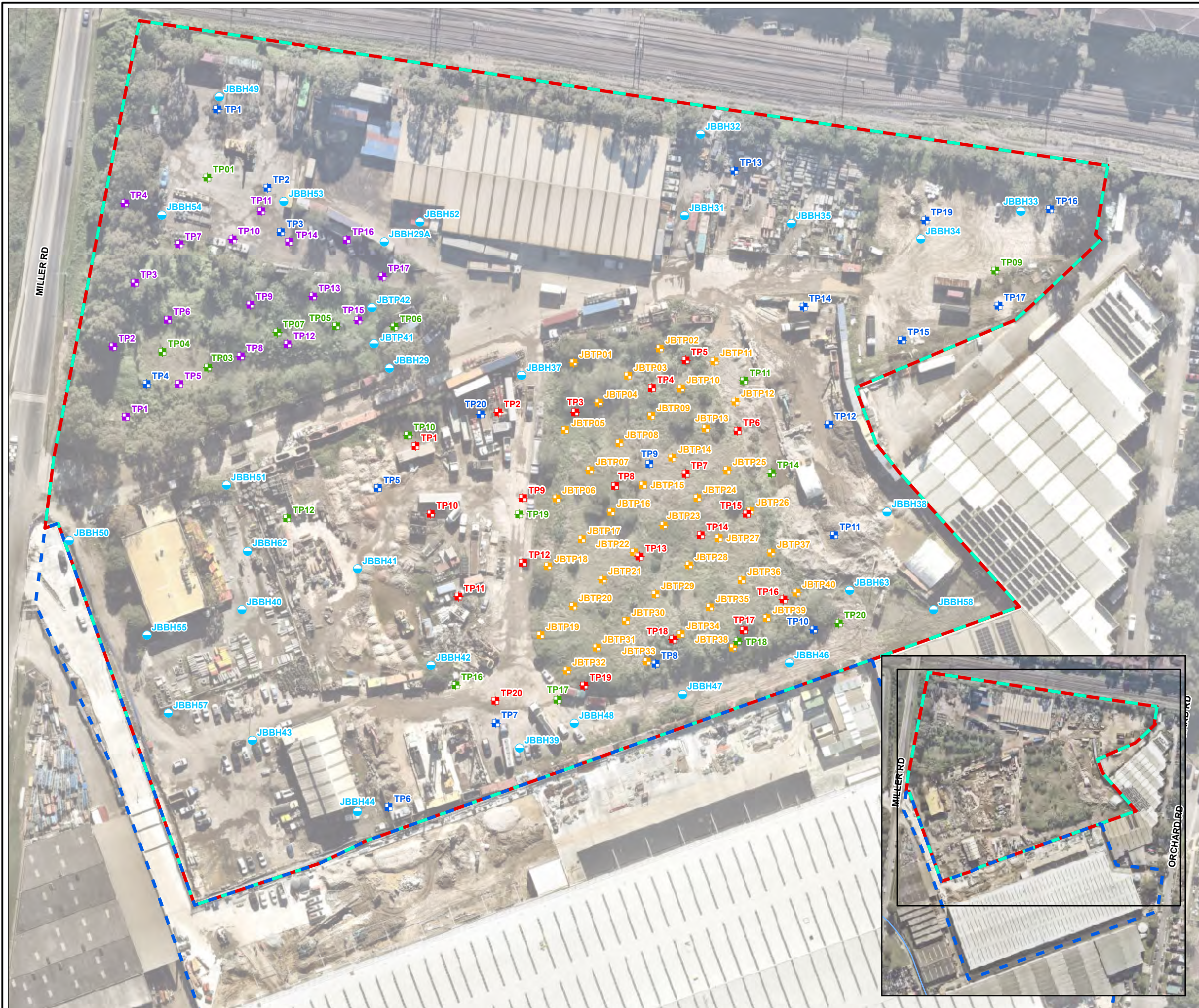
Scale: 1:1,100 at A3

Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

HISTORICAL SOIL VAPOUR
(1,2-DCE IN CONCENTRATION OF MG/M3),
CURRENT SOIL VAPOUR
(1,2-DCE IN CONCENTRATION OF MG/M3)

FIGURE 4D



Legend

- Approximate Site Boundary
- 191 Miller Road
- 149 Orchard Road
- Sample Locations
- Test Pit, JBS (2007)
- Test Pit, JBS (2008)
- Test Pit, JBS (2009)
- Test Pit, JBS&G (2015)
- Test Pit, JBS&G (2021)
- Borehole, JBS&G (2021)



Job No: 70509

Client: LogiSPACE Pty Ltd

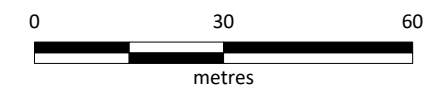
Version: R03 Rev A

Date: 10-Nov-2025

Drawn By: JL

Checked By: MP

Scale: 1:1,200 at A3



Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

SOIL LOCATION - HISTORICAL

FIGURE 5A



Legend

- Approximate Site Boundary
- 191 Miller Road
- 149 Orchard Road

Sample Locations

- Test Pit, JBS (2007)
- Test Pit, JBS (2008)
- Test Pit, JBS (2009)
- Test Pit, JBS&G (2015)
- Test Pit, JBS&G (2021)
- Borehole, JBS&G (2021)
- Asbestos Detection
- Asbestos Exceeding Health Criteria

Job No: 70509

Client: LogiSPACE Pty Ltd

Version: R03 Rev A	Date: 10-Nov-2025
Drawn By: JL	Checked By: MP

Scale: 1:1,200 at A3

Coord. System: GDA2020 MGA Zone 56

191 Miller Road,
Chester Hill, NSW

SOIL RESULTS - ASBESTOS

FIGURE 5B



- Legend**
- Approximate Site Boundary
 - 191 Miller Road
 - 149 Orchard Road
 - NSW Cadastre
 - Site Features
 - Stockpile
 - Underground Services
 - Ausgrid
 - Sewer
 - Telstra
 - NBN
 - Stormwater Pits
 - Stormwater Flow Direction
 - Identified Impacts
 - Asbestos Impacts Present in Stockpiled Soils
 - Asbestos Impacts as within in-situ Soils
 - Trichloroethene(TCE) and cis-1,2-dichloroethene(cis-1,2-DCE) impacted Soils
 - Xylene Impacted Soils



Job No: 70509	
Client: LogiSPACE Pty Ltd	
Version: R03 Rev A	Date: 10-Nov-2025
Drawn By: JL	Checked By: MP
Scale: 1:1,300 at A3	
Coord. System: GDA2020 MGA Zone 56	
191 Miller Road, Chester Hill, NSW	
IMPACTS IDENTIFIED	
FIGURE 6	

Appendix A Summary Tables

Table A1: Soil Vapour Field Screening Results
Project No. 70509
Project Name: 191 Miller Road, Chester Hill

Field Measurements									
Sample Location	Sample Date	Oxygen (% v/v)	Carbon Dioxide (% v/v)	Methane (% v/v)	Hydrogen Sulfide (ppm)	Carbon Monoxide (ppm)	PID (ppm)	Leak Detection PID	Shroud PID (ppm)
SV201	10 Oct 2025	4	0.1	2.1	0	10	0	0	143
SV202	10 Oct 2025	19.9	0.3	0	0	0	0	0	81
SV203	10 Oct 2025	8.7	6.2	0	0	0	0	0	124
SV204	10 Oct 2025	12.3	0	0	0	10	0	0	110
SV205	10 Oct 2025	8.5	0	0	0	10	0.1	0.1	97
SV206	10 Oct 2025	17.7	0	0	0	10	0	0	108
SV207	13 Oct 2025	4.7	7.2	0	0	0	1	1.1	93
SV208	10 Oct 2025	19.4	0	0	0	0	0	0	64
SV209	13 Oct 2025	9.4	1.3	0	0	0	4.7	4.8	94
SV210	13 Oct 2025	0	0	1.9	0	10	5.2	5.5	103
SV211	13 Oct 2025	19.3	0	0	0	0	5.9	6	75
SV212	10 Oct 2025	0	3.6	18	0	72	0.1	0.1	83
SV213	10 Oct 2025	0	0	0.8	0	18	0.1	0.1	93
SV214	13 Oct 2025	4.7	0	0	0	0	1.7	1.8	75
SV216	10 Oct 2025	5.4	2.9	0.5	0	0	0	0	78
SV217	10 Oct 2025	1.5	0.3	21.7	0	62	3.4	3.3	74
SV217A	13 Oct 2025	2.4	1.1	1.4	25	15	0	0	65
SV217B	13 Oct 2025	7.4	0	0	0	0	0.1	0	57
SV218	13 Oct 2025	19.7	0	0	0	0	0	0	72
SV219	13 Oct 2025	16.7	0.5	0	0	0	0.7	0.7	57
SV220	13 Oct 2025	18.4	1.3	0	0	0	0.3	0.3	84
SV221	13 Oct 2025	16.6	2.9	0	0	0	0.2	0.2	84
SV222	13 Oct 2025	18.3	1.9	0	0	0	0	0	75
SV223	10 Oct 2025	0.5	4.2	0	0	10	0	0	64
SV224	10 Oct 2025	20	0.1	0	0	10	0	0	78
SV225	10 Oct 2025	10.9	1.8	0	0	10	0	0	89
SV226	13 Oct 2025	17.8	0	0	0	10	0.4	0.4	97
SV227	10 Oct 2025	15.2	0.4	0	0	11	0.1	0.1	84
SV228	13 Oct 2025	20	0.4	0	0	10	0.3	0.3	80
SV229	13 Oct 2025	19.9	0.7	0	0	10	0.7	0.8	92
SV230	13 Oct 2025	20.3	0.3	0	0	10	0.1	0.1	84
SV231	13 Oct 2025	12.5	3.7	0	0	13	0.5	0.5	85
SV232	13 Oct 2025	20.5	0	0	0	10	0.3	0.3	72
SV233	13 Oct 2025	20.6	0	0	0	10	0.8	0.8	84
SV234	14 Oct 2025	17	2.6	0	0	10	0	0	84
SV235	13 Oct 2025	7.1	0	0	0	10	31.8	32	85
SV236	13 Oct 2025	3.7	0	0	0	0	1.7	1.7	91
SV237	13 Oct 2025	18.3	0.5	0	0	10	0.9	0.8	63
SV238	13 Oct 2025	0	0	0	0	10	0.1	0.1	85
SV240	13 Oct 2025	14.5	0	2	60	170	0.1	0.1	82
SV241	13 Oct 2025	9.9	0.1	0	0	10	0.2	0.2	94
SV242	13 Oct 2025	13.8	0	2.4	30	94	0.1	0.1	94
SV243	21 Oct 2025	12.7	4.4	0	0	0	0	0	115
SV244	21 Oct 2025	0	1	0	0	0	0.6	0.6	108
SV245	21 Oct 2025	9.8	7.5	0	0	0	0.6	0.6	97
SV246	21 Oct 2025	16.5	3.9	0	0	0	0.8	0.8	84
SV247	21 Oct 2025	12.6	7.6	0	0	0	0.7	0.7	134
SV248	21 Oct 2025	2.2	4.9	0	0	0	1	1	89
SV249	21 Oct 2025	5.4	7	0	0	0	23.1	23.2	115
SV250	21 Oct 2025	10.6	0.6	0.6	0	0	1.3	1.3	124
SV251	21 Oct 2025	14.6	1.7	0	0	10	172	175	135
SV252	21 Oct 2025	9.4	2.6	0	0	0	68.1	68.1	98
SV253	21 Oct 2025	6.1	2	0	0	10	1.5	1.5	101
SV254	21 Oct 2025	9.5	4.5	0	0	0	0.6	0.6	123
SV255	21 Oct 2025	18.3	1.4	0	0	0	0.4	0.4	84
SV256	21 Oct 2025	12	6.8	0	0	0	0.6	0.6	124



				TRHs (NEPC 2013)				BTEXN					PAH	MAH										Miscellaneous Hydrocarbons									
				C6-C10	C10-C16	F1 (C6-C10 minus BTEX)	F2 (C10-C16 less Naphthalene)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	Bromobenzene	Isopropylbenzene	1,2-dibromoethane	2,2,4-Trimethylpentane	Bromomethane	Cyclohexane	Dibromomethane	2-Hexanone (MBK)	4-Methyl-2-pentanone	Methyl Ethyl Ketone	
				mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	
EQL				3.3	3.3	3.3	3.3	0.071	0.071	0.071	0.08	0.17	0.21	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.08	0.071	0.08	0.071	0.071	0.08	0.33	0.08	0.071	0.08	0.08	0.08	
NEPM 2013 Table 1A(2) Comm/Ind D Soil Vap VOCC HILs																																	
NEPM 2013 Table 1A(5) Comm/Ind D Soil Vapour HSL for Vapour Intrusion, Clay																																	
>=0m, <1m						1,000 ^{#1}	800 ^{#2}	5	6,500	1,800			1,200	4																			
>=1m, <2m						19,000	NL	80	100,000	31,000			21,000	85																			
NEPM 2013 Table 1A(5) Comm/Ind D Soil Vapour HSL for Vapour Intrusion, Sand																																	
>=0m, <1m						680 ^{#1}	500 ^{#2}	4	4,800	1,300			840	3																			
>=1m, <2m						2,800	2,400	10	16,000	4,600			3,200	15																			
USEPA RSLs Industrial Air THQ=1.0 TR=1E-05 Nov 2021								0.016	22	0.049	0.44		0.44	0.0036	0.26	0.26		4.4			4.4		0.26	1.8	0.0002		0.022	26	0.018	0.13	13	22	

Field ID	Date	Type	Lab Report Number	<3.3	<3.3	<3.3	<3.3	<0.083	<0.083	<0.083	-	-	<0.250	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV32	23 Sep 2020	Vapour Probe	746115	<3.3	<3.3	<3.3	<3.3	<0.083	<0.083	<0.083	-	-	<0.250	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV34	23 Sep 2020	Vapour Probe	746115	<3.3	<3.3	<3.3	<3.3	<0.083	<0.083	<0.083	-	-	<0.250	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV35	23 Sep 2020	Vapour Probe	746115	<3.3	<3.3	<3.3	<3.3	<0.083	0.1	<0.083	-	-	<0.250	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV38	23 Sep 2020	Vapour Probe	746115	5	<3.3	5	<3.3	<0.083	<0.083	<0.083	-	-	<0.250	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV39	22 Sep 2020	Vapour Probe	746115	7.3	<3.3	6.7	<3.3	0.2	0.47	<0.083	-	-	<0.250	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
QSV01 (Duplicate of JBSV39)	22 Sep 2020	Vapour Probe	746115	<3.3	<3.3	<3.3	<3.3	<0.083	0.2	<0.083	-	-	<0.250	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
QVM02 (Triplicate of JBSV39)	22 Sep 2020	Vapour Probe	252118	<8.3	-	-	-	<0.33	<0.83	<0.83	<0.83	<1.7	-	<0.83	-	-	-	-	-	-	<0.83	-	-	<0.83	-	-	-	<0.83	-	<0.83	<0.83	
JBSV41	22 Sep 2020	Vapour Probe	746115	4.7	<3.3	<3.3	<3.3	0.15	0.58	0.13	-	-	0.53	<0.083	0.13	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	<0.83	-	-	<0.83	<0.83	
QSV02 (Triplicate of JBSV41)	22 Sep 2020	Vapour Probe	252015	<8.333	-	-	-	<0.333	<0.83	<0.83	<0.83	<1.7	-	<0.83	-	-	-	-	-	<0.83	-	-	<0.83	-	-	-	<0.83	-	-	<0.83	<0.83	
JBSV43	22 Sep 2020	Vapour Probe	746115	<3.3	<3.3	<3.3	<3.3	<0.083	<0.083	<0.083	-	-	<0.250	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV45	22 Sep 2020	Vapour Probe	746115	<3.3	<3.3	<3.3	<3.3	0.1	<0.083	0.13	-	-	0.38	<0.083	0.55	0.18	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV47	22 Sep 2020	Vapour Probe	746115	<3.3	<3.3	<3.3	<3.3	<0.083	<0.083	<0.083	-	-	<0.250	<0.083	0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV49	22 Sep 2020	Vapour Probe	746115	4.3	<3.3	4.3	<3.3	<0.083	<0.083	<0.083	-	-	<0.250	<0.083	0.2	0.13	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV50	22 Sep 2020	Vapour Probe	746115	<3.3	<3.3	<3.3	<3.3	<0.083	<0.083	<0.083	-	-	<0.250	<0.083	0.23	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV51	22 Sep 2020	Vapour Probe	746115	15	<3.3	11	<3.3	0.2	0.3	1.2	-	-	2.3	<0.083	0.75	0.4	<0.083	0.267	0.517	<0.083	<0.83	<0.083	-	0.15	<0.083	-	-	-	<0.083	-	-	-
JBSV52	22 Sep 2020	Vapour Probe	746115	113	16.5	108	16.5	1.117	0.55	1.8	-	-	1.5	<0.083	0.92	1.35	<0.083	0.1	2.8	<0.083	0.933	<0.083	-	0.35	<0.083	-	-	-	<0.083	-	-	-
JBSV58	22 Sep 2020	Vapour Probe	746115	<3.3	<3.3	<3.3	<3.3	<0.083	<0.083	<0.083	-	-	<0.250	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV60	22 Sep 2020	Vapour Probe	746115	<3.3	<3.3	<3.3	<3.3	<0.083	<0.083	<0.083	-	-	<0.250	<0.083	0.117	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV64	22 Sep 2020	Vapour Probe	746115	<3.3	<3.3	<3.3	<3.3	<0.083	<0.083	<0.083	-	-	<0.250	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV70	22 Sep 2020	Vapour Probe	746115	<3.3	<3.3	<3.3	<3.3	<0.083	<0.083	<0.083	-	-	<0.250	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	-	<0.083	<0.083	-	-	-	<0.083	-	-	-	
JBSV71	27 Nov 2020	Vapour Probe	759961	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.083	<0.08	-	-	-	<0.08	-	-	-	
JBSV72	27 Nov 2020	Vapour Probe	759961	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.083	<0.08	-	-	-	<0.08	-	-	-	
QVA01 (Triplicate of JBSV72)	27 Nov 2020	Vapour Probe	256942	<8.33	-	-	-	<0.83	<0.83	<0.83	<0.83	<1.7	-	<0.83	-	-	-	-	-	<0.83	-	-	<0.83	-	-	-	<0.83	-	-	<0.83	<0.83	
JBSV73	27 Nov 2020	Vapour Probe	759961	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.083	<0.08	-	-	-	<0.08	-	-	-	
QV01 (Duplicate of JBSV73)	27 Nov 2020	Vapour Probe	759961	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-	
SV101	11 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-	
SVQC1 (Duplicate of SV101)	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-	
SVQA1 (Triplicate of SV101)	11 Jan 2021	Vapour Probe	259570	<7.1	-	-	-	<0.29	<0.71	<0.71	<0.71	<1.4	-	<0.71	-	-	-	-	-	<0.71	-	-	<0.71	-	-	-	<0.71	-	-	<0.71	<0.71	
SV102F	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-	
SV102N	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-	
SV103	12 Jan 2021	Vapour Probe	767902	-	-	-	-	0.3	0.31	0.53	-	-	1.1	<0.071	0.27	0.17	<0.071	0.086	0.94	<0.071	<0.71	&										



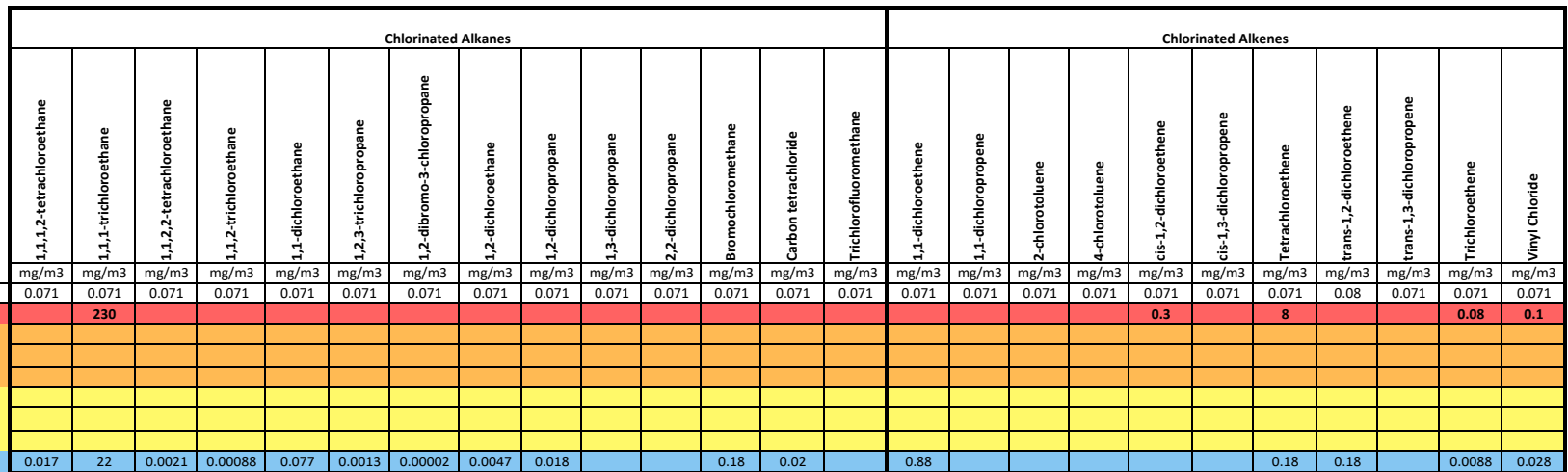
				TRHs (NEPC 2013)				BTEXN						PAH	MAH										Miscellaneous Hydrocarbons									
				C6-C10	C10-C16	F1 (C6-C10 minus BTEX)	F2 (C10-C16 less Naphthalene)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	Bromobenzene	Isopropylbenzene	1,2-dibromoethane	2,2,4-Trimethylpentane	Bromomethane	Cyclohexane	Dibromomethane	2-Hexanone (MBK)	4-Methyl-2-pentanone	Methyl Ethyl Ketone		
				mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3		
EQL				3.3	3.3	3.3	3.3	0.071	0.071	0.071	0.08	0.17	0.21	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.08	0.071	0.08	0.071	0.071	0.08	0.33	0.08	0.071	0.08	0.08	0.08		
NEPM 2013 Table 1A(2) Comm/Ind D Soil Vap VOCC HILs																																		
NEPM 2013 Table 1A(5) Comm/Ind D Soil Vapour HSL for Vapour Intrusion, Clay																																		
>=0m, <1m						1,000 ^{#1}	800 ^{#2}	5	6,500	1,800			1,200	4																				
>=1m, <2m						19,000	NL	80	100,000	31,000			21,000	85																				
NEPM 2013 Table 1A(5) Comm/Ind D Soil Vapour HSL for Vapour Intrusion, Sand																																		
>=0m, <1m						680 ^{#1}	500 ^{#2}	4	4,800	1,300			840	3																				
>=1m, <2m						2,800	2,400	10	16,000	4,600			3,200	15																				
USEPA RSLs Industrial Air THQ=1.0 TR=1E-05 Nov 2021								0.016	22	0.049	0.44		0.44	0.0036	0.26	0.26		4.4			4.4		0.26	1.8	0.0002		0.022	26	0.018	0.13	13	22		
Field ID	Date	Type	Lab Report Number																															
SV131N	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV132	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV133	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV134	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV135 FRONT + BACK	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV136	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV140	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV141F	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV141N	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV142	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV143	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV144	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV147	12 Jan 2021	Vapour Probe	767902	-	-	-	-	0.26	<0.071	0.13	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	0.17	<0.071	-	-	-	<0.071	-	-	-		
SV149	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV150	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV151	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SVQC4 (Duplicate of SV151)	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SVQA4 (Triplicate of SV151)	14 Jan 2021	Vapour Probe	259570	<7.1	-	-	-	<0.29	<0.71	<0.71	<0.71	<0.71	<1.4	-	<0.71	-	-	-	-	-	<0.71	-	-	<0.71	-	-	-	<0.71	-	-	<0.71	<0.71		
SV154	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV155	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV156	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	0.09	-	-	0.49	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV157	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV158	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV159	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV161	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV162	12 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV164	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0.071	<0.071	<0.071	-	-	<0.21	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV165F	14 Jan 2021	Vapour Probe	767902	-	-	-	-	0.39	0.071	0.24	-	-	0.64	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV165N	14 Jan 2021	Vapour Probe	767902	-	-	-	-	0.87	0.11	0.19	-	-	0.29	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV166F	14 Jan 2021	Vapour Probe	767902	-	-	-	-	0.1	0.17	0.26	-	-	0.67	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.71	<0.071	-	<0.071	<0.071	-	-	-	<0.071	-	-	-		
SV166N	14 Jan 2021	Vapour Probe	767902	-	-	-	-	<0																										



TRHs (NEPC 2013)				BTEXN						PAH	MAH										Miscellaneous Hydrocarbons									
C6- C10	C10- C16	F1 (C6- C10 minus BTEX)	F2 (C10- C16 less Naphthalene)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	Bromobenzene	Isopropylbenzene	1,2-dibromoethane	2,2,4-Trimethylpentane	Bromomethane	Cyclohexane	Dibromomethane	2-Hexanone (MBK)	4-Methyl-2-pentanone	Methyl Ethyl Ketone		
mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	
EQL	3.3	3.3	3.3	3.3	0.071	0.071	0.071	0.08	0.17	0.21	0.071	0.071	0.071	0.071	0.071	0.071	0.08	0.071	0.08	0.071	0.071	0.08	0.33	0.08	0.071	0.08	0.08	0.08	0.08	
NEPM 2013 Table 1A(2) Comm/Ind D Soil Vap VOCC HILs																														
NEPM 2013 Table 1A(5) Comm/Ind D Soil Vapour HSL for Vapour Intrusion, Clay																														
>=0m, <1m						1,000 ^{#1}	800 ^{#2}	5	6,500	1,800																				
>=1m, <2m						19,000	NL	80	100,000	31,000																				
NEPM 2013 Table 1A(5) Comm/Ind D Soil Vapour HSL for Vapour Intrusion, Sand																														
>=0m, <1m						680 ^{#1}	500 ^{#2}	4	4,800	1,300																				
>=1m, <2m						2,800	2,400	10	16,000	4,600																				
USEPA RSLs Industrial Air THQ=1.0 TR=1E-05 Nov 2021					0.016	22	0.049	0.44		0.44	0.0036	0.26	0.26		4.4			4.4		0.26	1.8	0.0002		0.022	26	0.018	0.13	13	22	

Field ID	Date	Type	Lab Report Number																											
SV227	10 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV228	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV229	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV230	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
QA20251013-2 (Duplicate of SV230)	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV231	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV232	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV233	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV234	14 Oct 2025	Vapour Pin	1279655	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
QC20251014-1 FRONT + BACK (Triplicate of SV234)	14 Oct 2025	Vapour Pin	EN2517630	-	-	-	-	<0.08	<0.08	<0.08	<0.08	<0.17	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.33	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
SV235	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV236	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV237-Back*	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	4.7	0.1	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	0.97	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV238	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV240	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV241	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV242	13 Oct 2025	Vapour Pin	1279520	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV243	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV244	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV245	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV246	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV247	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV248	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV249 FRONT + BACK	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	0.72	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV250	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV251	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV252	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV253 FRONT + BACK	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	0.1	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV254	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV255	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-
SV256	21 Oct 2025	Vapour Pin	1282362	-	-	-	-	<0.08	<0.08	<0.08	-	-	<0.25	<0.08	<0.08	<0.08	<0.08	<0.08	<0.8	<0.08	-	<0.08	<0.08	-	-	-	<0.08	-	-	-

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	Chlorinated Alkanes																Chlorinated Alkenes									
	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane	Carbon tetrachloride	Trichlorofluoromethane	1,1-dichloroethene	1,1-dichloropropene	2-chlorotoluene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichloroethene	Vinyl Chloride	
	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³		
EQL	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.08	0.071	0.071	0.071		
NEPM 2013 Table 1A(2) Comm/Ind D Soil Vap VOCC HILS	230																		0.3		8	0.08		0.08	0.1	
NEPM 2013 Table 1A(5) Comm/Ind D Soil Vapour HSL for Vapour Intrusion, Clay																										
>=0m, <1m																										
>=1m, <2m																										
NEPM 2013 Table 1A(5) Comm/Ind D Soil Vapour HSL for Vapour Intrusion, Sand																										
>=0m, <1m																										
>=1m, <2m																										
USEPA RSLs Industrial Air THQ=1.0 TR=1E-05 Nov 2021	0.017	22	0.0021	0.00088	0.077	0.0013	0.00002	0.0047	0.018			0.18	0.02		0.88						0.18	0.18		0.0088	0.028	

Field ID	Date	Type	Lab Report Number																						
SV131N	12 Jan 2021	Vapour Probe	767902	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	-	<0.071	<0.071	<0.071	
SV132	12 Jan 2021	Vapour Probe	767902	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	-	<0.071	<0.071	<0.071	
SV133	14 Jan 2021	Vapour Probe	767902	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	-	<0.071	<0.071	<0.071	
SV134	14 Jan 2021	Vapour Probe	767902	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	
SV135 FRONT + BACK	14 Jan 2021	Vapour Probe	767902	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	
SV136	14 Jan 2021	Vapour Probe	767902	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	
SV140	12 Jan 2021	Vapour Probe	767902	<0.071	<0.071	<0.071	<0.071																		

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[illegible]



	Solvents											Chlorinated Benzenes						Trihalomethanes				Organic Alcohols	Chlorinated Hydrocarbons	Other					NA		Organochlorine Pesticides	
	Decane	Heptane	Hexane	Octane	Nonane	Cyclohexanone	Acetone	1,4-Dioxane	Ethyl Acetate	Acrylonitrile	Benzyl chloride	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	Dibromochloromethane	Chloroform	Tribromomethane	Bromodichloromethane	2-Propanol	Hexachlorobutadiene	1,2-butyrlacetate	1-heptene	Di-isobutyl Ketone	Dodecane	Propylene oxide	Ethyl acrylate	Methyl styrene (alpha)	Epichlorohydrin	
EQL	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
NEPM 2013 Table 1A(2) Comm/Ind D Soil Vap VOCC HILs	0.08	0.08	0.08	0.08	0.08	0.08	0.17	0.71	0.71	0.71	0.71	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.71	0.071	0.71	0.08	0.71	0.71	1.4	0.71	0.71	0.71	
NEPM 2013 Table 1A(5) Comm/Ind D Soil Vapour HSL for Vapour Intrusion, Clay																																
>=0m, <1m																																
>=1m, <2m																																
NEPM 2013 Table 1A(5) Comm/Ind D Soil Vapour HSL for Vapour Intrusion, Sand																																
>=0m, <1m																																
>=1m, <2m																																
USEPA RSLs Industrial Air THQ=1.0 TR=1E-05 Nov 2021		1.8	3.1		0.088	3.1		0.025	0.31	0.0018	0.0025		0.0088	0.88		0.011	0.22		0.0053	0.11	0.0033	0.88	0.0056					0.033	0.035		0.0044	

Field ID	Date	Type	Lab Report Number	Decane	Heptane	Hexane	Octane	Nonane	Cyclohexanone	Acetone	1,4-Dioxane	Ethyl Acetate	Acrylonitrile	Benzyl chloride	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	Dibromochloromethane	Chloroform	Tribromomethane	Bromodichloromethane	2-Propanol	Hexachlorobutadiene	1,2-butyrlacetate	1-heptene	Di-isobutyl Ketone	Dodecane	Propylene oxide	Ethyl acrylate	Methyl styrene (alpha)	Epichlorohydrin
JBSV32	23 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV34	23 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV35	23 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV38	23 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV39	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
QSV01 (Duplicate of JBSV39)	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
QVM02 (Triplicate of JBSV39)	22 Sep 2020	Vapour Probe	252118	<0.83	-	<0.83	-	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	-	-	-	-	-	<0.83	-	-	-	-	<0.83	-	<0.83	<0.83	<1.7	<0.83	<0.83	<0.83	<0.83	<0.83
JBSV41	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
QSV02 (Triplicate of JBSV41)	22 Sep 2020	Vapour Probe	252015	<0.83	-	<0.83	-	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	-	-	-	-	-	<0.83	-	-	-	-	<0.83	-	<0.83	<0.83	<1.7	<0.83	<0.83	<0.83	<0.83	<0.83
JBSV43	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV45	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV47	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV49	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV50	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV51	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV52	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV58	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV60	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV64	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV70	22 Sep 2020	Vapour Probe	746115	-	-	-	-	-	-	-	-	-	-	-	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<0.083	<1.7	<0.083	-	-	-	-	-	-	-	-
JBSV71	27 Nov 2020	Vapour Probe	759961	-	-	-	-	-	-	-	-	-	-	-	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<1.7	<0.08	-	-	-	-	-	-	-	-
JBSV72	27 Nov 2020	Vapour Probe	759961	-	-	-	-	-	-	-	-	-	-	-	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<1.7	<0.08	-	-	-	-	-	-	-	-
QVA01 (Triplicate of JBSV72)	27 Nov 2020	Vapour Probe	256942	<0.83	-	<0.83	-	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	<0.83	-	-	-	-	-	<0.83	-	-	-	-	<0.83	-	<0.83	<0.83	<1.7	<0.83	<0.83	<0.83	<0.83	<0.83
JBSV73	27 Nov 2020	Vapour Probe	759961	-	-	-	-	-	-	-	-	-	-	-	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<1.7	<0.08	-	-	-	-	-	-	-	-
QV01 (Duplicate of JBSV73)	27 Nov 2020	Vapour Probe	759961	-	-	-	-	-	-	-	-	-	-	-	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<1.7	<0.08	-	-	-	-	-	-	-	-
SV101	11 Jan 2021	Vapour Probe	767902	-	-	-	-	-	-	-	-	-	-	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<1.4	<0.071	-	-	-	-	-	-	-	-
SVQC1 (Duplicate of SV101)	14 Jan 2021	Vapour Probe	767902	-	-	-	-	-	-	-	-	-	-	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<1.4	<0.071	-	-	-	-	-	-	-	-
SVQA1 (Triplicate of SV101)	11 Jan 2021	Vapour Probe	259570	<0.71	-	<0.71	-	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	<0.71	-	-	-	-	-	<0.71	-	-	-	-	<0.71	-	<0.71	<0.71	<1.4	<0.71	<0.71	<0.71	<0.71	<0.71
SV102F	12 Jan 2021	Vapour Probe	767902	-	-	-	-	-	-	-	-	-	-	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<1.4	<0.071	-	-	-	-	-	-	-	-
SV102N	12 Jan 2021	Vapour Probe	767902	-	-	-	-	-	-	-	-	-	-	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<1.4	<0.071	-	-	-	-	-	-	-	-
SV103	12 Jan 2021	Vapour Probe	767902	-	-	-	-	-	-	-	-	-	-	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<1.4	<0.071	-	-	-	-	-	-	-	-
SV104F	12 Jan 2021	Vapour Probe	767902	-	-	-	-	-	-	-	-	-	-	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<1.4	<0.071	-	-	-	-	-	-	-	-
SV104N	12 Jan 2021	Vapour Probe	767902	-	-	-	-	-	-	-	-	-	-	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<1.4	<0.071	-	-	-	-	-	-	-	-
SV105	12 Jan 2021	Vapour Probe	767902	-	-	-	-	-	-	-	-	-	-	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<1.4	<0.071	-	-	-	-	-	-	-	-
SV106	12 Jan 2021	Vapour Probe	767902	-	-	-	-	-	-	-	-	-	-	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<1.4	<0.071	-	-	-	-	-	-	-	-
SV107	12 Jan 2021	Vapour Probe	767902	-	-	-	-	-	-	-	-	-	-	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<1.4	<0.071	-	-	-	-	-	-	-	-
SV109	12 Jan 2021	Vapour Probe	767902	-	-	-	-	-	-	-	-	-	-	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<1.4	<0.071	-	-	-	-	-	-	-	-
SV110	12 Jan 2021	Vapour Probe	767902	-	-	-	-	-	-	-	-	-	-	-	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<0.071	<1.4	<0.071	-	-	-	-	-	-	-	-
SV111	11 Jan																																	



	Solvents											Chlorinated Benzenes						Trihalomethanes				Organic Alcohols	Chlorinated Hydrocarbons	Other					NA		Organochlorine Pesticides
	Decane	Heptane	Hexane	Octane	Nonane	Cyclohexanone	Acetone	1,4-Dioxane	Ethyl Acetate	Acrylonitrile	Benzyl chloride	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	Dibromochloromethane	Chloroform	Tribromomethane	Bromodichloromethane	2-Propanol	Hexachlorobutadiene	1,2-butylacetate	1-heptene	Di-isobutyl Ketone	Dodecane	Propylene oxide	Ethyl acrylate	Methyl styrene (alpha)	Epichlorohydrin
	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3	mg/m3
EQL	0.08	0.08	0.08	0.08	0.08	0.08	0.17	0.71	0.71	0.71	0.71	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.71	0.071	0.71	0.08	0.71	0.71	1.4	0.71	0.71	0.71
NEPM 2013 Table 1A(2) Comm/Ind D Soil Vap VOCC HILs																															
NEPM 2013 Table 1A(5) Comm/Ind D Soil Vapour HSL for Vapour Intrusion, Clay																															
>=0m, <1m																															
>=1m, <2m																															
NEPM 2013 Table 1A(5) Comm/Ind D Soil Vapour HSL for Vapour Intrusion, Sand																															
>=0m, <1m																															
>=1m, <2m																															
USEPA RSLs Industrial Air THQ=1.0 TR=1E-05 Nov 2021		1.8	3.1		0.088	3.1		0.025	0.31	0.0018	0.0025		0.0088	0.88		0.011	0.22		0.0053	0.11	0.0033	0.88	0.0056					0.033	0.035		0.0044

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Table A2: Groundwater Gauging

Project Name: 191 Miller Road, Chester Hill

Job Number: 70509



Well ID	MGA 56 Coordinates		Samples Date	Relative TOC Level ¹	Total Depth	Depth to Water	Depth to LNAPL	LNAPL Thickness	Standing Water Level ¹	Comments
	Easting	Northing		mAHD	m TOC	m TOC	m TOC	m	m AHD	
Current Wells										
MW03	314634.587	6248922.619	20-Oct-25	24.294	7.465	1.337	-	-	22.957	Sulfur odour, no sheen
MW18	314389.058	6248708.864	20-Oct-25	20.492	5.569	1.564	-	-	18.928	No odour or sheen
MW19	314390.371	6248719.611	20-Oct-25	20.473	5.025	1.434	-	-	19.039	No odour or sheen
MW20	314392.545	6248737.427	20-Oct-25	20.410	4.430	1.337	-	-	19.073	No odour or sheen
MW21	314394.627	6248751.477	20-Oct-25	20.359	2.895	1.259	-	-	19.100	No odour or sheen
MW22	314396.368	6248767.097	20-Oct-25	20.299	3.901	1.138	-	-	19.161	No odour or sheen
MW23	314399.732	6248796.283	20-Oct-25	20.263	3.875	0.810	-	-	19.453	No odour or sheen
MW24	314414.554	6248903.079	21-Oct-25	22.397	8.375	2.621	-	-	19.776	No odour or sheen
MW25	314460.182	6248770.321	21-Oct-25	20.528	4.515	0.739	-	-	19.789	Slight hydrocarbon odour, no sheen
MW26	314539.719	6248800.262	21-Oct-25	21.498	3.945	1.069	-	-	20.429	No odour or sheen
MW27	314507.247	6248815.692	21-Oct-25	20.861	5.121	0.526	-	-	20.335	No odour or sheen
MW28	314524.266	6248856.009	21-Oct-25	21.263	4.126	0.400	-	-	20.863	No odour or sheen
MW29	314570.052	6248894.598	20-Oct-25	24.395	4.307	3.657	-	-	20.738	No odour or sheen
MW30	314568.486	6248865.352	20-Oct-25	24.531	4.904	3.429	-	-	21.102	No odour or sheen
MW31	314565.422	6248836.771	21-Oct-25	24.261	4.760	2.140	-	-	22.121	Very slight hydrocarbon odour, no sheen
MW32	314638.218	6248805.172	20-Oct-25	24.934	4.357	3.313	-	-	21.621	No odour or sheen
MW33	314486.3	6248938.414	20-Oct-25	23.923	4.364	2.020	-	-	21.903	No odour or sheen
MW34	314513.413	6248932.241	20-Oct-25	24.209	3.763	3.161	-	-	21.048	No odour or sheen
MW35D	314477.921	6248793.003	20-Oct-25	20.804	6.868	0.835	-	-	19.969	No odour or sheen
MW35S	314477.279	6248793.63	20-Oct-25	20.775	3.890	0.794	-	-	19.981	No odour or sheen
MW36	314502.679	6248755.935	21-Oct-25	21.099	4.365	1.550	-	-	19.549	No odour or sheen
MW37	314456.723	6248743.812	21-Oct-25	20.602	3.788	0.953	-	-	19.649	No odour or sheen
MW38	314434.898	6248821.922	20-Oct-25	20.619	3.830	0.635	-	-	19.984	No odour or sheen
Missing Wells										
MW03	314634.587	6248922.619	13-Oct-25	Well is missing.						
MW05	314414.224	6248850.416	13-Oct-25	Well is missing.						
MW06	314466.912	6248859.69	13-Oct-25	Well is missing.						
MW07	314480.755	6248812.956	13-Oct-25	Well is missing.						
MW09	314508.4	6248770.071	13-Oct-25	Well is missing.						
JBBH24/MW04	314487.033	6248976.323	13-Oct-25	Well is missing.						
JBBH25/MW05	314743.667	6248953.974	13-Oct-25	Well is missing.						
JBBH59/MW06	314482.972	6248761.922	13-Oct-25	Well is missing.						
JBBH45/MW07	314468.523	6248738.651	13-Oct-25	Well is missing.						
JBBH56/MW14	314509.389	6248879.856	13-Oct-25	Well is missing.						
JBBH60/MW12	314502.485	6248802.009	13-Oct-25	Well is missing.						
JBBH61/MW13	314572.828	6248800.167	13-Oct-25	Well is missing.						

Notes:

¹ mAHD levels based on survey data from top of pipe. Datum - MGA Zone 55 AHD

Table A3: Groundwater Field Parameters
Project Name: 191 Miller Road, Chester Hill
Job Number: 70509



Well ID	Samples Date	Temperature	Dissolved Oxygen	Electrical Conductivity	pH	Redox
		°C	mg/L	µs/cm	-	mV
Groundwater Wells						
MW03	20-Oct-25	20.80	1.77	12574	6.57	-27
MW18	20-Oct-25	18.50	4.69	9988	4.56	68
MW19	20-Oct-25	19.70	4.81	19500	6.20	181
MW20	20-Oct-25	18.90	5.63	16094	6.62	164
MW21	20-Oct-25	19.00	4.56	9236	6.85	143
MW22	20-Oct-25	18.70	2.31	805	6.53	125
MW23	20-Oct-25	17.90	5.88	923	6.48	110
MW24	21-Oct-25	19.00	3.71	22493	6.64	151
MW25	21-Oct-25	22.90	0.15	3217	7.76	-4
MW26	21-Oct-25	19.40	3.18	11104	6.98	151
MW27	21-Oct-25	21.40	2.47	17599	6.65	167
MW28	21-Oct-25	21.30	3.70	16042	6.81	170
MW29	20-Oct-25	22.10	2.62	20625	6.88	63
MW30	20-Oct-25	22.70	2.20	7235	6.60	76
MW31	21-Oct-25	20.40	0.78	8256	6.01	40
MW32	20-Oct-25	20.10	2.28	13553	6.06	97
MW33	20-Oct-25	18.60	4.59	16280	6.44	38
MW34	20-Oct-25	19.60	4.36	11663	6.59	43
MW35D	20-Oct-25	23.60	0.78	19156	6.72	163
MW35S	20-Oct-25	24.10	2.44	7461	6.66	164
MW36	21-Oct-25	19.60	1.97	11908	6.93	84
MW37	21-Oct-25	20.00	2.89	9507	6.93	102
MW38	20-Oct-25	20.20	0.69	5339	6.33	140
Surface Water						
WR01	21-Oct-25	21.80	5.15	3619	8.15	826
CH01	21-Oct-25	29.90	9.07	3576	6.66	84
CH02	21-Oct-25	27.30	9.20	1926	9.22	68

Notes:
¹ mAHD levels based on survey data from top of pipe. Datum - MGA Zone 55 AHD

Project Name: 191 Miller Road, Chester Hill, Logispace

[illegible]

Table B3 - Groundwater Analytical Table
Project Number: 70509
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				PAH																									
				Arenic	2-Methylnaphthalene	3-Methylnaphthalene	7,12-Dimethylbenzo[a]anthracene	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[b]pyrene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Benzo[e,h]perylene	Benzo[k]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-c,d]pyrene	Naphthalene	Naphthalene - PAH	Phenanthrene	Pyrene	PAHs (Sum of total)			
				mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
EQL				0.001	0.005	0.005	0.005	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001		
ADWG (2025) Recreation (10x Health)				0.1								0.0001 ¹⁵																	
ANZG (2018) Freshwater 95% toxicant DGVs				0.013 ¹¹						0.0004 ¹²		0.0002 ¹²							0.0014 ¹³				0.016 ¹⁸	0.016 ¹⁸	0.003 ¹²				
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																													
>=2m, <4m																							NL	NL					
>=4m, <6m																							NL	NL					
>=6m																							NL	NL					
NEPM 2013 Table 1A(4) Solubility Limit GW for Vapour Intrusion, Clay																							0.17	0.17					
Location Code	Field ID	Date	Lab Report Number																										
JBBH23/MW03	JBBH23/MW03	18 May 2023	991673	-	<0.005	<0.005	<0.01	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	
JBBH23/MW03	JBBH23/MW03	29 Sep 2020	747221	-	<0.005	<0.005	<0.005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	
JBBH24/MW04	JBBH24/MW04	18 May 2023	991673	-	<0.005	<0.005	<0.01	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	
JBBH24/MW04	JBBH24/MW04	28 Sep 2020	747221	-	<0.005	<0.005	<0.005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	
JBBH45/MW07	JBBH45/MW07	18 May 2023	991673	-	<0.005	<0.005	<0.01	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	
JBBH45/MW07	JBBH45/MW07	28 Sep 2020	747221	-	<0.005	<0.005	<0.005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	
JBBH56/MW14	JBBH56/MW14	28 Sep 2020	747221	0.001	<0.005	<0.005	<0.005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	
JBBH59/MW06	JBBH59/MW06	17 May 2023	991673	-	<0.005	<0.005	<0.01	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	
JBBH59/MW06	JBBH59/MW06	27 Nov 2020	759965	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
JBBH60/MW12	JBBH60/MW12	28 Sep 2020	747221	<0.001	<0.005	<0.005	<0.005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	
JBBH60/MW12	JBBH60/MW12	27 Nov 2020	759965	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
JBBH60/MW12	QA20201127-MN (Triplicate of JBBH60/MW12)	27 Nov 2020	756940	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
JBBH60/MW12	QC20201127_MN (Duplicate of JBBH60/MW12)	27 Nov 2020	759965	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	-	-	-	
JBBH61/MW13	JBBH61/MW13	17 May 2023	991673	-	<0.005	<0.005	<0.01	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	
JBBH61/MW13	JBBH61/MW13	28 Sep 2020	747221	-	<0.005	<0.005	<0.005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	
JBBH64/MW15	JBBH64/MW15	27 Nov 2020	759965	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
JBBH65/MW16	JBBH65/MW16	27 Nov 2020	759965	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
JBBH66/MW17	JBBH66/MW17	27 Nov 2020	759965	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW03	MW03	21 Sep 2020	745750	-	<0.005	<0.005	<0.005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001
MW03	MW03	16 Feb 2017	534613	0.018	-	-	-	<0.00001	<0.00001	0.00002	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	0.00003	0.00003
MW03	MW03	17 May 2023	991673	-	<0.005	<0.005	<0.01	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	
MW03	MW03	20 Oct 2025	1281872	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
MW04	MW04	16 Feb 2017	534613	0.004	-	-	-	<0.00001	<0.00001	0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	0.00001
MW05	MW05	21 Sep 2020	745750	-	<0.005	<0.005	<0.005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001
MW05	MW05	16 Feb 2017	534613	<0.005	-	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001
MW05	MW05	28 Sep 2020	747221	-	<0.005	<0.005	<0.005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001
MW05	MW05	17 May 2023	991673	-	<0.005	<0.005	<0.01	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001
MW06	MW06	21 Sep 2020	745750	-	<0.005	<0.005	<0.005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001
MW06	2017_QCW01 (Duplicate of MW06)	21 Sep 2020	745750	-	<0.005	<0.005	<0.005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	-	<												

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Project Name: 191 Miller Road, Chester Hill, Logispace

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Table B3 - Groundwater Analytical Table
Project Number: 70509
Project Name: 191 Miller Road, Chester Hill, Logispace



	MAH										Miscellaneous Hydrocarbons										Chlorinated Benzenes										Trihalomethanes			Explosives															
	Aromatic	1,2,4-trimethylbenzene			1,3,5-trimethylbenzene			n-butylbenzene	i-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	Total MAH	Bromobenzene	Isopropylbenzene	Methane	1,2-dichloroethane	Bromomethane	Cyclohexane	Dibromomethane	Iodomethane	Vinyl Acetate	2-hexanone (MIB)	4-Methyl-2-pentanone	Methyl Ethyl Ketone	1,2,3,4-tetrachlorobenzene	1,2,3,5-tetrachlorobenzene	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3,5-trichlorobenzene	1,3-dichlorobenzene		1,4-dichlorobenzene	Chlorobenzene	Pentachlorobenzene	Dibromochloromethane	Chloroform	Trichloromethane	Bromodichloromethane	Nitroglycerine							
mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L						
0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.001	0.001	0.001	0.05	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.005	0.005	0.005	0.005	0.001	0.005	0.001	0.005	0.001	0.005	0.001	0.001	0.001	0.001	0.005	0.001	0.001	0.001	0.001	0.5					
ADWG (2025) Recreation (10x Health)	0.1										0.3						0.01 ¹⁵	0.01									0.004 ¹⁷	0.005 ¹⁷	0.01 ¹⁸	0.007 ¹⁷	0.17 ¹⁷	0.16 ¹⁸	0.013 ¹⁷	0.26 ¹⁸	0.06 ¹⁸	0.055 ¹⁸	0.002 ¹⁷												
ANZG (2018) Freshwater 95% toxicant DGVs	0.013 ⁴¹³																																																
NEPM 2013 Table 1A(4) Comm/nd HSL D GW for Vapour Intrusion, Clay																																																	
>=2m, <4m																																																	
>=4m, <8m																																																	
NEPM 2013 Table 1A(4) Solubility Limit GW for Vapour Intrusion, Clay																																																	
Location Code	Field ID	Date		Lab Report Number																																													
JBBH23/MW03	JBBH23/MW03	18 May 2023	991673	-	<0.001	<0.001	-	-	-	-	<0.001	-	<0.003	<0.001	<0.001	-	<0.001	<0.005	-	<0.001	<0.001	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-			
JBBH23/MW03	JBBH23/MW03	29 Sep 2020	747221	-	<0.001	<0.001	-	-	-	-	<0.001	-	<0.003	<0.001	<0.001	<0.05	<0.001	<0.001	-	<0.001	<0.001	-	-	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-		
JBBH24/MW04	JBBH24/MW04	18 May 2023	991673	-	<0.001	<0.001	-	-	-	-	<0.001	-	<0.003	<0.001	<0.001	-	<0.001	<0.005	-	<0.001	<0.001	-	-	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-		
JBBH24/MW04	JBBH24/MW04	28 Sep 2020	747221	-	<0.001	<0.001	-	-	-	-	<0.001	-	<0.003	<0.001	<0.001	<0.05	<0.001	<0.001	-	<0.001	<0.001	-	-	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-		
JBBH45/MW07	JBBH45/MW07	18 May 2023	991673	-	<0.001	<0.001	-	-	-	-	<0.001	-	<0.003	<0.001	<0.001	<0.05	<0.001	<0.001	-	<0.001	<0.001	-	-	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-		
JBBH45/MW07	JBBH45/MW07	28 Sep 2020	747221	-	<0.05	<0.05	-	-	-	-	<0.05	-	<0.1	<0.05	<0.05	1.3	<0.05	<0.05	-	<0.05	<0.05	-	-	<0.05	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-		
JBBH56/MW14	JBBH56/MW14	28 Sep 2020	747221	-	0.001	<0.001	-	-	-	-	<0.001	-	<0.003	<0.001	<0.001	<0.05	<0.001	<0.001	-	<0.001	<0.001	-	-	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-		
JBBH59/MW06	JBBH59/MW06	17 May 2023	991673	-	<0.001	<0.001	-	-	-	-	<0.001	-	<0.003	<0.001	<0.001	-	<0.001	<0.005	-	<0.001	<0.001	-	-	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	
JBBH59/MW06	JBBH59/MW06	27 Nov 2020	759965	-	<0.001	<0.001	-	-	-	-	<0.001	-	<0.003	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	
JBBH60/MW12	JBBH60/MW12	28 Sep 2020	747221	-	<0.001	<0.05	-	-	-	-	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	-		
JBBH60/MW12	JBBH60/MW12	27 Nov 2020	759965	-	<0.1	<0.1	-	-	-	-	<0.1	-	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.01	<0.01	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-		
JBBH60/MW12	QA20201127-MN (Triplicate of JBBH60/MW12)	27 Nov 2020	759965	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-		
JBBH60/MW12	QC20201127_MN (Duplicate of JBBH60/MW12)	27 Nov 2020	759965	-	<0.1	<0.1	-	-	-	-	<0.1	-	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-			
JBBH61/MW13	JBBH61/MW13	17 May 2023	991673	-	<0.001	<0.001	-	-	-	-	<0.001	-	<0.003	<0.001	<0.001	-	<0.001	<0.005	-	<0.001	<0.001	-	-	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	
JBBH61/MW13	JBBH61/MW13	28 Sep 2020	747221	-	<0.001	<0.001	-	-	-	-	<0.001	-	<0.003	<0.001	<0.001	0.57	<0.001	<0.001	-	<0.001	<0.001	-	-	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.001	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-
JBBH64/MW15	JBBH64/MW15	27 Nov 2020	759965	-	<0.05	<0.05	-	-	-	-	<0.05	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	<0.05	<0.005	<0																							

Table A1 - Ground Gas Monitoring Data
Project Number: 70509 Project Name: Miller Rd Chester Hill

Well ID	Date	Oxygen	Carbon Dioxide	Methane	H2S	CO	PID (ppm)	Flowrate - Stable (L/hr)	Flowrate - Peak (L/hr)	GSV CO2	CS - CH4	CS - CO2	Risk Classification	>1% Methane	>5% CO2	Max CS	Max. Risk Classification
MW29	21/10/2025	16.3	0.1	0.2	0	14	3.2	0.0	0.1	0.000	1	1	Very Low	No	No	1	Very Low
MW30	21/10/2025	9.4	4.0	4.9	0	0	1.5	0.1	0.1	0.004	1	1	Very Low	Yes	No	1	Very Low
MW31	21/10/2025	16.7	1.7	0.9	0	10	5.2	0.0	0.1	0.002	1	1	Very Low	No	No	1	Very Low
MW32	21/10/2025	3.6	0.9	1.9	0	10	3.4	0.0	0.1	0.001	1	1	Very Low	Yes	No	1	Very Low
MW33	21/10/2025	4.9	20.0	1.0	0	0	1.4	0.0	0.1	0.020	1	1	Very Low	No	Yes	2	Low
MW34	21/10/2025	11.3	9.9	0.0	0	0	0.3	0.7	1.0	0.099	1	2	Low	No	Yes	2	Low



	Metals & Metalloids											TPHs (NEPC 1999)					TRHs (NEPC 2013)							BTEXN					
	Aluminium	Arsenic	Cadmium	Chromium (III+VI)	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum of Total)	C6-C10	C10-C16	C16-C34	C34-C40	C10-C40 (Sum of total)	F1 (C6-C10 minus BTEX)	F2 (C10-C16 less Naphthalene)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene 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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQI	10	2	0.3	0.3	0.5	10	1	1	0.05	0.5	0.5	20	20	50	50	50	25,000	20,000	27,000	38,000	50	20	50	0.1	0.1	0.1	0.1	0.2	0.3
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial																	82,000	62,000	85,000	120,000				430	99,000	27,000			81,000
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																								1,100	120,000	85,000			130,000
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil		3,000 ⁴¹	900	3,600 ⁴²	240,000		1,500 ⁴³	60,000	730 ⁴⁴	6,000	400,000																		
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																													
>=0m, <1m																							310 ⁴⁶	NL ⁴⁹	4 ⁴¹⁰	NL ⁴¹⁰	NL ⁴¹⁰		NL ⁴¹⁰
>=1m, <2m																							480	NL	6	NL	NL		NL
>=2m, <4m																							NL	NL	9	NL	NL		NL
>=4m																							NL	NL	20	NL	NL		NL
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																													
>=0m, <1m																							260 ⁴⁸	NL ⁴⁹	3 ⁴¹⁰	NL ⁴¹⁰	NL ⁴¹⁰		230 ⁴¹⁰
>=1m, <2m																							370	NL	3	NL	NL		NL
>=2m, <4m																							630	NL	3	NL	NL		NL
>=4m																							NL	NL	3	NL	NL		NL
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind		160 ⁴¹¹		310 ⁴¹²	85 ⁴¹³		1,800 ⁴¹⁴			55 ⁴¹⁵	110 ⁴¹⁶																		
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																			1,700 ⁴¹⁷	3,300 ⁴¹⁷		215 ⁴¹⁸	170 ⁴¹⁹	75 ⁴²⁰	135 ⁴²¹	165 ⁴²¹			180 ⁴²⁷
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																			2,500 ⁴¹⁷	6,600 ⁴¹⁷		215 ⁴²⁰	170 ⁴²¹	95 ⁴²⁷	135 ⁴²⁷	185 ⁴²⁷			95 ⁴²⁷
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																	700 ⁴²³	1,000 ⁴²³	3,500	10,000									
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																	800 ⁴²³	1,000 ⁴²³	5,000	10,000									
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																													

Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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EQI	Metals & Metalloids											TPHs (NEPC 1999)					TRHs (NEPC 2013)							BTEXN					
	Aluminium	Arsenic	Cadmium	Chromium (III+VI)	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum of Total)	C6-C10	C10-C16	C16-C34	C34-C40	C10-C40 (Sum of total)	F1 (C6-C10 minus BTEX)	F2 (C10-C16 less Naphthalene)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene 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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial	10	2	0.3	0.3	0.5	10	1	1	0.05	0.5	0.5	20	20	50	50	50	26,000	20,000	27,000	38,000	50	20	50	0.1	0.1	0.1	0.1	0.2	0.3
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																	82,000	62,000	85,000	120,000				1,100	120,000	85,000			130,000
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil		3,000 ⁴¹	900	3,600 ⁴²	240,000		1,500 ⁴³	60,000	730 ⁴⁴	6,000	400,000																		
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																													
>=0m, <1m																							310 ⁴⁶	NL ⁴⁹	4 ⁴¹⁰	NL ⁴¹⁰	NL ⁴¹²		NL ⁴¹²
>=1m, <2m																							480	NL	6	NL	NL		NL
>=2m, <4m																							NL	NL	9	NL	NL		NL
>=4m																							NL	NL	20	NL	NL		NL
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																													
>=0m, <1m																							260 ⁴⁸	NL ⁴⁹	3 ⁴¹⁰	NL ⁴¹⁰	NL ⁴¹²		230 ⁴¹⁰
>=1m, <2m																							370	NL	3	NL	NL		NL
>=2m, <4m																							630	NL	3	NL	NL		NL
>=4m																							NL	NL	3	NL	NL		NL
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind		160 ⁴¹¹		310 ⁴¹²	85 ⁴¹³		1,800 ⁴¹⁴			55 ⁴¹⁵	110 ⁴¹⁶																		
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																			1,700 ⁴¹⁷	3,300 ⁴¹⁷		215 ⁴¹⁸	170 ⁴¹⁹	75 ⁴²⁰	135 ⁴²¹	165 ⁴¹⁷		180 ⁴¹⁷	
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																			2,500 ⁴¹⁷	6,600 ⁴¹⁷		215 ⁴²⁰	170 ⁴²¹	95 ⁴²⁰	135 ⁴²¹	185 ⁴¹⁷		95 ⁴¹⁷	
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																	700 ⁴²³	1,000 ⁴²³	3,500	10,000									
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																	800 ⁴²³	1,000 ⁴²³	5,000	10,000									
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																													

Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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	Metals & Metalloids											TPHs (NEPC 1999)					TRHs (NEPC 2013)							BTEXN						
	Aluminium	Arsenic	Cadmium	Chromium (III+VI)	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum of Total)	C6-C10	C10-C16	C16-C34	C34-C40	C10-C40 (Sum of total)	F1 (C6-C10 minus BTEX)	F2 (C10-C16 less Naphthalene)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene 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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EOL	10	2	0.3	0.3	0.5	10	1	1	0.05	0.5	0.5	20	20	50	50	50	26,000	20,000	27,000	38,000	50	20	50	0.1	0.1	0.1	0.1	0.2	0.3	
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial																	82,000	62,000	85,000	120,000				430	99,000	27,000			81,000	
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																								1,100	120,000	85,000			130,000	
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil		3,000 ⁴¹	900	3,600 ⁴²	240,000		1,500 ⁴³	60,000	730 ⁴⁴	6,000	400,000																			
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																														
>=0m, <1m																								310 ⁴⁰⁸	NL ⁴⁰⁹	4 ⁴¹⁰	NL ⁴¹⁰	NL ⁴¹⁰		NL ⁴¹⁰
>=1m, <2m																								480	NL	6	NL	NL		NL
>=2m, <4m																								NL	NL	9	NL	NL		NL
>=4m																								NL	NL	20	NL	NL		NL
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																														
>=0m, <1m																									260 ⁴⁰⁸	NL ⁴⁰⁹	3 ⁴¹⁰	NL ⁴¹⁰	NL ⁴¹⁰	230 ⁴¹⁰
>=1m, <2m																									370	NL	3	NL	NL	NL
>=2m, <4m																									630	NL	3	NL	NL	NL
>=4m																									NL	NL	3	NL	NL	NL
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind		160 ⁴¹¹		310 ⁴¹²	85 ⁴¹³		1,800 ⁴¹⁴			55 ⁴¹⁵	110 ⁴¹⁶																			
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																			1,700 ⁴¹⁷	3,300 ⁴¹⁷		215 ⁴¹⁸	170 ⁴¹⁹	75 ⁴²⁰	135 ⁴²¹	165 ⁴²¹			180 ⁴²²	
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																			2,500 ⁴¹⁷	6,600 ⁴¹⁷		215 ⁴²⁰	170 ⁴²¹	95 ⁴²⁷	135 ⁴²⁷	185 ⁴²⁷			95 ⁴²⁷	
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																	700 ⁴²³	1,000 ⁴²³	3,500	10,000										
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																	800 ⁴²³	1,000 ⁴²³	5,000	10,000										
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																														

Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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	Metals & Metalloids											TPHs (NEPC 1999)					TRHs (NEPC 2013)						BTEXN											
	Aluminium	Arsenic	Cadmium	Chromium (III+VI)	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum of Total)	C6-C10	C10-C16	C16-C34	C34-C40	C10-C40 (Sum of total)	F1 (C6-C10 minus BTEX)	F2 (C10-C16 less Naphthalene)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene 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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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	2	0.3	0.3	0.5	10	1	1	0.05	0.5	0.5	20	20	50	50	50	20	50	100	100	50	20	50		430	99,000	27,000			81,000				
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial																	26,000	20,000	27,000	38,000				1,100	120,000	85,000								
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																	82,000	62,000	85,000	120,000														
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil		3,000 ^{#1}	900	3,600 ^{#2}	240,000		1,500 ^{#3}	60,000	730 ^{#4}	6,000	400,000																							
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																																		
>=0m, <1m																						310 ^{#5}	NL ^{#6}	4 ^{#10}	NL ^{#10}	NL ^{#10}			NL ^{#10}					
>=1m, <2m																						480	NL	6	NL	NL			NL					
>=2m, <4m																						NL	NL	9	NL	NL			NL					
>=4m																						NL	NL	20	NL	NL			NL					
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																																		
>=0m, <1m																						260 ^{#8}	NL ^{#9}	3 ^{#10}	NL ^{#10}	NL ^{#10}			230 ^{#10}					
>=1m, <2m																						370	NL	3	NL	NL			NL					
>=2m, <4m																						630	NL	3	NL	NL			NL					
>=4m																						NL	NL	3	NL	NL			NL					
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind		160 ^{#11}		310 ^{#12}	85 ^{#13}		1,800 ^{#14}			55 ^{#15}	110 ^{#16}																							
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																			1,700 ^{#17}	3,300 ^{#17}		215 ^{#18}	170 ^{#19}	75 ^{#17}	135 ^{#17}	165 ^{#17}			180 ^{#17}					
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																			2,500 ^{#17}	6,600 ^{#17}		215 ^{#20}	170 ^{#21}	95 ^{#17}	135 ^{#17}	185 ^{#17}			95 ^{#17}					
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																	700 ^{#23}	1,000 ^{#23}	3,500	10,000														
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																	800 ^{#23}	1,000 ^{#23}	5,000	10,000														
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																																		
Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone																													
SP03																																		
SP03-1	SP03-1			748554	SP03	-	4.8	<0.4	37	45	-	49	-	<0.1	33	280	<20	27	360	210	597	<20	<50	480	190	670	<20	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3
SP03-2	SP03-2			748554	SP03	-	3.2	<0.4	8.5	22	-	23	-	<0.1	21	45	<20	<20	55	68	123	<20	<50	<100	<100	<100	<20	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3
SP03-3	SP03-3			748554	SP03	-	4	0.5	60	56	-	53	-	<0.1	90	320	<20	26	130	150	306	<20	<50	210	150	360	<20	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3

ID	Date	Depth	Lab Report Number	Monitoring Zone
JBBH29	25 Sep 2020	0.2 - 0.3	746938	191 Miller Road
JBBH29A	25 Sep 2020	0 - 0.1	746938	191 Miller Road
JBBH29A	25 Sep 2020	0.5 - 0.6	746938	191 Miller Road
JBBH33	21 Sep 2020	0-0.3	745719	191 Miller Road
JBBH34	21 Sep 2020	0 - 0.3	745719	191 Miller Road
JBBH35	25 Sep 2020	0 - 0.1	746938	191 Miller Road
JBBH39	24 Sep 2020	0.5 - 0.6	746718	191 Miller Road
JBBH40	22 Sep 2020	0.4 - 0.5	746648	191 Miller Road
JBBH40	22 Sep 2020	0.1 - 0.2	746648	191 Miller Road
JBBH41	24 Sep 2020	0.1 - 0.2	746718	191 Miller Road
JBBH41		0.5 - 0.5	748554	191 Miller Road
JBBH41		0.1 - 0.1	748554	191 Miller Road
JBBH41		1 - 1	748554	191 Miller Road
JBBH41	24 Sep 2020	1 - 1.1	746718	191 Miller Road
JBBH42	24 Sep 2020	0.1 - 0.2	746718	191 Miller Road
JBBH42	24 Sep 2020	0.5 - 0.6	746718	191 Miller Road
JBBH43		0 - 0.1	748554	191 Miller Road
JBBH44		0 - 0.1	748554	191 Miller Road
JBBH46		0.1 - 0.1	748554	191 Miller Road
JBBH46	24 Sep 2020	1 - 1.1	746718	191 Miller Road
JBBH46	24 Sep 2020	0.1 - 0.2	746718	191 Miller Road
JBBH46	24 Sep 2020	0.5 - 0.6	746718	191 Miller Road
JBBH48	24 Sep 2020	1.5 - 1.6	746718	191 Miller Road
JBBH49	22 Sep 2020	0 - 0.1	746402	191 Miller Road
JBBH51	22 Sep 2020	0.1 - 0.2	746648	191 Miller Road
JBBH51	22 Sep 2020	0.4 - 0.5	746648	191 Miller Road
JBBH53	25 Sep 2020	0 - 0.1	746938	191 Miller Road
JBBH53	QCJ_20200925-3	0 - 0.1	746938	191 Miller Road
JBBH53	JBBH53 0.5-0.6	0.5 - 0.6	748554	191 Miller Road
JBBH53	JBBH53 0.9-1.0	0.9 - 1	748554	191 Miller Road
JBBH53	QAJ_20200925-3	25 Sep 2020	252951	191 Miller Road
JBBH54	JBBH54 0.1-0.2	22 Sep 2020	746402	191 Miller Road
JBBH55	JBBH55 0.1-0.2	22 Sep 2020	746648	191 Miller Road
JBBH55	JBBH55 0.4-0.5	22 Sep 2020	746648	191 Miller Road
JBBH57	JBBH57 0-0.1	25 Sep 2020	746938	191 Miller Road
JBBH57	JBBH57 0.2-0.3	25 Sep 2020	746938	191 Miller Road
JBBH58	QCJ_20200924	24 Sep 2020	746718	191 Miller Road
JBBH58	JBBH58 0.1	24 Sep 2020	746718	191 Miller Road
JBBH62	JBBH62 0-0.1	25 Sep 2020	746938	191 Miller Road
JBBH63	JBBH63 0.1	24 Sep 2020	746718	191 Miller Road
JBBH63	JBBH63 1.0	24 Sep 2020	746718	191 Miller Road
JBBH63	JBBH63 0.5	24 Sep 2020	746718	191 Miller Road
JBBH63	QAJ_20200924-2	24 Sep 2020	252473	191 Miller Road
JBS2007b_TP01	JBS2007b_TP1 0.1	10 Oct 2007	14317	191 Miller Road
JBS2007b_TP01	JBS2007b_TP1 1.0	10 Oct 2007	1	14317
JBS2007b_TP02	JBS2007b_TP2 0.1	10 Oct 2007	0.1	14317
JBS2007b_TP02	JBS2007b_TP2 1.5	10 Oct 2007	1.5	14317
JBS2007b_TP03	JBS2007b_TP3 0.1	10 Oct 2007	0.1	14317
JBS2007b_TP03	JBS2007b_TP3 0.3	10 Oct 2007	0.3	14317
JBS2007b_TP04	JBS2007b_TP4 0.1	10 Oct 2007	0.1	14317
JBS2007b_TP05	JBS2007b_TP5 0.3	10 Oct 2007	0.3	14317
JBS2007b_TP05	JBS2007b_TP5 1.5	10 Oct 2007	1.5	14317
JBS2007b_TP06	JBS2007b_TP6 0.1	10 Oct 2007	0.1	14317
JBS2007b_TP06	JBS2007b_TP6 0.5	10 Oct 2007	0.5	14317
JBS2007b_TP07	JBS2007b_TP7 0.1	10 Oct 2007	0.1	14317
JBS2007b_TP08	JBS2007b_TP8 0.1	10 Oct 2007	0.1	14317
JBS2007b_TP09	JBS2007b_TP9 0.1	10 Oct 2007	0.1	14317
JBS2007b_TP09	JBS2007b_TP9 0.5	10 Oct 2007	0.5	14317
JBS2007b_TP10	JBS2007b_TP10 0.3	10 Oct 2007	0.3	14317
JBS2007b_TP11	JBS2007b_TP11 0.1	10 Oct 2007	0.1	14317
JBS2007b_TP11	JBS2007b_TP11 2.0	10 Oct 2007	2	14317
JBS2007b_TP12	JBS2007b_TP12 0.1	10 Oct 2007	0.1	14317
JBS2007b_TP12	JBS2007b_TP12 1.0	10 Oct 2007	1	14317
JBS2007b_TP13	JBS2007b_TP13 0.1	10 Oct 2007	0.1	14317
JBS2007b_TP13	JBS2007b_TP13 0.5	10 Oct 2007	0.5	14317
JBS2007b_TP14	JBS2007b_TP14 0.1	10 Oct 2007	0.1	14



	PAH					Organochlorine Pesticides																															
	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)	2-(acetylamino) fluorene	Pentachlorophenol	2,4-DDT	4,4-DDE	α-BHC	β-BHC	γ-BHC	γ-BHC (Lindane)	Aldrin	Dieldrin	Aldrin + Dieldrin	Chlordane	Chlordane (cis)	Chlordane (trans)	DDT	DDD	p,p-DDD	p,p'-DDE	DDT+DDE+DDD	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	gamma-Chlordane	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Methoxychlor	trans-Nonachlor	Toxaphene	
EQL	0.1	0.1	0.1	0.05	0.5	1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.05	0.05	0.1	0.1	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	0.1
ERC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial	11,000																																				
ERC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker	29,000																																				
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil				4,000 ^{MS}		660									45	530							3,600				100				50		80	2,500		160	
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																																					
>=0m, <1m	NL ^{MS}																																				
>=1m, <2m	NL																																				
>=2m, <4m	NL																																				
>=4m	NL																																				
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																																					
>=0m, <1m	NL ^{MS}																																				
>=1m, <2m	NL																																				
>=2m, <4m	NL																																				
>=4m	NL																																				
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind	370																		640																		
NEPM 2013 Table 1B(6) EILs for Comm/Ind, Coarse Soil																																					
NEPM 2013 Table 1B(6) EILs for Comm/Ind, Fine Soil																																					
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																																					
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																																					
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																																					

Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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Project Number: 70509
Project Name: 191 Miller Road, Chester Hill

[illegible]

Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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[illegible]

[illegible]

Table D1 - Soil Analytical Table v2

[illegible]

[illegible]

[illegible]

[illegible]



Organophosphorus Pesticides																									
Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Diazinon	Dichlorvos	Dimethoate	Disulfoton	Ethion	Ethyl methanesulfonate	Fenitrothion	Fenphion	Malathion	Medidathion	Methyl parathion	Mevinphos (Phosdrin)	Phorate	Phonnel	Safrole	Terbufos	Terbufos	Terbufos	Terbufos	Terbufos	Terbufos
mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5
EQI																									
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial																									
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																									
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil																									
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																									
>=0m, <1m																									
>=1m, <2m																									
>=2m, <4m																									
>=4m																									
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																									
>=0m, <1m																									
>=1m, <2m																									
>=2m, <4m																									
>=4m																									
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind																									
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																									
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																									
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																									
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																									
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																									
Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone																				
SP03																									
SP03-1	SP03-1			748554	SP03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP03-2	SP03-2			748554	SP03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP03-3	SP03-3			748554	SP03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



	Chlorinated Alkanes																				Chlorinated Alkenes																Chlorinated Hydrocarbons	
	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	1,2-dichloropropane	Bromochloromethane	Carbon tetrachloride	Chloroethane	Chloromethane	Dichlorodifluoromethane	Dichloromethane	Hexachloroethane	Pentachloroethane	Trichlorofluoromethane	1,1-dichloroethene	1,1-dichloropropene	2-chlorotoluene	3-chloropropene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichloroethene	Vinyl Chloride	Hexachlorocyclopentadiene	Hexachlorobutadiene				
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg			
EOL	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5			
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NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																																						
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																																						

Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
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	Semivolatile Organic Compounds																											Solvents						
	1-Chloronaphthalene	2-Chloronaphthalene	Bis(2-chloroethoxy) methane	Hexachloropropene	Dibenz(a,j)acridine	Acetophenone	Bis(2-chloroethyl) ether	Bis(2-chloroisopropyl) ether	4-Bromophenyl phenyl ether	4-Chlorophenyl phenyl ether	2,6-dinitrotoluene	2-Picoline	4-Aminobiphenyl	N-Nitrosomorpholine	N-Nitrosopiperidine	2-methyl-5-nitroaniline	N-nitrosodi-n-butylamine	N-nitrosodi-n-propylamine	1-Naphthylamine	2-Naphthylamine	3,3-Dichlorobenzidine	4-(dimethylamino) azobenzene	Azobenzene	Diphenylamine	Carbazole	Butyl benzyl phthalate	Dibenzofuran	Isosafrole	Methapyrene	Phenacetin	Acetone	Isophorone	Benzyl chloride	
EQL	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	1	0.5	0.5	1	1	1	0.5	1	0.5
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																																		
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil																																		
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																																		
>=0m, <1m																																		
>=1m, <2m																																		
>=2m, <4m																																		
>=4m																																		
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																																		
>=0m, <1m																																		
>=1m, <2m																																		
>=2m, <4m																																		
>=4m																																		
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind																																		
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																																		
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																																		
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																																		
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																																		
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																																		

Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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[illegible]



	Semivolatile Organic Compounds																														Solvents				
	1-Chloronaphthalene	2-Chloronaphthalene	Bis(2-chloroethoxy) methane	Hexachloropropene	Dibenz(a,j)acridine	Acetophenone	Bis(2-chloroethyl)ether	Bis(2-chloroisopropyl) ether	4-Bromophenyl phenyl ether	4-Chlorophenyl phenyl ether	2,6-dinitrotoluene	2-Picoline	4-Aminobiphenyl	N-Nitrosomorpholine	N-Nitrosopiperidine	2-methyl-5-nitroaniline	N-nitrosodi-n-butylamine	N-nitrosodi-n-propylamine	1-Naphthylamine	2-Naphthylamine	3,3-Dichlorobenzidine	4-(dimethylamino) azobenzene	Azobenzene	Diphenylamine	Carbazole	Butyl benzyl phthalate	Dibenzofuran	Isoafrole	Methapyrene	Phenacetin	Acetone	Isophorone	Benzyl chloride		
EQL	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	0.5	1	0.5	0.5		1	1	1	0.5	1	0.5
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																																			
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil																																			
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																																			
>=0m, <1m																																			
>=1m, <2m																																			
>=2m, <4m																																			
>=4m																																			
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																																			
>=0m, <1m																																			
>=1m, <2m																																			
>=2m, <4m																																			
>=4m																																			
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind																																			
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																																			
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																																			
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																																			
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																																			
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																																			
Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone																														
SP03																																			
SP03-1	SP03-1			748554	SP03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SP03-2	SP03-2			748554	SP03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SP03-3	SP03-3			748554	SP03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Station Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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[illegible]

Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone
SP01					
JBTPO1	JBTPO1 0.9	21 Sep 2020	0.9 - 1	745719	SP01
JBTPO1	JBTPO1 1.6	21 Sep 2020	1.6 - 1.7	745719	SP01
JBTPO1	JBTPO1 2.8	21 Sep 2020	2.8 - 2.9	745719	SP01
JBTPO2	JBTPO2 0.5	21 Sep 2020	0.5 - 0.6	745719	SP01
JBTPO2	JBTPO2 3	21 Sep 2020	3 - 3.1	745719	SP01
JBTPO2	JBTPO2 1.5	21 Sep 2020	1.5 - 1.6	745719	SP01
JBTPO2	JBTPO2 3		3 - 3	748554	SP01
JBTPO3	JBTPO3 0.9	21 Sep 2020	0.9 - 1	745719	SP01
JBTPO3	JBTPO3 3	21 Sep 2020	3 - 3.1	745719	SP01
JBTPO3	JBTPO3 0.3	21 Sep 2020	0.3 - 0.4	745719	SP01
JBTPO4	JBTPO4 1.8	21 Sep 2020	1.8 - 1.9	745719	SP01
JBTPO4	JBTPO4 0.9	21 Sep 2020	0.9 - 1	745719	SP01
JBTPO4	JBTPO4 3	21 Sep 2020	3 - 3.1	745719	SP01
JBTPO5	JBTPO5 0.4	21 Sep 2020	0.4 - 0.5	745719	SP01
JBTPO5	JBTPO5 3.1	21 Sep 2020	3.1 - 3.2	745719	SP01
JBTPO5	JBTPO5 1.5	21 Sep 2020	1.5 - 1.6	745719	SP01
JBTPO5	JBTPO5 3.1		3.1 - 3.1	748554	SP01
JBTPO6	JBTPO6 0.5	21 Sep 2020	0.5 - 0.6	745719	SP01
JBTPO6	JBTPO6 3	21 Sep 2020	3 - 3.1	745719	SP01
JBTPO6	JBTPO6 1.1	21 Sep 2020	1.1 - 1.2	745719	SP01
JBTPO6	JBTPO6 2.1		2.1 - 2.1	748554	SP01
JBTPO6	JBTPO6 2.1	21 Sep 2020	2.1 - 2.2	745719	SP01
JBTPO6	JBTPO6 4	21 Sep 2020	4 - 4.1	745719	SP01
JBTPO7	JBTPO7 0.6	21 Sep 2020	0.6 - 0.7	745719	SP01
JBTPO7	JBTPO7 2.5	21 Sep 2020	2.5 - 2.6	745719	SP01
JBTPO7	JBTPO7 4	21 Sep 2020	4 - 4.1	745719	SP01
JBTPO7	JBTPO7 1.5	21 Sep 2020	1.5 - 1.6	745719	SP01
JBTPO7	JBTPO7 2.5		2.5 - 2.5	748554	SP01
JBTPO8	JBTPO8 2.5	21 Sep 2020	2.5 - 2.6	745719	SP01
JBTPO8	JBTPO8 0.5	21 Sep 2020	0.5 - 0.6	745719	SP01
JBTPO8	JBTPO8 1.5	21 Sep 2020	1.5 - 1.6	745719	SP01
JBTPO8	JBTPO8 2.5		2.5 - 2.5	748554	SP01
JBTPO8	JBTPO8 4	25 Sep 2020	4 - 4.1	746938	SP01
JBTPO9	JBTPO9 3.5	21 Sep 2020	3.5 - 3.6	745719	SP01
JBTPO9	JBTPO9 0.5	21 Sep 2020	0.5 - 0.6	745719	SP01
JBTPO9	JBTPO9 2.5	21 Sep 2020	2.5 - 2.6	745719	SP01
JBTPO9	JBTPO9 3.5		3.5 - 3.5	748554	SP01
JBTPI0	JBTPI0 2.5	21 Sep 2020	2.5 - 2.6	745719	SP01
JBTPI0	JBTPI0 4	25 Sep 2020	4 - 4.1	746938	SP01
JBTPI0	JBTPI0 0.5	21 Sep 2020	0.5 - 0.6	745719	SP01
JBTPI0	JBTPI0 1.5	21 Sep 2020	1.5 - 1.6	745719	SP01
JBTPI0	JBTPI0 2.5		2.5 - 2.5	748554	SP01
JBTPI1	JBTPI1 3.6	22 Sep 2020	3.6 - 3.7	746648	SP01
JBTPI1	JBTPI1 3	22 Sep 2020	3 - 3.1	746648	SP01
JBTPI1	JBTPI1 0.3-0.4	22 Sep 2020	0.3 - 0.4	746648	SP01
JBTPI1	QCR_01	22 Sep 2020	3 - 3	746648	SP01
JBTPI1	JBTPI1 1.5	22 Sep 2020	1.5 - 1.6	746648	SP01
JBTPI1	JBTPI1 2.5	22 Sep 2020	2.5 - 2.6	746648	SP01
JBTPI1	QCCK01	22 Sep 2020	0.3 - 0.4	746648	SP01
JBTPI1	JBTPI1 0.3-0.4		0.3 - 0.4	748554	SP01
JBTPI1	JBTPI1 0.7	22 Sep 2020	0.7 - 0.8	746648	SP01
JBTPI1	JBTPI1 3.6		3.6 - 3.6	748554	SP01
JBTPI1	QAR_01	22 Sep 2020		252351	SP01
JBTPI1	QAR_01	22 Sep 2020		252351	SP01
JBTPI2	JBTPI2 1.8	22 Sep 2020	1.8 - 1.9	746648	SP01
JBTPI2	QCR_02	22 Sep 2020	1.8 - 1.8	746648	SP01
JBTPI2	QAR_02	22 Sep 2020		252351	SP01
JBTPI3	JBTPI3 1.2	22 Sep 2020	1.2 - 1.3	746648	SP01
JBTPI3	JBTPI3 2	22 Sep 2020	2 - 2.1	746648	SP01
JBTPI3	JBTPI3 3	22 Sep 2020	3 - 3.1	746648	SP01
JBTPI4	JBTPI4 1.8	22 Sep 2020	1.8 - 1.9	746648	SP01
JBTPI4	JBTPI4 0.3	22 Sep 2020	0.3 - 0.4	746648	SP01
JBTPI4	JBTPI4 1.8		1.8 - 1.8	748554	SP01
JBTPI4	JBTPI4 2.9	22 Sep 2020	2.9 - 3	746648	SP01
JBTPI5	JBTPI5 0.7	22 Sep 2020	0.7 - 0.8	746648	SP01
JBTPI5	JBTPI5 1.5	22 Sep 2020	1.5 - 1.6	746648	SP01
JBTPI5	JBTPI5 2.8	22 Sep 2020	2.8 - 2.9	746648	SP01
JBTPI5	QAR_03	22 Sep 2020		252351	SP01
JBTPI5	QCR_03	22 Sep 2020	1.5 - 1.5	746648	SP01

[illegible]



						Chlorinated Benzenes										Polychlorinated Biphenyls										Phenols																			
						1,2,3,4-tetrachlorobenzene	1,2,3,5-tetrachlorobenzene	1,2,3-trichlorobenzene	1,2,4,5-tetrachlorobenzene	1,2,4-trichlorobenzene	1,2-Dichlorobenzene	1,3,5-trichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	Pentachlorobenzene	Kochlor 1016	Kochlor 1221	Kochlor 1222	Kochlor 1242	Kochlor 1248	Kochlor 1254	Kochlor 1260	Kochlor 1268	Kochlor 1262	PCBs (Sum of total)	2,3,4,6-tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,4-dimethylphenol	2,4-dinitrophenol	2,6-D	2,6-dichlorophenol	2-chlorophenol	2-Methylphenol	2-nitrophenol	2,6-Methylphenol (m&p-cresol)	4,6-Dinitro-2-methylphenol	4-Chloro-3-Methylphenol	4-nitrophenol	Phenol	Phenolics 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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EOL						0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.5	0.5	5	0.5	0.5	0.5	0.2	0.5	0.4	0.5	1	5	0.5			
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial																																													
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																																													
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil																																													
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																																													
>=0m, <1m																																													
>=1m, <2m																																													
>=2m, <4m																																													
>=4m																																													
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																																													
>=0m, <1m																																													
>=1m, <2m																																													
>=2m, <4m																																													
>=4m																																													
NEPM 2013 Table 18(1-5) Generic EIL - Comm/Ind																																													
NEPM 2013 Table 18(6) ESLs for Comm/Ind, Coarse Soil																																													
NEPM 2013 Table 18(6) ESLs for Comm/Ind, Fine Soil																																													
NEPM 2013 Table 18(7) Management Limits Comm / Ind, Coarse Soil																																													
NEPM 2013 Table 18(7) Management Limits Comm / Ind, Fine Soil																																													
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																																													
Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone																																								
SP03																																													
SP03-1	SP03-1			748554	SP03	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SP03-2	SP03-2			748554	SP03	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SP03-3	SP03-3			748554	SP03	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Table D1 - Soil Analytical Table v2 JBS&G Australia Pty Ltd

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						MAH												Miscellaneous Hydrocarbons								Trihalomethanes			
	Sum of PFHxS and PFOS	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	Sum of US EPA PFAS (PFOS + PFOA)*	Sum of PFAS (WA DER List)	Sum of PFAS	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	n-butylbenzene	n-propylbenzene	p-isopropyltoluene	sec-butylbenzene	Styrene	tert-butylbenzene	Total MAH	Bromo benzene	Isopropylbenzene	1,2-dibromoethane	Bromomethane	Cyclohexane	Dibromomethane	Iodomethane	4-Methyl-2-pentanone	Methyl Ethyl ketone	Dibromochloromethane	Chloroform	Tribromomethane	Bromodichloromethane		
EQL	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial	0.0001	0.005	0.0001	0.01	0.0001	0.5	0.5	1	1	1	1	0.5	1	0.5	0.5	0.5	0.5	0.5	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																													
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil																													
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																													
>=0m, <1m																													
>=1m, <2m																													
>=2m, <4m																													
>=4m																													
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																													
>=0m, <1m																													
>=1m, <2m																													
>=2m, <4m																													
>=4m																													
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind																													
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																													
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																													
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																													
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																													
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																													
Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone																								
SP03																													
SP03-1	SP03-1			748554	SP03	<0.005	<0.005	<0.005	<0.01	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SP03-2	SP03-2			748554	SP03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SP03-3	SP03-3			748554	SP03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

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Cocation Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone
SP01					
J8TP01	J8TP01 0.9	21 Sep 2020	0.9 - 1	745719	SP01
J8TP01	J8TP01 1.6	21 Sep 2020	1.6 - 1.7	745719	SP01
J8TP01	J8TP01 2.8	21 Sep 2020	2.8 - 2.9	745719	SP01
J8TP02	J8TP02 0.5	21 Sep 2020	0.5 - 0.6	745719	SP01
J8TP02	J8TP02 3	21 Sep 2020	3 - 3.1	745719	SP01
J8TP02	J8TP02 1.5	21 Sep 2020	1.5 - 1.6	745719	SP01
J8TP02	J8TP02 3	21 Sep 2020	3 - 3	748554	SP01
J8TP03	J8TP03 0.9	21 Sep 2020	0.9 - 1	745719	SP01
J8TP03	J8TP03 3	21 Sep 2020	3 - 3.1	745719	SP01
J8TP03	J8TP03 0.3	21 Sep 2020	0.3 - 0.4	745719	SP01
J8TP04	J8TP04 1.8	21 Sep 2020	1.8 - 1.9	745719	SP01
J8TP04	J8TP04 0.9	21 Sep 2020	0.9 - 1	745719	SP01
J8TP04	J8TP04 3	21 Sep 2020	3 - 3.1	745719	SP01
J8TP05	J8TP05 0.4	21 Sep 2020	0.4 - 0.5	745719	SP01
J8TP05	J8TP05 3.1	21 Sep 2020	3.1 - 3.2	745719	SP01
J8TP05	J8TP05 1.5	21 Sep 2020	1.5 - 1.6	745719	SP01
J8TP05	J8TP05 3.1	21 Sep 2020	3.1 - 3.1	748554	SP01
J8TP06	J8TP06 0.5	21 Sep 2020	0.5 - 0.6	745719	SP01
J8TP06	J8TP06 3	21 Sep 2020	3 - 3.1	745719	SP01
J8TP06	J8TP06 1.1	21 Sep 2020	1.1 - 1.2	745719	SP01
J8TP06	J8TP06 2.1	21 Sep 2020	2.1 - 2.1	748554	SP01
J8TP06	J8TP06 2.1	21 Sep 2020	2.1 - 2.2	745719	SP01
J8TP06	J8TP06 4	21 Sep 2020	4 - 4.1	745719	SP01
J8TP07	J8TP07 0.6	21 Sep 2020	0.6 - 0.7	745719	SP01
J8TP07	J8TP07 2.5	21 Sep 2020	2.5 - 2.6	745719	SP01
J8TP07	J8TP07 4	21 Sep 2020	4 - 4.1	745719	SP01
J8TP07	J8TP07 1.5	21 Sep 2020	1.5 - 1.6	745719	SP01
J8TP07	J8TP07 2.5	21 Sep 2020	2.5 - 2.5	748554	SP01
J8TP08	J8TP08 2.5	21 Sep 2020	2.5 - 2.6	745719	SP01
J8TP08	J8TP08 0.5	21 Sep 2020	0.5 - 0.6	745719	SP01
J8TP08	J8TP08 1.5	21 Sep 2020	1.5 - 1.6	745719	SP01
J8TP08	J8TP08 2.5	21 Sep 2020	2.5 - 2.5	748554	SP01
J8TP08	J8TP08 4	25 Sep 2020	4 - 4.1	746938	SP01
J8TP09	J8TP09 3.5	21 Sep 2020	3.5 - 3.6	745719	SP01
J8TP09	J8TP09 0.5	21 Sep 2020	0.5 - 0.6	745719	SP01
J8TP09	J8TP09 2.5	21 Sep 2020	2.5 - 2.6	745719	SP01
J8TP09	J8TP09 3.5	21 Sep 2020	3.5 - 3.5	748554	SP01
J8TP10	J8TP10 2.5	21 Sep 2020	2.5 - 2.6	745719	SP01
J8TP10	J8TP10 4	25 Sep 2020	4 - 4.1	746938	SP01
J8TP10	J8TP10 0.5	21 Sep 2020	0.5 - 0.6	745719	SP01
J8TP10	J8TP10 1.5	21 Sep 2020	1.5 - 1.6	745719	SP01
J8TP10	J8TP10 2.5	21 Sep 2020	2.5 - 2.5	748554	SP01
J8TP11	J8TP11 3.6	22 Sep 2020	3.6 - 3.7	746648	SP01
J8TP11	J8TP11 3	22 Sep 2020	3 - 3.1	746648	SP01
J8TP11	J8TP11 0.3-0.4	22 Sep 2020	0.3 - 0.4	746648	SP01
J8TP11	QCR_01	22 Sep 2020	3 - 3	746648	SP01
J8TP11	J8TP11 1.5	22 Sep 2020	1.5 - 1.6	746648	SP01
J8TP11	J8TP11 2.5	22 Sep 2020	2.5 - 2.6	746648	SP01
J8TP11	QCK01	22 Sep 2020	0.3 - 0.4	746648	SP01
J8TP11	J8TP11 0.3-0.4	22 Sep 2020	0.3 - 0.4	748554	SP01
J8TP11	J8TP11 0.7	22 Sep 2020	0.7 - 0.8	746648	SP01
J8TP11	J8TP11 3.6	22 Sep 2020	3.6 - 3.6	748554	SP01
J8TP11	QAR_01	22 Sep 2020		252351	SP01
J8TP11	QAR_01	22 Sep 2020		252351	SP01
J8TP12	J8TP12 1.8	22 Sep 2020	1.8 - 1.9	746648	SP01
J8TP12	QCR_02	22 Sep 2020	1.8 - 1.8	746648	SP01
J8TP12	QAR_02	22 Sep 2020		252351	SP01
J8TP13	J8TP13 1.2	22 Sep 2020	1.2 - 1.3	746648	SP01
J8TP13	J8TP13 2	22 Sep 2020	2 - 2.1	746648	SP01
J8TP13	J8TP13 3	22 Sep 2020	3 - 3.1	746648	SP01
J8TP14	J8TP14 1.8	22 Sep 2020	1.8 - 1.9	746648	SP01
J8TP14	J8TP14 0.3	22 Sep 2020	0.3 - 0.4	746648	SP01
J8TP14	J8TP14 1.8	22 Sep 2020	1.8 - 1.8	748554	SP01
J8TP14	J8TP14 2.9	22 Sep 2020	2.9 - 3	746648	SP01
J8TP15	J8TP15 0.7	22 Sep 2020	0.7 - 0.8	746648	SP01
J8TP15	J8TP15 1.5	22 Sep 2020	1.5 - 1.6	746648	SP01
J8TP15	J8TP15 2.8	22 Sep 2020	2.8 - 2.9	746648	SP01
J8TP15	QAR_03	22 Sep 2020		252351	SP01
J8TP15	QCR_03	22 Sep 2020	1.5 - 1.5	746648	SP01



		Herbicides & Fungicides																												Phthalates					Organic Sulfur Compounds		Organic Alcohols
		Picloram	2,4,5-TP (Silvex)	2,4,5-Trichlorophenoxy Acetic Acid	2,4-dichlorophenoxybutanoic acid	2,4-Dichloroprop	2-Methyl-4-Chlorophenoxy Butanoic Acid	2-Methyl-4-chlorophenoxyacetic acid	4-(2,4-Dichlorophenoxy)butyric Acid (2,4-DB)	Ametryn	Atrazine	Bromoxynil	Clpyralid	Cyanazine	Dicamba	Dinoseb	Hedonal	Hexazinone	Mecoprop	Metribuzin	Pronamide	Propazine	Simazine	Terbutryn	Triclopyr	Trifluralin	Terbutylazine	Bis(2-ethylhexyl) phthalate	Diethylphthalate	Dimethyl phthalate	Di-n-butyl phthalate	Di-n-octyl phthalate	Carbon disulfide	Sulphur as S	Benzyl Alcohol		
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	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	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	100	1			
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial																																					
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																																					
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil		35,000		5,000			5,000	5,000			2,500						9,000		5,000																		
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																																					
>=0m, <1m																																					
>=1m, <2m																																					
>=2m, <4m																																					
>=4m																																					
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																																					
>=0m, <1m																																					
>=1m, <2m																																					
>=2m, <4m																																					
>=4m																																					
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind																																					
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																																					
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																																					
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																																					
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																																					
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																																					
Location Code	Field ID	Date		Depth	Lab Report Number	Monitoring Zone																															
SP03																																					
SP03-1	SP03-1				748554	SP03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
SP03-2	SP03-2				748554	SP03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
SP03-3	SP03-3				748554	SP03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			

[illegible]

Project Number: 70509
Project Name: 191 Miller Road, Chester Hill

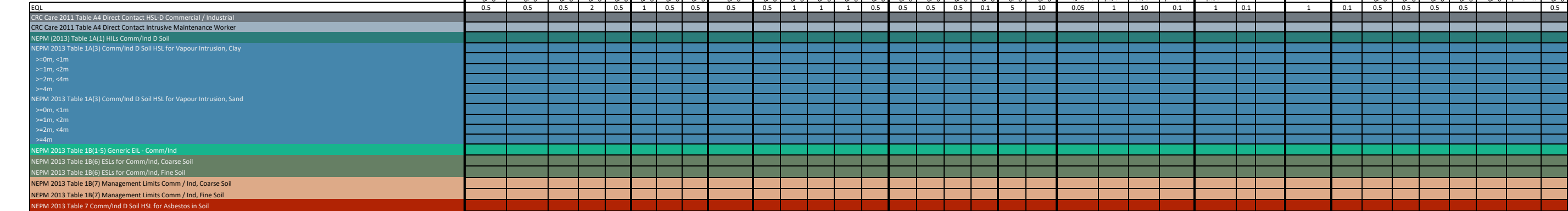


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	Herbicides					Nitro-benzenes			Nitro-toluenes	Anilines					Non-Metallic Inorganics				Major Anions		Ionic Balance				Inorganics			Particle Size	Other									
	2,4,6-Trichlorophenoxy-acetic acid	2-Chlorophenoxyacetic acid	4-Chlorophenoxy acetic acid	Acifluorfen	Prometryn	1,3-dinitrobenzene	Nitrobenzene	Pentachloronitrobenzene	2,4-dinitrotoluene	2-Nitroaniline	3-Nitroaniline	4-Chloroaniline	4-Nitroaniline	Aniline	Ammonia as N	Fluoride	Nitrate (as N)	Nitrite (as N)	Chloride	Sulphate	CEC	Electrical Conductivity (Lab)	Conductivity (1:5 aqueous extract)	pH (aqueous extract)	Electrical Conductivity (Non Compensated)	Moisture	pH 1:5 soil:water:1:5 soil:water	% Clay*	Moisture Content (dried @ 103 °C)	3,5-Dichlorobenzoic acid	Atril (Ioxynil)	DCPA (Chlorthal) Diacid	Irganol	Low Molecular Weight PAHs	pH	Phosalone		
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	MEQ/100G	µS/cm	US/CM	pH Units	µS/cm	%	-	%	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	pH Units	mg/kg	
EQL	0.5	0.5	0.5	2	0.5	1	0.5	0.5	0.5	0.5	1	1	1	0.5	0.5	0.5	0.5	0.1	5	10	0.05	1	10	0.1	1	0.1		1	0.1	0.5	0.5	0.5	0.5				0.5	
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial																																						
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																																						
NEPM (2013) Table 1A(1) Hills Comm/Ind D Soil																																						
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																																						
>=0m, <1m																																						
>=1m, <2m																																						
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NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																																						
>=0m, <1m																																						
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NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind																																						
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																																						
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																																						
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																																						
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																																						
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil																																						
Location Code	Field ID	Date		Depth	Lab Report Number	Monitoring Zone																																
SP03																																						
SP03-1	SP03-1				748554	SP03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SP03-2	SP03-2				748554	SP03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SP03-3	SP03-3				748554	SP03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

[illegible]

[illegible]

[illegible]



	Asbestos - Eurofins																				Asbestos - Envirolab					
	Approximate Sample Mass	Mass ACM	Mass Asbestos in ACM	Asbestos from ACM in Soil	Mass FA	Mass Asbestos in FA	Mass AF			Mass asbestos in AF	Mass Asbestos in FA & AF		ACM- Comment	FA- Comment	AF- Comment	Organic Fibres - Comment	Respirable Fibres - Comment	Synthetic Fibres - Comment	Asbestos Reported Result	Asbestos FA & AF in Soil						
	g	g	g	% (w/w)	g	g	g	Comment	g	Comment	g	Comment	Comment	Comment	Comment	Comment	Comment	Comment	Comment	% (w/w)						
	g/kg	mg/kg	g/kg	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)	% (w/w)						
EOL																										
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial																										
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																										
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil																										
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																										
>=0m, <1m																										
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>=0m, <1m																										
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NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																										
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																										
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																										
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil				0.05 ⁴²⁴																0.001 ⁴²⁵						

Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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Table D1 - Soil Analytical Table v2



	Asbestos - Eurofins																								Asbestos - Envirolab					
	Approximate Sample Mass	Mass ACM	Mass Asbestos in ACM	Asbestos from ACM in Soil	Mass FA	Mass Asbestos in FA	Mass AF		Mass asbestos in AF	Mass Asbestos in FA & AF	ACM - Comment	FA - Comment	AF - Comment	Organic Fibres - Comment	Respirable Fibres - Comment	Synthetic Fibres - Comment	Asbestos Reported Result	Asbestos FA & AF in Soil	Asbestos ID in Soil	Total Asbestos	Asbestos (ACM >7mm) Estimation	Asbestos in soil (<2mm AF/FA) (%w/w)	Asbestos in soil (<2mm AF/FA) (%w/w)							
	g	g	g	% (w/w)	g	g	g	Comment	g	Comment	g	Comment	Comment	Comment	Comment	Comment	Comment	Comment	% (w/w)	g/kg	mg/kg	g/kg	% (w/w)	% (w/w)	g					
EOL																					0	0	0	0						
CRC Care 2011 Table A4 Direct Contact HSL-D Commercial / Industrial																														
CRC Care 2011 Table A4 Direct Contact Intrusive Maintenance Worker																														
NEPM (2013) Table 1A(1) HILs Comm/Ind D Soil																														
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																														
>=0m, <1m																														
>=1m, <2m																														
>=2m, <4m																														
>=4m																														
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																														
>=0m, <1m																														
>=1m, <2m																														
>=2m, <4m																														
>=4m																														
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind																														
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																														
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																														
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Coarse Soil																														
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																														
NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil			0.05 ^{#24}																0.001 ^{#25}				0.05 ^{#24}	0.001 ^{#25}						

Location Code	Field ID	Date	Depth	Lab Report Number	Monitoring Zone
SP03					
SP03-1	SP03-1			748554	SP03
SP03-2	SP03-2			748554	SP03
SP03-3	SP03-3			748554	SP03

Appendix B Development Plans

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