



## Site Audit Report

AEC 34: 43B Luddenham Road, Orchard Hills

Audit Number: MP181\_1

22 December 2022



## 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. MP181\_1

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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*)

Name:

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Company: Senversa Pty Ltd

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Address: Level 24, 1 Market Street

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Sydney NSW

Postcode: 2000

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Phone: 02 8252 0000

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Email: @senversa.com.au

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#### Site details

Address: 43B Luddenham Road, Orchard Hills NSW

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Postcode: 2748

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## Property description

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

Part Lot 51 Deposited Plan 1276956 (Attachment 1)

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Local government area: Penrith City Council

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Area of site (include units, e.g. hectares): Approximately 0.07

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Current zoning: RU2: Rural Landscaping

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## 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.~~

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☐ ~~Order no.~~

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☐ ~~Proposal no.~~

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☐ ~~Notice no.~~

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☒ **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:

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Company: CPB Contractors Pty Ltd and United Infrastructure Pty Ltd (CPBUI JV)

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Address: Level 5, 60 Miller Street, North Sydney NSW

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Postcode: 2060

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Phone: 02 9035 5007

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Email: @cpbuijv.com.au

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**Contact details for contact person** (if different from above)

Name:

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Phone:

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Email:

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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)~~

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

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

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

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## Purpose of site audit

☒ **A1** To determine land use suitability

Intended uses of the land: Railway track, embankments/ noise barriers, a stabling yard and maintenance facility, station and passive open space adjacent to the rail corridor

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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: \_\_\_\_\_

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## Information sources for site audit

Consultancies which conducted the site investigations and/or remediation:

Douglas Partners Pty Ltd (Douglas Partners)

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Titles of reports reviewed:

Sampling and Analysis Quality Plan (SAQP), Surface & Civil Alignment Works (SCAW) Package for Sydney Metro – Western Sydney Airport (SMWSA), Area of Environmental Concern (AEC) 34, 43B Luddenham Road, Orchard Hills' dated 2 August 2022 by Douglas Partners.

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Report on Detailed Site Investigation (Contamination), Surface & Civil Alignment Works (SCAW) Package for Sydney Metro – Western Sydney Airport (SMWSA), Area of

Environmental Concern (AEC) 34, 43B Luddenham Road, Orchard Hills' dated 1 November 2022 by Douglas Partners.

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

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**Site audit report details**

Title Site Audit Report, AEC 34: 43B Luddenham Road, Orchard Hills

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Report no. MP181\_1 (Senversa Ref 19824)

Date: 22 December 2022

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## 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 plan<sup>1</sup>, 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.

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<sup>1</sup> 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):

Railway track, embankments/ noise barriers, a stabling yard and maintenance facility, station and passive open space adjacent to the rail corridor

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### 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:

The site has been used for rural pasture land since at least 1955. An investigation of soil and groundwater reported analytical results and field observations consistent with no widespread contamination at the site.

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## Section A2

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

~~Subject to compliance with the **attached** environmental management plan<sup>2</sup> (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 systems<sup>3</sup>~~
- ☐ ~~requires maintenance of **passive** control systems only<sup>3</sup>.~~

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<sup>2</sup> Refer to Part IV for an explanation of an environmental management plan.

<sup>3</sup> Refer to Part IV for definitions of active and passive control systems.

Purpose of the EMP:

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Description of the nature of the residual contamination:

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Summary of the actions required by the EMP:

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

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How there will be appropriate public notification:

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Overall comments:

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## Section B

Purpose of the plan<sup>4</sup> which is the subject of this audit:

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**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

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

- ☐ ~~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):~~
- 

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

~~\*Strike out as appropriate~~

Plan title:

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Plan author:

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Plan date:

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No. of pages:

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SUBJECT to compliance with the following condition(s):

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Overall comments:

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## 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. MP\_0803

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### 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: 22 December 2022

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## 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**

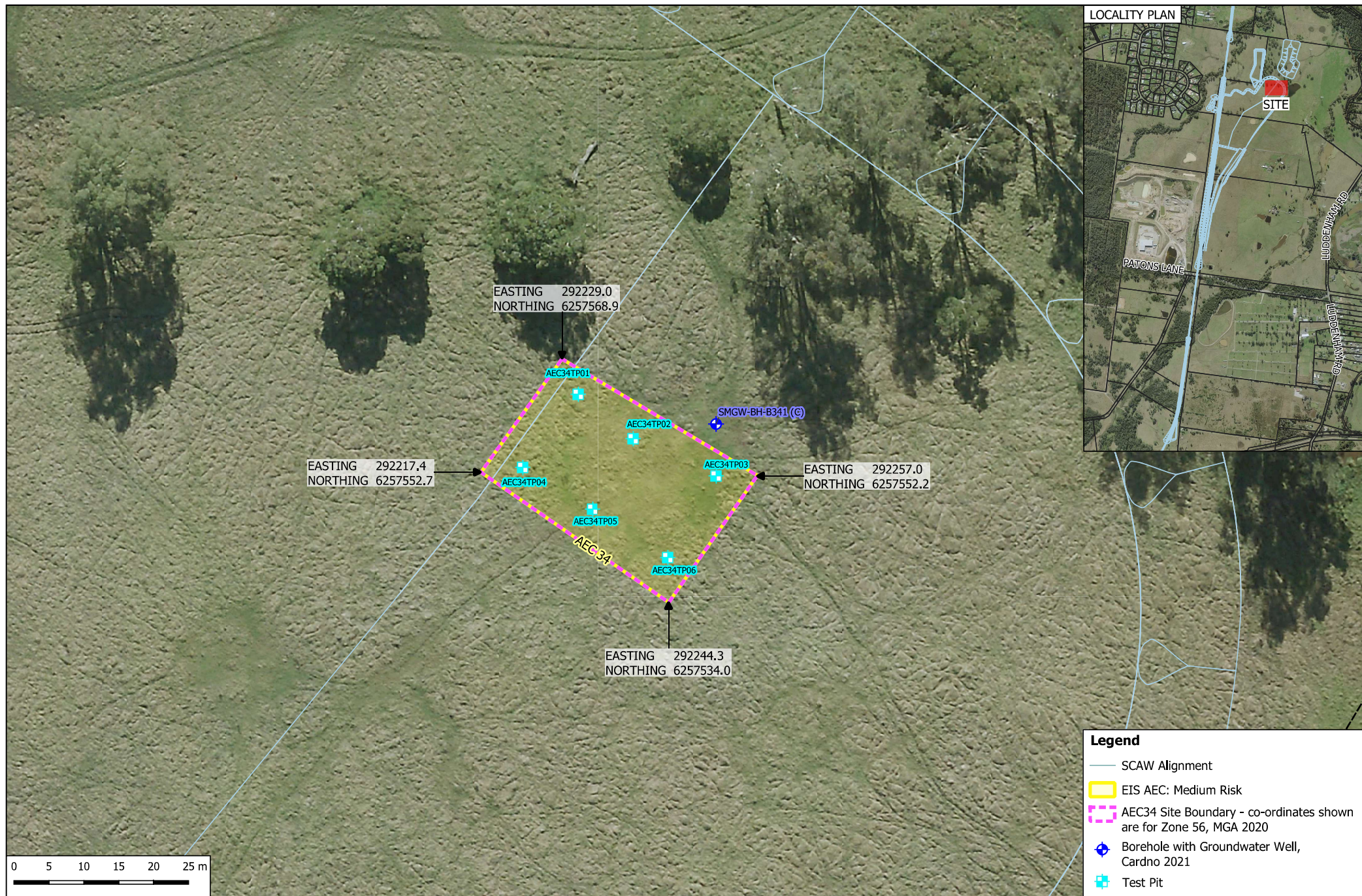
In addition to furnishing a copy of the audit statement to the person(s) who commissioned the site audit, statutory site audit statements must be sent to

- the **NSW Environment Protection Authority**:  
[nswauditors@epa.nsw.gov.au](mailto: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.





**Legend**

- SCAW Alignment
- EIS AEC: Medium Risk
- AEC34 Site Boundary - co-ordinates shown are for Zone 56, MGA 2020
- Borehole with Groundwater Well, Cardno 2021
- Test Pit







# Document Information

## Site Audit Report

**AEC 34: 43B Luddenham Road, Orchard Hills**

**Audit Number: MP181\_1**

### Prepared by:

**Senversa Pty Ltd**

ABN: 89 132 231 380

Level 24, 1 Market Street, Sydney NSW 2000

tel: + 61 2 8252 0000; fax: + 61 3 9606 0074

[www.senversa.com.au](http://www.senversa.com.au)

### Prepared for:

CPBUI JV

Level 5, 60 Miller Street

North Sydney NSW

### Disclaimer and Limitations:

This document is confidential and has been prepared by Senversa for use only by its client and for the specific purpose described in our proposal which is subject to limitations. No party other than Senversa's client may rely on this document without the prior written consent of Senversa, and no responsibility is accepted for any damages suffered by any third party arising from decisions or actions based on this document. Matters of possible interest to third parties may not have been specifically addressed for the purposes of preparing this document and the use of professional judgement for the purposes of Senversa's work means that matters may have existed that would have been assessed differently on behalf of third parties.

Senversa prepared this document in a manner consistent with the level of care and skill ordinarily exercised by members of Senversa's profession practicing in the same locality under similar circumstances at the time the services were performed.

Senversa requires that this document be considered only in its entirety and reserves the right to amend this report if further information becomes available.

This document is issued subject to the technical principles, limitations and assumptions provided in Section 15.

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Senversa acknowledges the traditional custodians of the land on which this work was created and pay our respect to elders past and present.



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Appendix A: Attachments

Appendix B: EPA Guidelines

Appendix C: Interim Audit Advice



# List of Acronyms

Acronym	Definition
<b>Measures</b>	
%	per cent
µg/L	Micrograms per Litre
ha	Hectare
km	Kilometres
m	Metre
mbgl	Metres below ground level
mg/kg	Milligrams per Kilogram
ppm	Parts Per Million
<b>General</b>	
ABC	Added Background Concentrations
ACL	Added Contaminant Limit
ACM	Asbestos Containing Material
ADWG	Australian Drinking Water Guidelines
AF	Asbestos Fines
ALS	Australian Laboratory Services
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZG	Australian and New Zealand Guidelines
BaP	Benzo(a)pyrene
BGL	Below Ground Level
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes & Naphthalene
CLM Act	NSW Contaminated Land Management Act 1997

Acronym	Definition
COC	Chain of Custody
Council	Penrith City Council
DA	Development Application
DGV	Default Guideline Value
DP	Deposited Plan
DQI	Data Quality Indicator
DQO	Data Quality Objective
EIL	Ecological Investigation Level
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
Envirolab	Envirolab Services Pty Ltd
EPA	Environment Protection Authority (NSW)
ESL	Ecological Screening Level
FA	Fibrous Asbestos
GIL	Groundwater Investigation Level
HIL	Health Investigation Level
HSL	Health Screening Level
IAA	Interim Audit Advice
LCS	Laboratory Control Sample
LEP	Local Environment Plan
LOR	Limit of Reporting
MAH	Monocyclic Aromatic Hydrocarbons
Mercury	Inorganic mercury unless noted otherwise



Acronym	Definition
<b>Metals</b>	As: Arsenic, Cd: Cadmium, Cr: Chromium, Cu: Copper, Ni: Nickel, Pb: Lead, Zn: Zinc, Hg: Mercury
<b>ML</b>	Management Limits
<b>MS</b>	Matrix Spike
<b>NATA</b>	National Association of Testing Authorities
<b>NC</b>	Not Calculated
<b>ND</b>	Not Detected
<b>NEHF</b>	National Environmental Health Forum
<b>NEPM</b>	National Environment Protection Measure
<b>NHMRC</b>	National Health and Medical Research Council
<b>NL</b>	Non-Limiting
<b>n</b>	Number of Samples
<b>OCPs</b>	Organochlorine Pesticides
<b>OEH</b>	Office of Environment and Heritage
<b>OPPs</b>	Organophosphorus Pesticides
<b>PAHs</b>	Polycyclic Aromatic Hydrocarbons

Acronym	Definition
<b>PCBs</b>	Polychlorinated Biphenyls
<b>PFAS</b>	Perfluoroalkyl and Polyfluoroalkyl Substances
<b>pH</b>	A measure of acidity, hydrogen ion activity
<b>PID</b>	Photoionisation Detector
<b>PQL</b>	Practical Quantitation Limit
<b>QA/QC</b>	Quality Assurance/Quality Control
<b>RPD</b>	Relative Percent Difference
<b>SAQP</b>	Sampling Analysis and Quality Plan
<b>SAR</b>	Site Audit Report
<b>SAS</b>	Site Audit Statement
<b>SCEW</b>	Standing Council on Environment and Water
<b>SWL</b>	Standing Water Level
<b>TRHs</b>	Total Recoverable Hydrocarbons
<b>VOCs</b>	Volatile Organic Compounds
<b>-</b>	On tables is "not calculated", "no criteria" or "not applicable"



# 1.0 Introduction

A site contamination audit has been conducted in relation to the site at 43B Luddenham Road, Orchard Hills NSW (known as 'AEC 34').

The site is part of the Sydney Metro – Western Sydney Airport rail line that will extent approximately 23 km from St Marys to the Western Sydney Aerotropolis. The Surface & Civil Alignment Works (SCAW) package is between Orchard Hills and Western Sydney Airport.

Areas of environmental concern (AECs) have been identified along the SCAW corridor requiring investigation. The current site is known as AEC 34. The remaining AECs will be subject to separate audits.

The audit was conducted to provide an independent review by an EPA Accredited Auditor of whether the land is suitable for any specified use or range of uses i.e. a "Site Audit" as defined in Section 4 (1) (b) (iii) of the NSW Contaminated Land Management Act 1997 (the CLM Act).

## 1.1 Scope of the Audit

Details of the Audit are:

Requested by: on behalf of CPB Contractors Pty Ltd and United Infrastructure Pty Ltd (CPBUI JV)

Request/Commencement Date: 7 June 2022

Auditor:

Accreditation No.: 0803

The scope of the audit included:

- Review of the following reports:
  - 'Environmental Impact Statement' dated October 2020 by Sydney Metro (EIS).
  - 'Sampling and Analysis Quality Plan (SAQP), Surface & Civil Alignment Works (SCAW) Package for Sydney Metro – Western Sydney Airport (SMWSA), Area of Environmental Concern (AEC) 34, 43B Luddenham Road, Orchard Hills' dated 2 August 2022 by Douglas Partners (SAQP).
  - Report on Detailed Site Investigation (Contamination), Surface & Civil Alignment Works (SCAW) Package for Sydney Metro – Western Sydney Airport (SMWSA), Area of Environmental Concern (AEC) 34, 43B Luddenham Road, Orchard Hills' dated 1 November 2022 by Douglas Partners (DSI).
- A site visit by the auditor on 29 November 2022.
- Discussions with CPBUI JV and with Douglas Partners who undertook the investigation.

A previous investigation by Cardno (NSW/ACT) Pty Ltd (Cardno) dated 26 November 2021 was undertaken for a larger area. One of the samples was positioned to the north of the current site. The Cardno report was not provided for auditor review, Douglas Partners included relevant information within the reports listed above.

Several Interim Audit Advice (IAA) have been issued for the site (Appendix C) providing comments on the various reports. IAA No. 3 issued on 17 November 2022 confirmed that the DSI could be finalised.



## 2.0 Site Details

### 2.1 Location

The site locality is shown on Attachment 1, Appendix A.

The site details are as follows:

Street address:	43B Luddenham Road, Orchard Hills NSW 2748
Identifier:	Part Lot 51 Deposited Plan (DP) 1276956
Local Government:	Penrith City Council
Site Owner:	Sydney Metro
Site Area:	Approximately 0.07 ha

The boundaries of the site are not well defined by streets/adjoining properties. A survey plan of the site has been provided (Attachment 2, Appendix A).

### 2.2 Zoning

The current zoning of the site is RU2: Rural Landscape and an area along the proposed railway which is not zoned.

### 2.3 Adjacent Uses

The site is located within an area of rural land used for grazing with some residential properties located further to the east and south.

Patons Lane Landfill is located approximately 940 m to the south west and up-gradient of the site.

Blaxland Creek is approximately 500 m west and South Creek is located approximately 730 m east of the site. Blaxland Creek flows into South Creek approximately 1 km to the north and down-gradient of the site. A number of dams are located near to the site with the closest being located approximately 100 m east of the site.

### 2.4 Site Condition

Douglas Partners noted that the site sloped generally to the north and was used for grazing purposes. While a small section of bare earth was noted in the EIS, Douglas Partners did not observe the same bare earth path.

During the auditors site visit on 29 November 2022, consistent with Douglas Partners observations, the site consisted of grassed rural land with no visible signs of waste material or bare earth. The surrounding area is also grassed rural with some earthworks for initial stages of the metro line evident to the west of the site.





## 2.5 Proposed Development

It is understood that the site is to be redeveloped by CPBUI JV as a part of a stabling yard associated with the railway corridor for the Sydney Metro – Western Sydney Airport line. The Sydney Metro – Western Sydney Airport line development includes approximately 10km of railway track from Orchards Hills to the Western Sydney Airport, embankments/ noise barriers, a stabling yard and maintenance facility, station and passive open space adjacent to the rail corridor.

For the purposes of this audit, the 'commercial/industrial' land use scenario will be assumed.



## 3.0 Site History

Douglas Partners provided a summary of the site history based on the EIS review of aerial photographs, site photographs and NSW EPA records. Consistent with the current condition, the site has been rural land for pastoral use since at least 1955.

In the auditor's opinion, the site history provides an adequate indication of past activities. The auditor is satisfied that there is no evidence of past uses that have significant potential to contaminate the site.



## 4.0 Contaminants of Concern

Douglas Partners provided a list of the contaminants of concern and potentially contaminating activities. These have been tabulated in Table 4.1.

**Table 4.1: Contaminants of Concern**

Area	Activity	Potential Contaminants
Entire site	Unknown fill	Metals, total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAH), organochlorine pesticides (OCP), organophosphorus pesticides (OPP), polychlorinated biphenyls (PCB), phenols and asbestos.
Entire site	Potential hazardous building material use	Lead, asbestos and PCBs

Given that no cropping was evident historically at the site, Douglas Partners considered that Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) impacts were unlikely.

The auditor considers that the analyte list used by Douglas Partners adequately reflects the site history and condition.



## 5.0 Stratigraphy and Hydrogeology

Following a review of the reports provided, a summary of the site stratigraphy and hydrogeology was compiled as follows.

### 5.1 Stratigraphy

The sub-surface profile of the site is summarised in Table 5.1.

**Table 5.1: Stratigraphy**

Depth (mbgl)	Subsurface Profile
0.0 – 0.2	Fill (gravelly silty clay)
0.2 – 5.0	Silty clay and gravelly clay
5.0 to depth	Sandstone and siltstone

mbgl – metres below ground level

The site is not within an area of associated with a risk of acid sulfate soil (ASS).

The auditor considers that the depth of fill and underlying stratigraphy have been adequately characterised.

### 5.2 Hydrogeology

Groundwater investigations have been undertaken at the site. Depth to groundwater is approximately 1.4 mbgl. Groundwater is considered likely to flow to the north or northeast following the sites topography. There are no registered bores within a 500 m radius of the site.

The nearest surface water receptor is Blaxland Creek located approximately 500 m to the west of the site and South Creek located approximately 730 m to the east of the site. Blaxland Creek flows into South Creek approximately 1 km to the north and down-gradient of the site. A dam is located approximately 100 m to the east of the site. Douglas Partners reported that surface water from the site is likely to infiltrate the ground as runoff to the north.

The auditor considers that the hydrogeology has been adequately characterised.



## 6.0 Evaluation of Quality Assurance and Quality Control

The auditor has assessed the overall quality of the data by review of the information presented in the referenced report, supplemented by field observations. The auditor's assessment follows in Tables 6.1 and 6.2.

**Table 6.1: QA/QC – Sampling and Analysis Methodology Assessment**

Sampling and Analysis Plan and Sampling Methodology	Auditor's Opinion
<b>Data Quality Objectives (DQO)</b> Douglas Partners defined specific DQOs in accordance with the seven-step process outlined in DEC (2006) Guidelines for the NSW Site Auditor Scheme.	Appropriate for the investigations conducted.
<b>Sampling pattern and locations</b> Soil: Investigation locations were spaced to gain coverage of the majority of the site. Groundwater: A monitoring well was previously installed by Cardno adjacent to the northeast and down-gradient of the site.	These investigation locations adequately target the main areas of concern.
<b>Sampling density</b> Soil: The sampling density of 6 locations over approximately 0.07 ha meets the minimum recommended by EPA (1995) Sampling Design Guidelines however does not meet the minimum recommended by the updated EPA (2022) of 8 locations. Samples analysed for asbestos were not collected as outlined in NEPM (2013) (Schedule B1). Groundwater: A total of 1 groundwater well was previously installed at the site.	With regards asbestos, given that no anthropogenic materials were identified at the site, the auditor is satisfied that the sampling is appropriate. The field work was commenced prior to the release of the updated EPA (2022) Sampling Design Guidelines. Given the consistency of the results between sampling locations, the lack of significant contaminating activities and the relatively low concentrations of the contaminants of concern, the discrepancy is not considered to affect the audit conclusions.
<b>Sample depths</b> Samples were collected and analysed from a range of depths, with the primary intervals being within the shallow fill (0.0-0.2 mbgl) and at and around the fill/clay interface (around 0.2-0.5 mbgl).	Adequate
<b>Well construction</b> Groundwater: The monitoring well was installed to a depth of 6.5 mbgl, with screen intervals of 3 m placed in sand. A bentonite seal was placed above the screen. The construction material of the well was not specified. The standing water level (SWL) did not intersect the screen interval.	As light non-aqueous phase liquids were not of concern, the screen depth being below the SWL is not considered to affect the results.
<b>Sample collection method</b> Soil: Sample collection was by hand from the excavator returns or hand auger. Groundwater: Well was installed, developed and samples were collected by low flow peristaltic pump with dedicated sample tubing. Drilling and development methods were not specified.	Overall, the sample collection method was found to be acceptable.
<b>Decontamination procedures</b> Soil: No equipment was used that required decontamination. New gloves were reportedly used for each new sample.	Acceptable



## Sampling and Analysis Plan and Sampling Methodology

## Auditor's Opinion

Groundwater: Equipment was decontaminated between monitoring well by rinsing in a diluted Liquinox solution and then rinsing with demineralised water. Dedicated tubing was used for each well. New gloves were reportedly used for each new sample.

**Sample handling and containers**

Acceptable.

Samples were placed into prepared and preserved sampling containers provided by the laboratory and chilled during storage and subsequent transport to the labs. Samples for asbestos analysis were placed in plastic zip-lock bags.

Groundwater samples to be analysed for heavy metals were field filtered.

**Chain of Custody (COC)**

Acceptable.

Completed chain of custody forms were provided in the report.

**Detailed description of field screening protocols**

Acceptable.

Soil: Field screening for volatiles was undertaken using a PID.

Groundwater: Field parameters were measured during well sampling and development.

**Calibration of field equipment**

Acceptable.

The reports indicated that calibration had been undertaken prior to use. Calibration certificates from the equipment supplier were provided for the water quality meter. Field calibration records were provided for the PID.

**Sampling logs**

Acceptable.

Soil logs are provided within the report, indicating sample depth, PID readings and lithology.

Groundwater field sampling records were provided, indicating SWL, field parameters, methodology and observations.

**Table 6.2: QA/QC – Field and Lab Quality Assurance and Quality Control**

## Field and Lab QA/QC

## Auditor's Opinion

**Field quality control samples**

Acceptable.

Field quality control samples including trip blanks, trip spikes, rinsate blanks, field intra-laboratory and inter-laboratory duplicates were undertaken.

Rinsates were not required during soil sampling since dedicated sampling equipment was used for each location.

**Field quality control results**

The results of field quality control samples were generally within appropriate limits. The following exceptions were noted:

Relative Percent Difference (RPDs) for the inter- and intra-laboratory soil duplicate samples for two metals ranged from 40 to 43%. RPDs for the inter- and intra-laboratory groundwater duplicate samples for two metals ranged from 40 to 100%. The highest of the check laboratory result and the project laboratory result was used in the assessment.

Overall, in the context of the dataset reported, the elevated RPD results are not considered significant and the field quality control results are acceptable.

**NATA registered laboratory and NATA endorsed methods**

Acceptable

Laboratories used included: Envirolab and Eurofins | mgt. Laboratory certificates were NATA stamped.



## Field and Lab QA/QC

## Auditor's Opinion

### Analytical methods

Analytical methods were included in the laboratory test certificates. Both Envirolab and Eurofins | mgt provided brief method summaries of in-house NATA accredited methods used based on USEPA and/or APHA methods (excluding asbestos) for extraction and analysis in accordance with the NEPM (2013).

Asbestos identification was conducted by Envirolab using polarised light microscopy with dispersion staining by method AS4964-2004 Method for the Qualitative Identification of Asbestos Bulk Samples.

The analytical methods are considered acceptable for the purposes of the site audit, noting that the AS4964-2004 is currently the only available method in Australia for analysing asbestos. DOH (2009) and enHealth (2005) state that "until an alternative analytical technique is developed and validated the AS4964-2004 is recommended for use".

### Holding times

Review of the COCs and laboratory certificates indicate that the holding times had been met with the exception of analysis for groundwater duplicate samples and pH in soil samples.

Douglas Partners also reported that holding times have been met with the exception of the above.

Given the primary groundwater sample and soil samples did not indicate contamination at the site and the auditor has not relied on the pH results to derive site criteria, the analysis outside of holding time does not detract from the overall quality and completeness of the data.

### Practical Quantitation Limits (PQLs)

Soil: PQLs (except asbestos) were less than the threshold criteria for the contaminants of concern.

Asbestos: The limit of detection for asbestos in soil was 0.01% w/w.

Groundwater: The following trigger values were less than the PQLs:

Fluoranthene 0.1 µg/L, DGV 1 µg/L

Soil (except asbestos): Overall the soil PQLs are acceptable.

Asbestos: In the absence of any other validated analytical method, the detection limit for asbestos is considered acceptable. A positive result would be considered to exceed the "no asbestos detected in soil" criteria, providing this is applied within a weight of evidence approach to assess the significance of the exceedance, accounting for the history of the site and frequency of the occurrence.

Groundwater: The elevated PQL was only marginally elevated above the guideline value and in the context of the results reported and site history, this discrepancy does not materially affect the outcome of the audit.

### Laboratory quality control samples

Laboratory quality control samples including laboratory control samples, matrix spikes, surrogate spikes, blanks, internal standards and duplicates were undertaken by the laboratory.

Envirolab did not undertake duplicates in one batch.

The majority of the laboratory reports did include duplicates as part of laboratory quality control samples. As such overall, sufficient quality control samples have been analysed to assess laboratory accuracy.

### Laboratory quality control results

The results of laboratory quality control samples were generally within appropriate limits, with the following exceptions:

RPDs elevated for arsenic, chromium, copper, lead and nickel duplicates.

Matrix spike for endrin aldehyde below acceptance limit and for chlordane above acceptance limit.

The matrix recoveries outside of acceptance limits are not considered to affect the usability of the data as OCPs were not detected above guidelines in any of the samples analysed.

In the context of the dataset reported, the elevated RPD is not considered significant and the laboratory quality control results are acceptable.

### Data Quality Indicators (DQI) and Data Evaluation (completeness, comparability, representativeness, precision, accuracy)

Predetermined data quality indicators (DQIs) were set for laboratory analyses including blanks, replicates, duplicates, laboratory control samples, matrix spikes, surrogate spikes and internal standards. These were discussed with regard to the five category areas. There was limited discussion regarding actions required if data do not meet the expected objectives.

An assessment of the data quality with respect to the five category areas has been undertaken by the auditor and is summarised below.



In considering the data as a whole the auditor concludes that:

- The data is likely to be representative of the overall conditions of the site.
- The data is complete.
- There is a high degree of confidence that data is comparable for each sampling and analytical event.
- The primary laboratory provided sufficient information to conclude that data is of sufficient precision.
- The data is accurate.





## 7.0 Environmental Quality Criteria

The auditor has assessed the results against Tier 1 criteria from National Environmental Protection Council (NEPC) National Environmental Protection (Assessment of Site Contamination) Measure 1999, as Amended 2013 (NEPM, 2013). Other guidance has been adopted where NEPM (2013) is not applicable or criteria are not provided. Based on a proposed land use of a stabling yard as part of a rail corridor, the criteria for 'commercial/industrial' land use has been referred to.

The auditor has assessed the **soil** data provided with reference to Tier 1 (screening) criteria from the following:

- Human Health Assessment:
  - Health Based Investigation Levels (HIL D).
  - Soil Health Screening Levels (HSL D) for Vapour Intrusion. The most conservative criteria were adopted i.e. assumed depth to source < 1 m and sand.
  - CRC CARE (2011) Direct Contact (HSL D, and intrusive maintenance worker).
  - Asbestos Health Screening Levels (HSL D).
  - HEPA, 2020. PFAS National Environmental Management Plan (NEMP) released by the National Chemicals Working Group of the Heads of EPAs Australia and New Zealand (HEPA)
- Ecological Assessment:
  - Ecological Screening Levels (ESL Commercial/Industrial) assuming coarse/fine soil.
  - Ecological Investigation Levels (EIL Commercial/Industrial). In the absence of site specific soil data on pH, clay content, cation exchange capacity and background concentrations, the published range of the added contaminant values have been applied as an initial screen.
- Management Limits (ML Commercial/Industrial) assuming coarse soil.
- Aesthetics:
  - The auditor has considered the need for remediation based on the 'aesthetic' contamination as outlined in the NEPM (2013).

The auditor has assessed the **groundwater** data provided with reference to Tier 1 (screening) criteria from the following:

- Human Health Assessment
  - NEPM (2013) Groundwater Health Screening Levels (HSL D) for vapour intrusion (sand, 2 to <4 m) (applied for screening purposes).
  - NHMRC and NRMCC (2011) Australian Drinking Water Guidelines (ADWG).
  - WHO (2008) Petroleum Products in Drinking-water. applicable where HSLs are not applicable
  - WHO (2011) Guidelines for drinking-water quality, fourth edition, applicable where the ADWG are not available.



- Ecological Assessment
  - Groundwater Investigation Levels (GILs) listed in NEPM (2013) for protection of aquatic ecosystems referenced in ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality. The ANZECC 2000 guidelines have been updated in ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. (Available at [www.waterquality.gov.au/anz-guidelines](http://www.waterquality.gov.au/anz-guidelines)). The Default Guideline Values (DGV) provided are concentrations of toxicants that should have no significant adverse effects on the aquatic ecosystem. The marine/fresh water 95% level of protection was adopted. Some have been modified based on bioaccumulation or acute-toxicity or potential toxicity to particular species.



## 8.0 Evaluation of Soil Analytical Results

Soil samples were analysed for a variety of contaminants including petroleum hydrocarbons, PAHs, asbestos and heavy metals. The analytical results are summarised below in Table 8.1.

The results have been assessed against the environmental quality criteria. Soil sampling locations are shown as Attachment 2, Appendix A.

**Table 8.1: Evaluation of Soil Analytical Results – Summary Table (mg/kg)**

Analyte	N	Detections	Maximum	n > Human Health Screening Criteria (NEPM, 2013)	n > Terrestrial Ecological Screening Criteria (NEPM, 2013)
<b>Lead</b>	9	9	13	0 above HIL D of 1500 mg/kg	0 above Generic ACL of 1800 mg/kg
<b>Benzene</b>	9	0	<PQL	0 above HSL D 0-1 m, sand of 3 mg/kg	0 above ESL (commercial/industrial) (coarse) of 75 mg/kg
<b>Toluene</b>	9	0	<PQL	HSL D, Non limiting	0 above ESL (commercial/industrial) (coarse) of 135 mg/kg
<b>Ethyl benzene</b>	9	0	<PQL	HSL D, Non limiting	0 above ESL (commercial/industrial) (coarse) of 165 mg/kg
<b>Total Xylenes</b>	9	0	<PQL	HSL D, Non limiting	0 above ESL (commercial/industrial) (fine) of 95 mg/kg
<b>TRH C6-C10</b>	9	0	<PQL	0 above ML (commercial/industrial) of 800 mg/kg	-
<b>TRH C10-C16</b>	9	0	<PQL	0 above ML (commercial/industrial) of 1000 mg/kg	-
<b>F1 (TRH C6–C10 minus BTEX)</b>	9	0	<PQL	0 above HSL D 0-1 m, sand of 260 mg/kg	0 above ESL (commercial/industrial) (coarse/fine) of 215 mg/kg
<b>F2 (TRH &gt;C10–C16 minus naphthalene)</b>	9	0	<PQL	HSL D, Non limiting	0 above ESL (commercial/industrial) (coarse/fine) of 170 mg/kg
<b>F3 (TRH C16-C34)</b>	9	0	<PQL	0 above ML (commercial/industrial) of 3500 mg/kg	0 above ESL (commercial/industrial) (coarse) of 1700 mg/kg
<b>F4 (TRH C34-C40)</b>	9	0	<PQL	0 above ML (commercial/industrial) of 10,000 mg/kg	0 above ESL (commercial/industrial) (coarse) of 3300 mg/kg
<b>Naphthalene</b>	9	0	<PQL	HSL D, Non limiting	0 above Generic EIL (commercial/industrial) of 370 mg/kg



Analyte	N	Detections	Maximum	n > Human Health Screening Criteria (NEPM, 2013)	n > Terrestrial Ecological Screening Criteria (NEPM, 2013)
<b>Benzo(a)pyrene</b>	9	0	<PQL	-	0 above ESL (commercial/industrial) (coarse/fine) of 1.4 mg/kg
<b>BaP TEQ</b>	9	0	<PQL	0 above HIL D 40 mg/kg	-
<b>Total PAHs</b>	9	0	<PQL	0 above HIL D 4000 mg/kg	-
<b>Pentachlorophenol</b>	1	0	<PQL	0 above HIL A 100 mg/kg	-
<b>Total Phenols</b>	1	0	<PQL	0 above HIL D 240000 mg/kg	-
<b>Arsenic</b>	9	7	7	0 above HIL D 3000 mg/kg	0 above Generic EIL (commercial/industrial) of 160 mg/kg
<b>Cadmium</b>	9	0	<PQL	0 above HIL D 900 mg/kg	-
<b>Chromium</b>	9	9	31	0 above HIL D 3600 mg/kg	0 above most conservative ACL for commercial/industrial of 310 mg/kg
<b>Copper</b>	9	9	13	0 above HIL D 240000 mg/kg	0 above most conservative ACL for commercial/industrial of 85 mg/kg
<b>Mercury</b>	9	0	<PQL	0 above HIL D 730 mg/kg	-
<b>Nickel</b>	9	9	7	0 above HIL D 6000 mg/kg	0 above most conservative ACL for commercial/industrial of 55 mg/kg
<b>Zinc</b>	9	9	16	0 above HIL D 400000 mg/kg	0 above most conservative ACL for commercial/industrial of 110 mg/kg
<b>Total OCPs</b>	9	0	<PQL	0 above HIL D	-
<b>Total OPPs</b>	9	0	<PQL	-	0 above EIL (commercial/industrial)
<b>PCBs</b>	9	0	<PQL	0 above HIL D 7 mg/kg	-
<b>Asbestos (FA/AF)</b>	6	0	<PQL	0 above HSL D 0.07%	-
<b>Asbestos (presence/absence)</b>	6	0	Not detected	-	-

n number of samples

- No criteria available/used

NL Non-limiting

<PQL Less than the practical quantitation limit

\*Note: The numbers presented in the above table have been compiled and transcribed manually from data tabulated by the consultants and thus some errors may be present. Any such errors are not considered by the Auditor to be significant in the overall context and amount of data reviewed and conclusions drawn regarding the site during the audit.



The site is characterised by low level detection of metals in both fill and natural soil with all results reported below site criteria. The remaining analytes were not reported above detection. No asbestos was identified at the site.

PID results were less than 5 ppm. No odours, staining or potential asbestos containing material were observed during sampling. This is consistent with the soil results indicating no widespread contamination at the site.

Soil samples were also collected during a previous investigation by Cardno at one location adjacent to the northeast of the site. Metals were detected in fill and natural soil samples with zinc above ecological site criteria in two samples within natural (at depths of at 4 and 5.2 m bgl). TRH, BTEX, PAHs, OCPs, OPPs, herbicides, PCBs, phenols, PFAS and VOCs were reported below detection. The exceedence of zinc within natural soil is likely natural occurring given the sample depth.

In the auditor's opinion the sites soil has been adequately characterised. The auditor is satisfied that no further investigations are needed and that the site criteria for commercial/industrial land uses have been met.



## 9.0 Evaluation of Groundwater Analytical Results

One groundwater sample was collected from a well adjacent to the northeast of the site. The sample was submitted for metals, TRH, BTEX, PAHs, OCPs, OPPs, PCBs, phenols and VOCs. The analytical results are summarised below in Table 9.1.

The results have been assessed against the environmental quality criteria. Sample locations are presented in Attachment 2, Appendix A.

**Table 9.1: Summary of Maximum Groundwater Investigation Analytical Results (µg/L)**

Analyte	n	Detections	Maximum	n > ANZG (2018)	n > HSL D (<2-4 mbgl)	n > DWG (ADWG 2011, WHO 2008, WHO 2011)
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	1	0	<PQL	-	0 above 6000 µg/L	0 above 90 µg/L
TRH >C <sub>10</sub> -C <sub>16</sub> less naphthalene (F2)	1	0	<PQL	-	NL	0 above 900 µg/L
TRH >C <sub>16</sub> -C <sub>34</sub> (F3)	1	0	<PQL	-	-	0 above 900 µg/L
TRH >C <sub>34</sub> -C <sub>40</sub> (F4)	1	0	<PQL	-	-	0 above 900 µg/L
Benzene	1	0	<PQL	0 above 950 µg/L	0 above 5000 µg/L	0 above 1 µg/L
Toluene	1	0	<PQL	-	NL	0 above 800 µg/L
Ethyl benzene	1	0	<PQL	-	NL	0 above 300 µg/L
Xylene	1	0	<PQL	0 above 200 µg/L	NL	0 above 600 µg/L
Naphthalene	1	0	<PQL	0 above 16 µg/L	NL	-
Benzo(a)pyrene	1	0	<PQL	-	-	-
Arsenic	1	1	4	0 above 13 µg/L	-	0 above 10 µg/L
Cadmium	1	0	<PQL	0 above 0.2 µg/L	-	0 above 2 µg/L
Chromium	1	0	<PQL	0 above 0.2 µg/L	-	0 above 50 µg/L
Copper	1	0	<PQL	0 above 1.4 µg/L	-	0 above 2000 µg/L
Lead	1	0	<PQL	0 above 3.4 µg/L	-	0 above 10 µg/L
Mercury	1	0	<PQL	0 above 0.06 µg/L	-	0 above 1 µg/L
Nickel	1	1	6	0 above 11 µg/L	-	0 above 20 µg/L



Analyte	n	Detections	Maximum	n > ANZG (2018)	n > HSL D (<2-4 mbgl)	n > DWG (ADWG 2011, WHO 2008, WHO 2011)
<b>Zinc</b>	1	1	6	0 above 8 µg/L	-	0 above 3000 µg/L
<b>Total VOCs</b>	1	0	<PQL	-	-	-

n number of samples

- No criteria available/used

NL Non-limiting

<PQL Less than the practical quantitation limit

\*Note: The numbers presented in the above table have been compiled and transcribed manually from data tabulated by the consultants and thus some errors may be present. Any such errors are not considered by the Auditor to be significant in the overall context and amount of data reviewed and conclusions drawn regarding the site during the audit.

The groundwater is characterised by low level detections of metals including arsenic, nickel and zinc with all results reported below site criteria. The remaining analytes were reported below detection. While a sulphurous odour was noted during sampling, no hydrocarbon odours, oil sheen or phase separated hydrocarbons were observed. This is consistent with site history and soil results indicating no widespread contamination at the site.

In the auditor's opinion the sites groundwater has been adequately characterised. The auditor is satisfied that no further investigations are needed and that the site criteria for the commercial/industrial land use have been met.



## 10.0 Evaluation of Conceptual Site Model

A conceptual site model (CSM) is a representation of the source, pathway and receptor linkages at a site. Douglas Partners has developed a conceptual site model and has used the CSM iteratively throughout the site assessment to inform decisions around investigation requirements. The CSM was initially developed following the preliminary investigations and has been updated as new information became available. Table 10.1 provides the auditors review of the final CSM used by Douglas Partners to conclude on site suitability.

Table 10.1: Review of the Conceptual Site Model

Element of CSM	Consultant	Auditor Opinion
<b>Contaminant source and mechanism</b>	Contaminated ground from potential fill and potential hazardous building material use.	Adequate.
<b>Affected media</b>	Soil. Groundwater.	Adequate.
<b>Receptor identification</b>	Construction workers. Future site workers including maintenance workers. Pedestrians and commuters. Adjacent site users. Surface water bodies. Groundwater. Terrestrial ecosystems. In ground structures.	Adequate. The auditor notes receptors in surface water bodies would include aquatic ecosystems.
<b>Exposure pathways</b>	Ingestion and direct contact. Inhalation of dust. Inhalation of vapours. Surface run-off. Leaching of contaminants into groundwater and lateral migration of groundwater.	Adequate.
<b>Presence of preferential pathways for contaminant movement</b>	Not specified.	The auditor considers the preferential pathways are likely to be direct contact during construction works and migration into groundwater/ run-off to surface water.
<b>Evaluation of data gaps</b>	None identified.	Adequate.





## 11.0 Contamination Migration Potential

No significant levels of contaminants were detected over the site and therefore there is little or no potential for migration of contamination from the site or vertically to groundwater, or in surface water or dust.

In the auditor's opinion, there is no evidence of significant migration of contamination and little potential for future migration.



## 12.0 Assessment of Risk

Based on assessment of results against relevant guidelines and consideration of the overall investigation, it is the auditor's opinion that the risks to human health and the environment are low.

The auditor considers that the risk of any undetected contamination is low. The expected conditions at the site are fill (gravelly silty clay) overlying natural (silty clay and gravelly clay) and sandstone/siltstone with no odour or staining.



## 13.0 Compliance with Regulatory Guidelines and Directions

The auditor has used guidelines currently approved by the EPA under Section 105 of the NSW Contaminated Land Management Act 1997 (Appendix C).

The investigation was generally conducted in accordance with SEPP (Resilience and Hazards) 2021 and reported in accordance with the NSW EPA (2020) Consultants Reporting on Contaminated Sites Contaminated Land Guidelines. The checklist included in that document has been referred to. The EPA's Checklist for Site Auditors using the EPA Guidelines for the NSW Site Auditor Scheme 2017 (October 2017) has also been referred to.

It is further noted that the NSW EPA Sampling Design Guideline 1995 has been revised and is now the NSW EPA Sampling Design Guidelines (2022). As investigation reporting was underway at the time of revision of this guideline, the reporting has been assessed against NSW EPA (1995). This is not considered to impact upon the outcome of the audit.



## 14.0 Conclusions and Recommendations

Douglas Partner considers that the site is “suitable for the proposed development”. Based on the information presented in Douglas Partners reports and observations made on site, and following the Decision-Making Process for Assessing Urban Redevelopment Sites in NSW EPA (2017) Guidelines for the NSW Site Auditor Scheme, the Auditor concludes that the site is suitable for the purposes of “a railway track, embankments/ noise barriers, a stabling yard and maintenance facility, station and passive open space adjacent to the rail corridor”.



## 15.0 Other Relevant Information

This audit was conducted on the behalf of Sydney Metro for the purpose of assessing whether the land is suitable for the proposed commercial/industrial uses i.e. a “Site Audit” as defined in Section 4 (definition of a ‘site audit’ (b)(iii)). The audit report has been prepared to satisfy a requirement for the redevelopment the site.

This summary report may not be suitable for other uses. Douglas Partners included limitations in their report. The audit must also be subject to those limitations. The auditor has prepared this document in good faith, but is unable to provide certification outside of areas over which the auditor had some control or is reasonably able to check.

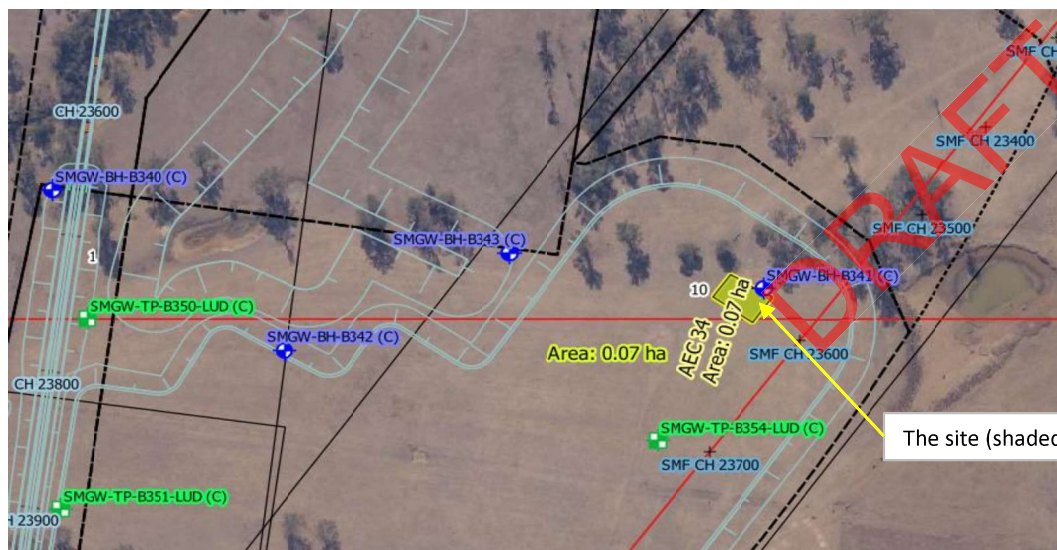
In drawing conclusions, the auditor used reasonable care to avoid reliance upon data and information that may be inaccurate, however a degree of uncertainty is inherent in all subsurface investigations and there remains the possibility that variations may occur between sample locations. The audit and this report are limited by and rely upon the scope of the review, and the information provided by the Client and their consultants and representatives through documents provided to the auditor. The Audit is based on a review of the subsurface condition of the site at the time of assessment, as described in the assessment reports attached to the Audit report and site inspections conducted by the auditor and their representatives. The auditor’s conclusions presented in this report are therefore based on the information made available to them and arising from their own observations conducted during the audit. If the auditor is unable to rely on any of those documents, the conclusions of the audit could change.

It is not possible in a Site Audit Report to present all data which could be of interest to all readers of this report. Readers are referred to the referenced reports for further data. Users of this document should satisfy themselves concerning its application to, and where necessary seek expert advice in respect to, their situation.

In reaching their conclusions about the site, CPBand NSW EPA may use this audit report and site audit statement. The scope of work performed as part of the audit process may not be appropriate to satisfy the needs of any other person. Any other person’s use of, or reliance on, the audit document and report, or the findings, conclusions, recommendations or any other material presented or made available to them, is at that person’s sole risk.

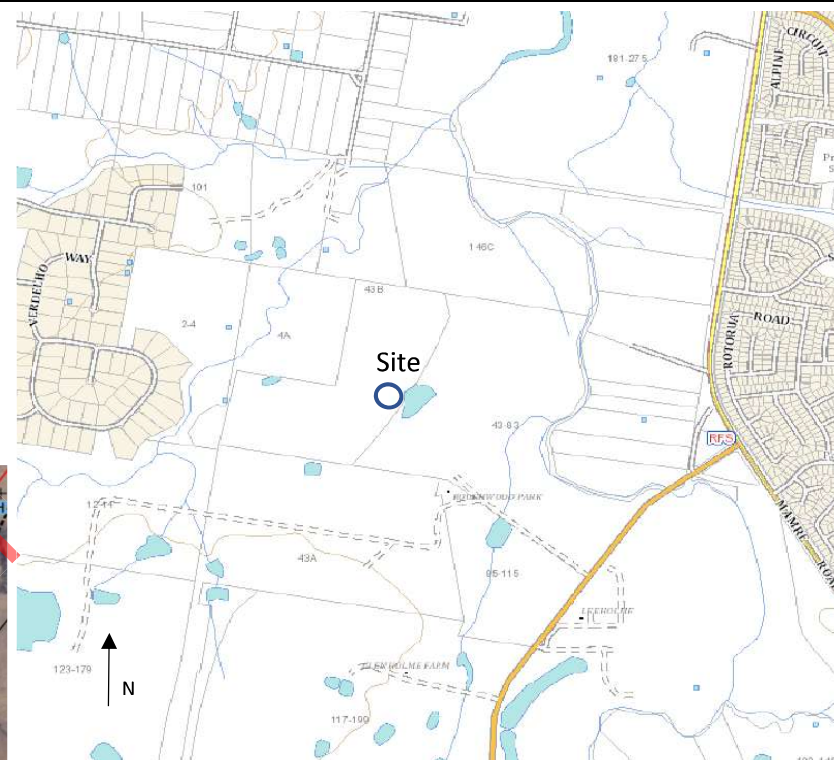
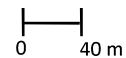


## Appendix A: Attachments



The site (shaded yellow)

Approximate scale



Site Location



CLIENT: CPB Contractors Pty Ltd

OFFICE: Sydney

DATE: 6 May 2022

Site Location

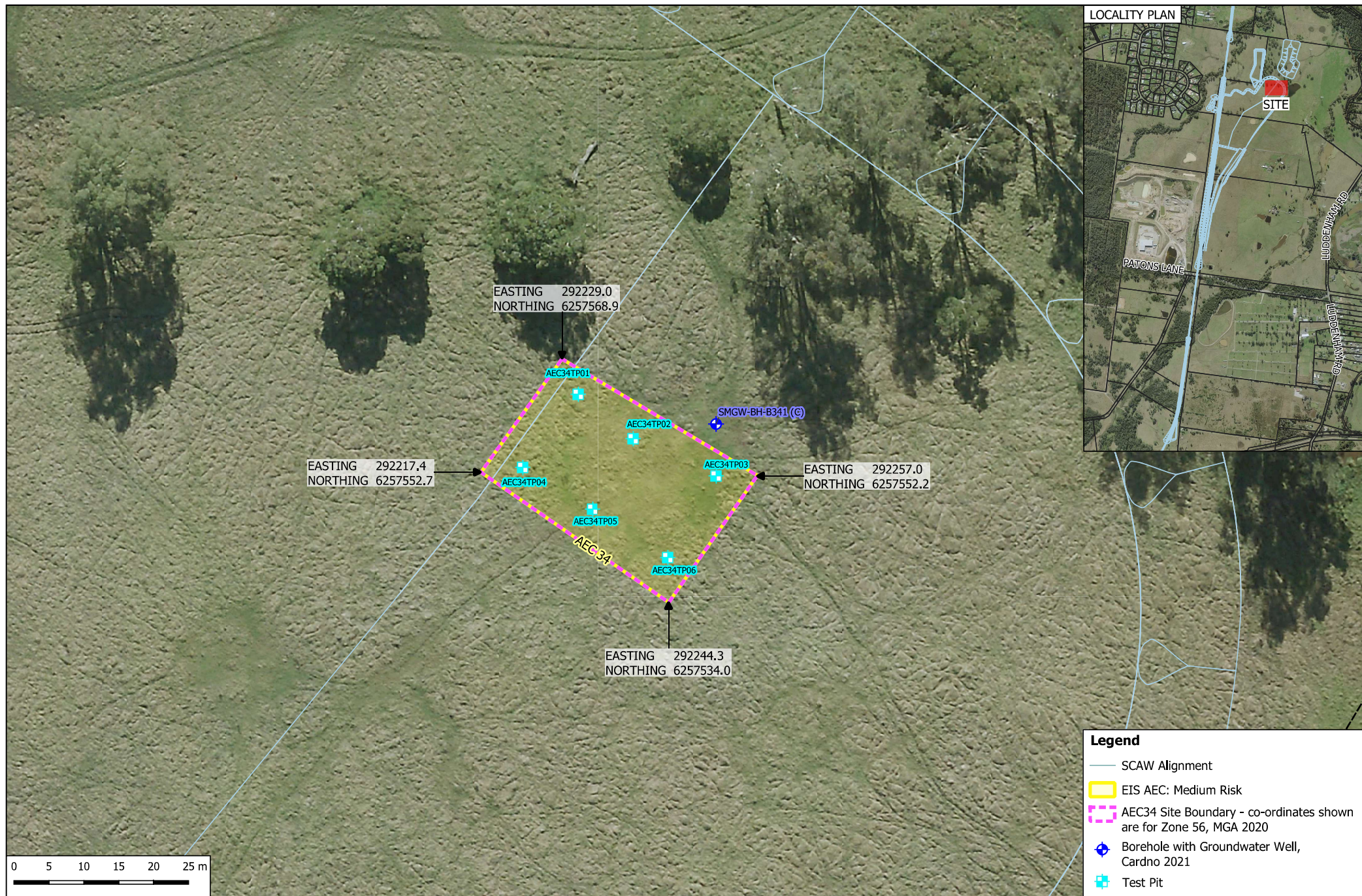
Surface & Civil Alignment Works Package for Sydney  
Metro - Western Sydney Airport  
Area of Environmental Concern (AEC) 34  
43B Luddenham Road, Orchard Hills

PROJECT No: 204814.01

DWG No: 1

REVISION: 0









## Appendix B: EPA Guidelines



## Guidelines made or approved by the EPA under section 105 of the Contaminated Land Management Act 1997

(as of: 12 August 2022)

Section 105 of the Contaminated Land Management Act 1997 (CLM Act) allows the EPA to make or approve guidelines for purposes connected with the objects of the Act. The EPA must consider these guidelines whenever they are relevant. Other people must also consider the guidelines, namely, accredited site auditors when conducting a site audit; contaminated land consultants when investigating, remediating, validating and reporting on contaminated sites; and those responsible for land contamination with a duty to notify the EPA.

A current list of guidelines made or approved by the EPA under the CLM Act appears below.

### Guidelines made by the EPA

- Assessment and management of hazardous ground gases: Contaminated land guidelines (PDF 4MB)
- Guidelines for the vertical mixing of soil on former broad-acre agricultural land (PDF 148KB)
- Contaminated land sampling design guidelines part 1 – application (PDF 3.3MB)
- Contaminated land sampling design guidelines part 2 – interpretation (PDF 1MB)
- Guidelines for assessing banana plantation sites (PDF 586KB)
- Consultants reporting on contaminated land: Contaminated land guidelines (PDF 1MB)
- Guidelines for assessing former orchards and market gardens (PDF 172KB)
- Guidelines for the NSW Site Auditor Scheme, 3rd edition (PDF 999KB)
- Guidelines for the assessment and management of groundwater contamination (PDF 604KB)
- Guidelines on the duty to report contamination under the Contaminated Land Management Act 1997 (PDF 412KB)

### Guidelines that refer to the:

- Australian Water Quality Guidelines for Fresh and Marine Waters (ANZECC, October 2000), are replaced as of 29 August 2018 by the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, August 2018), with the exception of the water quality for primary industries component, which still refer to the ANZECC & ARMCANZ (2000) guidelines
- National Environment Protection (Assessment of Site Contamination) Measure 1999 are replaced as of 16 May 2013 by the National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013).

### Guidelines approved by the EPA

- Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZG (August 2018)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 3, Primary Industries - Rationale and Background Information (ANZECC & ARMCANZ (October 2000)
- Composite sampling, Lock, W. H., National Environmental Health Forum Monographs, Soil Series No.3, 1996, SA Health Commission, Adelaide. Email [enHealth.Secretariat@health.gov.au](mailto:enHealth.Secretariat@health.gov.au) for a copy of this publication.
- Environmental health risk assessment: Guidelines for assessing human health risks from environmental hazards, Department of Health and Ageing and EnHealth Council, Commonwealth of Australia (June 2012)
- National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013)\* (ASC NEPM)
- Guidelines for the Assessment and Clean Up of Cattle Tick Dip Sites for Residential Purposes, NSW Agriculture and CMPS&F Environmental (February 1996)
- Australian Drinking Water Guidelines, NHMRC and Natural Resource Management Ministerial Council of Australia and New Zealand (2011)

\*The ASC NEPM was amended on 16 May 2013..



## Appendix C: Interim Audit Advice

4 August 2022

CPBUI JV  
Level 5, 60 Miller Street  
North Sydney NSW 2060

Dear

## Re: Interim Audit Advice No. 1: AEC34, 43B Luddenham Road, Orchard Hills

### Review of Sampling and Analysis Quality Plan

#### 1. Introduction and Background

the Site Auditor) of Senversa Pty Ltd (Senversa) has been engaged by CPB Contractors Pty Ltd and United Infrastructure Pty Ltd (CPBUI JV) on behalf of Sydney Metro as a NSW Environment Protection Authority (EPA) Accredited Contaminated Sites Auditor for the proposed development of the Sydney Metro to Western Sydney Airport line. The site is part of the proposed Sydney Metro line and is located at 43B Luddenham Road, Orchard Hills (hereafter referred to as 'the site').

The site is currently occupied by rural grazing land. An area of potential fill and hazardous building material use (known as 'AEC34') has been identified at the site and requires investigation. It is understood that development of the site will likely include stripping of topsoil and placement of soil top raise the ground level for a construction stabling yard. Douglas Partners Pty Ltd (Douglas Partners), engaged as the environmental consultant to assess the contamination status of the site, produced the following report, which was forwarded to the Site Auditor for review:

- 'Sampling and Analysis Quality Plan (SAQP), Surface & Civil Alignment Works (SCAW) Package for Sydney Metro – Western Sydney Airport (SMWSA), Area of Environmental Concern (AEC) 34, 43B Luddenham Road, Orchard Hills' dated 2 August 2022 by Douglas Partners.

This interim audit advice details the review of the SAQP for a detailed site investigation in relation to the contamination status of the site.

#### 2. Review Comments

The Site Auditor has undertaken a review of the SAQP against the requirements specified in the *Guidelines for the NSW Site Auditor Scheme (3<sup>rd</sup> edition)* (NSW EPA, 2017) and the *Guidelines for Consultants Reporting on Contaminated Sites* (NSW Office of Environment and Heritage, 2011).



Review comments are detailed herein.

- Section 5. Please summarise the analytical results for SWGW-BH-B341 in Section 5 inclusive of the discussion regarding the elevated metal concentration. Also include the borelog for SMGW-BH-B341 in an appendix.
- Section 6.
  - In the second paragraph AEC 43 is stated, please update to AEC 34 for clarity.
  - Ideally the SAQP would include a table with activities of concern and the corresponding contaminants of concern. This will be required in the investigation report in any case.
- Section 7. Site Assessment Criteria in Appendix B extends over a wide range of analytes, depths and two separate land uses. The actual criteria to be applied at the site should be outlined in Section 7.
- Please apply the most up to date PFAS criteria from NEMP 2.0 for recreational waters.

It is noted that the SAQP states that 'soil to raise ground levels will be sourced from off-site'. The sampling regime to be applied are not specified in the SAQP and cannot be commented upon by the auditor. It is understood that material reuse criteria in the SAQP was derived from the Human Health and Ecological Risk Assessment (HHERA) prepared to facilitate the re-use of spoil along the Sydney Metro alignment. At this stage we cannot comment on the material reuse criteria stated in the SAQP until approval to the HHERA has been received (if required).

### 3. Close

We look forward to receiving a response to the comments above and trust this meets your current requirements. Should you have any queries or require further information, please do not hesitate to contact the undersigned.

Yours sincerely,  
On behalf of **Senversa Pty Ltd**

NSW EPA Accredited Site Auditor (0803)

ES/MP

**Technical Limitations and Uncertainty** – This Interim Advice is not a Site Audit Report or a Site Audit Statement, as defined in the Contaminated Land Management Act 1997, but forms part of the Site Audit process. It is intended that a Site Audit Statement and report will be issued at the completion of the site audit.

Consistent with NSW EPA requirements for staged "sign-off" of sites that are the subject of progressive assessment, remediation and validation, the Auditor is required to advise that:

- This site audit advice does not constitute a site audit report or statement.
- This letter is considered by the Auditor to be consistent with NSW EPA guidelines and policies.
- This letter will be documented in the final Site Audit Statement and associated documentation.
- At the completion of the site audit, a Site Audit Statement will be prepared, for the consent agency to include the Site's property information, held by the local council.

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27 October 2022

CPBUI JV  
Level 5, 60 Miller Street  
North Sydney NSW 2060

Dear

## Re: Interim Audit Advice No. 2: AEC34, 43B Luddenham Road, Orchard Hills

### Review of Detailed Site Investigation

#### 1. Introduction and Background

(the Site Auditor) of Senversa Pty Ltd (Senversa) has been engaged by CPB Contractors Pty Ltd and United Infrastructure Pty Ltd (CPBUI JV) on behalf of Sydney Metro as a NSW Environment Protection Authority (EPA) Accredited Contaminated Sites Auditor for the proposed development of the Sydney Metro to Western Sydney Airport line. The site is part of the proposed Sydney Metro line and is located at 43B Luddenham Road, Orchard Hills (hereafter referred to as 'the site').

The site is currently occupied by rural grazing land. An area of potential fill and hazardous building material use (known as 'AEC34') has been identified at the site and requires investigation. It is understood that development of the site will likely include stripping of topsoil and placement of soil to raise the ground level for a construction stabling yard. Douglas Partners Pty Ltd (Douglas Partners), engaged as the environmental consultant to assess the contamination status of the site, produced the following reports, which were forwarded to the Site Auditor for review:

- 'Sampling and Analysis Quality Plan (SAQP), Surface & Civil Alignment Works (SCAW) Package for Sydney Metro – Western Sydney Airport (SMWSA), Area of Environmental Concern (AEC) 34, 43B Luddenham Road, Orchard Hills' dated 2 August 2022 by Douglas Partners.
- Report on Detailed Site Investigation (Contamination), Surface & Civil Alignment Works (SCAW) Package for Sydney Metro – Western Sydney Airport (SMWSA), Area of Environmental Concern (AEC) 34, 43B Luddenham Road, Orchard Hills' dated 7 October 2022 by Douglas Partners.

The SAQP was previously reviewed and comments provided by the auditor in interim audit advice (IAA) No.1 dated 4 August 2022.

This interim audit advice details the review of the detailed site investigation in relation to the contamination status of the site.

#### 2. Review Comments

The auditor has undertaken a review of the DSI against the requirements specified in the *Guidelines for the NSW Site Auditor Scheme (3<sup>rd</sup> edition)* (NSW EPA, 2017) and the *Guidelines for Consultants Reporting on Contaminated Sites* (NSW Office of Environment and Heritage, 2020).



Review comments are detailed herein.

- Section 4. Please note where surface water is likely to flow.
- Section 6. Separate out fill and hazardous building material in Table 4.
- Section 7. Site Assessment Criteria in Appendix F extends over a wide range of analytes, depths and two separate land uses. The actual criteria to be applied at the site should be outlined in Section 7 or updated in Appendix F. Please provide additional construction details for the well i.e. bentonite seal, sand around slotted screen etc.
- Discuss DSI compliance with the SAQP.
- Section 11.2 and Appendix I. Please compare groundwater analytical results against relevant groundwater criteria given standing water level is less than 2 m bgl.
- Section 11.3. Confirm if TCLP analysis of PFAS will be required for waste classification.
- Drawing. Please show location of 'bare earth' on the drawing.
- Please provide a survey plan of the site boundary, i.e. eastings and northing.

It is noted that the SAQP and DSI state that 'soil to raise ground levels will be sourced from off-site'. The sampling regime to be applied are not specified in the SAQP and cannot be commented upon by the auditor. It is understood that material reuse criteria in the SAQP was derived from the Human Health and Ecological Risk Assessment (HHERA) prepared to facilitate the re-use of spoil along the Sydney Metro alignment. At this stage we cannot comment on the material reuse criteria stated in the SAQP until approval to the HHERA has been received (if required).

### 3. Close

We look forward to receiving a response to the comments above and trust this meets your current requirements. Should you have any queries or require further information, please do not hesitate to contact the undersigned.

Yours sincerely,

On behalf of **Senversa Pty Ltd**

NSW EPA Accredited Site Auditor (0803)

ES/MP

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Consistent with NSW EPA requirements for staged "sign-off" of sites that are the subject of progressive assessment, remediation and validation, the Auditor is required to advise that:

- This site audit advice does not constitute a site audit report or statement.
- This letter is considered by the Auditor to be consistent with NSW EPA guidelines and policies.
- This letter will be documented in the final Site Audit Statement and associated documentation.
- At the completion of the site audit, a Site Audit Statement will be prepared, for the consent agency to include the Site's property information, held by the local council.

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17 November 2022

CPBUI JV  
Level 5, 60 Miller Street  
North Sydney NSW 2060

Dear

## Re: Interim Audit Advice No. 3: AEC34, 43B Luddenham Road, Orchard Hills

### Review of updated Detailed Site Investigation

#### 1. Introduction and Background

(the Site Auditor) of Senversa Pty Ltd (Senversa) has been engaged by CPB Contractors Pty Ltd and United Infrastructure Pty Ltd (CPBUI JV) on behalf of Sydney Metro as a NSW Environment Protection Authority (EPA) Accredited Contaminated Sites Auditor for the proposed development of the Sydney Metro to Western Sydney Airport line. The site is part of the proposed Sydney Metro line and is located at 43B Luddenham Road, Orchard Hills (hereafter referred to as 'the site').

The site is currently occupied by rural grazing land. An area of potential fill and hazardous building material use (known as 'AEC34') has been identified at the site and requires investigation. It is understood that development of the site will likely include stripping of topsoil and placement of soil to raise the ground level for a construction stabling yard. Douglas Partners Pty Ltd (Douglas Partners), engaged as the environmental consultant to assess the contamination status of the site, produced the following reports, which were forwarded to the Site Auditor for review:

- 'Sampling and Analysis Quality Plan (SAQP), Surface & Civil Alignment Works (SCAW) Package for Sydney Metro – Western Sydney Airport (SMWSA), Area of Environmental Concern (AEC) 34, 43B Luddenham Road, Orchard Hills' dated 2 August 2022 by Douglas Partners.
- Report on Detailed Site Investigation (Contamination), Surface & Civil Alignment Works (SCAW) Package for Sydney Metro – Western Sydney Airport (SMWSA), Area of Environmental Concern (AEC) 34, 43B Luddenham Road, Orchard Hills' dated 1 November 2022 by Douglas Partners.

The SAQP was previously reviewed and comments provided by the auditor in interim audit advice (IAA) No.1 dated 4 August 2022. A previous version of the DSI was also reviewed and comments provided by the auditor in IAA No. 2 dated 27 October 2022.

This interim audit advice details the review of the updated detailed site investigation in relation to the contamination status of the site.





## 2. Review Comments

The auditor has undertaken a review of the DSI against the requirements specified in the *Guidelines for the NSW Site Auditor Scheme (3<sup>rd</sup> edition)* (NSW EPA, 2017) and the *Guidelines for Consultants Reporting on Contaminated Sites* (NSW Office of Environment and Heritage, 2020).

The auditor considers that the DSI addresses the comments provided in IAA No.2 and the DSI can be finalised.

## 3. Close

We look forward to receiving a response to the comments above and trust this meets your current requirements. Should you have any queries or require further information, please do not hesitate to contact the undersigned.

Yours sincerely,  
On behalf of **Senversa Pty Ltd**

NSW EPA Accredited Site Auditor (0803)

ES/MP

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- This letter is considered by the Auditor to be consistent with NSW EPA guidelines and policies.
- This letter will be documented in the final Site Audit Statement and associated documentation.
- At the completion of the site audit, a Site Audit Statement will be prepared, for the consent agency to include the Site's property information, held by the local council.

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# Senversa Pty Ltd

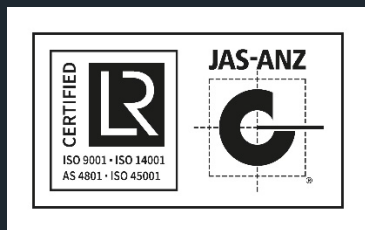
ABN 89 132 231 380

[www.senversa.com.au](http://www.senversa.com.au)

[enquiries@senversa.com.au](mailto:enquiries@senversa.com.au)

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