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. 1508-1904

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: [redacted]

Company: Cavvanba Consulting

Address: Unit 1, 66 Centennial Circuit, Byron Bay NSW

Postcode: 2483

Phone: (02) 6685 7811

Email: [redacted]

Site details

Address: Lot 99 DP 1076242; Lot 118 and Lot 119 DP 1223046, Part of Lot 61 DP 1041353

Lot 63 DP 1041353; and Part of Lot 3 DP 881749.

Princes Highway, Yallah, NSW

Postcode: 2530

Property description

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

Lot 99 DP 1076242; Lot 118 and Lot 119 DP 1223046, Part of Lot 61 DP 1041353

Lot 63 DP 1041353; and Part of Lot 3 DP 881749.

Refer to Figure 1 (attached) for the site. The site location is shown as the bold black line, and consists of the following subsections:

- investigation area (including two subsections); and
- encapsulation area.

Local government area: Wollongong City Council

Area of site: (include units, e.g. hectares): 3.54 hectares

Current zoning: SP2 Infrastructure

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.
- ❑ 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: [redacted]

Company: Fulton Hogan Construction

Address: PO Box 6099 Alexandria, NSW 2015

Site Office: PO Box 1014, Albion Park NSW Postcode: 2527

Phone: [redacted]

Email: [redacted]

Contact details for contact person (if different from above)

Name

Phone

Email

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)

Part of the NSW RMS State Significant Infrastructure project (SSI 6678) Albion Park Rail bypass, approval under Section 115ZB. Condition E58. Approval Authority: Minister of Planning

❑ 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:

Commercial/industrial: Road corridor

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:

Information sources for site audit

Consultancies which conducted the site investigations and/or remediation:

Hyder Cardno Joint Venture (HCJV), Environment & Natural Resource Solutions, Cardno

Titles of reports reviewed:

- Hyder Cardno Joint Venture (HCJV, 2014) Phase 1 – *Preliminary Site Investigation Report, Albion Park Rail Bypass*.
- Hyder Cardno Joint Venture (HCJV, 2017) *Environmental site assessment – PAEC02: Industrial Estate, Albion Park Rail Bypass* (Ref. FK0004-APRB-R-02).

- Environment & Natural Resource Solutions (ENRS) (2019a) *Sampling, Analysis & Quality Control Plan (SAQP), Asbestos in Soil (ASBINS), Albion Park Bypass Project* (Ref. ENRS1153R1E1, April 2019).
- ENRS (2019b) Stage 2 – Detailed Site Investigation (DSI), Asbestos in Soil (ASBINS RAP), Albion Park Bypass Project (Ref. ENRS1153_APRB_PAEC02 Cut#1_DSI, June 2019).
- ENRS (2019c) *Remediation Action Plan, Asbestos in Soil (ASBINS RAP), Albion Park Bypass Project* (Ref. ENRS1153, June 2019).
- ENRS (2020a) *Stage 4 – Site Validation Report, PAEC02 – Cut No. 1, Albion Park Rail Bypass* (APRB) (Ref. ENRS1153).
- Cardno (2021) *Environmental Management Plan – Asbestos in Soils Encapsulation Cell – M1 Princes Motorway Chainages 18250 to 18490, Albion Park Rail Bypass* (Ref. 8201904701).
- ENRS (2019d) *Stage 2 – Detailed Site Investigation (DSI) The Island Fill No. 1, Albion Park Bypass (APRB) Project* (Ref. ENRS1153).

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

Site audit report details

Title: Site Audit Report for SAS 1508-1904

Report no. 19040 1508-1904 Date: 25/02/2021

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[1], 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 plan[2] (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: Environmental Management Plan – Asbestos in Soils Encapsulation Cell – M1 Princes Motorway Chainages 18250 to 18490

Author: Cardno

Date: 17 February 2021 No. of pages: 43

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~~[3]

☑ requires maintenance of **passive** control systems only[3].

[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:

To provide guidance on the ongoing and passive future management of the encapsulated material and assist any future site workers in developing project specific environmental controls.

Description of the nature of the residual contamination:

Approximately 8,725 m^3 of asbestos impacted soil, and 7 m^3 of lead impacted soil has been encapsulated. A geofabric encapsulation is present beneath the road corridor in a portion of the new M1 Princes Motorway as part of the Albion Park Rail Bypass.

Summary of the actions required by the EMP:

Maintenance, inspections and repair of the encapsulation cell which will naturally occur with maintenance of the road.

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

The Site Audit and EMP is a requirement of compliance with conditions of approval E57 to E58 of NSW Infrastructure Approval SSI 6878 for the ARPb project. It can therefore be considered to be Legally enforceable.

How there will be appropriate public notification:

As the containment cell is located wholly within the kerb to kerb road alignment of a major arterial roadway, the likelihood of future purchasers or interested parties being associated with the site is considered to be negligible. Public notification of the EMP to any authorities or interested parties should be made aware of the managed residual contamination. Public notification of the EMP to any authorities or interested public member would be made through appropriate notifications on the land title and to be issued under Section 10.7 (2) & (5) of the EP&A Act 1979.

Overall comments:

Section B

Purpose of the plan[4] which is the subject of this audit:

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

[4] 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

Plan author

Plan date No. of pages

SUBJECT to compliance with the following condition(s):

Overall comments:

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. 1508

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: 25/02/2021

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.

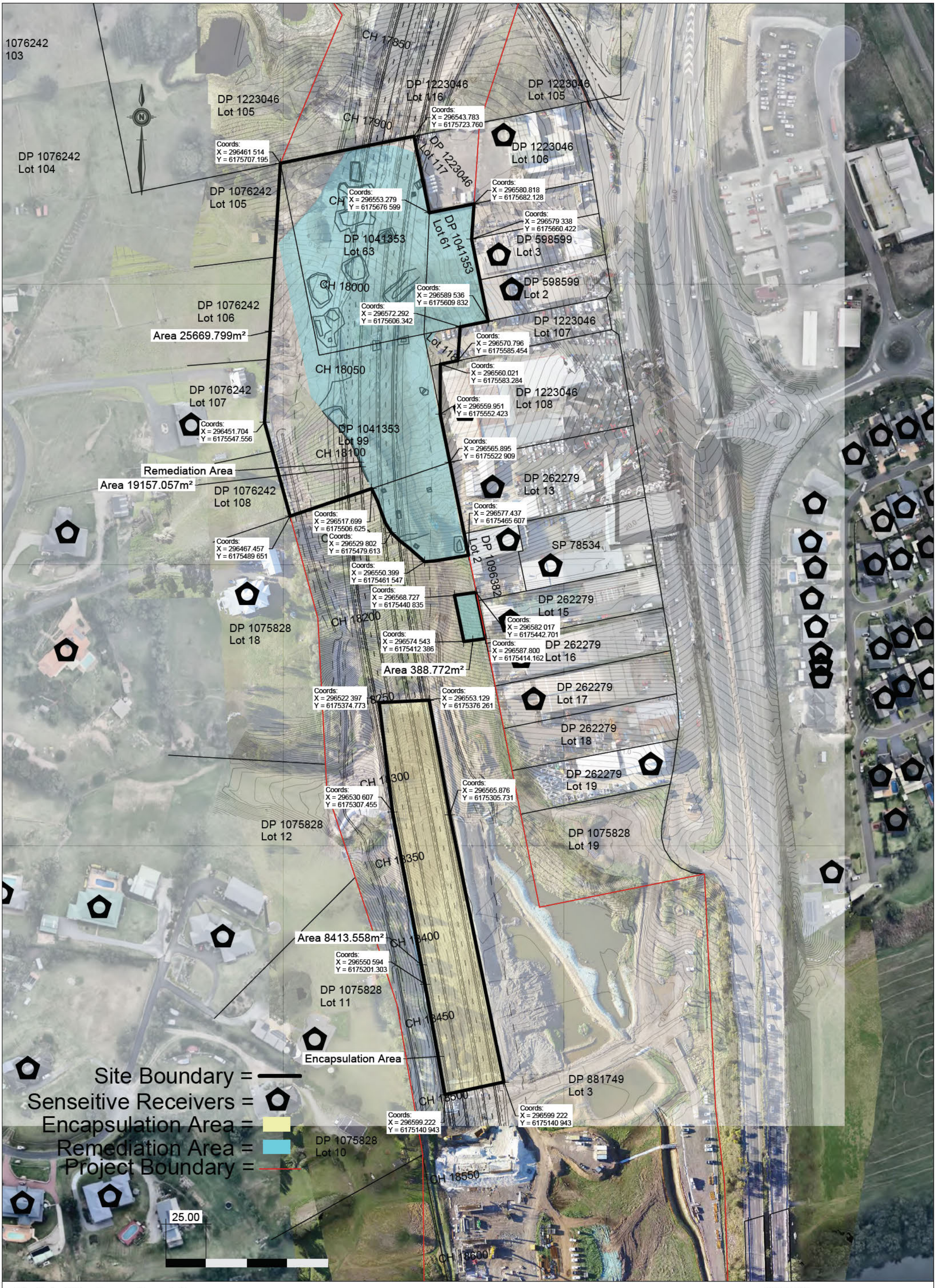
Where to send completed forms

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.



Cut 1 Site Location Plan

12d Model
Scale 1:2000
Fri Dec 18 10:27:43 2020

Environmental Management Plan – Asbestos in Soils Encapsulation Cell – M1 Princes Motorway Chainages 18250 to 18490

Albion Park Rail bypass

Prepared for
Transport for NSW

17 February 2021

Cardno

Contact Information

Cardno (NSW/ACT) Pty Ltd
ABN 95 001 145 035

16 Burelli Street
Wollongong NSW 2500
Australia

Phone +612 4228 4133
Fax +612 4228 6811

Document Information

Prepared for	Transport for NSW
Project Name	Albion Park Rail bypass
File Reference	8201904701-R017-EMP_Asbestos_Encapsulation_Cell_Rev5.docx
Job Reference	8201904701
Date	17 February 2021
Version Number	5
Effective Date	17/02/2021
Date Approved	17/02/2021

[redacted] - CEnvP
Senior Environmental Scientist

[redacted]
Principal Environmental Scientist

Document History

Version	Effective Date	Description of Revision	Prepared by	Reviewed by
A	15/09/20	Internal Review	CC	BC
1	21/09/20	Draft for external review	CC	BC
2	10/12/20	2nd Draft for external review	CC/CL	PC (TfNSW)
3	14/01/21	Final	CC	RL (TfNSW), SL
4	11/02/21	Final – Updated	CC	BW (Site Auditor), SL
5	17/02/21	Final – Updated	MB	BW (Site Auditor), SL

© Cardno. Copyright in the whole and every part of this document belongs to Cardno and may not be used, sold, transferred, copied or reproduced in whole or in part in any manner or form or in or on any media to any person other than by agreement with Cardno.

This document is produced by Cardno solely for the benefit and use by the client in accordance with the terms of the engagement. Cardno does not and shall not assume any responsibility or liability whatsoever to any third party arising out of any use or reliance by any third party on the content of this document.

Our report is based on information made available by the client. The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the informa ion provided to Cardno is both complete and accurate. Whilst, to the best of our knowledge, the information contained in this report is accurate at the date of issue, changes may occur to the site conditions, the site context or the applicable planning framework. This report should not be used after any such changes without consulting the provider of the report or a suitably qualified person.

Table of Contents

1	Introduction		1
	1.1	Purpose and objectives	1
	1.2	Relevant criteria	1
2	Site information		2
	2.1	Site details	2
	2.2	Environmental information	2
	2.3	Neighbouring land use	3
3	Site history		4
	3.1	ENRS (2019) Remediation Action Plan	4
	3.2	ENRS (2020) Stage 4 – Site Validation Report	4
4	Encapsulation details		6
5	Management and application		7
	5.1	Responsible parties	7
	5.2	EMP review and revision	8
	5.3	EMP enforcement	8
	5.4	Public notification and restrictions	8
	5.5	Communications	9
	5.6	Primary stakeholders	9
	5.7	Offsite migration	9
6	Ongoing management, maintenance and monitoring		10
	6.1	Unplanned breach of encapsulation	10
7	Site controls during ground disturbance		12
	7.1	Monitoring and compliance	14
8	References		15
9	Limitations		16

Appendices

Appendix A Figures

Appendix B Encapsulation Survey

Appendix C ENRS Figure Extracts

Appendix D UFP

Appendix E Inspection Checklist

Tables

Table 2-1	Site Information	2
Table 2-3	Surrounding land use	3

Table 4-1 Nature of contamination and details of encapsulation 6
Table 5-1 Summary of responsibilities 7
Table 5-2 Stakeholder summary 9
Table 6-1 Ongoing encapsulation management 10
Table 7-1 General controls during ground disturbance 12
Table 7-2 Sediment control requirements 12
Table 7-3 Dust control requirements 13
Table 7-4 Waste disposal requirements 13
Table 7-5 Fill importation requirements 14

1 Introduction

Transport for NSW (TfNSW) is undertaking the construction of the Albion Park Rail bypass (APRb) during which asbestos impacted soils were identified and were subsequently emplaced in an encapsulation cell. Cardno (NSW/ACT) Pty Ltd (Cardno) has been engaged by TfNSW to prepare the following Environmental Management Plan (EMP) to provide guidance on the ongoing future management of the encapsulation cell.

The encapsulation cell has been constructed and is located adjacent north of the Macquarie Rivulet at the northern end of the APRb alignment between Chainages 18250 and 18490 which will become part of the M1 Princes Motorway following completion of construction. The site location and surrounding features are shown in **Figures 1** and **2, Appendix A**.

1.1 Purpose and objectives

The purpose of this EMP is to provide guidance on the ongoing and passive future management of the encapsulated material and assist any future site workers in developing project specific environmental controls.

The objectives of this EMP are to:

- Identify the nature and location of contaminated material within the site; and
- Provide a passive methodology to manage ongoing risks, during and post road construction, associated with this contaminated material for current and future site users.

1.2 Relevant criteria

This document has been prepared with reference to the following guidelines and regulations.

- NEPC (1999) National Environment Protection (Assessment of Site Contamination) Measure 1999. National Environmental Protection Council.
- NSW EPA (2020) *Consultants reporting on contaminated land, Contaminated land guidelines*
- NSW EPA (2017) *Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme (3rd Edition)*, NSW Environment Protection Authority, October 2017
- NSW Department of Urban Affairs and Planning (1998) *Managing Land Contamination: Planning Guidelines: SEPP 55 Remediation of Land*, 1998;
- SafeWork (2019) *Code of Practice: How to manage and control asbestos in the workplace*;
- SafeWork (2014) *Managing asbestos in or on soil*; and
- WA DOH, 2009. *Guidelines for Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia,* Western Australia Department of Health (WA DOH).
- Fowler, IR & Cole, D 2010, Safe on-site retention of contaminants. Part 1: Regulatory approaches and issues- a legal perspective, Technical Report no. 16, CRC for Contamination Assessment and Remediation of the Environment Pty Ltd, Adelaide, Australia.
- ANZECC (1999) Guidelines for The Assessment of On-Site Containment of Contaminated Soil Australian And New Zealand Environment and Conservation Council (ANZECC) September 1999
- CRC (2018a) CRC for Contamination Assessment and Remediation of The Environment National Remediation Framework: Guideline on Implementing Institutional Controls, Version 0.1: November 2018
- CRC (2018b) CRC for Contamination Assessment and Remediation of the Environment National Remediation Framework Technology guide: Containment, Version 0.1: August 2018

2 Site information

2.1 Site details

Details related to the Site are included in **Table 2-1**, below whilst **Figure 1 and 2, Appendix A** shows the site locality in the context of the local area.

Table 2-1 Site Information

Details	Comments		
Site address	M1 Princes Motorway, Yallah NSW		
Project identifications	Chainages 18250 and 18490 Fill No. 4 50-100 m north of Macquarie Rivulet under both carriageways		
Lot and Deposited Plan	Part Lot 3 DP 881749		
Current Land use	Motorway construction site		
Proposed Land use	Multilane dual carriageway motorway		
Local Government Authority (LGA)	Wollongong City Council		
Current Zoning - Wollongong Local Environment Plan (2009)	SP2 – Infrastructure		
Site Area	Approximately 6,900 m^2 encapsulation cell footprint		
Site Coordinates (GDA2020 MGA 56)	**Vertex**	**X – Coordinate**	**Y – Coordinate**
	North-east	296550.128	6175369.841
	South-east	296858.352	6175149.525
	South-west	296562.390	6175141.614
	North-west 1	296527.899	6175335.928
	North-west 2	296527.648	6175370.401
Current Site Owner	Transport for NSW		

2.2 Environmental information

Site information available from public datasets is summarised in **Table 2-2**.

Table 2-2 Site description

Item	Information
Site slope and drainage features	The Site slopes towards the south and east with Macquarie Rivulet as the proximal receiving body. Road construction makes understanding underlying slope difficult though based on survey data provided for this report and included in **Appendix B** the site falls from approximately 12 to 13 m Australian Height Datum (AHD) in the north to between 8 and 9 mAHD in the south. A dam was historically located on the site and was partially infilled as part of the road construction with portions remaining as sediment and treatment pods visible in June 2020 aerial imagery (Nearmap, 2020). Surface run-off from the site passes through these ponds before eventually draining into Macquarie Rivulet. During construction material overlying the encapsulation cell is unsealed with surface water and precipitation able to penetrate this material at a rate reflective of the material permeability. As road surface is placed this avenue for water infiltration will be removed with precipitation directed to surface drainage features.
Nearby water bodies (NSW DFSI, Spatial Services)	The Site is approximately 170 m from Macquarie Rivulet to the south.

Item	Information
Groundwater	Based on the supplied survey and cross-section (**Appendix B**) groundwater has been modelled for the site at a level of 1.9 m AHD
Soil landscapes (NSW OEH, 2013)	Based on a review of soil landscape mapping for the site indicates that northern areas of the site are underlain by the Albion Park landscape while southern areas within the floodplain are underlain by the Fairy Meadow landscape. The landscapes have the following descriptions: **Albion Park –** Characterized by short steep upper slopes with long gentle footslopes on the Berry Formation. Relief is generally between 60 and 100 m with footslope gradients of 5 to 15% and upper slopes gradients of 15 to 50%. Vegetation is mostly cleared with stands of tall open-forest. Soils are moderately deep (50–100 cm) Brown Podzolic Soils occur on crests, Yellow Podzolic Soils on midslopes and Soloths on footslopes and drainage lines. Soil limitations within the landscape include waterlogging, seasonally high watertable, shrink-swell, hardsetting (topsoil), sodicity, low wet bearing strength (subsoil), high available water-holding and capacity (topsoil and subsoil). **Fairy Meadow –** Characterized by alluvial plains, floodplains, valley flats and terraces below the Illawarra Escarpment. Relief is generally <10 m with slopes <5% gradient. Vegetation is almost completely cleared low open-forest and woodland. Soils are moderately deep (50–100 cm) Alluvial Loams and Siliceous Sands on terraces with Prairie Soils and Yellow Podzolic Soils occurring on the drainage plains. Soil limitations within the landscape include flood hazard, low wet bearing strength, highly permeable topsoils and high watertables.

2.3 Neighbouring land use

Surrounding land uses are summarised in **Table 2-3** below.

Table 2-3 Surrounding land use

Direction	Land use or activity
North	APRb construction and future road corridor
West	Rural residential land use
East	Light industrial and road construction land use
South	Macquarie Rivulet bridge and floodplain

3 Site history

Cardno has been supplied with the following documents with relation to the site contamination issues:

- ENRS (2019) *Remediation Action Plan – Asbestos in Soil, Albion Park Bypass Project*
- ENRS (2020) *Stage 4 – Site Validation Report, PAEC 02 – Cut No.1, Albion Park Rail Bypass Project*

These reports are summarised in **Section 3.1** and **3.2** below.

3.1 ENRS (2019) Remediation Action Plan

This report was written for the stated purpose of documenting the preferred remediation methodologies and protocols for managing asbestos in soil to facilitate construction of the bypass project. Two areas of asbestos impacted soils (shown in **Figure 3, Appendix A** and figure extracts in **Appendix C**) are identified by the Remediation Action Plan (RAP):

- **Cut 1** – detailed in **Section 3.2** below; and
- **Fill 1 – The Island** – a portion of road reserve containing bonded asbestos impacted soils located at the northern end of the APRb project

The identified preferred methodology was onsite encapsulation with the following information extracted from the RAP with regards to the encapsulation cell location and construction:

The level of the existing ground in the Fill No.4 area proposed for the encapsulation is predominantly at a level in excess of 2.0 m above the groundwater table. In areas where this is not the case Fulton Hogan will place and compact general fill materials to provide a level surface greater than 2.0 m above the groundwater level which the ACM encapsulation cell will then be constructed upon. This level will be verified by survey prior to commencement of any ACM encapsulation works.

The containment cell will be protected by rapping (sic) in geo-fabric so that all material is enclosed with the cell. High visibility webbing will also be placed as a warning layer outside the cell to highlight for any works in the future that the containment cell exists. In addition to the geo-fabric the cell will be protected from flood waters by the placement and compaction of general fill materials a minimum of 3.0 m from the edge of the embankment. This material will be good quality general fill compacted to 98 % compaction and will be competent to resist infiltration of any flood waters and stable so as not to be susceptible to any form of erosion. In addition to this, the batter will be topsoiled with a minimum of 150 mm of topsoil and planted out with red gum forest to ensure that this material cannot be eroded to leave any risk of exposure of the containment cell in the future.

Remaining items within the RAP pertain to remedial methodologies and do not relate to the construction or contents of the encapsulation cell. It is noted that the red gum forest seed mix that will be applied via hydromulching, rather than planting of seedlings, over the batters surrounding the encapsulation cell does not contain of any deep-rooted plants. This seed mix consists of a cover crop, native grass seed mix and native shrub mix only.

3.2 ENRS (2020) Stage 4 – Site Validation Report

This report was written to outline the validation of Cut 1, located adjacent north of the Site, following removal of asbestos impacted soil from this location for emplacement within the encapsulation cell. The following key pieces of information are noted from the report:

- Material from within Cut 1 was assessed by ENRS as part of a *Detailed Site Investigation* (DSI) prepared by ENRS in 2019 to inform management options for the material and inform preparation of a Remedial Action Plan (RAP). The DSI included a review of previous investigations for the area and a test pitting and sampling program of 48 test pits which identified:
  - With the exception of asbestos, no contaminants of potential concern were identified above the adopted commercial / industrial health screening levels (HIL D) from the ASC NEPM (NEPC, 1999);
  - Asbestos containing materials was identified in fill materials down to maximum depth of 0.85 m. Two samples were analysed and confirmed for asbestos presence by a NATA-accredited laboratory while remaining samples were visually assessed onsite. Observed fragments were all greater than 7 mm in size and did not crumble under hand pressure. Based on this asbestos impact was considered non-friable.

- Elevated lead in soil concentrations were identified in an area identified as a former car lot and wrecking yard. The results were below the adopted HIL D screening criteria with a maximum result of 633 mg/kg. Use of the toxicity characteristic leaching procedure (TCLP), as required in the NSW EPA (2014) Waste Classification Guidelines, to determine lead leachability and mobility identified results below the TCLP1 criteria (5mg/L). Based on these results it was determined that this material was suitable for encapsulation onsite.
- The following recommendations have been extracted from the DSI:
  - *Remove and dispose of Stockpile No.3 as Demolition Waste containing Asbestos, to a suitably licenced waste facility. Remove and dispose of all other non-soil stockpiles (such as car tyres) to a suitably licensed facility supported by visual clearance certificates to ensure no asbestos containing materials are present prior to disposal; and*
  - *Excavate all other areas of Fill and asbestos in soil and re-instate on site within a designated asbestos containment cell. Encapsulation should be conducted in general accordance with RMS (2018) Asbestos Management Procedure; Section 4.2. The base of the Cell is required to be above the groundwater table and suitably engineered to provide a stable structure with a cover of non-contaminated materials greater than 1 m in thickness.*

> The following is extracted from Section 10 of the ENRS *Site Validation Report* and summarises the construction and encapsulation of the asbestos impacted soil (ASBINS), this is consistent with the requirements noted in the RAP quoted above.

The ASBINS material from the Site was excavated and re-instated in an engineered capping cell in accordance with the RAP (ENRS;2019). The ASBINS containment cell was constructed within the Fill 4 road embankment, extending from Chainage 18250 to the SB06 Bridge Treatment at Chainage 18500. Initial cell construction provided an area of approximately 10,000 m_2, with ASBINS estimated to be placed to a final thickness of 1m. The cell was constructed at an elevation greater than 2.0 m above the groundwater table and further protected by wrapping all re-instated ASBINS in geo-fabric, thus enclosing all materials within the cell. The cell was protected from flood waters by the placement and compaction of a capping layer comprising general fill materials to a minimum of 3.0 m from the edge of the embankment. ENRS understand the capping material was characterised as 'good quality' general fill compacted to 98 % compaction and was competent to resist infiltration of any flood waters and stable so as not to be susceptible to any form of erosion. Further details on cell design and construction can be found in the project RAP (ENRS, 2019). ENRS understand that all suitable material excavated from the Site was placed into the cell as outlined in the RAP (ENRS; 2019). The ASBINS encapsulation cell was surveyed by Fulton Hogan to establish final quantities.

> The report conclusions stated the following with regards to the encapsulation cell:

It is recommended the ASBINS containment Cell be appended to the RMS asbestos register and managed in accordance with RMS requirements, including regular inspections for cell integrity, a no dig policy without asbestos controls, and the area should remain void of any deep-rooted plants which may penetrate the capping layer. Where necessary an Environmental Management Plan (EMP) may be issued for the Site to document the protocols for ongoing site management.

4 Encapsulation details

The nature of contamination and details of the encapsulation are summarised in **Table 4-1**.

Table 4-1 Nature of contamination and details of encapsulation

Nature of contamination	Approximately 8,725 m^3 of asbestos impacted soil sourced from Cut 1 and Fill 1 located north of the encapsulation area (see **Figure 3, Appendix A**). In addition to the asbestos impacted soil, approximately 7m^3 of lead impacted soil sourced from SP02 within Cut 1 is shown on **Figure 3** of **Appendix C.** There was no information identified during site investigations to suggest that other significant contaminants of concern are present on Site.		
Overview of contamination management	Asbestos impacted soils have been placed within a geofabric encapsulation beneath the road corridor between Chainages 18250 and 18500 of the new M1 Princes Motorway as part of the APRb. The encapsulation is bound by the coordinates listed below in lateral and vertical extent section.		
Landscaping	The encapsulation cell is located beneath a dual carriageway motorway.		
Capping material	The encapsulation is overlain by between approximately 2.1 m and 6.25 m of geotechnical suitable un-impacted, road construction material followed by the road pavement materials and asphaltic concrete wearing surface. Cap thickness at various chainages is indicated on the as-built cross-sections in **Appendix B.**		
Marker layer	High visibility webbing was placed as a marker layer above the geofabric encapsulated asbestos impacted material.		
Lateral and vertical extent	The lateral and vertical extent of the encapsulation area (including depth of encapsulation and location coordinates) is shown in the as-built survey drawings in **Appendix B** with the vertex coordinates listed below.		
	Vertex	**X – Coordinate**	**Y – Coordinate**
	North-east	296550.128	6175369.841
	South-east	296858.352	6175149.525
	South-west	296562.390	6175141.614
	North-west 1	296527.899	6175335.928
	North-west 2	296527.648	6175370.401
Built infrastructure	APRb as well as related stormwater infrastructure will be emplaced over the encapsulation cell, including within the overlying road construction material. Larger diameter stormwater infrastructure is also present under the northern end of the encapsulation cell. Infrastructure is noted in as-built surveys in **Appendix B.**		

5 Management and application

This EMP has been prepared to provide guidance on a passive methodology for the management of the identified encapsulation. Despite being passive the following items must be undertaken to ensure this EMP remains relevant and effective in the management of contamination issues associated with the site encapsulation cell:

- This EMP will remain relevant as long as encapsulation conditions do not change, the plan should be reviewed or updated based on changes to site conditions or relevant legislative requirements.
- While the EMP is active it must be referred to for any proposed construction or maintenance activities to take place on the Site.
- As this is an EMP for ongoing management of the encapsulation cell it should be stored in such a way as to be readily identifiable and accessible for current and future site users. This may include storage in TfNSW contaminated land management data bases or their property information systems as well as notification with the relevant regulatory bodies.

5.1 Responsible parties

Whilst the encapsulation cell remains onsite, this EMP applies to all construction and maintenance activities throughout the operational life of the APRb as well as any future land uses.

Table 5-1 Summary of responsibilities

Role	Entity	Responsibilities
Site owner	TfNSW	▪ Ensuring this EMP is included in the TfNSW contaminated land management database and/or the property information management system (PIMS). ▪ Notification of relevant public authorities including Wollongong City Council. ▪ The assignment of individual responsibilities for implementing, maintaining, monitoring, and reporting each environmental requirement as discussed in this EMP. ▪ Ensuring that all works are conducted in compliance with the EMP and regulatory requirements. ▪ Ensuring appropriate monitoring, corrective actions and reporting of the environmental requirements. ▪ Ensuring that all maintenance workers, contractors, subcontractors, employees and visitors conduct their work in accordance with the requirements of the EMP and the relevant Work Health and Safety (WH&S) requirements. ▪ Ensuring provision of updated information to the Environment Protection Authority (EPA), when significant changes to the contamination status of the site are detected. Information requirements to the EPA are to be conducted in accordance with the Section 60 reporting requirements of the Contaminated Land Management (CLM) Act 1997. ▪ Ensuring that all necessary reporting, as outlined within this EMP is conducted to an appropriate quality and standard. This may include preparation of the reports as necessary and archiving of the documentation.

Role	Entity	Responsibilities
Person/s conducting work[1]	Various including contractors and subcontractors to TfNSW	▪ Ensuring that the information within this EMP is incorporated into their environmental and WHS systems of work. ▪ Ensuring that procedures exist within their systems of work to inform all employees, contractors or subcontractors of this and the associated requirements. ▪ Ensuring that all persons physically conducting work on-site understand and comply with the requirements of this EMP and their associated systems of work, including training and inductions as required. ▪ Ensuring that their environmental and WH&S systems of work include a 'stop work' procedure, such that if conditions are encountered which differ significantly from those described in this EMP or the referenced relevant documents, all persons physically conducting the works can appropriately stop work in a controlled manner. ▪ Preparation of documents and reporting as required by the Site Owner to an appropriate quality and standard.
Site workers	All	▪ Complying with the requirements of this EMP, as detailed in the systems of work under which they are operating. ▪ To actively engage in inductions, JSAs, tool box meetings and the like as specified in the systems of work under which they operate. ▪ To seek clarification from their supervisor if they are unsure of the requirements or their environmental / WH&S responsibilities. ▪ To stop work and notify their supervisor if they know or suspect that works are being conducted in a manner which may result in environmental or WH&S incidents or accidents.

5.2 EMP review and revision

This EMP will be reviewed by the Site Owner to assess its effectiveness including audit and review of the application of control measures. Reviews should be conducted as required by TfNSW management systems with a minimum interval of 5 years between reviews. Where necessary, such as due to changes in site conditions or regulatory requirements, this EMP will be revised and updated by the Site Owner.

5.3 EMP enforcement

For future and ongoing management of the site the EMP should be recorded within TfNSW contaminated lands management systems and PIMS. The EMP should be immediately and readily identified as a necessary control measure should any work need to be undertaken in or around the encapsulation over the lifetime of the encapsulation cell.

All contractors working at the site will be inducted into this EMP for incorporation into their SWMSs.

If the site is to be redeveloped, subdivided and/or divested by the NSW Government, site contamination will be subject to planning process and SEPP55 planning requirements. The current Site Owner (TfNSW) must undertake necessary due diligence to ensure appropriate management of the site contamination for planning and property transactions purposes.

This EMP is a requirement of compliance with conditions of approval E57 to E58 of NSW Infrastructure Approval SSI 6878 for the ARPb project. It can therefore be considered to be legally enforceable.

5.4 Public notification and restrictions

As the containment cell is located wholly within the kerb to kerb road alignment of a major arterial roadway, the likelihood of future purchasers or interested parties being associated with the site is considered to be negligible. However future purchasers and/or interested parties should be made aware of the managed residual contamination. Public notification of the EMP to any authorities or interested public members would be made through appropriate notations on the land title and to be issued under Section 10.7 (2) & (5) of the EP&A Act 1979.

[1] Equivalent to Person Conducting a Business or Undertaking (PCBU) as defined by SafeWork NSW

5.5 Communications

Communication for maintenance activities will be managed by TfNSW Regional Maintenance Division under its existing Environmental Management System. This EMS documents the protocol for management of communication for maintenance planning, maintenance work crews and contractors. Communication for affected stakeholders will be managed by PIMS.

5.5.1 Emergency contact

Emergency contact is the Transport Management Centre on 131 700.

5.6 Primary stakeholders

Primary stakeholders in the implementation of this EMP include:

Table 5-2 Stakeholder summary

Role	Identity
Asset owner and manager	TfNSW Regional Maintenance Division
Pollution and incident authority	NSW Environmental Protection Authority
Local government authority	Wollongong City Council

This EMP will be included in the TfNSW contaminated land database and property information management system (PIMS). PIMS will manage the affected stakeholder notification procedure of the residual contaminated material within the cell.

5.7 Offsite migration

The following steps were implemented to ensure that offsite migration does not occur from the containment cell:

- The containment cell was not excavated to a depth where groundwater was intersected. As outlined in the validation report the construction of the containment cell did not require excavation into residual subsurface and therefore the potential for the contained material within the containment cell to interact with any underlying groundwater is low.
- The containment cell was not located where surface runoff/erosion will expose contaminated material or allow offsite migration.
  - Groundwater is identified as part of the containment cell design as having a depth of 1.9m AHD, the containment cell is a variable height above this, between approximately 2 m and 6 m.
- Permanent bound pavement materials and asphaltic concrete wearing surfaces (bitumen hardstand) will be installed above the containment cell. Survey information provided indicates that the geofabric layer above the contained asbestos contaminated soil within the containment cell will be between 2.1 m and 6.25 m below the proposed finished level of the new M1 Princes Motorway. Permanent bound pavement materials and asphaltic concrete wearing surfaces reduces the potential for the leaching of any contaminants from the contained soils within the containment cell. The containment cell does not present an unacceptable risk to either the onsite or offsite surrounding environments.

6 Ongoing management, maintenance and monitoring

Based on the location of the encapsulation cell beneath an active road corridor with substantial overburden material it is unlikely that any ongoing maintenance activities will be required to maintain the geofabric encapsulation of the asbestos impacted soils. Further to this, as the contamination is inert, non-mobile and placed above the measured water table at the site, provided the encapsulation is not breached in any way no ongoing monitoring is required.

Management of the site is necessary to ensure that the encapsulation remains intact and is not compromised, this can be achieved by regular road maintenance activities. Management objectives and strategies are summarised in **Table 6-1** below.

Table 6-1 Ongoing encapsulation management

Objective	The encapsulation is maintained so that it continues to provide adequate containment of asbestos impacted soils for site users and the environment.
Performance requirements	No breach of marker layer or geofabric layer, no ground depression, no ponding of water, no slope failure, no eroded rill and no marker layer exposed. No excavation or change of landform to occur without the approval of the Site Owner.
Management Strategy	Inspection by a suitably qualified person[2] during and after activities requiring ground disturbance greater than 1 m BGL above the extents of the encapsulation, including road maintenance activities. Inspect the surface level of the encapsulation area as part of weekly road maintenance inspections to identify the presence of unacceptable ground depression (e.g. >300mm drop exceeding an area of $4m^2$ as a guide), pavement damage (e.g. pavement pothole greater than $1m^2$) or slope failure which requires corrective action. Weekly inspections will capture and record all defects electronically. The inspection template provided in **Appendix E** would be used for a more detailed scheduled inspection which would be triggered if a noticeable defect occurred around the encapsulation cell area from the weekly inspections. Note should be made of these changes in a single event or in the cumulative as future land use as a high speed motorway make it unlikely that any of the above thresholds would be reached before preventative measures will be undertaken for road safety purposes. No planting of large or deep-rooted (>1.5 m below ground level) trees along the area of the encapsulation cell. Maintenance of road corridor to remove potential deep rooted trees that appear as a result of natural processes. Undertake and complete corrective actions within four (4) weeks of identification of the need to restore the encapsulation of overlying materials. If the underlying asbestos impacted material is exposed, appropriate reinstatement work to be undertaken to the required standard immediately and as practicable with reference to SafeWork NSW or equivalent guidelines on working with asbestos. Any excavation will be undertaken in accordance with **Table 7-1**. In the event of an unexpected discovery of potentially contaminated material not noted or managed by this EMP, refer to the Unexpected Finds Protocol (UFP) attached in **Appendix D**.
Record Keeping and Reporting	Maintain a logbook and record cap inspection notes, survey records, corrective actions undertaken and excavation details.
Responsibility	Site Owner

6.1 Unplanned breach of encapsulation

In the event that the encapsulation is breached in an unplanned fashion then works should stop immediately. The site is to be secured, including emplacement of a temporary cover and exclusion zone around the breach to prevent short term dispersal of contaminated material.

[2] A TfNSW environmental representative who is trained in environmental management, and is familiar with requirements of this EMP.

Once the site is secured the site controls during ground disturbance can be implemented as appropriate.

7 Site controls during ground disturbance

General controls during ground disturbance activities are outlined in **Table 7-1**.

Table 7-1 General controls during ground disturbance

Objective	Essential ground disturbance activities are appropriately managed such that the encapsulation of asbestos impacted material is not breached.
Performance requirements	No intrusive ground disturbance (such as excavation) is to be undertaken without firstly referring to this EMP and obtaining a consent to proceed from the Site Owner. No health and safety incidents are reported as a result of intrusive ground disturbance activities.
Management Strategy	All intrusive ground disturbance works are to be assessed and approved by the Site Owner prior to proceeding using an excavation permit system. Approvals are to be recorded in a logbook. A task specific SWMS is to be developed for each intrusive ground disturbance activity. Dial Before You Dig information and other site-specific information (such as as-built surveys included in **Appendix B**) from the Site Owner should be assessed and incorporated into the SWMS. Any ground disturbance in the vicinity of the encapsulation cell must only impact soils above or below the encapsulation cell. Works should seek to avoid the cell by at least 1 m in all directions however if the marker layer is encountered all works are to stop and be reassessed. All disturbance works are conducted in accordance with SafeWork NSW guidelines on the safe management of asbestos including: ▪ SafeWork (2019) *Code of Practice: How to manage and control asbestos in the workplace*; and ▪ SafeWork (2014) *Managing asbestos in or on soil*. If the cell is disturbed then it must be reinstated such that the encapsulation is restored with geofabric, marker layers and sufficient overlying material. All disturbance activities must be undertaken in accordance to sediment control requirements described in **Table 7-2**. All disturbance activities must be undertaken in accordance to dust management requirements described in **Table 7-3**. All disturbance activities must be undertaken in accordance to waste disposal requirements described in **Table 7-4.** Fill importation activities must be undertaken in accordance to requirements described in **Table 7-5**.
Record Keeping and Reporting	Maintain records of SWMS and records of approval.
Responsibility	Site Owner to provide consent and ensure compliance. Person/s conducting work and Site workers to comply with all identified controls and record any control failures.

Sediment control requirements are outlined in **Table 7-2**.

Table 7-2 Sediment control requirements

Objective	Essential ground disturbance activities are appropriately managed such that excavated asbestos impacted soil is contained.
Performance requirements	Asbestos impacted soil is not spread via sediment runoff.
Management Strategy	A task specific Erosion and Sediment Control Plan must be prepared and implemented in accordance with industry's standard practice. Examples of control measures to be included in the Erosion and Sediment Control Plan include but not limited to: Sediment fences or other appropriate sediment control devices to be constructed and maintained down-gradient of the disturbance area and stockpiles. Stockpiles to be placed on heavy duty plastic sheets.

	Stockpiles will be kept wet and covered. Vehicle loads will be covered with tarpaulins and wheels will be washed/brushed to remove site soil prior to leaving site. Following completion of ground disturbance, the ground should be restored similar to original state as soon as practicable, including re- establishment of any disturbed encapsulation or marker layers.
Record Keeping and Reporting	Maintain a copy of Erosion and Sediment Control Plans.
Responsibility	Site Owner, Person/s conducting work.

Dust control requirements are outlined in **Table 7-3**.

Table 7-3 Dust control requirements

Objective	Essential ground disturbance activities are appropriately managed such that environmental and health risks associated with dust generation are managed to acceptable levels.
Performance requirements	Boundaries of work site are free of visible dust. No dust is released during excavation or disturbance of the asbestos impacted soils. No environmental incident (such as dust complaint) is reported as a result of the ground disturbance activities. No asbestos fibres are identified in asbestos air monitoring to be conducted as part of disturbance.
Management Strategy	Undertake asbestos air monitoring as per *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres—2nd Edition* [NOHSC: 3003 (2005)] Dust suppression techniques must be implemented during ground disturbance activities such as excavation. Avoid ground disturbance activities during windy conditions and cease such work if visible dust occurs at site boundaries until such time as conditions improve. Reduce/minimise movement of vehicles, where practicable. Vehicle loads will be covered with tarpaulins and wheels will be washed/brushed to remove site soil prior to leaving site. Reduce/minimise excavation and movement of soils, where practicable. All asbestos impacted material (if exposed/disturbed during excavation), exposed ground and stockpiles will be kept wet and covered (if not in use). Following completion of ground disturbance, the ground should be restored similar to original state as soon as practicable, including re- establishment of any disturbed encapsulation or marker layers.
Record Keeping and Reporting	Maintain a site diary comprising dust observations, wind speed, wind direction and dust suppression/control records.
Responsibility	Site Owner, Person/s conducting works

Waste disposal requirements are outlined in **Table 7-4**.

Table 7-4 Waste disposal requirements

Objective	Essential ground disturbance activities are appropriately managed such that waste disposal activities comply with statutory/regulatory requirements.
Performance Requirements	Compliance with statutory/regulatory requirements. No excavated spoil is spread and no environmental incident (such as illegal dumping complaint) is reported as a result of the ground disturbance activities.
Management Strategy	If essential excavation is required, the work must be consulted with a suitably qualified environmental consultant and the excavated material must be classified in accordance with NSW EPA (2014) *Waste Classification Guidelines Part 1: Classifying Waste*. The classified waste soil must be disposed of to an appropriate waste facility licensed to accept the waste.
Record Keeping and Reporting	Maintain excavation details, material tracking details, waste classification documentations and disposal records/dockets.
Responsibility	Site Owner, Person/s conducting works

Fill importation requirements are outlined in **Table 7-5**.

Table 7-5 Fill importation requirements

Objective	Fill material imported to make up for material removed during any works is appropriately managed and does not pose an unacceptable risk to the environment and human health.
Performance Requirements	Compliance with statutory/regulatory requirements. No non -approved material is imported.
Management Strategy	Imported fill material (including topsoil) must be virgin excavated natural material (VENM) and/or exempt material(s) approved under the resource recovery exemptions (RRE) made under the Waste Regulation (2014). Commercial topsoil products, if specified by arborist/horticulturalist, may be considered on merit, subject to an assessment of the product. Imported fill material must be assessed and validated by a suitably qualified environmental consultant. The following procedures for validation of imported soils will be undertaken: Assessment and approval of proposed source sites prior to importation; and Checking of fill material as it enters the site to confirm if it is consistent with the approved fill material. As part of the assessment at source, sampling may be required depending on the type, observation, condition and/or history of the proposed source material. Commercial topsoil products which have not been purchased from a supplier who is able to provide a certificate to demonstrate the product is clean, must be tested for potential contamination (e.g. waste classification). Alternatively, certifications from the supplier confirming/validating the materials to be VENM or exempted under the RRE will be reviewed by the environmental consultant.
Record Keeping and Reporting	Maintain assessment/validation records, material tracking records and associated importation dockets.
Responsibility	Site Owner, Person/s conducting works

7.1 Monitoring and compliance

Person/s conducting works on-site should keep records of soil excavated, reused or disposed, as well as waste classification certificates and waste disposal dockets, significant environmental incidents, and any environmental data collected as part of their work. This information should be conveyed to the site owner/manager for their records and for action, as well as for reviewing the effectiveness of the EMP.

Compliance with this EMP during ground disturbance activities is managed using an excavation permit system. Satisfactory completions are to be signed-off by the Site Owner.

8 References

Nearmap. (2020). *Aerial Imagery Data*. Retrieved from Nearmap: maps.au.nearmap.com

NEPC. (1999). *National Environment Protection (Assessment of Site Contamination) Measure (NEPM).* National Environment Protection Council (NEPC).

NSW Dept of Urban Affairs and Planning. (1998). *Managing Land Contamination: Planning Guidelines: SEPP 55 Remediation of Land.* NSW Dept of Urban Affairs and Planning.

NSW DFSI, Spatial Services. (n.d.). *NSW Topographic Maps.* NSW Department of Finance, Services and Innovation, Spatial Services.

NSW EPA. (2014). *Waste Classification Guidelines, Part 1: Classifying Waste.* NSW Environment Protection Authority.

NSW EPA. (2017). *Guidelines for the NSW Site Auditor Scheme (3rd Edition).* NSW Environment Protection Authority.

NSW EPA. (2020). *Consultants reporting on contaminated land; Contaminated land guidelines.* NSW Environment Protection Authority.

NSW OEH. (2013). *Soil Landscapes of Central and Eastern NSW, version 2*. Retrieved from eSpade v2.0: https://www.environment.nsw.gov.au/eSpade2WebApp

Safework NSW. (2019). *Code of Practice: How to manage and control asbestos in the workplace.* SafeWork NSW.

WA DOH. (2009). *Guidelines for Assessment, Remediation and Management of Asbestos - Contaminated Sites in Western Australia.* Western Australia Department of Health.

WorkCover NSW. (2014). *Managing asbestos in or on soil.* WorkCover NSW.

9 Limitations

This management plan has been prepared in general accordance with the current “industry standards” for an Environmental Management Plan for the purpose and objectives and scope identified in this report. These standards are set out in:

- National Environment Protection [Assessment of Site Contamination] Measure (NEPM), December 1999, National Environment Protection Council (NEPC).
- National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999 (NEPC, 1999) as varied May 2013 (the ‘NEPM 2013’).
- Consultants reporting on contaminated land, Contaminated land guidelines, NSW EPA (2020)

The agreed scope of this assessment has been limited for the current purposes of the Client. The assessment may not identify contamination occurring in all areas of the Site, or occurring after sampling was conducted. Subsurface conditions may vary considerably away from the sample locations where information has been obtained.

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

- This Document has been prepared for the particular purpose outlined in Cardno’s proposal and no responsibility is accepted for the use of this Document, in whole or in part, in other contexts or for any other purpose.
- The scope and the period of Cardno’s services are as described in Cardno’s proposal, and are subject to restrictions and limitations. Cardno did not perform a complete assessment of all possible conditions or circumstances that may exist at the Site referenced in the Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Cardno in regards to it.
- It is recognised that the passage of time affects the information and assessment provided in this Document. Cardno’s opinions are based upon information that existed at the time of the production of the Document. It is understood that the services provided allowed Cardno to form no more than an opinion of the actual conditions of the Site at the time this Document was prepared and cannot be used to assess the effect of any subsequent changes in the quality of the Site, or its surroundings, or any laws or regulations.
- Any assessments made in this Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Document.
- Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by Cardno for incomplete or inaccurate data supplied by others.
- Cardno may have retained sub consultants affiliated with Cardno to provide services for the benefit of Cardno. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any direct legal recourse to, and waives any claim, demand, or cause of action against, Cardno’s affiliated companies, and their employees, officers and directors.

This assessment report is not any of the following:

- A Preliminary Site Investigation, Detailed Site investigation, Remediation Action Plan or Validation Report.
- A Site Audit Report or Site Audit Statement (SAR/SAS) as defined under the Contaminated Land Management Act, 1997 or an assessment sufficient for an Environmental Auditor to be able to conclude a SAR/SAS.
- A geotechnical report and the bore logs/test pit logs may not be sufficient for geotechnical advice.
- A detailed hydrogeological assessment in conformance with NSW DEC (2007) Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination.

- An assessment of groundwater contaminants potentially arising from other sites or sources nearby.
- A total assessment of the Site to determine suitability of the entire parcel of land at the Site for one or more beneficial uses of land.

APPENDIX A

FIGURES

Location Plan

ENVIRONMENTAL MANAGEMENT PLAN - ASBESTOS CELL

Legend

- Project Footprint
- Railway Station (NSW SS)
- Distance Buffer
- Major Road (NSW SS)
- Local Road (NSW SS)
- Railway (NSW SS)
- Major Watercourses (LPI)
- ACM Impacted Soil Containment Cell

Land Use (ABS, 2016)

- Other
- Commercial
- Education
- Hospital/Medical
- Industrial
- Parkland
- Primary Production
- Residential
- Water

FIGURE 1

1:30,000 Scale at A3

km
0 0.25 0.5 0.75 1

N

Cardno

Map Produced by Cardno NSW/ACT Pty Ltd (NW&E)
Date: 2020-09-15 | Project: 82019047
Coordinate System: GDA 1994 MGA Zone 56
Map: 82019047-GS-015-ACMContCell_Locality.mxd 01
Basemap suplied by ESRI and other third party suppliers