Environmental Management Plan (EMP)

12 Grand Avenue, Rosehill, NSW

Prepared for: ACE Rosehill Pty Ltd

A101024.0518.00 | EMP.V3f | Date: 7 March 2025

ADE CONSULTING GROUP

Document Information

Report Title: Environmental Management Plan
Prepared for: ACE Rosehill Group Pty Ltd
Project Address: 12 Grand Avenue, Rosehill, NSW 2142
File Reference: A101024.0518.00
Report Reference: EMP.v3f
Date: 7 March 2025

Document Control

Version	Date	Author	Revision description	Reviewer
V1d	24/07/2024	Zahra Derakhshan	Draft for client review	David Adams
V1f	26/07/2024	Linda Lenihan	Update following client review	David Adams
V2f	29/01/2025	Zahra Derakhshan	Updating following EPA review	Santo Ragusa
V3f	07/03/2025	Junaid Riaz	Updating following EPA review	Santo Ragusa

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Abbreviations

Abbreviation	Definition
ACE	Ace Rosehill Pty Ltd
ADE	ADE Consulting Group Pty Ltd
AHD	Australian Height Datum
AASS	Actual Acid Sulfate Soil
AST	Aboveground Storage Tanks
BMS	Business Management System
CLM	Contaminated Land Management
CSM	Conceptual Site Model
CEMP	Construction Environmental Management Plan
CoPCs	Contaminants of Potential Concern
Cr (VI)	Hexavalent chromium
COPR	chromium ore processing residue
DPH	Dissolved Phase Hydrocarbons
EMS	Environmental Management System
EPA	Environment Protection Authority
GME	Groundwater Monitoring Event
LNAPL	Light Non-Aqueous Phase Liquid
m BGL	meters Below Ground Level
MPVE	Multi-Phase Vacuum Extraction
NEPM	National Environmental Protection Measure
NSW	New South Wales
NSW EPA	New South Wales Environment Protection Authority
PASS	Potential Acid Sulfate Soil
PPE	Personal Protective Equipment
PSH	Phase Separated Hydrocarbon
PAH	Polycyclic aromatic hydrocarbons
SWMP	Storm Water Management Plan
TRH	Total Recoverable Hydrocarbon
UST	Underground Storage Tanks
VMP	Voluntary Management Proposal

1 Introduction

1.1 Introduction

ADE Consulting Group Pty Ltd (ADE) was engaged by Ace Rosehill Pty Ltd (ACE) (the Client) to finalise an Environmental Management Plan (EMP) for part of 12 Grand Avenue, Rosehill, NSW 2142 (the site) to satisfy the requirements of the New South Wales Environment Protection Authority (NSW EPA) under the Contaminated Land Management Act 1997 (CLM Act, 1997).

The subdivision is completed, and a new title has been registered. The site is Lot 33 DP 1287670. The area covered by the EMP is shown in **Appendix A - Figure 1**.

The site is approximately 2.1 hectares (ha) in area, located in the south-east of the larger property boundary. Under the Parramatta Local Environmental Plan (LEP) 2023, the site is zoned as E5: Heavy Industrial Zone under the new LEP.

ADE understands that ACE took ownership of the site from TAP IV Chullora Pty Limited as trustee for the TAP IV Rosehill Trust (the former Landowner) in March 2024. At the time of purchase, the site was under a Voluntary Management Proposal (VMP) with the NSW EPA, with recognition of the regulation of the site under the Contaminated Land Management Act 1997 (CLM Act). The previous EMP prepared by Consara Pty Ltd (2014) for the site provided a consolidated approach to management of the larger property located at 12 Grand Avenue, Rosehill.

An update to the EMP is required to reflect changes in environmental conditions with respect to the nature and extent of identified contamination on-site as well as changes to ownership and onsite activities.

This EMP pertains to the management of Lot 33 and supersedes the existing EMP on the basis of a more comprehensive conceptual site model (CSM). This updated EMP aims to ensure effective management of contamination at the site, safeguarding human health and the environment under the new ownership of ACE.

1.2 Objectives

The objective of the EMP is to ensure the site's ongoing suitability for continued use under heavy industrial land use. This will be achieved by implementing passive management measures that protect human health and the environment for both current and future site users, addressing the residual contamination impacts previously identified in soil and groundwater.

1.3 Purpose

The purpose of this EMP is to detail conditions for the management of environmental, health and safety risks to minimise risks from the residual hexavalent chromium (Cr (VI)) impacts in the soil and groundwater during ongoing operation of the site.

This EMP applies to Lot 33 (**Appendix A – Figure 1**) and is intended to be in effect for the duration of the site's operation under its current heavy industrial land use. However, the EMP should be updated if significant changes to environmental conditions are identified or if a change in land use is proposed.

This EMP applies to the following operational activities:

- General site operations not involving intrusive work (maintenance of capping layers).
- Subsurface maintenance works.

- Penetration of the existing capping layer and disturbance of the underlying subgrade or fill material during any construction activities.
- Additional construction or development activities requiring disturbance of the cap and underlying soils.

The EMP will be legally enforceable by the NSW EPA under the CLM Act – Section 17: Voluntary management proposals. The site is regulated as a significantly contaminated site and is listed on the NSW EPA Contaminated Land register.

2 Site History & Background

2.1 Site Identification

The site details are summarised in **Table 1**.

Table 1. Summary of site identification details

Site Identification Details	
Site Address	12 Grand Avenue, Rosehill, NSW
Legal Description	Lot 33 in DP1287670
Approximate Site Area	2.1 ha
Site Owner	ACE Rosehill Pty Ltd
Site Occupier	Vacant
Local Government Area (LGA)	City of Parramatta
Land Use	Heavy Industrial use
Land Use Zoning	E5 – Heavy Industrial Zone (Parramatta LEP 2023)
Area Subject to this EMP	Site area subject to this EMP is Lot 33 shown in **Appendix A – Figure 1**. The site boundary extends approximately 180 m east or 500 m north to the Paramatta River, approximately 50 m south to the wetland area and approximately 580 m south to Duck Creek.

2.2 Summary of Site History

It is understood the site was previously used for aggregate stockpiling of feedstock and bitumen / emulsion manufacturing materials since circa 1950s by its former owner Mobil Oil Australia Pty Ltd (Mobil) until 2013, then leased by Downer until 2022, and subsequently acquired by the current landowner, ACE Rosehill Pty Ltd, in 2023. Circa 1980, the larger property was subdivided into a consolidated bitumen/emulsion manufacturing operation within the north-western portion (the adjacent Lot 32), and the south-eastern portion into an asphalt/bitumen recycling facility (the site). Prior to the establishment of commercial industrial operations on the site, it was understood to comprise open low-lying wetland environments, adjacent to the Parramatta River and Duck River, located to the north and south-east of the site, respectively.

The site is located approximately 1.2 km east of a historical chromium chemical manufacturing company, understood to have produced large quantities of chromium ore processing residue (COPR) that was subsequently used for filling activities in the Camellia peninsula (EP Risk, 2023). A summary of the historical sampling locations is shown in **Appendix A– Figure 2**. The former Shell Clyde refinery is located directly south-west of the site.

The majority of the site was covered with asphalt or concrete pad comprised a layer of bitumen asphalt or highly compacted road base bitumen overlaying sandy gravel/clay fill varying in thickness from the surface up to 3.0 m BGL (EP Risk, 2022a). Previously, stockpiled aggregate material was levelled and compacted to form a recycled asphalt layer, creating a pad that extends across most of the site. **Appendix A– Figure 3** shows a contour plot of the depth of the bitumen asphalt layer.

2.3 Previous Investigations

2.3.1 Groundwater Monitoring Events (URS 2005 – 2012) & (Consara 2013 – 2022)

Based on our review of the GME report prepared by EP Risk in 2022 (EP Risk, 2022b) for the whole area including Lot 31, 32 and 33, ADE understands that between 2005 and 2012, a number of groundwater investigations were conducted by URS Australia on behalf of the owner, Mobil Australia. Road Holdings Australia (RHA) took ownership in early 2013 and Consara was commissioned by RHA. Consara undertook site-wide groundwater investigations in July 2013 and December 2013 and then completed annual monitoring events in July 2014, June 2015, June 2016, June 2018, June 2019, October 2020 and October 2021.

Review of the reports showed a limited plume of phase separated hydrocarbon (PSH), and some dissolved phase hydrocarbons (DPH) had previously been identified within the central to northern area of Lot 32 in an area used as a truck wash bay. Two Multi-phase Vacuum Extraction (MPVE) Events using a MPVE truck were reported to be conducted at MW10 in early June 2011 and in early December 2011. In late June 2012 a MPVE event was conducted at both MW10 and MW27. Between June 2011 and June 2012, approximately 17,100 L of PSH and groundwater was removed over the three MPVE Events from both wells combined. Two Multi-phase Vacuum Extraction (MPVE) Events using a MPVE truck were reported to be conducted at MW10 in early June 2011 and in early December 2011. In late June 2012 a MPVE event was conducted at both MW10 and MW27. Between June 2011 and June 2012, approximately 17,100 L of PSH and groundwater was removed over the three MPVE Events from both wells combined. No measurable PSH was present at either well immediately after the extraction works. In addition, Consara undertook the installation and commissioning of a PSH Active Skimmer System which is monitored for the effectiveness of the remediation as per the VMP. The results of regular quarterly periods of monitoring of the PSH Skimmer System have been presented in a series of reports prepared by Consara and submitted to the NSW EPA under the requirements of the previous VMPs and now the current VMP. The results presented in these reports demonstrate the successful installation, commissioning and operation of the system in the continual removal of PSH from the groundwater at these wells and an overall reduction of the lateral extent of the PSH Plume since 2014.

Moreover, identified hydrocarbon contamination appeared to be limited to the interfered lateral extent of the PSH plume located on Lot 32 and concentrations of hydrocarbons in groundwater at the site have consistently been reported at levels either less than adopted groundwater criteria or considered to be low. For this reason, it was concluded by EP Risk (EP Risk, 2022b) that total recoverable hydrocarbons (TRH) are not a chemical concern for Lot 33.

Significant concentrations of Cr (VI) had previously been identified at sporadic locations throughout the site and Lot 32 during monitoring events conducted by Consara. It was established based on the 11 years of monitoring data that Cr (VI) contamination was limited and isolated in nature and likely attributable to the presence of fill materials at those locations containing high concentrations of COPR waste resulting in dissolved Cr (VI). Although it is noted the majority of data collected had been from wells located at Lot 32 and limited data has been collected from wells located at Lot 33 (the current site) (EP Risk, 2023).

2.3.2 Consara (2022) Performance of Remediation System

Based on our review of the GME report prepared by EP Risk in 2022 (EP Risk, 2022b) and CSM report prepared by EP risk on 2023 (EP Risk, 2023), ADE understands that several remediation methods were employed for Lot 32 in locations identified to have been impacted by PSH. Consara (2022) was subsequently engaged to provide an assessment of the performance of remedial methods chosen.

An assessment of remedial options for the ongoing presence of PSH on-site conducted by Consara in 2014 identified the use of skimmer pumps within selected monitoring wells within the PSH plume on-site to be the most suitable option. Ongoing remediation via Multi-Phase Vacuum Extraction (MPVE) events was considered unsuitable based on the high cost associated with each event, and the overall stabilising trend displayed by

the PSH plume. It is understood that skimmers were initially installed in CW7 and CW8 for a duration of 3-4 months to assess the efficacy of the proposed remedial strategy. Two additional skimmers were subsequently deployed into monitoring wells CW10 and CW11. See Figures 7A and 7B **Appendix A** for groundwater monitoring well locations on site.

Following a reported reduction in the lateral extent of the PSH plume in 2019, one new monitoring well was installed, one skimmer removed, and the locations of the skimmer moved to the newly installed well. The results of the remediation indicate that the active skimmers effectively reduced the PSH contamination, decreasing its lateral extent from approximately 600 m² to 200 m² and removing approximately 384 kg of PSH. The ongoing remediation of PSH on-site was reported to be expected to continue until the PSH plume reported a thickness of <1 mm.

2.3.3 EP Risk Environmental Due Diligence (March 2022, EP2544.001_v1)

Based on our review of the contaminated land due diligence assessment prepared by EP Risk in 2022 (EP Risk, 2022a), ADE understands that EP Risk had conducted an intrusive investigation on Lot 32 and Lot 33 as part of a preacquisition due diligence to assess the contamination status of the site. The scope of works comprised an assessment of the soil, sediment, surface water and groundwater conditions as well as a preliminary geotechnical assessment. EP Risk undertook 15 test pits to a maximum depth of 3.0 metres below ground level (mBGL) targeted to the southern portion of Lot 33 and advancement of 5 boreholes to a maximum depth of 12.0 mBGL by track mounted drill rig converted into two shallow wells (screened interval 2 – 5 m) and three deep wells (screened interval 9-12 m). A further 4 boreholes were drilled for geotechnical purposes.

Suspected COPR was observed in the fill layer generally observed at depths up to 3.0 m BGL across the southeast and northern portions of the site (see **Table 2** and **Appendix A– Figure 4**). This was characterised by lime green / yellow-coloured precipitates observed within Fill. Sources of COPR historically used in backfill across the Peninsula and originating as by-product from the chromium chemical factory at 6 Grand Avenue (former ICI/AKZO–currently remediated by horizontal and vertical cap & contain). The results of the investigation had indicated chromium in the 6+ oxidation state exists within the natural material at the site primarily in areas where suspected historically placed COPR waste had been identified. As shown in **Table 3** below and **Appendix A– Figure 5**, no exceedance of the investigation NEPM HIL-D for Cr (VI) was detected in both fill and natural soil at the site. See Also Figure 9 Appendix A for locations where suspected COPR was observed within test pits.

Table 2. Summary of the distribution of chromium in Fill

Sampling Location	Chromium (Total) concentration (mg/kg)	Chromium (VI) concentration (mg/kg)	Criteria Exceedance for Chromium (VI)
			NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil (3,600 mg/kg)
TP01-1.0	4560*	<0.5	No
TP02-1.0	11300*	2.3	No
TP04-0.3	112	0.9	No
TP05-0.3	17	<0.5	No
TP06-2.0	15200*	9.6	No
TP07-1.0	320	3.1	No
TP08-1.0	13	<0.5	No
TP09-1.5	2540*	45.5	No
TP10-0.5	23	<0.5	No
TP11-2.0	33400*	19.5	No
TP12-0.5	573	1	No
TP12-2.5	2540*	1.9	No
TP14-2.0	6300*	0.6	No

Sampling Location	Chromium (Total) concentration (mg/kg)	Chromium (VI) concentration (mg/kg)	Criteria Exceedance for Chromium (VI)
			NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil (3,600 mg/kg)
TP15-1.0	16300*	1,640	No
TP16-0.5	16	<0.5	No
MW1001-1.5	9980*	<0.5	No
MW1002-0.1	38	0.8	No
MW1002-0.5	665	4.2	No
MW1004-1.0	34800*	2,280	No
MW1005-2.0	502	<0.5	No
GBH1-2.7	14300*	1,190	No
GBH2-3.0	3510*	<0.5	No
GBH3-1.5	54	<0.5	No

*Indicative of Chromium Ore Processing Residue (COPR)

Table 3. Summary of the distribution of chromium in Natural soil

Sampling Location	Chromium (Total) concentration (mg/kg)	Chromium (VI) concentration (mg/kg)	Criteria Exceedance for Chromium (VI)
			NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil (3,600 mg/kg)
TP01-3.0	9	<0.5	No
TP02-3.0	1120*	<0.5	No
TP03-3.0	37	<0.5	No
TP04-2.0	316	0.9	No
TP06-3.0	12500*	550	No
TP09-2.5	29600*	23.7	No
TP11-3	50	<0.5	No
TP14-3.0	37	<0.5	No
TP15-2.0	1440*	<0.5	No
TP16-3.5	3740*	<0.5	No
MW1001-3.0	18	<0.5	No
MW1002-5.0	16	<0.5	No
MW1004-5.0	25	<0.5	No
MW1006-3.0	84	<0.5	No
GBH1-4.0	92	<0.5	No
GBH2-3.9	15	<0.5	No
GBH3-6.0	11	<0.5	No

*Indicative of Chromium Ore Processing Residue (COPR)

2.3.4 EP Risk Groundwater Monitoring Event (December 2022)

EP Risk undertook an annual Groundwater Monitoring Event (GME) in October 2022 (EP Risk, 2022b) for Lot 33. EP Risk undertook gauging and sampling of 11 groundwater wells including: CW106, MW28, and CW200 located at Lot 32 adjacent to Lot 33, as well as MW1002, CW201, CW204, MW17, CW203, CW202, MW1001, and MW12A at lot 33. Collected samples were analysed for Cr(VI).

The majority of wells at the site were either recently installed or contain an insufficient dataset to perform a reliable trend analysis. Indicatively from 3 existing well locations (MW28, MW17 (former wells) and CW106) containing data for more than 3 monitoring events, it appears concentrations of Cr (VI) have remained relatively stable with four shallow wells (screened from 2 to 5 mBGL) along the southern boundary which have exceedance in Cr(VI) (see **Table 4** and **Appendix A– Figure 6**). Additionally, two deep wells (MW1004 and MW1005), screened from 9 to 12 mBGL, are situated at the southern boundary and the eastern side within Lot 33, respectively. The locations of these wells are shown in **Appendix A– Figure 6.**

EP Risk considered highly likely that the presence of Cr (VI) in groundwater is a direct result of the presence of fill materials that may be present around the screened interval of the monitoring wells at these locations. Moreover, significant widespread contamination has not been observed to follow a discernible trend throughout the site or along the inferred hydraulic gradient (**Appendix A– Figure 7**). Therefore, EP Risk considered it unlikely the observed contamination is resulting from migration of contamination from upgradient sources in groundwater throughout the site. Referring to **Table 4** below, the concentrations of Cr(VI) are elevated in MW1001 and MW1002, located on Lot 33 at the southern boundary, show concentrations exceeding the ANZG (2018) Marine Water (0.0044 mg/L), with Cr(VI) levels of 7.10 mg/L and 4.49 mg/L, respectively (Figure 6, Appendix A). On the other hand, MW1004, MW1005, and MW1006 are deep wells located on both Lot 32 and Lot 33, with Cr(VI) concentrations below the detection limit (<0.01 mg/L), indicating no exceedance in these deeper wells. Two historical wells CW202 and CW203 have also shown exceedance of Cr(VI), which are primarily located on Lot 33 at southern boundary.

Results showed that PSH was not considered a contaminant of concern for Lot 33, as ongoing monitoring results suggest the lateral extent of PSH (located on lot 32) is contracting. However, extensive sheening was observed within shallow groundwater inflow at depths of 1.0 mBGL during test pitting in the eastern portion of the site within one test pit (TP06). A slight hydrocarbon odour was detected in MW1001 downgradient of the identified sheening; however, no Light Non-Aqueous Phase Liquid (LNAPL) was detected in the downgradient boundary wells. Historical aerial imagery of the site from 1986 confirmed the presence of an above ground tank corresponding to the area where the potential PSH was observed during test pitting (i.e., TP06). PSH have not been observed within groundwater monitoring wells downgradient of this location, although some elevated levels of light to medium chain hydrocarbons have been observed at concentrations which have not been considered by EP Risk (2023a) as significant and at levels which are below NEPM Health Screening Levels (HSL) for a commercial/industrial land use.

Table 4. Summary of the historical distribution of chromium in groundwater wells

Sampling ID	Sampling location	Cr (VI) concentration (mg/L)	Criteria Exceedance for Cr(VI)
			ANZG (2018) Marine Water 95% LOSP Toxicant DGVs (0.0044 mg/L)
MW1001 (shallow well)	Lot 33	**7.10**	**Yes**
MW1002 (shallow well)	Lot 33	**4.49**	**Yes**
MW1004 (deep well)	Lot 33	<0.01*	No
MW1005 (deep well)	Lot 33	<0.01*	No
MW1006 (deep well)	Lot 32	<0.01*	No
CW106 (shallow well)	Lot 32	<0.01*	No
CW200 (shallow well)	Lot 32	<0.01*	No
CW201 (shallow well)	Lot 33	<0.01*	No
CW202 (shallow well)	Lot 33	**50**	**Yes**
CW203 (shallow well)	Lot 33	**17**	**Yes**
CW204 (shallow well)	Lot 33	<0.01*	No
MW28 (shallow well)	Lot 32	<0.01*	No
MW12A (shallow well)	Lot 33	<0.01*	No

Notes to Table 4:

LOSP: level of species protection
DGV: Default Guideline Value
*LOR was greater than DGV
Note: During the ADE site inspection, three historical wells including CW202, CW203, and CW204 were found on-site but could not be gauged due to a nest and a snake observed in the cap of the well monument.

2.3.5 EP Risk Supplementary PFAS sampling Investigation (August 2022)

Based on our review of CSM prepared by EP Risk on 2023 (EP Risk, 2023), ADE understood that EP Risk conducted a Per- and Polyfluoroalkyl Substances (PFAS) sampling assessment at the Lot 33 prior to its acquisition by TAP IV Rosehill Trust (EP Risk, 2022c). This assessment aimed to address data gaps as PFAS had not been previously evaluated on-site. Samples were collected from 11 groundwater monitoring wells, 10 surficial test pits (up to 0.1 mBGL), and 3 surface water samples from pooled runoff.

Key findings:

- No PFAS sources or related infrastructure were observed during the site inspection.
- PFAS concentrations in all surface and groundwater samples were below the human health criteria and the 95% DGV.
- PFAS levels in soil were below the laboratory Limit of Reporting (LOR) in all but one sample, which had Perfluorooctane Sulfonate (PFOS) above the Ecological Indirect Exposure Limit.
- Detectable PFAS concentrations were likely due to diffuse background sources within the Camellia Industrial Precinct.
- The risk of PFAS in soil and groundwater at the site was reported by EP Risk as negligible for human health and ecological receptors, given the background conditions of the area.

2.4 Current Site Condition

The present configuration of the site includes heavy vegetation at the south and eastern boundary of the site, with a drainage channel present along the eastern boundary. The area adjacent to the investigated area is Lot 32 which has been operating asphalt/bitumen recycling facility. ADE understands that the site is currently capped, with a combination of asphalt and concrete hardstand areas, which together act as a control measure for any potential exposure pathways to contaminated soil.

The land use surrounding the site comprises the following:

- **North:** An open drainage channel owned by the City of Parramatta Council, and waste management facilities EarthPower and Veolia Environmental Services, separated by Grand Avenue. Parramatta River is located approximately 300 m north of the site.
- **South:** Heavy industrial land use.
- **East:** Concrete supplier Hymix and open wetland beyond. The Parramatta River extends to the east of the site beyond the wetland, and Duck River to the south-east.
- **West:** Heavy industrial land use, including the former Shell Australia operations.

2.5 Topography and Drainage

The general topography of the site is flat, with a minor slope from south down to the drainage channel that bounds the site to the north. The topography of the site was previously understood to be affected by the presence of stockpiles of recycled asphalt, an estimated 1.5 to 2 m above the elevation of surrounding

properties, following which the stockpiles were levelled into the existing compacted recycled asphalt layer pad circa 2022.

In the previous site inspections conducted by Consara, as part of the previous EMP (Consara, 2014), the drainage channel was reported to not operate as a watercourse at any time, with any surface water expected to collect within depressions or between vegetation in the channel. Surface water discharge into Parramatta River from the drainage channel was considered to be unlikely.

The site is currently subject to a Storm Water Management Plan (SWMP). However, the focus of the SWMP has been on Lot 32 and therefore a new SWMP should be prepared for Lot 33.

2.6 Geology

Based on review of the NSW Department of Mineral Resources, Sydney 1:100 000 geological map, the site is underlain by man-made fill comprising dredged estuarine sand and mud, demolition rubble, industrial and household waste and Chromium Ore Processing Residue (COPR). Sand, clay and peat (variably ferruginous) of the Cainozoic era was reported beneath the fill.

A review of previous investigations at the site (EP Risk, 2023) identified fill material extending to depths of 1 to 3 m below ground level (mBGL), underlain by natural silty clays transitioning to stiff clays at depths of 4 to 5 mBGL. Details regarding the thickness of fill material across Lot 33 and adjacent areas are provided in **Table 5** and **Appendix A- Figure 10**

Table 5. Summary of the fill thickness across the site

Sampling Location	Fill thickness (mBGL)
TP01	2.2
TP02	2.1
TP03	2.5
TP04	1.9
TP05	0.5
TP06	2.8
TP07	1.8
TP08	3.4
TP09	2.3
TP10	1.8
TP11	2.3
TP12	3.1
TP14	2.4
TP15	1.7
TP16	2.3
GBH1	3.0
GBH2	3.4
MW1001	3.0
MW1002	2.5
MW1004	2.8
MW1005	3.5

2.7 Surface Water

Based on reviews of previous reports (EP Risk 2023b), ADE understands that surface water flows are expected to follow along the general topography of the site and drain downgradient to the east/southeast of the site. Several drainage features were reported at the northern area (i.e., Lot 32), adjacent to the Lot 33, of the site which have been observed to affect surface water flow and drainage at the site. An operational stormwater system is reported to be present within the Lot 32 which is currently occupied and operated by Road Holdings Australia (operating as SAMI Bitumen) as a bitumen manufacturing facility. It comprises a stormwater system and a separate Dirty Water System constructed of a series of open surface water drains, underground pipework and pits ultimately discharging into a sedimentation pond on the northeast portion of Lot 32. In addition, a large water detention basin reported to be located on the northeast boundary of Lot 33. It is understood the sedimentation basin was designed to collect surface water flow from the surface of the area of the southern portion of the site. When the water flows are high enough, they overflow from the basin into the drainage channel to the north (EP Risk, 2023a).

2.8 Hydrogeology

Regional groundwater is expected to be present at depth within the shale / sandstone underlying the Site. Over 10 years of groundwater monitoring data has consistently indicated that shallow groundwater at the Site is inferred to flow in a general south, east and to northeasterly direction towards the adjacent wetland areas as well as the Parramatta River. Shallow groundwater appears to be present in an unconfined aquifer at the interface of fill materials and underlying natural clays (EP Risk, 2023b). Shallow groundwaters within Lot 33 appear to flow in the direction of the topography of historically low-lying areas on the southeastern portion of the site, and then further off site to the east towards the adjacent wetland (see Appendix A - Figure 7A. Deeper groundwater is expected to flow in a general south-easterly direction towards the Parramatta River (see Appendix A - Figure 7B. The lithology of the underlying natural material reported to be variable and reflected the varying depositional environments. Clays beneath the fill layer were reported to become drier with depth, potentially acting as an aquiclude. Deeper groundwater was reported between depths of 9 – 10 mBGL.

2.9 Acid Sulfate Soils

The City of Parramatta LEP (2011) has classified the site as being underlain by Class 3 acid sulfate soil (ASS), requiring Development Consent for Works more than 1 metre below the natural ground surface, and for works beneath which the water table is likely to be lowered more than 1 metre below the natural ground surface. Analytical testing and field screening for ASS on-site (EP Risk, 2022a) indicated Actual and Potential Acid Sulfate Soils (AASS and PASS, respectively) across the larger property located at 12 Grand Avenue, Rosehill at depths of between 2.0 and 4.5 mBGL.

In the event of proposed development works more than 1 mBGL, management of ASS at the site should be undertaken in accordance with an Acid Sulfate Soil Management Plan (ASSMP) to be prepared by a suitably qualified and experienced consultant. It is furthermore noted that revisions to this EMP will be required in the event of proposed redevelopment works.

3 Extent of Residual Contamination

3.1 Contaminants of Concern

Contamination at the site (i.e., Lot 33) and adjacent Lot 32 has been previously identified and summarised in the following reports:

- Consara Pty Ltd (Consara) (2014). *Environment Management Plan – 12 Grand Avenue, Camellia NSW* (ref: C121006_EMP_18Feb14, 18 February 2014).
- Consara (2017). *Report on Stormwater System on Part Lot 5 DP549358* (ref: 28 February 2017).
- Consara (2021a). *Summary of Current Environmental Condition and Land Use Suitability 12 Grand Avenue Camellia NSW* (ref: 4 November 2021).
- Consara (2021b). *Site Wide Groundwater Investigation – October 2021* (ref: C121006_RPT_23Dec2021, December 2021).
- Consara (2022). *Performance of Remediation System January 2021 to December 2021* (ref: C121006_RPT_15Dec2020, 18 January 2022).
- EP Risk Management Pty Ltd (EP Risk) (2022a). *Contaminated Land and Geotechnical Due Diligence Assessment, 12 Grand Avenue, Camellia, NSW 2142* (ref: EP2544.001_v1, 25 March 2022).
- EP Risk Management Pty Ltd (EP Risk) (2022b). *Groundwater Monitoring Event, 12 Grand Avenue, Rosehill, NSW 2142* (ref: 21 December 2022).
- EP Risk Management Pty Ltd (EP Risk) (2022c). *Summary Letter – Supplementary PFAS Sampling, Downer Site – 12 Grand Avenue, Camellia, NSW, 2142* (ref: EP2761.001_v2, 8 August 2022).
- EP Risk Management Pty Ltd (EP Risk) (2023a). *Environmental Management Plan, Lot 33, 12 Grand Avenue, Rosehill NSW* (ref: EP2827.005_v1, 3 March 2023) (EP Risk, 2023).
- EP Risk M Management Pty Ltd (EP Risk) (2023b). Conceptual Site Model, 12 Grand Avenue, Rosehill NSW (reference: EP2827.003_vDraft, 15 March 2023) (EP Risk, 2023).

Based on a review of the reports listed above and the EPA Declaration, the primary contaminant of concern for Lot 33 was identified as hexavalent chromium.

Review of the reports showed a limited plume of phase separated hydrocarbon (PSH), and some dissolved phase hydrocarbons (DPH) had previously been identified within the central to northern area of Lot 32 in an area used as a truck wash bay. The measured thickness of PSH (by an interface probe) within the plume prior to commencement of the operation of the PSH Skimmer ranged from approximately 1 mm to 15 mm. Recent monitoring (Consarsa, 2021) has confirmed a reduction to either being not present to 3-5 mm (as measured by bailer). Moreover, identified hydrocarbon contamination appeared to be limited to the interfered lateral extent of the PSH plume located on Lot 32 and concentrations of hydrocarbons in groundwater at the site have consistently been reported at levels either less than adopted groundwater criteria or considered to be low. The ongoing remediation of PSH on-site was reported to be expected to continue until the PSH plume reported a thickness of <1 mm. However, extensive sheening was also observed within shallow groundwater inflow at depths from 1.0 mBGL during test pitting in the western portion of Lot 33. A slight hydrocarbon odour was observed in MW1001 downgradient of the identified sheening however LNAPL was not detected in downgradient boundary wells. A site inspection conducted by ADE on July 12, 2024, recorded no hydrocarbon odours or sheens within existing groundwater wells on site. So, based on the above, PSH is not considered to be a contaminant of concern for Lot 33.

With respect to the CSM (EP Risk, 2023b) prepared for the site, this EMP pertains primarily to the management of contaminants of concern considered likely to pose a risk to on and off-site receptors within the Lot 33,

identified as Cr(VI). While previous investigations confirmed that Cr(VI) concentrations in soil samples from Lot 33 did not exceed NEPM HIL-D criteria, exceedances were recorded in shallow groundwater wells (i.e., CW202, CW203, MW1001 and MW1002) for ANZG (2018) Marine Water 95% criteria.

Cr(VI) is known to undergo reduction to the less toxic and less mobile Cr(III) under reducing groundwater conditions (USEPA 1994 and 2000, and Acharyya et al., 2023). Key factors influencing this transformation include:

- **Low Oxygen Levels (Anaerobic Conditions)** – Reducing conditions, often indicated by low dissolved oxygen (DO) and negative oxidation-reduction potential (ORP), favour its conversion to Cr(III). Groundwater assessment (Consara, 2022) reported DO levels of 0.19–0.27 mg/L in shallow wells and 0.11–7.29 mg/L in deep wells. ORP values ranged from -89.7 to 16.20 mV in shallow wells and -14.40 to 201.3 mV in deep wells, indicating a mix of reducing and oxidising conditions, with greater potential for Cr(VI) reduction in shallow wells.
- **Lithological Influence** – The site comprises sandy clay to clayey sand, which may enhance reduction of Cr(VI) to Cr(III) due to more iron-bearing minerals in fine-grained soils (e.g., clays).
- **pH Conditions** – The reduction of Cr(VI) to Cr(III) is more effective under slightly acidic to neutral pH (~4–7) in natural groundwater. Groundwater assessment indicated pH levels of 6.59–8.7 in shallow wells and 5.53–6.42 in deep wells, suggesting that reduction is less favourable in the shallow well with basic pH (i.e., MW1002).
- **Groundwater Hydrochemistry:** The shallow groundwater is classified as sodium/calcium-type and influenced by sulphate, which may promote reduction, while the deeper groundwater is sodium/potassium-type and influenced by chloride, indicating distinct redox environments that may impact Cr(VI) mobility and transformation.
- **Redox Potential** – A lower redox potential (more negative ORP values) encourages the reduction of Cr(VI). Generally, Cr(VI) reduces to Cr(III) when **redox potential is below +200 mV**. The reported ORP values for both shallow and deep wells suggest conditions conducive to Cr(VI) reduction.

Overall, site conditions indicate the potential for natural attenuation of Cr(VI), though the extent and rate of reduction may vary spatially. Ongoing monitoring of ORP, pH, and iron concentrations is recommended to assess Cr(VI) behaviour and inform potential remediation strategies.

3.2 Potential Receptors

Based on the current use of the site, potential receptors and exposure pathways comprise:

- On-site receptors:
  - Current and future intrusive construction and maintenance workers.
  - Current and temporary workers, users and visitors of the site.
  - Future commercial workers at the site.
- Off-site receptors:
  - Current and future construction and maintenance workers at surrounding commercial/industrial properties.
  - Current and future users and visitors of surrounding commercial/industrial properties.
  - Current and future terrestrial flora and fauna in the nearby areas including the Parramatta River.

A potential risk to ecological receptors was identified in areas where future excavation or dewatering is required, due to the potential for ASS to be disturbed during construction works. The disturbance of ASS is considered outside the scope of this EMP and is therefore not discussed in detail. In the event that intrusive

construction works within natural soils on-site are proposed, the preparation of an ASSMP would be required in conjunction with the preparation of a Dewatering Management Plan, and revision to this EMP.

3.3 Potential Future Exposure Pathways

The highest risk of exposure to Cr (VI) impacted soils and groundwater during maintenance works will be to intrusive construction and in-situ maintenance workers. Potential exposure pathways include:

- Direct dermal contact with Cr (VI) impacted groundwater.
- Incidental ingestion with Cr (VI) impacted groundwater.

Based upon the proximity of ecological receptors to the site (including the northern drainage channel and associated vegetation, Parramatta River, Duck River and eastern wetland) future potential exposure pathways to ecological receptors at the site include the following:

- Migration of contaminated groundwater off-site.
- Discharge of impacted groundwater into surface water bodies, potentially affecting aquatic ecosystems.

3.4 Conceptual site Model (CSM) Summary

Potential on and off-site contaminating activities, contamination sources and CoPC are summarised in **Table 7** below. The potential sources and CoPC have been updated based on the analytical results.

Table 6. Known and potential contamination source, pathway and linkages

Sources				Pathways	Receptors	Linkages	Data Gaps / Management Measures
Primary	**Secondary**	**Contaminants**	**Affected Media**	**Exposure Pathway**			
Historical imported fill materials and Chromium Ore processing residue (COPR) of unknown origin and quality. **Current and historical use of wider site (i.e., Lot 32) for bitumen production and subsequently asphalt stockpiling in Lot 33.** **Potential use of chemicals/above ground fuel storage during site operation.** **Demolition, maintenance, and weathering of hazardous building materials on-site.** **Surface water run-off during high rainfall events to off-site properties.**	COPR waste (Cr (VI)) present in the unsaturated zone Cr (VI) Impacted Groundwater	Hexavalent Chromium	• Groundwater	<u>Human Health</u> • Dermal contact • Incidental ingestion	• Future construction and sub-surface maintenance workers. • Future users – commercial.	**Potentially Complete for Groundwater – Hexavalent Chromium – Human Health / Ecological**. Based on the components of the CSM (EP Risk, 2023b) there is a source of hexavalent chromium within the soil and vadose zone sediments that is migrating into groundwater. The magnitude of the source flux appears to be a function of recharge rate, variations in the water table elevation and the contaminant sorption and solubility. Although based on the groundwater level monitoring conducted, the water table appears to be relatively stable.	The primary source area has not been fully delineated. However, degradation/retardation process have been observed at the site which could be effectively limiting the transport pathways. As such it is currently unknown whether there is a complete source pathway receptor linkage between hexavalent chromium contaminated groundwaters migrating from the site to downgradient receptors including the adjoining wetlands and eventually the Parramatta River / Duck Creek and recreational users of the Parramatta River. Surface Water Management Measures should be implemented to limit potential for groundwater recharge and contaminant mobilisation from vadose zone sediments. An Environmental Management Plan (EMP) is required for subsurface work.
				<u>Ecological</u> Direct and Indirect uptake by flora and fauna	• Terrestrial and Aquatic fauna and flora at the site and off-site adjoining Wetlands. • Ecosystems dependant on the downgradient Duck Creek and Parramatta River.		
				<u>Ecological</u> Direct and Indirect uptake by flora and fauna	• Terrestrial and Aquatic fauna and flora at the site and adjoining land. • Ecosystems dependent on the downgradient Creeks and Rivers.		

4 Management and Monitoring Procedures

4.1 Emergency Contacts and Response

In the unlikely event of an emergency, the contacts presented in **Table 7** are available.

Table 7. Emergency Contacts

Name	Role	Contact
Emergency Response		000
Fire and rescue NSW	Headquarters and general enquiries	(02) 9265 2999
NSW Ambulance Service	State Headquarters	(02) 9320 777
NSW Police Service	Non-emergencies	131 444
Safe Work NSW	Incident Reporting	13 10 50
NSW Environment Protection Authority	Environmental Hotline	131 555
Site Contact – Dennis Zhang		0450 101 017

4.2 Roles and Responsibilities

All site personnel (including site owner/manager/tenants, contractors and visitors) have a responsibility for protecting human health and the environment. The key roles and responsibilities for the EMP are presented in **Table 9.**

Table 8. Roles and Responsibilities

Parties	Responsibilities
Site owner/manager	• Provision of a copy of the EMP to any future purchasers or occupiers of the site and attach a copy of the document to the contract of sale / lease. • To ensure that all contractors and consultants are aware of the contents of the EMP and that a copy of the EMP is available. • Undertake all stakeholder management including liaison with regulatory bodies and follow-up of all external complaints. • Ensure EMP is documented on the Section 10.7 certification. • Maintains ultimate responsibility for the implementation of the EMP for the site including the completion of corrective actions to rectify non-conformances or complaints. • Responsible for revisions and amendments to the EMP if site conditions change, track and management the revisions and amendments and ensure amendments are communicated to all stakeholders. • Review effectiveness of the EMP following any incident or any other event that suggests the EMP is ineffective.
Site manager (TBC)	• Responsible for the implementation of the Management Procedures MP1-MP11 in **Appendix B**. • To ensure that all contractors and consultants are aware of the contents of the EMP and that a copy of the EMP is available. • To ensure compliance to the requirements of the EMP through surveillance and monitoring of consultants and contractors. • Ensure EMP is documented on the site Asbestos Register (if any).

Parties	Responsibilities
	• Review effectiveness of the EMP following any incident or any other event that suggests the EMP is ineffective. • Ensure any site workers and contractors engaged in sub-surface activities at the site are inducted on the requirements of the EMP. • Report any unexpected Finds to the site Owner and the Environmental Consultant. • Record Keeping.
Civil works and construction contractors as delegated by the Site Manager	• Implementation of the EMP during any construction works, and undertake all works in accordance with the requirements of the EMP. • Monitor and report (where relevant) on environmental and safety hazards, impacts or improvements to work activities. • Immediate reporting of all non-conformances or complaints to the site owner / site Manager or concerns regarding the implementation of the EMP. • Undertake corrective actions to rectify non-conformances or complaints.
Site tenants / operators	• To ensure that all contractors and consultants are aware of the contents of the EMP and that a copy of the EMP is available. • Ensure any site workers and contractors engaged in sub-surface activities at the site are inducted on the requirements of the EMP. • Implementation of the EMP during subsurface maintenance works, and undertake all works in accordance with the requirements of the EMP. • Monitor and report (where relevant) on environmental and safety hazards, impacts or improvements to work activities. • Immediate reporting of all non-conformances or complaints to the site owner / site Manager or concerns regarding the implementation of the EMP. • Undertake corrective actions to rectify non-conformances or complaints.
Environmental consultant as delegated	• Provide advice on environmental issues, unexpected finds and incidents as necessary. • Update the EMP as necessary.

Table 9 outlines all stakeholders and points of contact (where applicable) for this EMP.

Table 9. list of stakeholders

Role	Contact
Site Owner	Dennis Zhang dennis@acepdg.com.au
NSW EPA	info@epa.nsw.gov.au

4.3 Legislative and Regulatory Framework

The regulatory safety, health and environment standards which apply to the EMP are listed below:

- **Work Health and Safety Act 2011 (WHS Act) and WHS Regulation 2017:** The WHS Act aims to protect workers against the health and safety risk arising from the activities of persons at work. This EMP will assist site management with disclosure of potential workplace risks and assist site workers and contractors with the development of appropriate controls to mitigate the risks.
- **Contaminated Land Management Act 1997 (CLM Act):** The CLM Act provides a framework for the management of contaminated land in NSW and accountabilities for managing contamination. This EMP has been prepared in accordance with the CLM Act.
- **Protection of the Environment Operations Act 1997 (POEO Act):** The POEO Act aims to manage the cumulative impact on the environment from existing and future human activities. This EMP will assist site management, site workers and contractors with the management of potential environmental risks associated with future site activities.

- **Environmental Planning and Assessment Act 1979 (EP&A Act):** The EP&A Act regulates development in NSW and incorporates the principles of ecologically sustainable development through the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation). The EP&A Act established planning requirements for projects with potential environmental impacts. It is understood that this EMP may be considered by planning authorities when assessing future development applications and planning approvals for the site.

Other relevant codes include:

- SafeWork NSW (2022). *Code of Practice: How to Safely Remove Asbestos* (SafeWork NSW, 2022a).
- SafeWork NSW (2022). *Code of Practice: How to Manage and Control of Asbestos in the Workplaces,* (SafeWork NSW, 2022b).
- Safe Work Australia (SWA) (2022). *Workplace Exposure Standards for Airborne Contaminants* (SWA, 2022).

Other relevant standards and guidelines include:

- NSW EPA (2022). *Practice Note: Preparing environmental management plans for contaminated land,* (NSW EPA, 2022).
- NSW EPA (2020). *Contaminated Land guidelines, Consultants Reporting on Contaminated Land* (NSW EPA, 2020).
- State Environmental Planning Policy (Resilience and Hazards) 2021.

4.4 Management Procedures

A consolidated and compacted recycled asphalt pad serves as the primary control measure for managing potential Cr (VI) contamination at the site.

Additional control measures include:

1. **Maintenance and inspection**

- Maintaining the capping layer and sub-grade integrity throughout the EMP duration;
- Conducting regular inspections at least once per month, with written and photographic documentation covering:
    - Condition of the compacted recycled asphalt pad;
    - Status of unsealed areas, including landscaped sections;
    - Identification of any fissures, degradation, subsidence, or other issues affecting the pad's integrity;
    - Assessment of in-ground services, such as stormwater pits, grates, and drainage systems;
    - Noting any significant changes to the hardstand since the last inspection;
    - Detailed reports on any excavation activities; and
    - Additional observations on the condition and integrity of the pad and sub-grade material.

2. **Immediate repair**
    - Repair any significant fissures or cracks within the compacted recycled asphalt pad within two weeks of identification.
    - Follow-up inspection by a qualified environmental consultant.

Tertiary administrative control measures are also required for managing potential source – pathway – receptors exposure pathways. These administrative controls are outlined in the management procedures (MPs) below. The key roles and responsibilities for implementation of the EMP and associated MPs is outlined in **Section 4.2**.

MPs are summarised below and more details are provided in **Sections 4.4.1 to 4.4.10**:

- MP 1: Land use restrictions.
- MP 2: Excavation of Contaminated Fill Material Beneath Capping Layer.
- MP 3: Stockpiling and Management of Contaminated Fill Material.
- MP 4: Off-site Disposal of Surplus Excavated / Unsuitable Material.
- MP 5: Importation of Fill Material / Aggregate.
- MP 6: Materials Tracking.
- MP 7: Subsurface Maintenance Works.
- MP 8: Unexpected Finds.
- MP 9: Monitoring and Management of Groundwater.
- MP 10: Management of Surface Water.

Management procedures address site activities identified in **Table 10**.

Table 10. Activities, Hazards and Control Measures

Activities	Hazard	Management Procedure	Documentation
Minor Works: (Comprising above ground maintenance works such as minor landscaping and mowing of grasses, or temporary removal of capping layer resulting in the potential for contact with surficial soils and/or sub-grade only).	• Leaching of contaminants to surface water and groundwater.	MP8, MP9, and MP10	• Revised EMP for site operation.
Major Works: (Comprising sub-surface works, including maintenance works, development works and works by which the integrity of the constructed pad may be compromised, and the potential for contact with underlying contaminated Fill materials, natural soils or groundwater is encountered).	• Accidental ignition of contaminated soil and groundwater. • Dermal contact with soil and groundwater. • Leaching of contaminants to surface water and groundwater.	MP1-MP10	• Revised EMP for site operation. • EMP induction records. Depending on the activity proposed, the following documentation may be required following consultation with an appropriately qualified and experienced environmental consultant: • Clearance Certificates • Records/Receipts of Lawful Transport • Soil Tracking Records

Activities	Hazard	Management Procedure	Documentation
			• Dewatering Management Plan • Acid Sulfate Soils Management Plan. • Construction Environmental Management Plan (CEMP).

4.4.1 MP1 – Land Use Restrictions

- **Responsibility**: Site Manager.
- **Frequency**: Ongoing operation.
- **Objective**: Manage risk to human health and the environment through land use restrictions.
- **Areas of the site**: Entire site.
- **Details**:
    - Potentially contaminated fill beneath the site contains Cr (VI) impacted soils, managed by a capping layer.
    - Groundwater cannot be used beneficially.
    - Land use restrictions can be lifted upon approval by NSW EPA after remediation and validation.

4.4.2 MP2 – Excavation of Contaminated Fill Material Beneath Capping Layer

- **Responsibility**: Site Manager.
- **Frequency**: Development works.
- **Objective**: Protect human health and the environment during disturbance.
- **Areas of the site**: Entire site.
- **Details**:
    - Contaminated fill beneath capping layer contains Cr (VI) and must be managed carefully if disturbed.
    - Protocols include setting up clearly defined work areas, using appropriate PPE, and avoiding temporary stockpiling of contaminated soil where possible.
    - Erosion and sediment controls, dust suppression, and odour management are essential during disturbance.
    - Disposal of single-use PPE in designated receptacles and maintaining materials tracking records are required.
    - Any excavation of natural soil at the site may encounter acid sulfate soils. Management of acid sulfate soils should be undertaken in accordance with a suitably prepared ASSMP to manage excavation of natural soils during future construction or long-term maintenance.
    - Materials tracking records should be retained for all contaminated fill material that has been excavated (see MP 6 - Materials Tracking). This should include the volume of material excavated, location of area where it was placed and survey drawings to confirm placement depth and extent beneath the capping layer

4.4.3 MP3– Stockpiling and Management of Contaminated Fill Material

- **Responsibility**: Site Manager.
- **Frequency**: Development works.
- **Objective**: Protect human health and the environment during excavation and stockpiling.
- **Areas of the site**: Entire site.
- **Details**:
    - Asbestos Work Area: Clearly defined and sign-posted area for asbestos work must be established.
    - Dust Suppression: Use water spraying or cover (e.g., geofabric, plastic, hessian sheeting, clean soil) to suppress dust during excavation.
    - Avoiding Temporary Storage: Minimize temporary storage of contaminated fill beneath the capping layer where possible.
    - Contamination Assessment and Treatment Area (CATA): Establish a CATA prior to excavation for temporary storage, ensuring it's outside flood zones and away from stormwater channels.
    - CATA Construction: Construct CATA with sealed surfaces (e.g., sealed concrete, asphalt, high density polyethylene) to prevent cross-contamination and leachate seepage.
    - Bunding: Use appropriate bunding (e.g., hay bales, silt fences) around stockpiles and divert surface water to prevent contamination.
    - Covering Contaminated Material: Cover stockpiles to prevent rainwater infiltration, reduce windblown dust, and minimize odour emission.
    - Leachate Management: Collect leachate and dispose of it off-site at a licensed facility or use it on-site for dust suppression if it meets discharge criteria after testing by an accredited laboratory.
    - Stockpile Management: Assign unique identifiers to stockpiles, record their locations, and develop a stockpiling and materials tracking procedure as part of the CEMP.

4.4.4 MP4– Off-site Disposal of Surplus Excavated / Unsuitable Material

- **Responsibility**: Site Manager.
- **Frequency**: Development works / Ongoing operation.
- **Objective**: Ensure lawful disposal of surplus materials.
- **Details**:
    - Waste Minimisation: Methods recommended include using screw piles instead of bored piers for pier footings, minimizing excavation below the capping layer to reduce disposal costs, and preventing cross-contamination between shallow and deeper groundwater.
    - Stockpile Classification: Materials identified for removal must be characterized by an Environmental Consultant, considering NSW legislation and guidelines. This includes NSW EPA Waste Classification Guidelines and relevant resource recovery orders.
    - Disposal Requirements: Compliance with POEO (Waste) Regulation 2014, including use of licensed vehicles, waste tracking, and covering of vehicles during transport to licensed facilities.

- Disposal Records: Detailed records of all material removed from the site must be provided to the site Owner or appointed representative upon completion of disposal works. These records are crucial for final site condition reports.
- Special Waste (Asbestos): Asbestos impacted soils must be disposed of as Special Waste (Asbestos) and tracked according to specific regulations.
- Stockpile Classification Testing: Environmental Consultants must conduct classification testing before off-site disposal. Sampling protocols are detailed, with specific requirements for different stockpile sizes and types.
- Liquid Wastes: Liquid wastes requiring off-site disposal must also be classified in accordance with NSW EPA (2014) guidelines.

4.4.5 MP5– Importation of Fill Material / Aggregate

- **Responsibility**: Site Manager.
- **Frequency**: Development works / Ongoing operation.
- **Objective**: Ensure imported material meets environmental standards.
- **Details**:
  - Verification Process: The environmental consultant will review information provided by the remediation contractor concerning imported soils. This process focuses on soils classified as Virgin Excavated Natural Material (VENM) or Excavated Natural Material (ENM) from reputable sources.
  - Review of source, site history, material properties to assess potential for contaminants.
  - Soil sampling may be necessary if it's unclear whether materials meet VENM or ENM definitions, following NSW EPA (2014) guidelines.
  - Sampling frequency varies based on volume, with a minimum of 3 samples or one per 25 m^3 for smaller volumes, and higher for larger volumes or non-homogeneous materials.
  - Testing focuses on potential contaminants identified through site history and material source review.
  - ENM materials must be tested according to ENM Order 2014 or relevant resource recovery orders.
  - An inspection is conducted upon arrival at the site to ensure consistency with provided VENM or ENM information.

4.4.6 MP6– Materials Tracking

- **Responsibility**: Site Manager.
- **Frequency**: Development works / Ongoing operation.
- **Objective**: Track movement of materials to ensure proper handling.
- **Details**:
  - Includes a Materials Tracking Plan (MTP) to monitor source and destination of all materials.
  - Aims to track all construction-generated materials on-site, identifying their source and destination at all times.

- Establish and maintain a naming system for identifying source and destination areas, including excavations, stockpiles (clean ENM, VENM, and potentially contaminated fill), treated or disposed soils, and off-site material sources.
- Use signage to classify materials and designate area numbers for each excavation prior to soil movement.
- Maintain a 'Record of Soil Movement' sheet detailing material source, classification, volume, and destination for each load or stockpile moved on-site or off-site.
- Place soil in approved locations based on its classification and prevent mixing with other soil types.
- Educate all operators on system requirements.
- Monitor and review contractor tracking records, conduct spot checks during construction, and review construction materials handling records with the environmental consultant.

4.4.7 MP7– Subsurface Maintenance Works

- **Responsibility**: Site Manager.
- **Frequency**: Ongoing operation.
- **Objective**: Ensure maintenance activities do not pose risks.
- **Details**:
  - Existing Capping Layer: Includes gravels, crushed concrete, concrete slab, bitumen, and asphaltic cement, with contaminated fill (including hexavalent chromium impacted soils) encapsulated below.
  - Environmental Consultant assessment required before intrusive subsurface maintenance to assess risks.
  - Standard work health and safety controls anticipated, including specific measures for handling contaminated fill.
  - Compliance with WHS Act 2011, including considerations for confined spaces as per AS 2865.
  - PPE requirements for workers exposed to impacted fill materials.
  - SWMS required and authorized by the site Owner.
  - Stormwater management through redirection and sediment controls.
  - Groundwater management, including lawful disposal if removal is necessary.
  - Use of gas screening and additional respiratory protection if needed.
  - Air monitoring for confined space entry and use of blowers for ventilation.
  - Hygiene practices and precautions during and after work in fill material.
  - Minimize disturbance of underlying fill during slab removal.
  - Reinstatement of concrete slab to original specifications promptly after disturbance.
  - Procedures include setting up asbestos work areas and decontamination zones.
  - Use of appropriate PPE and dust suppression during excavation.
  - Disposal of used PPE as special waste.
  - Waste classification and disposal procedures in accordance with NSW EPA guidelines.
  - Potential encounter with acid sulfate soils (ASS) requires an ASSMP.

- Management of groundwater ingress per MP 9 guidelines.
- Requires EMP update, including stockpiling, imported materials, waste classification, and materials tracking procedures.
- Must reinstate disturbed capping layer appropriately, with clean VENM materials used for interim capping.
- Any changes to long-term capping layer require site owner approval and EMP revision.

4.4.8 MP8– Unexpected Finds

- **Responsibility**: Site Manager.
- **Frequency**: Ongoing operation.
- **Objective**: Manage unexpected discoveries of contamination.
- **Details**:
  - Principal Contractor must prepare an Unexpected Finds Protocol (UFP) for construction works to manage unexpected discovery of on-site contamination.
  - During subsurface maintenance, hazards may include visible or detectable materials such as asbestos, construction/demolition waste, hydrocarbon impacted materials, drums or underground storage tanks (USTs), and oily ash/slag contaminated soils.
  - If any unexpected hazardous substance is uncovered:
    - Stop work immediately and isolate the affected area using temporary barriers or covers to prevent exposure.
    - Contact an Environmental Consultant promptly to assess and manage the situation.
  - Environmental Consultant will assess the substance to determine if it poses a hazardous risk to human health or the environment.
  - Responsible for reporting details of the Unexpected Find and validating sampling results.
  - Provides clearance certificates to confirm the area is safe for work to resume after remediation.

4.4.9 MP9– Management of Groundwater

- **Responsibility**: Site Manager.
- **Frequency**: As required.
- **Objective**: Manage groundwater to prevent risks to health and environment.
- **Details**:
  - Groundwater extraction for any beneficial use is not permitted at the site due to ongoing commercial/industrial land use and existing contamination concerns on the Camellia Peninsula.
  - Groundwater monitoring should continue as per the requirements specified in the recent VMP.
  - Measures to manage worker exposure to contaminated groundwater include:
    - Project inductions to identify high-risk areas.

- SWMS detailing hazards associated with contaminated groundwater and appropriate control measures.
- PPE requirements including disposable overall suits with boots, waterproof nitrite gloves, and standard PPE.
- Hygiene practices emphasizing hand and face washing before eating, regardless of glove use.
- Immediate washing of skin exposed to contaminated water, and removal of wet clothing post-work.

- Additional groundwater monitoring well**s**
  - Assessment and rehabilitation of current GW wells on Lot 33, replace any lost or destroyed wells.
  - Installation of Wells: Groundwater wells need to be installed for regular monitoring of Cr(VI) concentration, LNAPL presence, ORP, and DO on-site and potential movement off-site. ADE proposes the installation of a minimum of four (4) shallow groundwater monitoring wells at Lot 33, specifically two at the northern section corner and two at the southern part near the former MW1002 and MW1001, for regular monitoring of Cr(VI). In addition, installation of a minimum of 2 deep groundwater wells in the central part of Lot 33 to assess Cr6+ concentration and confirm GW flow direction.

Groundwater wells will be used to define the extent and movement of groundwater plumes and tidal influence on movement.

4.4.10 MP10– Management of Surface Water

- **Responsibility**: Site Manager.
- **Frequency**: As required.
- **Objective**: Manage surface water to prevent risks to health and environment.
- **Details**:
  - Contaminated surface water at the site cannot be used for any beneficial purpose due to potential leaching of contaminants from disturbed fill material.
  - A site-specific Stormwater Management Plan (SMP) should be prepared.
  - Design stormwater controls to limit infiltration of runoff into contaminated soil areas.
  - Notify the Environmental Consultant for inspection and sampling if contaminated stormwater is suspected.
  - Implement measures to manage exposure to contaminated surface water, including:
    - Project inductions to identify high-risk contamination areas.
    - SWMS detailing hazards and control measures for contaminated surface water.
    - Use of PPE in high-risk areas:
      - Disposable overall suits with boots.
      - Disposable waterproof nitrite gloves in addition to standard gloves.
      - Standard PPE required for on-site work.

- Place signage in ablution blocks to remind workers to wash hands and face before eating, regardless of glove use.
- Ensure immediate washing of skin with clean water and removal of wet clothing if contact with contaminated water occurs.

5 Site Management

5.1 Potential Health and Safety Risks

Potential health and safety risks apply to unexpected finds / remaining surface or near surface asbestos containing material (ACM) as well as contaminated fill material underlying the capping layer within the site. The risks posed by the hazards identified at the site are:

- Exposure to contaminated soil by way of inhalation; and
- Exposure to contaminated soil by way of contaminants being removed from site on soil clothing. It is recommended that prior to undertaking any works with the potential to disturb contaminated soils within the site, all personnel must be appropriately trained and must be wearing appropriate personal protective equipment (PPE) to undertake works within the area.
- Direct dermal contact with contaminated groundwater.

5.2 Regulatory Requirements

Task-specific safe work method statements (SH&EWMS) must be prepared prior to undertaking intrusive works across the site. SH&EWMS must:

- Provide a description of the work to be undertaken.
- Identify the safety risks.
- Describe the control measures to be implemented as part of the works.
- Describe the equipment to be used in the work.
- Describe the relevant codes / standards applicable to the works.
- Provide details on the training and qualifications of persons undertaking the work; and,
- Directly reference and take into consideration requirements outlined in the EMP.

5.3 Training and Certification

All personnel involved in any works on the site will be subject to a site induction. The level of induction will depend on the tasks to be undertaken by the individual. It is the responsibility of the site owner/manager/tenant to ensure the inductions are performed and maintain records of inductions. All workers should undergo training including the following:

- Site Induction;
- The role and purpose of the EMP (i.e. PPE requirements, associated risks etc); and

- Environmental emergency response training.

It is anticipated tasks associated with routine operations and maintenance which do not involve intrusive groundworks (where required), will not require any specific inductions or training. However, all other workers will need to be made aware of the EMP and how it is to be implemented.

The following items should be discussed for workers identified in **Table 4** and **Table 5** during a site induction, where works require disturbance of the compacted recycled asphalt pad, sub-grade and underlying soils:

- General overview of the work to be conducted;
- Hazard identification and prevention measures;
- Review of the residual contamination on the site and when the EMP applies; and
- Review of the control measures required for implementation of the EMP.

5.4 Site Access

All workers undertaking intrusive works within the site are required to meet the applicable PPE requirements. Permission to undertake intrusive works at the site can only be provided by the site manager only after persons entering the site have been advised of the potential contamination hazards. Any person accessing the site must do so in accordance with the environmental, health and safety requirements indicated in this EMP.

5.5 Availability and Implementation of the EMP

The EMP is not a static document. It is a working document that requires review and amendment during the life of the site. Making changes to the EMP will continually improve the effectiveness of this document. This EMP applies indefinitely and is to be implemented as long as the contamination remains in-situ.

An appropriate mechanism should be implemented to ensure that the EMP is readily available to construction workers, occupiers, maintenance workers and future landowners including:

- In accordance with the EP&A Act, the EMP will be provided to the City of Paramatta (Council) which is enforceable via planning instruments as a condition on the Section 17 Voluntary Management Proposals for the site.
- Provision of the EMP as an attachment to future contracts of sale or lease agreements, with contractual obligations to ensure implementation of the EMP, via further contracts of lease or sale.
- During operation the EMP will be incorporated into the owner's / operator's business management system (BMS) / environmental management system (EMS).
- A site induction protocol shall be implemented for personnel involved in subsurface maintenance, where removal of the cap and disturbance of the underlying fill is required.

5.6 Updates to EMP

The EMP applies until such time as conditions change or the site is further remediated and/or assessed through revised human health or ecological risk assessments (or similar). Given the continuous source of Cr (VI) contamination in groundwater through the presence of fill material, it is likely the EMP will need to remain in place in the long-term. In the event significant development of the site is planned excavation and source removal/management should be considered.

Should site conditions change with respect to the nature and extent of identified contamination, or further assessment demonstrate human health or ecological risks no longer exit, the EMP should be revised. A periodic yearly review of the EMP and management controls should be undertaken (under the responsibility of the site owner/manager/tenant) for the following:

Review of the effectiveness of the EMP following any incident or other event that suggests the EMP is ineffective.

- Identification of any corrective actions following any changes to site conditions arising from major or minor works, or due to an extreme weather event such as flooding.
- The EMP should be reviewed and potentially revised if there are any regulatory changes relevant to the implementation of the EMP.
- The EMP should be reviewed if there is any significant change in land use or development of the site.
- Where the EMP is revised, copies should be provided to all current stakeholders, training provided, and induction procedures updated where necessary.
- The EMP may also require review following changes to site activities or changes to NSW EPA or Safe Work NSW reporting guidelines.
- The EMP should be reviewed at the time when/if the VMP requires renewal.
- Close-out parameters should be included in the next review of this EMP.

5.7 Corrective Actions

Where corrective actions have been identified during inspections, these must be communicated to the site owner. Corrective actions should be completed in accordance with the adopted environmental management system. However, where the actions relate to breaches in environmental controls, use of PPE and WHS requirements, corrective action must be implemented immediately.

5.8 Record Keeping

The Site Manager is responsible for ensuring records of the inductions, inspections, corrective actions (i.e. maintenance) and reports prepared for the site are retained and provided to the site owner on an annual basis.

During long-term occupation, sub-surface maintenance induction records, capping layer inspections and capping layer maintenance records will be managed and maintained via the site user's BMS system. These records should be evaluated and used for completing the review of this EMP.

6 Limitations

This report has been prepared for use by ACE who have commissioned the works in accordance with the project brief only and has been based on information provided by the client. The advice herein relates only to this project and contents should be reviewed by a competent and experienced person with experience in said reports, before being used for any other purpose.

ADE accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced or amended in any away without prior approval by the client or ADE and should not be relied upon by any other party, who should make their own independent enquiries.

This report does not provide an assessment of the environmental status of the site, and it is limited to the scope defined herein. ADE's professional opinions are based upon its professional judgment, experience, and training.

As requested by the client, ADE was tasked with finalising a draft EMP originally prepared by EP Risk (2023a). ADE has exercised reasonable skill and care in reviewing and incorporating the text provided by EP Risk into the final document. This approach was taken to ensure continuity and coherence in the project's documentation.

ADE does not verify the accuracy or completeness of, or adopt as its own, the information or data supplied by others and excludes all liability with respect to such information and data. To the extent that conditions differ from assumptions set out in the report, and to the extent that information provided to ADE is inaccurate or incomplete or has changed since it was provided to ADE, the opinions expressed in this report may not be valid and should be reviewed.

ADE has used a degree of care and skill ordinarily exercised in similar investigations by reputable members of the Environmental Industry within Australia. No other warranty, expressed or implied, is made or intended.

7 References

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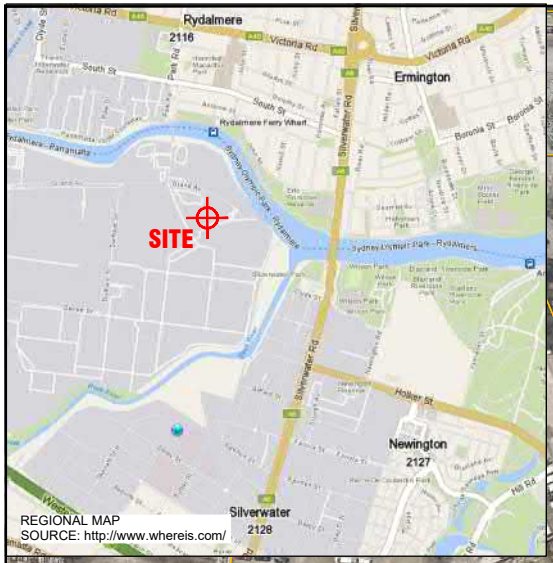
Appendix A – Figures



REGIONAL MAP
SOURCE: http://www.whereis.com/

LEGEND

SITE BOUNDARY

NOTE:
ALL LOCATIONS ARE APPROXIMATE
DIMENSIONS IN METRES.

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 30 OCT 2024.

revision	no.	description	drawn	approved	date
	A	FIRST ISSUE	MC	LL	22/07/24
	B	HISTORICAL SAMPLE UPDATE	MC	LL	16/01/25

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SCALE 1:1500 @A3 METRES

drawn	MC
approved	LL
date	16/01/2025
scale	AS SHOWN
original size	A3

client: ACE ROSEHILL PTY LTD

project: ENVIRONMENTAL MANAGEMENT PLAN
LOT33, DP1287670
12A GRAND AVENUE, ROSEHILL, NSW

title: SITE LAYOUT PLAN

project no: A101024.0518.00 | figure no: FIGURE 1 | rev: A

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LEGEND

- SITE BOUNDARY
- MW — SHALLOW GROUNDWATER MONITORING WELL (EP RISK, 2022)
- MW — DEEP GROUNDWATER MONITORING WELL (EP RISK, 2022)
- MW — SHALLOW GROUNDWATER MONITORING WELL (CONSARA, 2020)
- MW — SAMPLE LOCATION (CONSARA, 2020)
- TP — TEST PIT LOCATION (EP RISK, DUE DILIGENCE ASSESSMENT, EP2544.001_V1, 25 MARCH 2022)
- SS — SURFACE / SEDIMENT WATER SAMPLE LOCATION (EP RISK, 2022)

NOTE:
ALL LOCATIONS ARE APPROXIMATE
DIMENSIONS IN METRES.

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 30 OCT 2024.

revision

no.	description	drawn	approved	date
A	FIRST ISSUE	MC	LL	22/07/24
B	HISTORICAL SAMPLE UPDATE	MC	LL	16/01/25

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SCALE 1:1000 @A3 METRES

drawn	MC
approved	LL
date	16/01/2025
scale	AS SHOWN
original size	A3

client: ACE ROSEHILL PTY LTD

project: ENVIRONMENTAL MANAGEMENT PLAN
LOT33, DP1287670
12A GRAND AVENUE, ROSEHILL, NSW

title: HISTORICAL SAMPLE LOCATION PLAN

project no: A101024.0518.00 | figure no: FIGURE 2 | rev: A

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PLOT DATE: 6/02/2025 5:17:32 PM DWG FILE: C:\USERS\MIRANDA.CHIA\ADE CONSULTING GROUP PTY LTD\ENV-WORKING - DOCUMENTS\NSW\PROJECT\24.0518.00 ACE ROSEHILL VMP & EMP\5 WORKING DOCS\4 CAD (MC)\24.0518.00_EMP_REV6.DWG

revision	no.	description	drawn	approved	date
	A	FIRST ISSUE	MC	LL	22/07/24
	B	HISTORICAL SAMPLE UPDATE	MC	LL	16/01/25

0 10 20 30 40 50
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drawn	MC
approved	LL
date	16/01/2025
scale	AS SHOWN
original size	A3

client: ACE ROSEHILL PTY LTD

project: ENVIRONMENTAL MANAGEMENT PLAN
LOT33, DP1287670
12A GRAND AVENUE, ROSEHILL, NSW

title: DEPTH OF BITUMEN CONTOUR PLAN

project no: A101024.0518.00 | figure no: FIGURE 3 | rev: A

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LEGEND

- SITE BOUNDARY
- TP — TEST PIT LOCATION (EP RISK, DUE DILIGENCE ASSESSMENT, EP2544.001_V1, 25 MARCH 2022)
- SHALLOW GROUNDWATER MONITORING WELL & GEOTECH BOREHOLE (GBH), (EP RISK, 2022)
- MW — DEEP GROUNDWATER MONITORING WELL (EP RISK, 2022)

DEPTH (meters)	CHROMIUM CONCENTRATION (mg/kg)
3600	HIL - D (mg/kg)
0.5	>LOR (mg/kg)

NOTE:
ALL LOCATIONS ARE APPROXIMATE
DIMENSIONS IN METRES.

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 30 OCT 2024.

revision	no.	description	drawn	approved	date
	A	FIRST ISSUE	MC	LL	22/07/24
	B	HISTORICAL SAMPLE UPDATE	MC	LL	16/01/25

SCALE 0 10 20 30 40 50 METRES — 1:1000 @A3

drawn	MC
approved	LL
date	16/01/2025
scale	AS SHOWN
original size	A3

client: ACE ROSEHILL PTY LTD

project: ENVIRONMENTAL MANAGEMENT PLAN
LOT33, DP1287670
12A GRAND AVENUE, ROSEHILL, NSW

title: SOIL ANALYTICAL RESULTS - CHROMIUM (VI) IN FILL MATERIAL

project no: A101024.0518.00 | figure no: FIGURE 4 | rev: A

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- SITE BOUNDARY
- TP — TEST PIT LOCATION (EP RISK, DUE DILIGENCE ASSESSMENT, EP2544.001_V1, 25 MARCH 2022)
- SHALLOW GROUNDWATER MONITORING WELL & GEOTECH BOREHOLE (GBH), (EP RISK, 2022)

DEPTH (meters)	CHROMIUM CONCENTRATION (mg/kg)
3600	HIL - D (mg/kg)
0.5	>LOR (mg/kg)

NOTE:
ALL LOCATIONS ARE APPROXIMATE
DIMENSIONS IN METRES.

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 30 OCT 2024.

revision	no.	description	drawn	approved	date
	A	FIRST ISSUE	MC	LL	22/07/24
	B	HISTORICAL SAMPLE UPDATE	MC	LL	16/01/25

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SCALE 1:1000 @A3 METRES

drawn	MC
approved	LL
date	16/01/2025
scale	AS SHOWN
original size	A3

client: ACE ROSEHILL PTY LTD

project: ENVIRONMENTAL MANAGEMENT PLAN
LOT33, DP1287670
12A GRAND AVENUE, ROSEHILL, NSW

title: SOIL ANALYTICAL RESULTS - CHROMIUM (VI) IN NATURAL SOIL MATERIAL

project no: A101024.0518.00 | figure no: FIGURE 5 | rev: A

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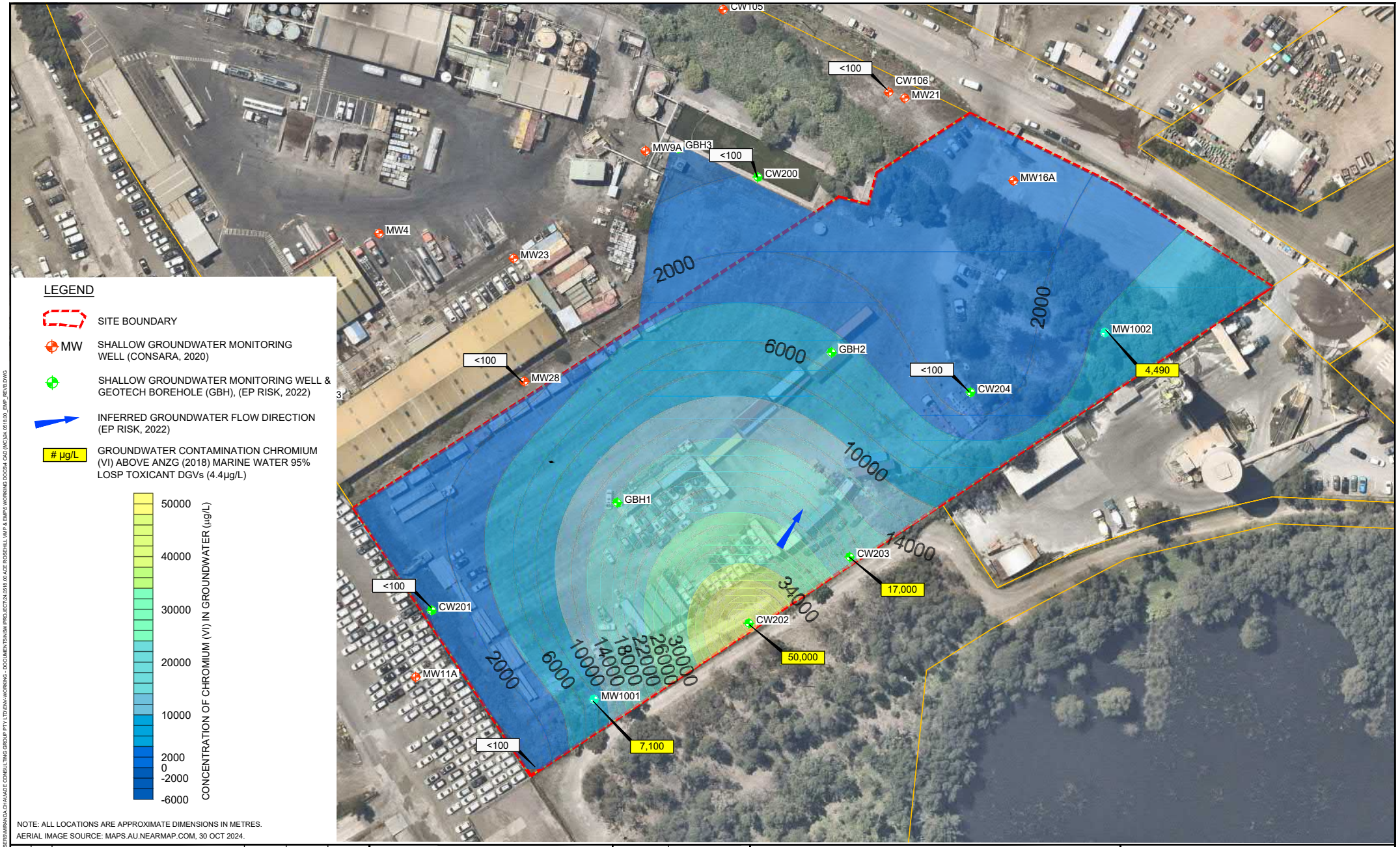

LEGEND

- SITE BOUNDARY
- MW — SHALLOW GROUNDWATER MONITORING WELL (CONSARA, 2020)
- SHALLOW GROUNDWATER MONITORING WELL & GEOTECH BOREHOLE (GBH), (EP RISK, 2022)
- INFERRED GROUNDWATER FLOW DIRECTION (EP RISK, 2022)
- # µg/L — GROUNDWATER CONTAMINATION CHROMIUM (VI) ABOVE ANZG (2018) MARINE WATER 95% LOSP TOXICANT DGVs (4.4µg/L)

CONCENTRATION OF CHROMIUM (VI) IN GROUNDWATER (µg/L)

50000
40000
30000
20000
10000
2000
0
-2000
-6000

NOTE: ALL LOCATIONS ARE APPROXIMATE DIMENSIONS IN METRES.
AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 30 OCT 2024.

revision	no.	description	drawn	approved	date
	A	FIRST ISSUE	MC	LL	22/07/24
	B	HISTORICAL SAMPLE UPDATE	MC	LL	16/01/25

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SCALE 1:1000 @A3 METRES

drawn	MC
approved	LL
date	16/01/2025
scale	AS SHOWN
original size	A3

client: ACE ROSEHILL PTY LTD

project: ENVIRONMENTAL MANAGEMENT PLAN
LOT33, DP1287670
12A GRAND AVENUE, ROSEHILL, NSW

title: SHALLOW AQUIFER -
GROUNDWATER EXCEEDANCES IN CHROMIUM (VI)

project no: A101024.0518.00 | figure no: FIGURE 6 | rev: A

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	A	FIRST ISSUE	MC	LL	22/07/24
	B	HISTORICAL SAMPLE UPDATE	MC	LL	16/01/25

NOTE: ALL LOCATIONS ARE APPROXIMATE DIMENSIONS IN METRES.

N

0 12 24 36 48 60

SCALE 1:1200 @A3 METRES

drawn	MC
approved	LL
date	16/01/2025
scale	AS SHOWN
original size	A3

client: ACE ROSEHILL PTY LTD

project: ENVIRONMENTAL MANAGEMENT PLAN
LOT33, DP1287670
12A GRAND AVENUE, ROSEHILL, NSW

title: SHALLOW GROUNDWATER CONTOURS

project no: A101024.0518.00 | figure no: FIGURE 7A | rev: A

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LEGEND

- SITE BOUNDARY
- MW — DEEP GROUNDWATER MONITORING WELL (EP RISK, 2022)
- SWL (mAHD)
- INFERRED GROUNDWATER FLOW DIRECTION
- 1.6 — INFERRED GROUNDWATER CONTOUR (mAHD)

NOTE: NOT DATA AVAILABLE FOR MW11A, MW04/2, AND MW4

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 30 OCT 2024.

revision	no.	description	drawn	approved	date
	A	FIRST ISSUE	MC	LL	22/07/24
	B	HISTORICAL SAMPLE UPDATE	MC	LL	16/01/25

NOTE: ALL LOCATIONS ARE APPROXIMATE DIMENSIONS IN METRES.

SCALE 0 12 24 36 48 60 METRES 1:1200 @A3

drawn	MC
approved	LL
date	16/01/2025
scale	AS SHOWN
original size	A3

client: ACE ROSEHILL PTY LTD

project: ENVIRONMENTAL MANAGEMENT PLAN
LOT33, DP1287670
12A GRAND AVENUE, ROSEHILL, NSW

title: DEEP GROUNDWATER CONTOURS

project no: A101024.0518.00 | figure no: FIGURE 7B | rev: A

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MW28	318857	6255830
CW201	318836	6255784
MW12A	318863	6255737
MW1001	318879	6255745
CW202	318901	6255762
CW204	318989	6255828
MW17	318990	6255825
UNKNOWN 1	318883	6255748
UNKNOWN 2	318909	6255759
MW14B	318933	6255773
UNKNOWN 3	318931	6255771

LEGEND

- SITE BOUNDARY
- MW — SHALLOW GROUNDWATER MONITORING WELL (EP RISK, 2022)
- MW — DEEP GROUNDWATER MONITORING WELL (EP RISK, 2022)
- MW — SHALLOW GROUNDWATER MONITORING WELL (CONSARA, 2020)
- MW — SAMPLE LOCATION (CONSARA, 2020)
- TP — TEST PIT LOCATION (EP RISK, DUE DILIGENCE ASSESSMENT, EP2544.001_V1, 25 MARCH 2022)
- SS — SURFACE / SEDIMENT WATER SAMPLE LOCATION (EP RISK, 2022)
- ADE WELL LOCATIONS FOUND BY ADE JULY 2024

NOTE:
ALL LOCATIONS ARE APPROXIMATE
DIMENSIONS IN METRES.

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 30 OCT 2024.

revision	no.	description	drawn	approved	date
	A	FIRST ISSUE	MC	LL	22/07/24
	B	HISTORICAL SAMPLE UPDATE	MC	LL	16/01/25

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drawn	MC
approved	LL
date	16/01/2025
scale	AS SHOWN
original size	A3

client: ACE ROSEHILL PTY LTD

project: ENVIRONMENTAL MANAGEMENT PLAN
LOT33, DP1287670
12A GRAND AVENUE, ROSEHILL, NSW

title: WELL INSPECTION LOCATION PLAN

project no: A101024.0518.00 | figure no: FIGURE 8 | rev: A

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LEGEND

SITE BOUNDARY

OBSERVED COPR WASTE LOCATIONS (EP RISK, 2022)

NOTE:
ALL LOCATIONS ARE APPROXIMATE DIMENSIONS IN METRES.

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM, 30 OCT 2024.

revision	no.	description	drawn	approved	date
	A	FIRST ISSUE	MC	LL	22/07/24
	B	HISTORICAL SAMPLE UPDATE	MC	LL	16/01/25

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drawn	MC
approved	LL
date	16/01/2025
scale	AS SHOWN
original size	A3

client: ACE ROSEHILL PTY LTD

project: ENVIRONMENTAL MANAGEMENT PLAN
LOT33, DP1287670
12A GRAND AVENUE, ROSEHILL, NSW

title: OBSERVED COPR WASTE FILL LOCATIONS (EP RISK, 2023)

project no: A101024.0518.00 | figure no: FIGURE 9 | rev: A

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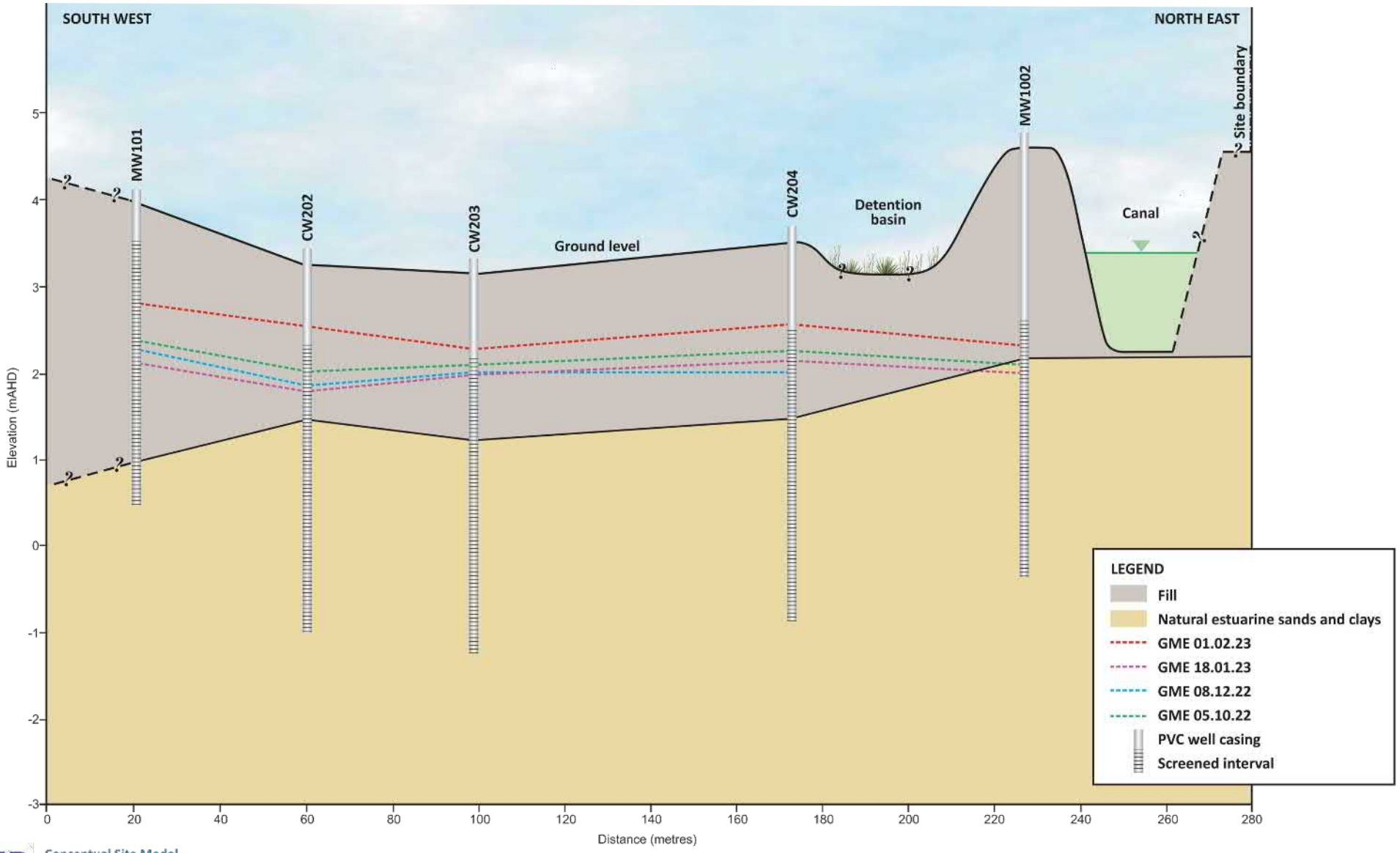

EP RISK

Conceptual Site Model
12 Grand Avenue, Camellia,

Job No: EP2827
Date: 12.02.2023
Drawing Ref: EP2827_03.cdr
Version No: v1

revision	no.	description	drawn	approved	date
	A	FIRST ISSUE	MC	LL	22/07/24
	B	HISTORICAL SAMPLE UPDATE	MC	LL	16/01/25

drawn	MC
approved	LL
date	16/01/2025
scale	AS SHOWN
original size	A3

client: ACE ROSEHILL PTY LTD

project: ENVIRONMENTAL MANAGEMENT PLAN
LOT33, DP1287670
12A GRAND AVENUE, ROSEHILL, NSW

title: PROPOSED LOT33 CROSS SECTION (EP RISK, 2023)

project no: A101024.0518.00 | figure no: FIGURE 10 | rev: A

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