

Oakdale East Industrial Estate (OEIE) – 2-10 Old Wallgrove Road, Horsley Park NSW

Goodman Property Services (Aust) Pty Ltd

Remedial Action Plan – Project Silverback (SSDA 120888992)

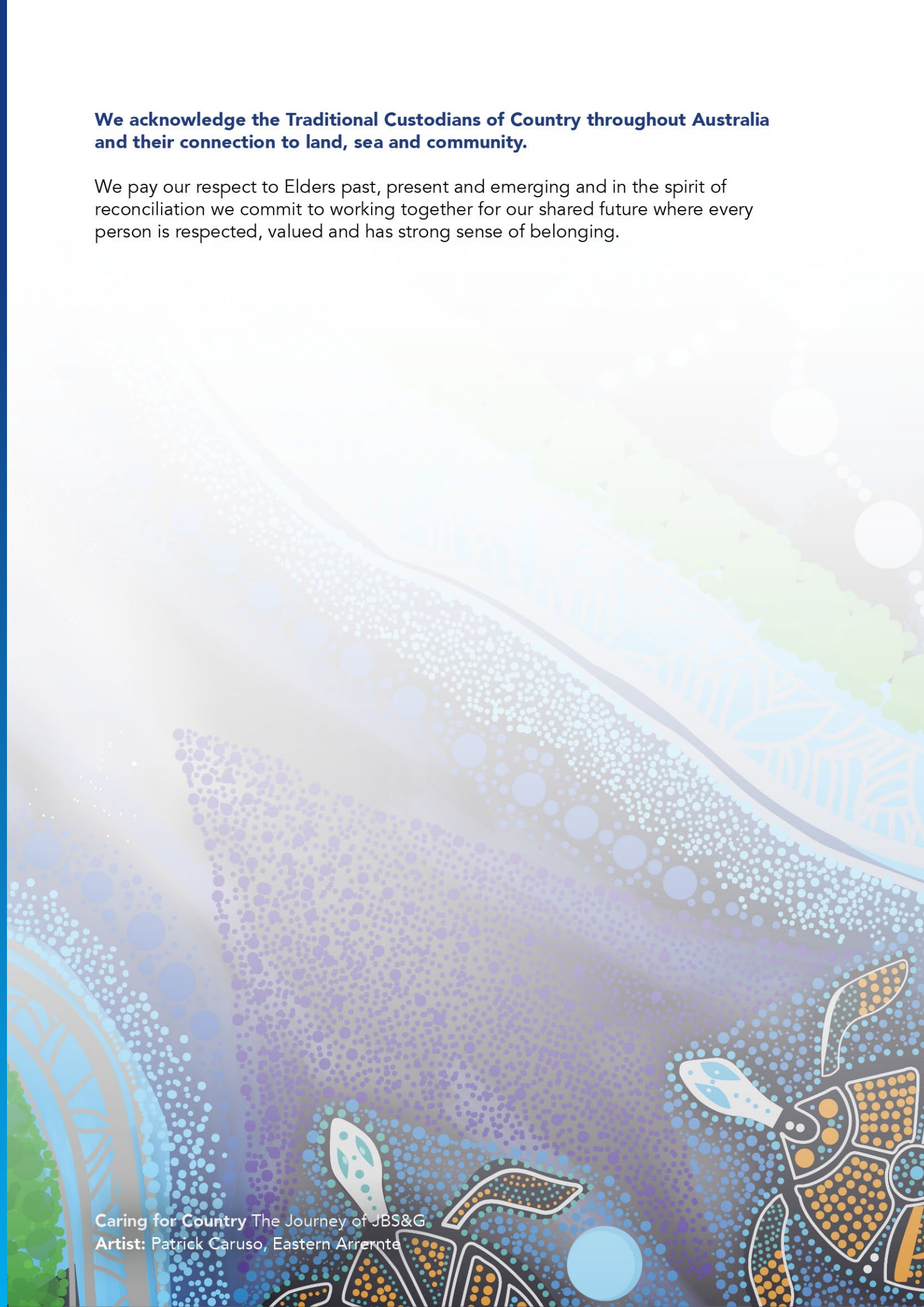
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2 July 2026



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

We pay our respect to Elders past, present and emerging and in the spirit of reconciliation we commit to working together for our shared future where every person is respected, valued and has strong sense of belonging.



Executive Summary

JBS&G Australia Pty Ltd (JBS&G) was engaged by Goodman Property Services (Aust) Pty Ltd (Applicant) on behalf of BGMG 14 Pty Ltd (ACN 661 888 884) as trustee of BGMG 1 Oakdale East Trust No.2 (Owner) (BGMG, the client) to prepare a Remedial Action Plan (RAP) to support the submission of Concept Plan Amendments (Mod 6) and a State Significant Development Application (SSDA) for a portion of the property located at the Oakdale East Industrial Estate (OEIE) redevelopment site, Horsley Park NSW (the OEIE site). The site is located at 2-10 Old Wallgrove Road, Horsley Park, and is formally identified as part of Lot 109 in Deposited Plan (DP) 1293112. The site has an area of approximately 43 hectares (ha).

The site location is shown on **Figure 1**, and site layout and development staging is shown on **Figure 2**. It is understood that the client proposes to modify the current OEIE redevelopment strategy via a new SSDA for the area of the site known as the 'Silverback site' (see **Figure 2**). The Silverback site (the site) is the subject of this RAP, and includes the following OEIE site areas:

- OEIE Stages 2 and 4, southern portion of the Silverback site (see proposed Lot PT110 south and Lot 113, **Figure 2**). This portion of the site is currently operating under an approved Development Application (DA 347.1/2021) and associated RAP (JBS&G 2023a) which will apply to remedial works within this area resulting in establishment of site relative levels (RLs) ranging from RL 70 m Australian Height Datum (m AHD, Stage 4) to RL 77.5 m AHD (western portion of Stage 2), see **Section 1.2**. Once these RLs have been achieved, it is anticipated that this RAP will then apply to any further site management works required above the DA-approved height limits;
- OEIE Precinct 5 (P5) (see proposed Lot PT110 north, **Figure 2**), northeast portion of the Silverback site. This area comprises a bulk earthworks site that has undergone quarry remediation works under a Rehabilitation Management Plan (RMP, RW Corkery 2024) based on requirements under the current Austral Brickworks mining lease (M(MO)L7). A RAP was also prepared for this portion of the site by JBS&G to manage identified asbestos impacts in soils (JBS&G 2024a). Similar to the above, this new RAP is proposed to apply for future additional works beyond the completion of the current rehabilitation works under the RMP;
- Future Infrastructure Corridor (FIC) - (see proposed Lot 111, **Figure 2**), northern portion of the Silverback site. This area is identified as a future infrastructure corridor under Chapter 4 *Major Infrastructure Corridors* of the Transport and Infrastructure SEPP, also known as and referred to herein as proposed Lot 111 in development plan (DP) 1293112, and has two designated containment cells for contamination identified during OEIE site remediation works including total recoverable hydrocarbon (TRH) and hazardous ground gas (HGG, glucose-related impacts) impacted soils, and asbestos impacted soils. The containment cells are currently managed under an Interim Environmental Management Plan (IEMP, JBS&G 2026a).

It is understood that the client proposes to modify the current OEIE redevelopment strategy via submission of two new Development Applications. The following applications are assessed as the baseline and re-assessment of environmental impacts previously assessed under DA 347.1/2021 and SSD 36486043 are not required in accordance with Clause 4.63 (a) Environmental Planning & Assessment Act 1979.

- **Concept Plan Amendments (Mod 6):** Amendments to State Significant Development Application 37486043 (as modified) in accordance with Section 4.24 of the *Environmental Planning & Assessment Act 1979*
- **Detailed Application (Proposed Works):** State Significant Development Application (SSDA) No. 120888992 based on Industry-Specific Secretary's Environmental Assessment Requirements (SEARs) dated 8 May 2026.

These approvals will enable development of the Silverback Site. Note that these approvals assume rehabilitation works have been completed up to:

- Precinct 2 (western portion): BE 77.5
- Precinct 2 (eastern portion): BE 71.5
- Precinct 3: BE 77.0
- Precinct 4: BE 70.0

Notwithstanding, DA 347.1/2021 (as modified) is currently unable to be fulfilled as the consent approves a shortfall of:

- Fill importation required to achieve the above FCC approved rehabilitation levels; and
- Contamination cell size required to fulfill rehabilitation obligations under the Fairfield City Council consent and associated Rehabilitation Action Plan.

This RAP addresses the SEARS requirements listed below in **Table 1.1**, and any outstanding remediation requirements within the site, as well as imported material requirements and the proposed additional cell for containment of a further 40,000 m³ of asbestos contaminated material on site.

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Abbreviations

Term	Definition
ACM	Asbestos Containing Materials
AEC	Area of Environmental Concern
FA/AF	Fibrous Asbestos/Asbestos Fines
AHD	Australian Height Datum
AMP	Asbestos Management Plan
ASRIS	Australian Soil Resource Information System
ASS	Acid Sulfate Soils
bgs	Below ground surface
BIC	Building Information Certificate
BTEXN	Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene
CLM Act	Contaminated Land Management Act
COC	Chain of Custody
COPC	Contaminant of Potential Concern
CSM	Conceptual Site Model
DBYD	Dial Before You Dig
DCP	Development Control Plan
DO	Dissolved Oxygen
DP	Development Plan
DQI	Data Quality Indicators
DQO	Data Quality Objectives
DSI	Detailed Site Investigation
EC	Electrical Conductivity
Eh	Redox Potential
EIL	Ecological Investigation Levels
ENM	Excavated Natural Material
EMP	Environmental Management Plan
EPA	NSW Environment Protection Authority
ESA	Environmental Site Assessment
ESLs	Ecological Screening Levels
f/mL	Fibres per millilitre
FIC	Future Infrastructure Corridor
FMP	Fill Management Plan
ha	Hectare
HILs	Health Investigation Levels
HSLs	Health Screening Levels
JBS&G	JBS&G Australia Pty Ltd
JRA	Job Risk Assessment
LEP	Local Environmental Plan

Term	Definition
LOR	Limit of Reporting
NATA	National Accreditation Testing Authority
NEPC	National Environmental Protection Measure
OCP	Organochlorine Pesticide
OPP	Organophosphate Pesticide
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PID	Photoionisation Detector
POEO Act	Protection of the Environment Operations Act
PSI	Preliminary Site Investigation
QA/QC	Quality Assurance/Quality Control
RAP	Remedial Action Plan
RPD	Relative Percent Difference
SAQP	Sampling, Analysis and Quality Plan
SEPP 55	State Environmental Planning Policy (SEPP) 55 – Remediation of Land (now SEPP (Resilience and Hazards) 2021)
SWMS	Safe Work Method Statement
TRH	Total Recoverable Hydrocarbons
UCL	Upper Confidence Limit
UST	Underground storage tank
VENM	Virgin excavated natural material
VOC	Volatile Organic Compound

1. Introduction

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- OEIE Stages 2 and 4, southern portion of the Silverback site (see proposed Lot PT110 south and Lot 113, **Figure 2**). This portion of the site is currently operating under an approved Development Application (DA 347.1/2021) and associated RAP (JBS&G 2023a¹) which will apply for these works resulting in establishment of site relative levels (RLs) ranging from RL 70 m Australian Height Datum (m AHD, Stage 4) to RL 77.5 m AHD (western portion of Stage 2), see **Section 1.2**. Once these RLs have been achieved, it is anticipated that this RAP will then apply to any further site management works required above the DA-approved height limits;
- OEIE Precinct 5 (P5) (see proposed Lot PT110 north, **Figure 2**), northeast portion of the Silverback site. This area comprises a bulk earthworks site that has undergone quarry remediation works under a Rehabilitation Management Plan (RMP, RW Corkery 2024²) based on requirements under the current Austral Brickworks mining lease (M(MO)L7). A RAP was also prepared for this portion of the site by JBS&G to manage identified asbestos impacts in soils (JBS&G 2024a³). Similar to the above, this new RAP is proposed to apply for future additional works beyond the completion of the current rehabilitation works under the RMP;
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It is understood that the client proposes to modify the current OEIE redevelopment strategy via submission of two new Development Applications. The following applications are assessed as the baseline and re-assessment of environmental impacts previously assessed under DA 347.1/2021 and SSD 36486043 are not required in accordance with Clause 4.63 (a) Environmental Planning & Assessment Act 1979.

¹ Remedial Action Plan, Austral Bricks Plant 23 and Quarry, 10 Old Wallgrove Road, Horsley Park, NSW 2175. 1 May 2023. JBS&G Australia Pty Ltd. Ref: 60530-139263, Rev 3. (JBS&G 2023a)

² Rehabilitation Management Plan for Horsley Park Plant 23 Quarry. RW Corkery and Co Pty Limited. August 2024 (RW Corkery 2024).

³ Remedial Action Plan, Oakdale East Industrial Estate Precinct 5 - 10 Old Wallgrove Road, Horsley Park, NSW 2175. 14 August 2024. JBS&G Australia Pty Ltd. Ref: 60530/161686, Rev A. (JBS&G 2024a)

- **Concept Plan Amendments (Mod 6):** Amendments to State Significant Development Application 37486043 (as modified) in accordance with Section 4.24 of the *Environmental Planning & Assessment Act 1979*;
- **Detailed Application (Proposed Works):** State Significant Development Application (SSDA) No. 120888992 based on Industry-specific Secretary's Environmental Assessment Requirements (SEARs) received dated 8 May 2026.

These approvals will enable development of the area of the site. Note that these assessments assume rehabilitation works have been completed up to:

- Precinct 2 (western portion): BE 77.5
- Precinct 2 (eastern portion): BE 71.5
- Precinct 3: BE 77.0
- Precinct 4: BE 70.0

Notwithstanding, DA 347.1/2021 (as modified) is currently unable to be fulfilled as the consent approves a shortfall of:

- Fill importation required to achieve the above FCC approved rehabilitation levels; and
- Contamination cell size required to fulfill rehabilitation obligations under the Fairfield City Council consent and associated Rehabilitation Action Plan.

This RAP addresses the SEARS requirements listed below in **Table 1.1**, and any outstanding remediation requirements within the site, as well as imported fill requirements and the proposed additional cell for containment of a further 40,000 m³ of asbestos contaminated material on site.

A checklist in relation to the SEARs compliance is documented in **Table 1.1** below.

Table 1.1 SEARs Compliance Checklist

Agency / Documentation Requirement	Relevant Section of Report
<i>Department of Planning, Housing and Infrastructure (DPHI)</i>	RAP - Section 1 to Section 11
Contamination and Remediation <i>In accordance with Chapter 4 of SEPP (Resilience and Hazards) 2021, assess and quantify any soil and groundwater contamination and demonstrate that the site is suitable (or will be suitable, after remediation) for the development.</i> <i>Required documentation:</i> • Preliminary Site Investigation <i>If required:</i> • Detailed Site Investigation • Remedial Action Plan • Preliminary Long-Term Environmental Management Plan	
	A PSI/DSI has been prepared as a separate document (JBS&G 2026b ⁴). A draft Long-Term Environmental Management Plan (LTEMP) has been addressed as a separate letter.

⁴ Oakdale East Industrial Estate (OEIE) 'Project Silverback' – Horsley Park, NSW Detailed Site Investigation – Project Silverback (SSDA120888992), JBS&G Australia Pty Ltd. 2 July 2026 Ref: 60530-175188, Rev 3. (JBS&G 2026b)

1.1 Objectives

As part of the SSDA submission, a combined Preliminary and Detailed Site Investigation (PSI/DSI) was prepared for areas of the Silverback site that had not been previously assessed. The previous RAP under DA347.1/2021 contemplates the containment of asbestos contaminated soils in the future infrastructure corridor.

This RAP has been prepared to address ongoing management requirements for the site once the rehabilitation works under DA 347.1/2021 are complete to the levels specified in **Section 1.2**. This includes management of imported fill activities, addressing remaining asbestos impacts and any unexpected finds that may arise during ongoing cut to fill activities within the Silverback site, and further placement of asbestos contaminated soils within the current containment cells in the northern portion of the site, or alternatively a new containment cell(s). It is envisaged that the site can be made suitable for the proposed commercial/industrial development following completion of the RAP, subject to implementation of a Long-Term Environmental Management Plan (LTEMP) to manage the containment cell areas.

This RAP has been prepared with reference to relevant guidelines made or approved by the NSW Environment Protection Agency (EPA) inclusive of *National Environmental Protection (Assessment of Site Contamination) Measure 1999*, as amended 2013 (NEPC 2013⁵).

The objective of this RAP is to document the procedures and standards to be followed in order to remove and/or manage the risks posed from the identified site contamination and ongoing filling activities to future commercial/industrial users of the site and the surrounding environment.

1.2 Scope of Work

The scope of works completed for the RAP included:

- Review of the proposed development and identified potential contamination exposure pathways;
- Review of previous environmental assessments to characterise the contamination status of the site;
- Development of a Conceptual Site Model (CSM);
- Identification of acceptable levels of contaminants for the proposed redevelopment and derivation of remediation criteria;
- Identification of Areas of Environmental Concern (AECs) requiring further investigation and development of appropriate validation sampling and analysis program(s) to address data gaps;
- Development of remedial strategies to remove the extent of contamination and/or identify requirements for containment of contamination within the site; and
- Development of a validation strategy to assess the effectiveness of remedial works.

⁵ *Guideline on Investigation Levels for Soil and Groundwater*, Schedule B1 National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013), National Environment Protection Council (NEPC 2013)

1.3 Proposed SSDA Activities

This RAP has been prepared to address the following Development Applications and note that the following applications are assessed as the baseline and re-assessment of environmental impacts previously assessed are not required in accordance with Clause 4.63 (a) Environmental Planning & Assessment Act 1979:

- **Concept Plan Amendments (Mod 6):** Amendments to State Significant Development Application 37486043 (as modified) in accordance with Section 4.24 of the *Environmental Planning & Assessment Act 1979*
- **Detailed Application (Proposed Works):** State Significant Development Application (SSDA) No. 120888992 based on Industry-Specific Secretary's Environmental Assessment Requirements (SEARs) dated 8 May 2026.

The proposed development is being undertaken by Goodman Property Services (Aust) Pty Ltd (Applicant) on behalf of BGMG 14 Pty Ltd (ACN 661 888 884) as trustee of BGMG 1 Oakdale East Trust No.2 (Owner). The development is located at 2-10 Old Wallgrove Road, Horsley Park (the Site). The folio identifier number is Lot 109 of Deposited Plan 1293112.

The below further outlines the respective works the Development Applications seek approval for.

1.3.1 Concept Plan Amendments | State Significant Development Application SSD - 37486043 (Mod 6)

As part of the proposed works under SSD No. 120888992, the following amendments are proposed to the Concept approval and Stage 1 Infrastructure works approved under SSDA 37486043:

- Amendment to approved Masterplan and Subdivision plan to accommodate revised Precinct 2-5 layout which will consolidate Precincts 2, 4 and 5, resulting in a total of three (3) precincts. (Precinct 1, 2 & 3).
- Amendment of Stage 2 infrastructure scope to accommodate revised and consolidated Precinct 2-5 layout
- Amendment of Development Controls, including those prescribed under Condition A9 & A10 of the consent, specifically:
 - Building Height
 - Maximum GLA
- Increase maximum permissible vehicle from a 30 m super B-double to a 36.5m B-triple (Condition D14)

This application, inclusive of the amendments to the Concept approval under SSD 37486043, seeks to facilitate the development of Building 2A, 2B & Lot 2C and associated Internal infrastructure changes.

1.3.2 Detailed Application | State Significant Development Application SSD-120888992

The SSDA seeks approval for the construction, fit-out, operation and use of 2 warehouse buildings and associated internal site infrastructure works to accommodate the proposed building layouts. Specifically, this includes:

Warehouses and Distribution Building – Building 2A

- 24/7 warehouse and distribution use.
- Construction, operation, fit-out (warehouse racking and office fit-out) and use of approximately 18,110 sqm warehouse with ancillary office GLA. Proposed ridge height of 14.6m (excluding rooftop plant and solar).
- Includes hard stand, dock offices, loading bays, landscaping, electric vehicle charging, solar panels and signage.

Warehouses and Distribution Building – Building 2B & Lot 2C

- 24/7 warehouse and distribution use for an automated mail and parcel processing and sorting facility.
- Construction, operation, fit-out (office and warehouse) and use of approximately 142,157 sqm of warehouse and office GLA across two levels spanning a proposed ridge height of 25.0m (excluding rooftop plant, roof access stairs and solar).
 - Warehouse fit-out includes automation and sortation equipment along with associated mezzanine structures.
- Building 2B will include hardstand, heavy rigid parking, guardhouses, dock offices, loading bays, landscaping, electric vehicle charging, goods collection lockers, solar panels six lithium-ion battery energy storage systems (BESS) external to the main warehouse building and fleet workshop, weighbridges, fleet workshop, dock temperature control with external units, emergency generators, refuelling bay, truck wash and signage.
- Dangerous goods (DGs) are proposed to be stored at the site, which are below the threshold quantities under Chapter 3 of the *State Environmental Planning Policy (Resilience and Hazard) 2021*
- Ground Improvements to Warehouse 2B building footprint (i.e. pilling), including a 200mm thick layer of Cement Treated Fine Crushed Rock (CTFCR) placed under the entire warehouse footprint.

Internal Estate Infrastructure

- Bulk Earthworks to Precinct 2 (formally Precinct 2, 4 & 5)
 - Approximately 550,000m³ fill importation required as either virgin excavated natural material (VENM), excavated natural material (ENM) or Resource Recovery Order under Section 286A of the *Protection of the Environment Operations Act 1997* (PoEO Act 1997) Importation proposed to be 24 hours, 7 days a week during the Fill Importation program
- Export any unsuitable material (i.e Topsoil and Clay)
- Retaining Walls (including importation of Engineered backfill)
- Stormwater Basin D (including fit-out)
- Construction and associated Easement to Drain of Stage 1 stormwater discharge line through Building 2B to Basin C
- Stage 1 road and servicing amendments to reflect revised Precinct 2, 4 & 5 building layout
- Noise barriers
- Lead-in services including additional 11kv feeder via the extension of HV feeders from existing Endeavour Energy switching stations within Roberts Road and Capicure Drive

Other

- Expansion and on-going management of DA 347.1/2021 Containment Cell
- Subdivision of Precinct 2, 4 & 5 to suit revised precinct plan and ultimate lot layout

1.3.3 Related Applications/Activities

Fairfield City Council Development Application DA 347.1/2021 (as modified) – Rehabilitation Works

A Fairfield City Council Development Application DA 347.1/2021 (as modified) has previously been approved over the site facilitating Bulk Earthworks and Rehabilitation (including an initial Containment Cell) Works at the Site to provide relative levels suitable for future industrial development.

These levels are:

- Precinct 2 (western portion): BE 77.5
- Precinct 2 (eastern portion): BE 71.5
- Precinct 3: BE 77.0
- Precinct 4: BE 70.0

Proposed SSD-120888992 assumes these levels and works in respect of assessment of environmental impacts previously assessed in accordance with Clause 4.63 (a) *Environmental Planning & Assessment Act 1979*. Further re-assessment is therefore not required.

DA 347.1/2021 assessed the Environmental Impacts associated with the required rehabilitation to achieve the above Bulk Earthworks levels.

Notwithstanding, DA 347.1/2021 (as modified) is currently unable to be fulfilled as the consent approves a shortfall of:

- Fill importation required to achieve the above FCC approved rehab levels; and
- Contamination cell size required to fulfill rehabilitation obligations under the Fairfield City Council consent and associated Rehabilitation Action Plan.

SSD-120888992 assess and seeks approval to address these shortfalls as part of the Environmental Impact Assessment.

1.4 Building Information Certificate (BIC)

In addition to the existing consents, it is understood that a BIC application has been submitted to FCC to document works completed for the on-site containment of TRH/HGG and asbestos contaminated material, within the future infrastructure corridor (FIC) under Chapter 4 *Major Infrastructure Corridors* of the Transport and Infrastructure SEPP, exceeding the storage volume covered under the scope of the existing DA 347.1/2021. The purpose of the BIC is to remedy a misunderstanding between the Applicant and Council regarding the approved storage limits under DA 347.1/2021.

Table 1.2 below outlines the volumes of material currently stored within the onsite containment cells as well as additional volumes proposed to be stored under the different planning approvals/consents for the site to date.

Table 1.2: Summary of material volumes currently contained onsite and how it has been approved

Planning approval/consent	Storage Volume
DA 347.1/2021	30,000 m ³ asbestos contaminated material
	51,986 m ³ ACM (contaminated) ¹ (total material stored within the onsite containment cells as well as bundled on top to date)
BIC (currently under consideration)	55,000 m ³ Asbestos Impacted Material (AIM ²) (total material stored within the onsite containment cells to date)
	14,486 m ³ TRH/HGG impacted material (total material stored within the onsite containment cells to date)
SSDA 120888992	Proposed additional 40,000 m ³ asbestos contaminated material

¹ Material classified as ACM (contaminated) is assessed as exceeding the Health Screening Levels (HSLs) for asbestos in soil for commercial/industrial land use (HSL-D, NEPC 2013⁶).

² Material classified as AIM is assessed as being below the HSL-D criteria for asbestos in soil for commercial/industrial land use (NEPC 2013) is not contaminated and is suitable to be re-used on-site without an EMP.

1.5 Fill Management Plan

The Silverback site currently comprises an operating bulk earthworks site. Excluding the P5 portion of the site, works are progressing under an approved development application (DA) for OEIE Stages 2-4 rehabilitation works (DA 347.1/2021). The northeastern portion of the Silverback site (also known as Stage 5, OEIE) comprises a separate bulk earthworks site undergoing quarry remediation works under a rehabilitation management plan (RMP, RW Corkery 2024) based on requirements under the current Austral Brickworks mining lease (M(MO)L7).

Quarry rehabilitation works at the site are currently being undertaken in accordance with the Precinct 2-4 RAP (JBS&G 2023a), Precinct 5 RAP (JBS&G 2024a) and Imported Fill Protocol (IFP, JBS&G 2023b⁷). These documents, excluding the Precinct 5 RAP (JBS&G 2024a) have been subject to review by the previous appointed independent NSW EPA accredited Site Auditor at the time, Kylie Lloyd of Geosyntec. These documents prescribe the requirements for assessment and characterisation of:

- Fill materials currently located on site as associated with former quarrying activities to confirm their suitability for re-use as part of rehabilitation works, from a contamination perspective;
- Materials proposed to be imported to the site for use as engineered fill as part of quarry rehabilitation works; and
- Protocols for addressing unexpected finds.

As part of this RAP, JBS&G has revised the current framework such that it may continue to be applicable to ongoing rehabilitation works concurrent to the proposed remediation and development activities outlined herein. It is envisaged that this revised JBS&G Fill Management Plan (FMP) which forms part of this RAP (**Appendix E**) will be reviewed by the Department of Planning and conditioned alongside this RAP for the

⁶ National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013, National Environment Protection Council (NEPC 2013)

⁷ Imported Fill Protocol, Oakdale East Stages 2, 3 and 4, 10 Old Wallgrove Road, Horsley Park, NSW. 19 June 2023. JBS&G Australia Pty Ltd. Ref: 60530/152550, Rev A. (JBS&G 2023b)

proposed development as part of the SSDA. In addition, this RAP and FMP will be subject to review and endorsement by the newly appointed independent NSW site auditor, Brad Eismen of AECOM, who was appointed to avoid any conflict of interest, in place of Kylie Lloyd as a result of Geosyntec acquiring JBS&G.

In development of this FMP (**Appendix E**), JBS&G has taken into consideration the ongoing site fill management practices, such that this document remains a practical and site-specific management plan, while also applicable to the proposed SSDA requirements.

2. Site Condition and Environmental Setting

2.1 Site Identification

The location of the site is shown in **Figure 1**, with the proposed layout presented as **Figure 2**. Site details are summarised in **Table 2.1**.

Table 2.1: Summary Site Details

Lot / DP	Part Lot 109 in DP1293112
Current Zoning	IN1 General Industrial
Local Government Authority	Fairfield City Council
Approximate MGA Coordinates (MGA 56) – central location	Easting: 299573 Northing: 6255085
Previous Use	Mining / quarrying related activities
Current Land Use	Former quarry undergoing rehabilitation works under consent DA 347.1/2021 and SSDA 37486043
Proposed Use	Commercial / Industrial warehousing with supporting road infrastructure in addition to landscaped zones as per the proposed development plan (Appendix D)
Approximate Site Area	Approximately 43 ha

2.2 Site Description

A site inspection was undertaken by JBS&G staff on 22 May 2026. A summary of the key observations made during the site inspection is provided following:

2.2.1 Overall Site

- The site comprised an active bulk earthworks site based on approved works under DA 347.1/2021 & SSD 37486043, with the majority of surfaces covered in stockpiled soil/crushed rock material or temporary heavy vehicle haul roads surfaced with unsealed clay materials;
- The northern, eastern and northwestern site boundaries were fenced. The western portion of the FIC portion of the site was also fenced to the south to separate the site from subdivided Lots 107 and 108 (DP1293112). There was no physical demarcation on site present between the FIC portion of the site and Stage 4 or proposed Lot 112 (refer **Figure 2**);
- Ground levels across the site had been significantly altered from the historical topography due to previous quarrying and current rehabilitation operations. In the freight corridor, the site gently sloped in an easterly direction from the western site boundary toward the southeast corner to the Reedy Creek riparian zone. The Precinct 5 portion of the site, discussed further below, comprised a quarry void undergoing backfilling works with ground levels beyond the quarry void that also sloped gently to the east towards the Reedy Creek riparian area; and
- No evidence of waste disposal, drum or chemical storage were observed at the site.

2.2.2 FIC Portion Site Features

- A water-filled basin was observed in the western portion of the area. The basin had geofabric textile-lined over-flow drainage in the west;
- A concrete hardstand area was observed in the western portion of the area in the location of a historical truck wash down bay (**Figure 3**). There was no staining observed across this area;

- Lightly vegetated (grass and weeds) areas were observed in the western portion of the area. The western portion of the freight corridor also contained small raised <2 m bunds vegetated by established Eucalyptus trees;
- Inground water quality infrastructure was observed to the east of the concrete hardstand area. One circular tank was connected via an underground pipe to a three-chamber rectangular concrete-lined pit to the west. Another underground pipe was observed in the eastern wall of the rectangular pit. The circular tank and rectangular pit were both filled with non-turbid water. No odour or sheen was observed in the water, and no staining was observed on the visible walls of the concrete-lined rectangular pit;
- Another lightly vegetated bund (also named Stage 4 Stockpile 03 in material characterisation reporting) was observed as a northern perimeter bund;
- A large clay stockpile (MQB JV SP18) was present to the south of Stage 4 Stockpile 03;
- A stockpile containing asbestos contaminated material was present in the central-eastern portion of the site (Refer **Figure 3**). The northern portion of the stockpile area was overlying orange/white geofabric textile, while the southern portion was placed over clay with no geofabric present. An earthen bund, flagging and asbestos signage surrounded the stockpiling area to the south. The stockpiled material consisted of moist brown/grey silty clay with 10% visible inclusions of organic matter (reeds);
- The eastern portion of the site contained an overhead powerline easement, the southern portion of the back-filled previous Precinct 5 Quarry East void and vegetated area extending beyond a fence line into the proposed Lot 112, external the current site; and
- Two large, clay-capped mounds were observed in the western half of the site and comprised capped Total Recoverable Hydrocarbon/hazardous ground gas (TRH/HGG) impacted materials and asbestos impacted material containment cells;
 - The TRH/HGG cell area comprised an earthen mound with a compacted clay surface. The surficial clay comprised brown, gravelly, silty clay with approximately 20% inclusions of shale gravels and cobbles. A mound extending approximately 1.5 m above the surface of the bund was positioned in the eastern portion of the bund and had a PVC pipe vent system extending from the top of the bund;
 - The TRH/HGG cell area was bound by a temporary fence to the north with a new permanent fence being installed at the time of inspection. The eastern, western and southern boundaries of the area were not marked;
 - The asbestos containment area also comprised an earthen mound with a compacted clay surface. The surficial clay comprised red/brown, gravelly, silty clay with approximately 20% inclusions of shale gravels and cobbles;
 - The asbestos containment cell area was bound by a temporary fence to the north with a new fence installation taking place during the time of inspection. The asbestos cell area was bounded to the south by a black metal fence, beyond which was the Stage 3 redevelopment portion of the OEIE site. The eastern, western and southern boundaries of the area were not marked; and
 - No odours, staining, asbestos or ponded water were observed in either of the cell areas at the time of inspection.

2.2.3 Precinct 5 Site Features

- Access to Precinct 5 was obtained through a sign-posted, restricted-access haul road;
- The western portion of Precinct 5 comprised an overhead powerline easement and unsealed clay surfaced haul roads;
- A small site works compound was present in the western portion of Precinct 5 comprising a red storage container, an aboveground water storage tank (AST) servicing two portable toilets and a demountable office;
- A flagged-off raised bund area with associated asbestos signage was observed south of the Precinct 5 site compound;
- The majority of the Precinct 5 area comprised a quarry void in the process of being backfilled as part of Brickworks rehabilitation works. The deepest portion of the void was in the east with water seepage observed on the eastern quarry void wall in the shale lithology;
- A water-filled basin was observed in the northeast portion of the site. No sheen was observed on the surface of the water. Two intermediate bulk containers (IBCs) were present on the western perimeter of the basin, inferred to contain flocculant chemicals although no chemical data information was present. A diesel-powered pump was also observed on the western perimeter of the basin that is filled manually via a jerry can. It is understood that the only fuel storage onsite consists of two 20L diesel drums stored within the locked red storage container; and
- The eastern perimeter of the site was covered in grass. The northeast portion of the site contained a flagged-off area of established Casuarina dominant vegetation as associated with the Reedy Creek riparian zone.

2.3 Surrounding Land Uses

Current features surrounding the site are summarised following:

- North: Infrastructure services corridor occupied by the Sydney Water Warragamba to Prospect pipeline and a series of above ground high voltage electrical transmission line towers. Commercial/industrial warehousing is located further to the north along Old Wallgrove Road, whilst an electrical distribution facility is located to the north of the east site portion beyond Roberts Road.
- East: Reedy Creek and a Cumberland Plain Woodland Area are situated at the east of the proposed Lot PT100 (north) and proposed Lot 111 site boundary, beyond which is an industrial warehouse development site. Proposed Lot PT100 (south) is immediately bordered to the east by proposed Lot 112 which is then bordered to the east by Reedy Creek. Beyond proposed Lot 112, mixed rural residential sites were present. A number of these properties appeared to be occupied by mixed businesses with shed/warehouse structures and numerous vehicles/mixed plant storage and/or stockpiled materials with variable grass/tree cover.
- South: The site is bordered by Burley Road, beyond which are rural residential properties further afield.
- West: Most of the site is bordered to the west by other portions of the OEIE redevelopment site (Stage 1 and Stage 3). Old Wallgrove Road and large DHL distribution/warehousing facilities are further afield.

2.4 Regional Environmental Setting

2.4.1 Topography and Hydrology

Review of published regional topographic data via the Spatial Information exchange (Six Maps⁸) indicated that the site lies within an area of typical elevations of between approximately 62-68 m Australian Height Datum (AHD). Survey data previously provided by Austral Brickworks identifies the historical (pre quarried) site elevation varied from approximately 62 m AHD along the eastern OEIE redevelopment site boundary up to 68 m AHD in the western portion of the OEIE site, with topography sloping both to the east and south. The site is located within a gently undulating regional area, where overall falls occur toward the east and the Reedy Creek alignment to the east of the site.

Historical quarrying and stockpiling activities undertaken across the broader Austral Brickworks site since the 1970s have resulted in significant modification of ground levels within the site. As such, whilst redevelopment works have resulted in a new constructed landform in the west of the OEIE site (to the south of the western part of the current site), overall, the OEIE site is situated within a highly modified regional landform as a result of historical quarrying activities within the broader redevelopment site and surrounding areas including constructed visual/noise bunds present along the broader quarry boundaries within Precinct 5 and within the north-eastern portion of the FIC portion.

Reedy Creek flows within and to the east of the OEIE site boundary in a south-west to north-east direction continuing in a similar orientation to meet Eastern Creek approximately 2.7 km to the north-east of the site. Eastern Creek is a tributary of the Hawkesbury River which is located approximately 25 km to the north of the site.

As discussed in **Section 2.2**, the site is largely unsealed (quarry void, containment cells and access roads) or vegetated. Where exposed, the surface soils are typically low permeability clay soils or exposed shale and as such, it is anticipated that minimal infiltration of precipitation falling onto the site will occur. In periods of heavy or prolonged rainfall, once the low permeability clay soils have been saturated, it is anticipated that excess water movement will follow the localised topographic gradients, including into the quarry void and constructed interim site drainage measures, that collect surface water and divert to the existing stormwater basins in the eastern portion of P5 as well to the west of the onsite TRH/HGG containment cell. Additional basins are located south within the broader OEIE redevelopment site.

2.4.2 Geology and Soils

Reference to the online ESPADE 2.0 tool hosted by the NSW Office of Environment and Heritage (OEH 2020⁹) and the 1:100 000 Geological Series Sydney Geological Survey of NSW Sheet 9030 (DMR 1991¹⁰) indicates that the OEIE site is present within the following natural geological and soil landscapes:

- **Geology:**
 - Bringelly Shale (Wianamatta Group) – comprising shale, carbonaceous claystone, laminite, fine to medium grained lithic sandstone, rare coal and tuff.
 - South Creek (Alluvial) – comprising, structures plastic clays or loams, red and yellow podzolic soils mostly found with small areas of structured grey clays, leached clays and yellow solodic soils.
- **Landscape:** the natural soil profile in the western portion of the site comprises the residual Blacktown landscape, whilst the natural soil profile in the eastern portion extending to the Reedy Creek alignment comprises the alluvial South Creek landscape:

⁸ Six Maps website, <https://maps.six.nsw.gov.au/> accessed 06 May 2026.

⁹ ESPADE 2.0. NSW Office of Environment and Heritage accessed 06 May 2026, (OEH 2020)

¹⁰ Penrith Geological Series Sheet 9030 (Edition 1) 1983. Geological Survey of NSW, Department of Mineral and Resources (DMR 1991)

- The Blacktown landscape gently undulating rises on Wianamatta shales, broad rounded crests and ridges with gently inclined slopes. Local relief to 30 m, slopes usually >5%.
- The South Creek alluvial landscape is generally present on floodplains, valley flats and drainage depressions of the Cumberland Plain. The dominant soil materials comprise brown apedal sandy loam to sandy clay loam; hardsetting dull brown clay loam to fine sandy clay and bright low to medium clay. These areas have typically been cleared and are characterised as flat with incised drainage channels and occasional terraces or levees providing low relief with slopes less than 5 % and local relief of less than 10 m. The soils are often deeply layered sediments over bedrock or relic soils. The soils are typically underlain by Quaternary alluvium derived from the Wianamatta Group shales and Hawkesbury Sandstone. The landscape is characterised as a flood hazard with seasonable waterlogging. The soils are typically characterised as having a high erodibility, low fertility with hardsetting surfaces, strong acidity and in some instances moderate salinity.
- **Soils:** Consistent with the Landscape, the site is characterised by soils of two groups:
 - 'Blacktown Residual' – shallow to moderately deep (>100 cm) hard setting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines; and the
 - 'South Creek Alluvial' – often very deep layered sediments over bedrock or relict soils, where pedogenesis has occurred structured plastic clays or structured loams are present in and immediately and adjacent to drainage lines, red and yellow podzolic soils are most common terraces with small areas of structured grey clays, leached clays and yellow solodic soils.
- **Limitations:**
 - 'Blacktown Residual' – localised seasonal waterlogging, localised water erosion hazard, moderately reactive highly plastic subsoil, localised surface movement potential; and
 - 'South Creek Alluvial' – flood hazard, seasonal waterlogging, localised permanently high watertables, localised water erosion hazard, localised surface movement potential.

Noting the two types of soils present across the site, the OEIE South Creek Alluvial material is likely associated with the Reedy Creek riparian zone alignment and may be isolated to areas close to this zone. The balance of soils comprises Blacktown Residual material, which is likely to be encountered across most of the site where alluvial deposits are not encountered and may also be present at depth beneath more recent alluvial deposits associated with the Reedy Creek alignment.

2.4.3 Hydrogeology

Registered groundwater bore information was reviewed from the Water NSW database¹¹. Review of the registered bore information identified four registered groundwater bores within 2 km radius of the site. Relevant information is summarised in **Table 2.2** below.

¹¹ Water NSW website accessed 6 May 2026, <http://allwaterdata.water.nsw.gov.au/water.stm>.

Table 2.2: Registered Groundwater Bore Search Summary

Bore Identification	Distance from site	Use	Drilled Depth (m bgs)	Standing Water Level (m bgs)	Encountered Lithology (m)
GW100447	1.2 km south-west	Monitoring	29.60	2.89	0-1.0 – clay 1.0-29.60 m – siltstone/shale
GW114926	720 m north	Monitoring	13.50	- ¹	0-0.15 – fill 0.15-1.70 – red brown silty clay 1.70-2.20 – dark brown silty clay 2.20-4.70 – light brown shale 4.70-12.00 – grey shale, dry 12.00-13.50 – grey shale, wet
GW114927	760 m north	Monitoring	18.00	- ¹	0.0-2.70 – red brown silty clay 2.70-2.90 – silty clay grading into weathered shale 2.90-12.00 – dark grey weathered shale 12.00-18.00 dark grey shale, hard
GW114928	780 m north	Monitoring	11.50	- ¹	0-0.15 – fill 0.15-0.35 – light brown silty clay 0.35-9.50 – grey brown shale, dry 9.50-11.50 – grey brown shale, wet

¹ No information presented

² Below ground surface

The nearest registered bores were located approximately 750 m north of the site and were reported to be used for monitoring purposes – the reported geology at the well location comprised shallow fill (0.15 m) underlain by dry silty clay to a depth of 2.9 m below ground surface (bgs). The silty clay was in turn underlain by dry shale to a depth of 18 m bgs from which the materials were reported to be wet from 9.50-13.50 m bgs.

A review of the previous topography identifies that localised groundwater is likely to generally flow to the north-east towards Reedy Creek (to the east and south of the site). The freshwater body of Reedy Creek flows in a north to north-easterly direction, meeting Eastern Creek approximately 4.1 km to the north-east of the site.

Review of regional conditions indicates that regionally the site is situated between the Eastern Creek and Ropes Creek systems, which both ultimately discharge into the Hawkesbury River a significant distance from the site. Whilst it is likely that groundwater would flow to the east, given the proximity of the Reedy Creek system and tertiary alluvial formation, there is the possibility that overall regional groundwater movement in the west of the site may occur towards Ropes Creek approximately 1.5 km to the west of the site.

2.4.4 Salinity

Review of the *Salinity Potential in Western Sydney* map (DIPNR 2002¹²) indicates that the OEIE site exists within an area of ‘moderate salinity potential’ outside of drainage line areas. Areas of moderate salinity generally consist of areas susceptible to saline affectation if disturbed particularly if saline groundwater/seepage is intercepted and/or if areas of water logging can occur. Areas with this classification exhibit scattered scalding and indicator vegetation, but soil concentrations have not been mapped. Saline soils are identified as potentially existing within these areas.

Soils surrounding Reedy Creek, and Ropes Creek approximately 1 km to the west, have a ‘high salinity potential’, situated adjacent to the east and west of the site, respectively. Areas of high saline risk generally occur lower in the landscape, or at zones of permeability contrast, where saline groundwater may come near to the ground surface or where seepage causes waterlogged conditions, thereby concentrating soils. Typically scattered saline indicator vegetation occurs in these areas.

JBS&G notes previous available assessment reports specifically addressing site soil conditions with regard to saline soils across the site have not been provided to JBS&G for review. Given the historical quarrying activities across significant portions of the site, typical soil profile and groundwater seepage conditions currently do not occur within the site.

2.4.5 Acid Sulfate Soils

DLWC (1998¹³) states that acid sulfate soils (ASS) are likely to be located in coastal lowlands up to about 10 m Australian Height Datum (AHD). No risk map was provided for the area encompassing the OEIE site as part of the DLWC (1998) acid sulfate soil risk map series, typically indicating that such conditions have not been identified based on regional mapping of geology and soil (as discussed in **Section 2.5**).

Review of accessible data using the SEED tool, hosted by NSW OEH (2018¹⁴) indicates the area occupied by the OEIE site has not been required to be assessed for the presence of ASS based on the outcomes of a preliminary evaluation. Such sites are by default characterised as “no known occurrence”, being defined as areas where land management activities are not likely to be affected by ASS materials.

Planning certificates for the site do not identify the site as being subject to any policies relating to ASS.

Review of the geographical and topographical location of the OEIE, indicates that there is no appreciable risk of ASS occurrence in natural soils and/or rock at the site or within 500 m downgradient of the site boundary. On this basis, there is no requirement for further consideration of ASS conditions and/or management of such during potential future ground disturbance activities.

2.4.6 Meteorology

A review of average climatic data for the nearest Bureau of Meteorology monitoring location (Horsley Park Equestrian Centre AWS¹⁵) indicates the site is located within the following meteorological setting:

- Average maximum temperatures range from 17.4°C in July to 29.9°C in January;
- Average minimum temperatures range from 5.9°C in July to 17.9°C in January;
- The average annual rainfall is approximately 802.6 mm with rainfall greater than 1mm occurring on an average of 77.2 days per year; and

¹² *Salinity Potential in Western Sydney*. Department of Infrastructure, Planning and Natural Resources, March 2003, DIPNR 2002.

¹³ *Guidelines for the Use of Acid Sulfate Soil Risk Maps, 2nd Edition*, Department of Land and Water Conservation, March 1998.

¹⁴ *Sharing and Enabling Environmental Data (SEED)*. <https://www.seed.nsw.gov.au/> accessed 06 May 2026.

¹⁵ http://www.bom.gov.au/climate/averages/tables/cw_067119.shtml. Commonwealth of Australia, 2013 Bureau of Meteorology, Product IDCJCM0028 and accessed by JBS&G on 06 May 2026.

- Monthly rainfall varies from 38.3 mm in September to 121.6 mm in February with the wettest periods occurring on average in February and March.

2.4.7 Naturally Occurring Asbestos

A review of the NSW Department of Planning and Environment (DPE¹⁶) map of Naturally Occurring Asbestos in NSW indicated that the site or its immediate surroundings is not situated in an area of naturally occurring asbestos.

¹⁶ Naturally Occurring Asbestos in NSW, NSW Department of Planning and Environment (DPE), <https://trade.maps.arcgis.com/apps/PublicInformation/index.html?appid=87434b6ec7dd4aba8cb664d8e646fb06>, accessed on 06 May 2026

3. Site History Summary

3.1 Historical Land Use

A detailed discussion of historical site use activities is presented in the Silverback DSI (JBS&G 2026b) and the preliminary environmental site assessment for the Stages 2-4 quarry portion of the site (PSA, JBS&G 2022a¹⁷). In brief, historical use of the site has comprised:

- Early historical aerial photographs indicated that the site was used as a works compound or for agricultural production activities in 1947. An unpaved road consistent with Old Wallgrove Road was present to the west of the site at this time and works associated with construction of the Sydney Water pipeline were in progress. The balance of the site comprised cleared grassland paddocks apart from two small stands of trees. The Reedy Creek alignment was apparent at the eastern site extent as a vegetated riparian corridor in addition to two surface water drainage lines that crossed the site.
- From the 1956 aerial photograph review the site appeared to be vacant open grassland.
- Initial development of the brick making plant facilities beyond the western portion of the site but within the property boundary occurred between 1970 and 1975. The initial configuration comprised the main warehouse building with a brick storage yard between this building and Old Wallgrove Road, with access to the site occurring from an access driveway in the north-west corner of the site. A quarry excavation was apparent to the south of the plant in addition to stockpiled material to the south and east of the plant.
- By 1978 quarrying activities were occurring to the east of the plant building with stockpiles of material present between the excavation areas and the plant infrastructure. The early quarry works to the south of the plant building had been backfilled by this time.
- The 1986 aerial photograph identified that the quarry footprint had been expanded to approximately 50% of the footprint. A bund had been constructed along the southern site boundary, whilst the balance of this south-east site area remained undisturbed.
- By the late 1990s, sections of the main quarry void had begun to be reshaped/backfilled, whilst quarrying continued to the north-east. Additional stockpiling of materials had occurred in the south-east quadrant of the site. By 2004, the base of the quarry had been expanded and parts were filled with water with further active quarrying continuing.
- The remainder of the site appeared to be subject to quarrying and/or stockpiling of varying shale materials for brickmaking purposes until Stages 2-4 rehabilitation earthworks commenced in 2022.

¹⁷ Preliminary Environmental Site Assessment, Austral Bricks Plant 23 Quarry, 10 Old Wallgrove Road, Horsley Park, NSW 2175. JBS&G Australia Pty Ltd. 5 July 2022 Ref: 60530-137932, Rev 1. (JBS&G 2022a)

4. Summary of Previous Site Assessments

The previous assessments available for the site are generally for the wider Austral Bricks quarry site. Summaries of the reports below provide some wider site context, however, have also been discussed in the context of the site. It is noted that some previous reports have been excluded from this section as they have been previously summarised in the current OEIE Stages 2-4 RAP (JBS&G 2023a) and mostly relate to fill materials in the site that will be validated and permanently placed as controlled fill under DA 347.1/2021 and prior to the approval of SSD 120888992.

4.1 Site Assessments – Overall Site/Context

4.1.1 DP 2018a¹⁸ Preliminary Site Investigation – Future Industrial Development

Douglas Partners Pty Ltd (DP) was engaged by Goodman Pty Ltd (Goodman) to conduct a preliminary site investigation (PSI) within the Austral Bricks Plant 3 site to support project planning requirements for a proposed industrial subdivision with respect to the Oakdale East Industrial Estate (OEIE). The objectives of the PSI were stated to be:

- Identify potential sources of contamination and determine the potential contaminants of concern;
- Identify potential human and environmental receptors; and
- Assess the need for further investigations and/or management with regard to the proposed development.

The scope of works comprised a brief site history review (including from historical aerial photographs, historical business searches and environmental regulatory notice searches) and review of the environmental setting of the site.

The site was reported to be largely cleared and vacant in the period from 1929-1970. From the 1982 aerial photograph, the site was reported to be used for mining and quarrying activities until the date of preparing the report.

A range of potential sources of contamination were identified in relation to the historical quarrying and brick manufacturing activities. It was noted that most potential contaminating activities were likely to be limited to the north-western portion of the site associated with the brick manufacturing activities (excluded from the site), being those associated with existing infrastructure associated with plant and equipment.

It was reported that any impacts of the identified potential contamination sources would be less evident (if at all) in the southern portion of the site (i.e. most of the Silverback site) where no manufacturing activities were reported to have taken place.

No intrusive investigations were undertaken as part of this investigation.

4.1.2 DP 2019a¹⁹ Preliminary Site Investigation – Proposed Crusher Relocation

Brickworks Land and Development engaged DP to undertake site assessment activities associated with a DA for the proposed relocation of a soil crusher machine and associated building, including an enclosed conveyer within the broader Austral Bricks Plant 3 (23) site and supporting road and vehicle parking infrastructure. The investigation areas were limited to three targeted areas of the site, including the

¹⁸ Report on Preliminary Site (Contamination) Investigation, Oakdale East Industrial Estate, 224-398 Burley Road, Horsley Park. Douglas Partners Pty Ltd, Project 86545.00 September 2018 (DP 2018a)

¹⁹ Report on Preliminary Site (Contamination) Investigation, Plant #3 Crusher – Oakdale East Industrial Estate, 224-398 Burley Road, Horsley Park. Douglas Partners Pty Ltd, Project 86545.02 February 2019 (DP 2019a)

northern plant access road and parking infrastructure situated at the north-west most portion of the site, referred to as 'Section A' which is located within the Silverback site.

The scope of works undertaken by DP included a desktop evaluation of historical site use, a site inspection and preparation of a site assessment report presenting the preliminary investigation outcomes and recommendations with respect to the need for further investigations/and or management needs for the proposed industrial development of the site.

At the time of the investigation, the investigation areas were occupied by unsealed haul routes adjoining the existing manufacturing buildings and associated kilns/structures. These buildings were generally of steel frame and panel construction, although other brick administration buildings and associated concrete vehicle movement and finished product storage areas were apparent. The crusher infrastructure was located in the southeast corner of the brick making facility. Vegetated areas were situated to the north of the clay shed with further vegetation scattered sparsely to the north of the current northern quarry access road.

Based on the desktop assessment and site inspections, the following observations were made for Section A:

- Two areas of environmental concern (AECs) were identified in this area, including the truck wash bay consisting of potential underground infrastructure, and the area occupied by the diesel above ground storage tank (AST) and a storage shed/container
- Encountered at all boreholes to depths of between 0.8 m and 2.8 m bgl. The fill generally comprises dark brown and brown sandy clay and silty clay fill with trace clay lumps, brick fragments, plastics, rootlets, sandstone, charcoal, wood, metal fragments, rubber, and fine shale gravel, with some pale grey sand.
- Potential asbestos-containing material (fibre cement sheeting) was observed in SA-BH4 and SA-TP4.
- No free groundwater was observed during drilling or excavation works.

DP prepared a preliminary CSM based on the above and nominated soil as generally being the potential impacted media, with sensitive receptors including existing and future site workers, including construction staff. Given the location and extent of works, DP did not consider that there were any ecological receptors likely to be disturbed as a result of the works.

The following conclusions were made for Section A:

- Given the results reported from Section A, including the presence of ACM in the fill and unconfirmed presence of potential USTs in inaccessible areas, DP recommends additional sampling is undertaken to meet the minimum sampling density requirements of EPA (1995) to confirm the results of this investigation. This additional sampling should include detailed asbestos investigation at double density utilising test pits.
- Furthermore, when access is improved within the section, further GPR scanning for any potential USTs will be made possible and is recommended.
- Subject to the above, DP considers that Section A can be made suitable for the development.

As such, DP considered that further intrusive investigation was required to assess the presence and possible impacts of potential contamination issues. It was recommended that further investigation include soil and groundwater sampling and analysis and further evaluation of the potential current/former fuel storage infrastructure locations.

It is noted that this area has since been subject to further investigation by JBS&G, known as Stage 3 Inground 12, and Stage 3 Inground 4, and has undergone subsequent asbestos remediation and validation surrounding SA-BH4 location as well as validation activities following the removal of the identified diesel AST. The area noted to contain two possible USTs has since been stripped to natural, with no evidence of any USTs and as such, no further action has been taken.

Additional investigations surrounding the wash bay area have not been able to be conducted due to ecological constraints with gaining access to the area for intrusive investigations and has been raised as a data gap subject to additional investigation.

4.1.3 JBS&G Quarry PSA (JBS&G 2022a)

JBS&G was engaged by Austral Brickworks to conduct a Preliminary Site Assessment (PSA) for the proposed Oakdale East Stages 2, 3 and 4 redevelopment site. The PSA was conducted across the quarried portion of the site comprising Stage 2, a portion of Stage 3 (excluding the Plant 3 site) and Stage 4.

The scope of works for the PSA comprised: a review of available site history, previous investigation reports and publicly available information to identify potential AECs and associated contaminants of potential concern (COPCs); soil sampling, analysis of selected samples for identified COPCs; comparison of collected data against relevant EPA endorsed criteria; and preparation of a PSA report in general accordance with relevant EPA made or approved guidelines to assess the suitability of the site from a contamination perspective for the proposed commercial use, or to make recommendations to enable such assessments to be made in the future.

The site investigation works comprised a detailed site inspection and advancement of 93 test pits across the site with selected soil samples submitted for laboratory analysis to sufficiently characterise site conditions.

Based on the scope of work completed for this investigation, the following conclusions were drawn with regard to the site:

- The site was a cleared vacant or agricultural land parcel until the early-mid 1970s, with the quarrying works conducted from approximately 1978 onwards under a mining license. Quarrying works on the site began to the east of Plant 3 and within the central-southern portion of the site, expanding through the central portion in the 1980s. The remainder of the site appeared to be subject to quarrying and/or stockpiling of varying shale materials for brickmaking purposes from the late 1980s to present. Recent remedial works for Oakdale East Stage 1 resulted in the relocation of asbestos contaminated materials (containment cell) and asbestos impacted materials (commercial/industrial stockpile).
- Potential sources of contamination were identified as part of the site history review and site inspection as related to the following: fill materials of unknown origin imported to the site; cross contamination or leaching from historically overlying fill materials to natural materials/water retention dams and spills or leaks associated with vehicle storage and/or maintenance.
- Representative samples of fill and natural soil were selected and analysed for a range of identified potential contaminants of concern including heavy metals, , total recoverable hydrocarbons (TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs), phenols, per- and polyfluoroalkyl substances (PFAS), and asbestos.
- The reported concentrations of all contaminants of concern within soil samples submitted to the laboratory for analysis were below the adopted criteria protective of ecological and human health.
- Bonded ACM was detected in soils from 0-1 metres (m) below ground surface (bgs) at three test pit locations and one fragment was identified on the ground surface. Concentrations of ACM at these locations were all below the adopted site assessment criterion for bonded ACM. Friable asbestos as asbestos fines (AF) was reported at trace level (below the site assessment criterion) in one sample co-located with the ACM. To this extent, asbestos in soil was considered to not pose a potentially unacceptable risk to future site receptors and is considered not to specifically require remediation from a contaminated land perspective. However, in accordance with NEPC (2013), the bonded ACM should not be present within the final surficial 100 mm profile for aesthetic reasons.

- Separate from the consideration of long term health risks, the bonded ACM would also require management from a WHS perspective during future activities that may result in ground disturbance in this area of the site.
- Based upon the assessment outcomes, and consideration with site conditions, it was considered sufficient site characterisation had been completed to enable the preparation of a remedial action plan (RAP) to address requirements for management of potential contamination at the site such that upon completion of the proposed rehabilitation works, sufficient information would be available to demonstrate the suitability of the site for the proposed commercial/industrial land use. The RAP was required to detail the management procedures for asbestos impacted soils as well as detailing material characterisation densities and associated remediation and validation actions for fill materials that were inaccessible during this PSA, including potential UFs.

4.1.4 JBS&G 2023a – Remedial Action Plan, Austral Bricks Plant 23 and Quarry

JBS&G prepared a site-wide RAP for the OEIE site to document the procedures and standards to be followed to remove or manage the risks posed to future commercial/industrial users of the OEIE site and the surrounding environment.

The RAP boundary was based upon the DA 347.1/2021 rehabilitation site boundary, but was also applied to the FIC area/proposed Lot 111 area given works approved under the DA extended to this site portion. A containment cell for identified asbestos contamination was also proposed within the FIC area.

The RAP detailed the relevant management requirements for the asbestos containment cell such that this portion of the site would be suitable for the proposed commercial/industrial land use subject to a LTEMP.

An addendum to the RAP was prepared (Addendum #2, JBS&G 2024b²⁰) specifically related to containment of TRH and HGG impacted materials also proposed to be placed within a containment cell located in the FIC area (part of the current site). The Addendum #2 detailed the procedures required for containment of impacted soils, as well as proposed containment cell locations.

4.1.5 JBS&G 2022b²¹ – Stockpile Management Framework (SMF), Oakdale East Stages 2-4

JBS&G prepared a SMF to appropriately identify the sources and nature of potential contamination that may be identified in the existing stockpiled material (not previously assessed) remaining at the OEIE site for future use as part of the redevelopment. The SMF included initial assessments prior to disturbance, screening the material for such contamination during earthworks, triggers to require further assessment of suspect material and identification of a management decision tree and procedures to document works as completed to provide evidence of the suitability of the material.

The SMF detailed the required sampling regime and frequency of analysis required to inform decisions on suitability of stockpiles for reuse as fill as part of the OEIE site redevelopment works. The nominated stockpile assessment methodologies comprised a series of slice, side and hole sampling locations on a 20 m grid basis in order to provide a three-dimensional assessment of existing stockpiles across the OEIE site. This grid base sampling was in addition to minimum required analysis sampling frequency for appropriate characterisation of each stockpile present on site to validate its suitability for reuse onsite, or requirement for remediation/management of materials under the RAP for the OEIE site (JBS&G 2023a).

²⁰ Austral Bricks Plant 23 and Quarry, 10 Old Wallgrove Road, Horsley Park, NSW 2175 Addendum Remedial Action Plan #2 - Additional Containment of Impacted Soils. JBS&G Pty Ltd. 26 August 2024. Ref: 60530-161169, Rev 1. (JBS&G 2024b)

²¹ Stockpile Management Framework, Austral Bricks Plant 23 Quarry, 10 Old Wallgrove Road, Horsley Park, NSW 2175. 5 July 2022. JBS&G Australia Pty Ltd. Ref: 60530/142726, Rev 1. (JBS&G 2022b)

In a similar manner to the RAP (JBS&G 2023a), the SMF, sampling programs in the FIC area adopted the sampling program and densities from the SMF. In addition, materials from elsewhere on the OEIE site were assessed under the SMF and relocated to the current site.

4.1.6 Addendum RAP 2 – Additional Containment of Impacted Soils (JBS&G 2024b)

During the Factory demolition works, JBS&G inspected residual inground infrastructure remaining following removal of above ground structures in accordance with the RAP, in addition to inspection of slab penetrations installed systematically across the proposed slab retainment area for geotechnical purposes. Remaining inground infrastructure across multiple areas within the factory portion of the site was observed to be in poor condition resulting in seepage of historically employed hydraulic oils (mostly comprising TRHs) into the surrounding soils. In addition, oil impacted fill was identified within geotechnical slab penetrations beneath the factory pavement slabs in addition to oil impacted fill within bedding sands surrounding previous inground service infrastructure across other areas of the Factory footprint. The identification of such materials triggered requirements for remediation of the impacts and subsequent validation of the areas in accordance with the objectives of the RAP (JBS&G 2023a).

In addition to the above, during additional stockpile and inground investigations completed across the site as part of the RAP requirements, a greater volume of asbestos contaminated materials was identified than originally anticipated at the time of the OEIE site rehabilitation DA submission.

As a result of the volume and extent of contamination identified, it was proposed to increase the containment cell footprint beyond that envisaged in the RAP (JBS&G 2023a) as approved under the current DA consent. This included:

- Expanding the containment capacity for asbestos contaminated materials within the proposed bunds situated to the north of the Stages 2-4 redevelopment boundary (within the FIC area); and
- Additional containment of TRH and HGG impacted materials within a new containment cell in the proposed bund footprint area, which would be designed with appropriate mitigation measures to effectively contain the impacted materials such that they do not pose a future human health or ecological risk to onsite or offsite receptors.

As such, a second Addendum RAP was required to provide details of the updated remediation and validation strategy to address the containment and long-term management of the TRH, HGG and asbestos contaminated materials identified across the Stages 2-4 redevelopment site, and subsequent relocation of these materials to the north of the redevelopment boundary within the FIC boundary. The remediation and validation activities as detailed in this Addendum were implemented in addition to the requirements of the existing RAP (JBS&G 2023a), amending the established remediation approach where required, whilst maintaining reference to those aspects of the existing RAP that remain relevant to the works.

As per JBS&G 2023a objectives, the remedial works within the Stages 2 -4 development boundary were required to be undertaken to a level such that no long-term management of contamination would be required, with only the proposed containment area, beyond the development boundary (within the FIC portion), to be the subject of a LTEMP.

The objective of this Addendum RAP was to document the updated procedures and standards to be followed with regard specifically to the management of identified additional contamination (greater volume of asbestos contaminated material and additional TRH/HGG impacted material) in order to remove and/or manage the risks posed from the identified site contamination to future commercial/ industrial users of the site and the surrounding environment.

4.1.7 JBS&G 2026b – Detailed Site Investigation, OEIE – Project Silverback (SSDA120888992)

JBS&G was engaged by BGMG to complete a combined PSI/DSI for a portion of the Project Silverback site located at the OEIE site, 2-10 Old Wallgrove Road, Horsley Park, NSW. The investigation area as part of this PSI/DSI did not comprise the full footprint of the OEIE site, rather, was limited to the FIC area (proposed Lot 111 on **Figure 2**) and Precinct 5 (proposed Lot PT110 on **Figure 2**). The balance of the OEIE site had either been subject to a Site Audit Statement (SAS) or was the subject of an existing approved development application (DA) for OEIE Stages 2-4 rehabilitation works (DA 347.1/2021).

The objective of this assessment was to address the SEARs by characterising the nature and extent of contamination at the site through a desktop assessment and intrusive investigation activities to enable conclusions to be drawn on whether the site was, or can be made, suitable for the proposed development activities as outlined in the SSDA.

This assessment identified two areas within the site boundary that had material containing contaminants of potential concern at concentrations exceeding the adopted site criteria. Within the eastern portion of the site, an Unexpected Find (UF) comprising ACM fragments were observed on the surface in a raised area (bund) within the P5 site, which is located in an area currently inaccessible given its location within a Transgrid easement in close proximity to 330 kV powerlines. The isolated fragments of bonded ACM, whilst not identified as site contamination exceeding assessment criteria, and therefore not a concern from a long-term health exposure (contaminated land) assessment perspective, will require management from a WHS perspective during future redevelopment activities. As such, once development considerations are understood appropriate management protocols will require to be implemented. In addition, identified AIM (again present at concentrations below assessment criteria) within the eastern portion of the S3BUND4 fill material currently remains in-situ, will require further management and subsequent validation following removal as per RAP (JBS&G 2023a) requirements.

In addition, two TRH/HGG and asbestos contaminated material containment cells have been constructed within the site and are managed under an IEMP whilst site remediation and construction works are ongoing. It is considered that the works relating to the intermediate storage of the TRH/HGG and asbestos contaminated material have been completed in accordance with the remedial document objectives and requirements, and as such, the materials do not pose an environmental risk in the interim during ongoing construction work across the OEIE site, subject to the implementation of the associated IEMP.

Based on the findings of this investigation, it was considered that subject to the management of the identified asbestos impacts within site soils that have not yet been remediated, appropriate interim management of the completed containment cells, management / remediation of other potential unexpected finds (UFs) and/or material that have not yet been assessed/identified at the time of this investigation, the site could be made suitable for the proposed commercial/industrial land use.

4.2 Site Assessments – Precinct 5

4.2.1 JBS&G 2022c²² – Preliminary Site Investigation, Austral Bricks Plant 23 Precinct 5

A PSI was conducted for the proposed Oakdale East Precinct 5 redevelopment site (JBS&G 2022c), which included an access road and associated stormwater detention basin to the south-west of the proposed Precinct 5, part of the OEIE redevelopment, located at Austral Bricks Plant 23, 10 Old Wallgrove Rd, Horsley Park NSW 2175 (the site) to support an SSDA.

The scope of the investigation included: a site walkover and inspection; desktop review of historical records of land use activities and regional environmental conditions; review of historical environmental reports provided to JBS&G at the time of reporting; identification of AECs and associated COPCs; and development of a CSM to inform a future sampling program to be undertaken as part of a future DSI.

The findings of the desktop review and site inspection undertaken at the site as provided in the PSI are summarised as follows:

- The site was observed to comprise the Quarry East void in the western portion, with adjacent grassed/vegetated areas and earthen access roads comprising the eastern portion of the site. Surface water was present within the base of Quarry East at the time of the inspection due to heavy rainfall at the site prior to the inspection. No other signs of contamination such as staining, odours, or asbestos were observed at the site at the time of inspection;
- Overhead power lines were observed across the eastern portion of the proposed new basin footprint (now no longer part of the proposed Precinct 5 redevelopment), running between the Stage 4 and Stage 5 boundaries in a southeast direction;
- Potential sources of contamination were identified as part of the site history review and site inspection related to the following: fill materials of unknown origin imported/stockpiled on the site; cross contamination or leaching from historically overlying fill materials to natural materials/temporary surface water present at the site; and spills or leaks associated with vehicle storage and/or maintenance activities as may have occurred within the site; and
- It was determined that it was unlikely that activities at the site will have contaminated the land to a degree that would prevent the redevelopment of the site for commercial / industrial land use.

Based on the above, JBS&G recommended that prior to redevelopment at the site, planned intrusive investigations should be undertaken to provide a quantitative assessment of contaminant levels associated with the identified AECs to confirm the suitability of the site (from a contamination perspective) for the proposed use. Subsequently, should contamination be identified during intrusive investigations, it was recommended that a RAP be prepared for implementation during proposed earthworks to manage any identified contamination impacts.

4.2.2 JBS&G 2024c²³ – Detailed Site Investigation, OEIE Precinct 5

A DSI was prepared for Oakdale East Precinct 5 redevelopment site, based on the recommendations of the PSI (**Section 4.2.1**).

The scope of works completed for the investigation included a desktop review of historical site use based on the PSI, field sampling and subsequent laboratory analysis of samples for potential COPCs, and preparation

²² Preliminary Site Investigation Austral Bricks Plant 23 Quarry Precinct 5, 10 Old Wallgrove Road, Horsley Park, NSW 2175. JBS&G Pty Ltd 31 March 2022. Ref: 60530-144338, Rev A. (JBS&G 2022c)

²³ Detailed Site Investigation, Oakdale East Industrial Estate Precinct 5 - 10 Old Wallgrove Road, Horsley Park, NSW 2175. 9 August 2024. (JBS&G 2024c)

of a site assessment report presenting the investigation outcomes and recommendations with respect to commercial/industrial development of the site in accordance with relevant EPA guidelines.

A total of 98 sampling locations were completed via test pits and hand auger. Fill material was encountered at all test pit and hand auger sampling locations at depths ranging between 0.1 m bgs to 6.7 m bgs. Fill material generally comprised brown gravelly/silty clay with variable inclusions of organic matter, shale gravels, metal, brick fragments, sandstone, tiles, and concrete. Natural soil underlying fill material comprised red/brown/grey clay and gravelly clay at all locations where natural materials were encountered.

Organic odours and staining (from decaying organic matter) were noted at sample locations conducted surrounding the southern dam, and sample locations advanced along the eastern boundary across the site. A disused vehicle part was identified in fill at location P5-TP20 (between 1.7 and 1.8 m bgs) within the northern portion of the site. The inclusion had a moderate hydrocarbon odour and was stained black, and contained a fibrous material that was submitted to the laboratory for asbestos identification, although laboratory analysis did not identify asbestos.

The investigation identified asbestos in fill material at two sample locations identified as P5-TP01 and AGG03, both within the northern portion of the site. TP01 was identified as friable asbestos comprising fibrous asbestos/asbestos fines (FA/AF) in soils exceeding site criteria at 0-1m depth, and AGG03 was identified as ACM exceeding site criteria in a surface sample collected at 0-0.1m depth. All other COPCs concentrations were below the adopted assessment criteria.

Based on the findings of the investigation, it was considered that the site could be made suitable for the proposed commercial land use, subject to the management of the identified asbestos impacts within site soils and management/remediation of other potential unexpected finds (UFs) that may be encountered during site redevelopment.

It was recommended that a RAP be prepared to identify the remediation/management required for asbestos impacts to render the site suitable for the proposed development.

4.2.3 JBS&G 2024d²⁴ – Remedial Action Plan (RAP), OEIE Precinct 5

JBS&G was engaged by the joint venture between Brickworks Pty Ltd and Goodman (BG JV) to prepare a Remedial Action Plan (RAP) to accompany a development application for the proposed OEIE Precinct 5, following identification of asbestos during the DSI (see **Section 4.2.2**).

The objective of the RAP was to document the procedures and standards to be followed to remove or manage the risks posed (from the identified site contamination) to future commercial/industrial users of the site and the surrounding environment.

The preferred remedial strategy for the identified asbestos was via placement of material beneath a permanent physical barrier such that there are no complete exposure pathways. It was noted that this option could result in the need for a LTEMP and Asbestos Management Plan (AMP) to be noted on documents to future tenants, however it was not desirable to include containment within the proposed development footprint.

However, given the site is part of the broader Austral Quarry/Plant 22/23 premises, containment of this material could occur within the broader OEIE redevelopment site, consistent with the plans for containment to the north of Stages 2-4. This option was considered appropriate from a regulatory viewpoint, an ecologically sustainable development (ESD) viewpoint, minimising waste, time and costs and was favourable to the clients.

Data gaps included the following:

²⁴ Remedial Action Plan, Oakdale East Industrial Estate Precinct 5 - 10 Old Wallgrove Road, Horsley Park, NSW 2175. 14 August 2024. JBS&G Australia Pty Ltd. Ref: 60530/161686, Rev A. (JBS&G 2024d)

- Characterisation of soils in proximity to the existing 330 kV earthing tower exclusion zone in the western portion of the site, with the potential for inferred filling of a former dam identified in the DSI (JBS&G 2024a, **Section 4.2.2**). Information provided to JBS&G at the time of the RAP indicated that no specific development works were proposed to be undertaken as part of the Precinct 5 development within the exclusion zone. On this basis and noting the strict approvals permitting requirements of the infrastructure owner with ground disturbance in this portion of the site, it is considered that only where specific proposed ground disturbance is proposed, would further investigation to close this data gap be required. Alternatively, if no works were to be undertaken and security fencing would be maintained/installed surrounding this infrastructure, this would appropriately remove any complete exposure pathways to future Precinct 5 site users. On this basis, no further investigation was considered necessary.
- Delineation works were required to define the nature and extent of FA/AF contaminated fill materials reported at P5-TP01. The sample was within an existing fill bund at the site, and therefore the potential remained for further impact than what has been observed/reported to date within the bund noting that only one location was able to be advanced in this area due to access limitations relevant to existing site operations. It was proposed to complete five additional test pits on a systematic sampling grid to delineate the extent of required remediation.

It was considered that the site could be made suitable for the intended uses and that the risks posed by the identified contamination could be managed in such a way as to be adequately protective of human health and the environment.

4.2.4 JBS&G 2024e²⁵ – Asbestos Remediation and Validation Summary

JBS&G was engaged to document the remediation and validation scope of works within Precinct 5. The objective of the report was to document the asbestos management works and validation of the P5 site in accordance with the RAP (JBS&G 2024d, **Section 4.2.3**) to confirm that the P5 site had been made suitable for the proposed commercial/industrial redevelopment.

The scope of works undertaken for the remediation/validation of the P5 site comprised:

- Supervision of removal of the asbestos impacted gravels associated with sample location, P5-AGG03 by an appropriately experienced contractor;
- Completion by JBS&G of a detailed clearance inspection and validation of the excavation formed by the removal of the P5-AGG03 material;
- Completion of five additional delineation test pits across the surrounding bund area in proximity to P5-TP01 to confirm the absence of additional asbestos in soil impacts within the bund area, in accordance with the RAP (JBS&G 2024c) requirements;
- Supervision by JBS&G of removal of the asbestos, as FA/AF, impacted soils by an appropriately licensed contractor, in proximity to sample location, P5-TP01 at a depth of 0-1 m bgs;
- Completion by JBS&G of a detailed clearance inspection of the excavation formed by the removal of P5-TP01-0-1 soils inclusive of the validation of the excavation via collection of representative samples in accordance with NEPC 2013/WA DoH 2009²⁶ requirements;

²⁵ L02 – Asbestos Remediation and Validation Summary – Proposed Oakdale East Precinct 5 and Future Lot 112, 10 Old Wallgrove Road, Horsley Park, NSW. 17 December 2024. JBS&G Australia Pty Ltd. Ref: 68458/164137, L02 Oakdale East Precinct 5 Asbestos Remediation and Validation Summary. (JBS&G 2024e)

²⁶ Guidelines for the Assessment, Remediation and Management of Asbestos – Contaminated Sites in Western Australia. Western Australia Department of Health, May 2009 (WA DoH 2009)

- Analysis of all collected soil validation samples and delineation test pit samples associated with P5-TP01 for asbestos at National Association of Testing Authorities (NATA) accredited laboratories;
- Comparison of analytical results against site validation criteria specified in the RAP;
- Review of material tracking sheets provided by the Principal Contractor; and
- Data assessment and documentation of remedial works and validation via preparation of the validation letter.

The results of laboratory analysis for samples submitted for the validation of P5-TP01 excavation reported no ACM or FA/AF above the laboratory limit of reporting (LOR) in all samples, and therefore the asbestos concentrations in the samples met the adopted validation criteria.

Following the scope of works completed, JBS&G considered that the asbestos remediation works and associated validation assessment had been appropriately implemented in accordance with the RAP (JBS&G 2024d) and the RMP (RW Corkery 2024) and on this basis, the site was considered suitable for the proposed commercial/industrial redevelopment without further remediation.

All asbestos impacted soils from AGG03 (120 m³) and P5-TP01 (750 m³) were relocated to the asbestos containment cell (western portion of the current site) between November and December 2024. It was understood that the relocated asbestos materials would be appropriately managed upon completion of the cell construction via a LTEMP for the asbestos containment cell located within the OEIE site beyond the P5 extent. No specific management of asbestos containing material was considered necessary for the remediation area based on the assessment findings, noting that an unexpected finds protocol (UFP) should remain in force for the duration of future earthworks within the P5 site area.

4.2.5 JBS&G 2026c²⁷ – Remediation Requirements and Review of Placed Materials

A summary letter (JBS&G 2026c) was completed to document the activities that had occurred within P5, to the date of issue of the summary letter, and are reported below.

Asbestos Unexpected Find (P5 UF01)

Following completion of remedial works as documented in **Section 4.2.4**, an unexpected asbestos find was identified in fill bund material in the northern portion of the P5 site.

Several ACM fragments (labelled P5 UF01) were observed in a raised area (bund) as shown in **Figure 3 Appendix A**. It is noted that specific intrusive investigation of this raised area was excluded from the DSI (JBS&G 2024b) due to its location being in a Transgrid easement in close proximity to 330 kV powerlines and a stanchion, restricting permitted works. As a result, the presence of the ACM fragments was deemed an unexpected find (UF) in accordance with the RAP (JBS&G 2024d). It is further noted that the area was located approximately 40 m west of the implemented P5-TP01 asbestos remediation area, the details of which are discussed above. Following identification of the UF, the impacted area was cordoned off with flagging and signage. The area has remained unchanged since the identification of the UF in March 2025, except for the growth of light vegetation which now covers the area.

At present, the designated UF area is approximately 400 m² and it is anticipated that the depth of fill is approximately 3-4 m based on observations from the DSI (JBS&G 2024c) and P5-TP01 asbestos delineation investigations (JBS&G 2024d). However, it is possible that the asbestos contamination is not present throughout the entire fill profile in this area. It is also possible that the raised area to the north of the asbestos UF as shown with an approximate volume of 2,500 m³, may contain asbestos.

²⁷ Remediation Requirements and Review of Placed Materials – Precinct 5, Oakdale East Industrial Estate, 10 Old Wallgrove Road, Horsley Park NSW 2175. 1 April 2026. JBS&G Australia Pty Ltd. Ref: 60530/174965, L04 (Oakdale East Precinct 5 - Remediation Requirements and Review of Placed Materials) Rev A. (JBS&G 2026c)

The asbestos remediation approach for the UF will need to consider the potential development scenario on this area (i.e. whether any significant earthworks are required), the electrical safety restrictions imposed by Transgrid and whether any identified/suspected asbestos contamination can be managed in-situ with/without an LTEMP under Goodman commercial agreement terms. This will require specific discussion with the site auditor once development considerations are understood.

If earthworks are required, then the asbestos impacted material will need to undergo characterisation assessment to inform decision making. Any excavations formed by the removal of asbestos impacted material will also require validation in accordance with an approved RAP.

Beneficial Reuse of Soils

Soil materials deemed unsuitable for brickmaking predominantly remained within the P5 site for beneficial reuse as backfill within the quarry void, as specified in the RMP (RW Corkery 2024). These materials comprised:

- Stockpiled and in situ fill materials surrounding the Quarry East void assessed as suitable for commercial industrial land use as documented in the DSI (JBS&G 2024c);
- Overburden stockpiled virgin excavated natural material (VENM) clay and shale materials present in the Quarry East void that were deemed unsuitable for brickmaking; and
- In situ VENM materials to the north and east of the Quarry East void.

Filling of the Quarry East void comprised (as advised by Wearn and verified by JBS&G site inspection) the following material, summarised in **Table 4.1**.

Table 4.1: Material Summary Sourced Within P5 Site

Origin Area/s	Classification	JBS&G Letter Reference/s	Comments
Area 1A Fill	Fill suitable for commercial industrial land use	JBS&G 2024f ²⁸	Small portion of fill material with anthropogenic inclusions identified in Area 1A VENM overburden material and temporarily stockpiled separately.
Areas 1A/B/C/D, Area 2B Overburden/Silt	VENM (Overburden)	JBS&G 2025a ²⁹ JBS&G 2025b ³⁰	Overburden Clay/Shale placed in Quarry East void during mining as uncontrolled fill. Additional material in Areas 1C/D also assessed for potential export to OEIE Stages 2-4.
Area 1A Ripped Shale	VENM	N/A	In situ natural shale material
Area 3A/3B/3C Fill/Overburden	Fill suitable for commercial industrial land use	JBS&G 2024c	Material surrounding Quarry East Void assessed during DSI.
Area 3A VENM/Ripped	VENM	JBS&G 2025c ³¹	In situ VENM clay and underlying shale for assessed for potential export to OEIE Stages 2-4.

²⁸ L02 – Precinct 5 Fill SP01 Characterisation - Oakdale East Redevelopment, Precinct 5, 10 Old Wallgrove Road, Horsley Park, NSW. JBS&G. 21 October 2024. Rev A (JBS&G 2024f).

²⁹ L01 – Virgin Excavated Natural Material (VENM) Assessment Precinct 5 Overburden – Oakdale East Estate Precinct 5, Horsley Park NSW 2175. JBS&G. 10 July 2025. Rev B (JBS&G 2025a)

³⁰ L03 – Virgin Excavated Natural Material (VENM) Assessment for Export into Oakdale East Estate Stages 2-4 Redevelopment – Oakdale East Estate Precinct 5, Horsley Park NSW 2175. JBS&G. 24 April 2025. Rev A (JBS&G 2025b).

³¹ L04 – Virgin Excavated Natural Material (VENM) Assessment Precinct 5 Area 3A– Oakdale East Estate Precinct 5, Horsley Park NSW 2175. JBS&G. 1 May 2025. Rev A (JBS&G 2025c).

Origin Area/s	Classification	JBS&G Letter Reference/s	Comments
Area 2A	VENM	N/A	In situ natural shale material (final extraction area for brick-making materials)
Wedge	VENM	N/A	In situ natural shale material underlying Area 1 Overburden VENM
Rock Stockpiles	VENM	N/A	Oversize materials that require crushing from various areas
Area 3B/3C VENM	VENM	N/A	Underlying fill assessed in the DSI

Soil materials transported to the P5 site for the backfilling of the Quarry East void was reported by Wearn and/or Austral Brickworks as limited to material sourced from the OEIE Stages 2-4 site that had been assessed as VENM or ENM in accordance with the RMP (RW Corkery 2024) requirements. In all instances, materials not meeting VENM/ENM in assessment areas were removed and validated by JBS&G prior to transport to the P5 site.

It is noted that the summary letter does not include material tracking or relevant reports, which was envisaged to be documented within the final P5 validation report prepared upon completion of all site works.

4.3 Site Assessments – FIC Area

4.3.1 TRH/HGG Containment Cell Interim Validation (JBS&G 2026d³²)

JBS&G was engaged to document the remediation and validation of works relating to the storage of TRH and HGG contaminated soils originating from the brickmaking factory footprint. As detailed in **Section 4.1.6**, an addendum RAP was prepared for the OEIE site to outline the remediation strategy for HGG and TRH impacts identified in the former brickmaking factory footprint during remediation works. The preferred remediation strategy was to cap and contain the impacted materials on site in a cell lined with a geosynthetic clay liner (GCL).

The scope of works for the interim TRH/HGG cell validation (JBS&G 2026d) comprised the collation and review of existing assessment data for materials relocated to the cell and overlying bund and supervision of cell construction and filling and capping in accordance with an inspection and test plan (ITP).

The interim validation concluded that works relating to the long-term storage of TRH/HGG material had been completed in accordance with the remedial document objectives and requirements (RAP and Addendum #2), and in accordance with the TRH/HGG cell ITP.

4.3.2 Asbestos Containment Cell Interim Validation (JBS&G 2026e³³)

JBS&G was engaged to document the remediation and validation of works relating to the storage of asbestos contaminated soils originating from the OEIE site. As detailed in **Section 4.1.4**, the preferred remediation strategy for asbestos contamination was to cap and contain the impacted materials on site in an asbestos containment cell with its proposed location in the central northern portion of the OEIE site within the FIC area.

³² L361 – TRH/HGG Cell Interim Validation– Oakdale East Stages 2-4 Redevelopment, 10 Old Wallgrove Road, Horsley Park NSW. JBS&G Pty Ltd. 26 May 2026. Rev 3 (JBS&G 2026d)

³³ L371 – New Containment Cell Interim Validation– Oakdale East Stages 2-4 Redevelopment, 10 Old Wallgrove Road, Horsley Park NSW. JBS&G Pty Ltd. 27 May 2026. Rev 3. (JBS&G 2026e).

The scope of works for the interim asbestos cell validation (JBS&G 2026e) comprised a collation and review of existing assessment data for materials relocated to the cell and supervision of filling and capping in accordance with the RAP (JBS&G 2023a).

4.3.3 FIC Portion – Interim Environmental Management Plan (JBS&G 2026a)

Two containment cells were created within the northern portion of the OEIE site, which is now managed under an IEMP, comprising:

1. Asbestos containment cell: approximate volume of 106,741 m³; and
2. TRH/HGG containment cell, overlain with an asbestos bund: approximate volume of 14,486 m³ within the cell and 245 m³ asbestos bunding.

Initial remedial works at the site required to be completed have been undertaken in accordance with the requirements of the RAP (JBS&G 2023a) up to and including placement of the interim capping profile as documented in JBS&G (2026d) and JBS&G (2026e). It is understood that the client is seeking a BIC from FCC, to confirm that completed works do not pose an ongoing environmental and/or human health risk.

The remedial works as documented in the RAP for the containment cells have only been completed to an interim stage, and earthworks are ongoing. Interim management measures are required in the interim for the site and cell infrastructure to ensure the contamination and associated interim capping measures are appropriately managed.

It is noted that the IEMP (JBS&G 2026a) is designed to apply until such time as the final capping as per the RAP (JBS&G 2023a) requirements is completed and the rehabilitation and earthworks program establishes the final landform and associate landscaping in this area. This IEMP will continue until such time as a final validation report documents the final site condition as being suitable for the proposed commercial/industrial land use, subject to a long term environmental management plan (LTEMP), at which time this LTEMP will supersede the IEMP.

5. Conceptual Site Model

Based on the history review conducted as part of previous assessments, AECs and associated COPCs remaining across the site have been identified and are presented in **Table 5.1**.

Table 5.1: AECs and Associated COPCs

AEC	COPC	Potential Impacted Media
Fill of unknown origin used to generate current site levels or otherwise stockpiled on site	Asbestos in soils	Soil
	Heavy metals	Groundwater
	TRHs	Soil Vapour
	BTEX	Surface Water
Natural Materials – cross contamination or leaching from overlying fill, including placed construction/demolition and brickmaking waste material	PAHs	Soil
	OCPs	Groundwater
	PCBs	Soil Vapour
	Volatile Organic Compounds (VOCs)	
	PFAS	
Spills or leaks associated with the storage and/or maintenance, vehicle washing etc. of plant and machinery	Heavy metals, TRH/BTEX, PAH, VOCs	Soil
		Groundwater
		Soil Vapour
		Surface Water
Potential for presence of USTs and ASTs (historical), generally limited to north-west portion of the site	TRH/BTEX, PAHs, VOCs, heavy metals	Soil
		Groundwater
		Soil Vapour

5.1.1 Potential for PFAS

Review of the OEIE site history and environmental setting (**Section 2.4 and 3**) has not identified historical aviation, or fire-fighting operations/infrastructure at the site. The OEIE site has been utilised as a commercial/industrial brick making facility since the 1970s and as such, there was the potential for historical use of PFAS products to have occurred at the site associated with the Plant operations, separate to the quarrying areas of the site. However, the potential for use at the site historically is considered to be low. Further, the use of PFAS foams was generally associated with fuel and/or solvent based fires, rather than environmental sources typical of wildfire/grass fire conditions in paddocks in Western Sydney. Foams were not standard equipment for either metropolitan or rural fire brigades such as those that may have attended the grass fire incident if separate to Austral Brickworks personnel. As such, it is concluded that PFAS compounds are highly unlikely to have been used during historical site activities and such are considered to not be a COPC requiring further assessment with respect to site contaminant risks.

5.1.2 Potential for Explosives

The potential historical storage of explosives at the OEIE site during quarrying activities has been identified within WorkSafe licence application documents (JBS&G, 2022b), however, during site assessment, Austral Brickworks provided advice that its corporate knowledge (at the time) was that no blasting had occurred at the OEIE site. Further, there was a low degree of accuracy as to the proposed location nominated in the original licence application to the north of the former plant (factory buildings) and it was not apparent in aerial images taken in subsequent years. As such, even if a quantity was stored on the site, it is considered likely to have been small and given the time period since the licence relinquishment in 1991, the level of uncertainty as to historical activities, in addition to changes in site condition, the likelihood of obtaining any

meaningful characterisation data that could be definitively associated with the explosives store footprint is very low.

Further, given the inferred minimal quantities of explosives stored, if there was no blasting program and the fact that storage would have occurred between 30 and 50 years ago, there is no risk-based justification to nominate explosives as a COPC and the associated storage location footprint as an AEC at the site.

5.2 Site Contamination Status

The contamination status of the site is summarised in **Table 5.2** below.

Table 5.2: Contamination Status

Issue	Area of Site	Criteria Exceeded	Report
ACM impacted soils	Unexpected find (UF) identified in northern portion of Precinct 5	Health Screening Levels (HSLs) for commercial / industrial land use (HSL-D) and Work, Health and Safety (WHS) Regulations	L04 Rev A (JBS&G 2026c)
	Eastern portion of Stage 3 Bund 4 that has not been removed (representative of TP03 and TP04, down to natural)	WHS	Material characterisation - MCF38 Rev A (JBS&G, 2025d ³⁴) Partial validation of western portion – L377 Rev A (JBS&G, 2026f ³⁵)
	Identified ACM in soils within OEIE Stages 2 and 4 that have not yet been excavated, proposed to be retained within onsite containment cells for long-term management	HSL-D and WHS	-
Onsite materials destined for onsite re-use that require further characterisation to demonstrate suitability (i.e., site fill)	Quarry	-	Preliminary Environmental Site Assessment (PSA, JBS&G 2022a)
Asbestos Containment Cell	FIC area	HSL-D	L371 Rev A (JBS&G 2026e)
TRH/HGG Containment Cell	FIC area	HSL-D	L361 Rev 1 (JBS&G 2026d)

³⁴ Stage 3 Bund 4 Material Characterisation Form– Oakdale East Stages 2-4 Redevelopment, 10 Old Wallgrove Road, Horsley Park NSW. JBS&G Australia Pty Ltd. 2 May 2025 Ref: 60530/156,638 MCF39 Rev A. (JBS&G 2025d)

³⁵ Stage 3 Bund 4 Partial Validation– Oakdale East Stages 2-4 Redevelopment, 10 Old Wallgrove Road, Horsley Park NSW. JBS&G Australia Pty Ltd. 21 May 2026 Ref: 60530/175,679 L377 Rev A. (JBS&G 2026f)

5.2.1 Data Gaps

As a result of access limitations associated with the current site operations, the existing services infrastructure, namely overhead electricity and associated earthing and stanchions, etc., and the areas of ecological significance that were unable to be accessed as part of the previous investigations, the existing site data set is considered to contain the following data gaps:

- Uncharacterised uncontrolled fill with the potential for impacts associated with site COPCs³⁶;
- Potentially contaminated fill material within the footprint of the 330 kV electrical earthing tower exclusion zone (30 m exclusion), which partially includes the footprint of the former, inferred filled dam location now occupied by the electrical earthing tower (330 kV tower, **Figure 3**);
- Potential for additional contaminated fill material within the P5 northern bund, where an unexpected find was identified (JBS&G 2026c); and
- Unknown conditions surrounding remaining inground former wash bay infrastructure (**Figure 3**) within areas of ecological significance in the north-west portion of the site.

5.3 Potentially Contaminated Media

Each of the AECs and corresponding COPCs identified in **Section 5.1** have the potential to impact soil, surface water including current and former sediment basins/dams, groundwater and/or soil gas (where volatile constituents are identified) at the site.

Potential remains for contamination in fill material resultant from importation of fill materials of unknown origin or use of site waste materials to create former/existing site levels, and as may be associated with historical quarrying works given the absence of imported material records available. In addition, where fill material is present at depth, or soil has been disturbed (including for the burial of waste/backfilling of quarry voids), there is the potential that environmental impact may be present at depth, consistent with the depth of the disturbance. Anthropogenic materials, including site reject materials have commonly been present in disturbed/impacted fill materials to date and can be used as an indication of the depth of disturbance in addition the presence of hard rock conditions.

Two recently constructed containment cells are present within the FIC areas, associated with TRH/HGG and asbestos contaminated material identified in within the site and more broadly across the OEIE site, and relocated to this area for future ongoing management under an IEMP and later an LTEMP.

Natural soils and/or bedrock underlay the fill material in various areas of the site and may potentially be impacted by the downward migration of contaminants through fill. There is the potential, albeit a low one, given the main COPCs at the site, for the leaching of contaminants vertically from fill into groundwater and/or potential off-site impacts. Natural soils/rock may also be impacted by contaminated groundwater migration (if present).

Based on data presented in **Section 2**, and field observations made during the previous investigations presented in **Section 4**, it is considered that groundwater underlying the site may be present in discontinuous perched conditions associated within weathered shale discontinuities, with true regional groundwater present at depth, generally below the existing quarry void maximum depths. Localised groundwater seepage movement is expected to occur consistent with top of rock patterns and be influenced by localised surface water drainage associated with deeper soil profiles, particularly in the eastern most portion of the site where alluvial soil profiles may be present nearby to the riparian zone. The presence of a

³⁶ Ongoing characterisation of fill materials including those associated with quarry rehabilitation works will be undertaken in accordance with the site FMP, **Appendix E**.

residual clay profile or direct hard bedrock conditions beneath fill materials at the site is anticipated to limit the potential for downward migration of contaminants.

Given the occurrence of former surface water detention basins/dams within the site, and the potential for fill materials and natural soils to be impacted associated with historical site land uses, surface water was identified to be a potentially contaminated media. Soils at the base of the basins/dams may have also been impacted as a result of surface water impacted with COPCs, as such soils within the basin/dam bases are considered potentially contaminated. It is understood that monitoring of surface water release is currently undertaken under the site EPL (Licence no. 546).

Given the scale of site earthworks and associated site operational plant, there is the potential for leaks associated with machine maintenance/vehicle washing, etc to have occurred during quarrying and rehabilitation works programs. These COPCs are potentially volatile in nature, which may be present in fill and/or natural soils. Therefore, soil vapour is a potentially contaminated medium should these conditions be present.

Based upon assessment of geological conditions at the site including consideration of the potential future development activities in accordance with ASSMAC (1998), it has been concluded that there are no risks from potential ASS at, or downgradient of the site that require further consideration during future development activities and/or proposed land uses.

5.4 Potential for Migration from Site

Contaminants generally migrate from site via a combination of windblown dusts, rainwater infiltration, groundwater migration and surface water runoff. The potential for contaminants to migrate is a combination of:

- The nature of the contaminants (solid/liquid and mobility characteristics);
- The extent of the contaminants (isolated or widespread);
- The location of the contaminants (surface soils or at depth); and
- The site topography, geology, hydrology and hydrogeology.

The COPCs identified as part of the site history review and site inspection are generally in solid form (e.g. asbestos, PAHs and metals), liquid form (e.g. TRH, BTEX, OCPs, phenols and PCBs) or gaseous form (e.g. BTEX, volatile TRH, HGG, VOCs and semi-volatile PAHs).

The potential solubility of chemical contaminants in soil, in addition to the rate of surface water intrusion, perched water seepage and groundwater movement across the site will influence the potential for migration of soil and groundwater-based contamination within and from the site. Should leachable contaminants be identified in soils, then potential groundwater contamination and subsequent off-site migration of contaminants in groundwater will require consideration.

Due to the unsealed nature of the site, there is considered to be a moderate potential for the generation of windblown dust generated from surface soils. The potential for contamination migration via surface water movement and infiltration of water and subsequent migration through the soil profile is considered generally to be low given the extent of low permeability soils in the assessment area.

Natural soils at the site comprise relatively impermeable clay overlying residual shale and inter-bedded sandstone at the western site extent. Notwithstanding, migration of potentially impacted groundwater may occur over moderate to long time periods. Migration of contaminants from the site via infiltration into groundwater is considered to be a potential pathway if there is significant liquid or liquid soluble (e.g. hydrocarbon) COPCs.

If petroleum hydrocarbon contamination occurs in soil, there is the potential for these impacts to also occur in groundwater and soil vapour underlying the site. The potential for off-site migration of vapours will only

be relevant where these constituents are identified at significant levels. These constituents can migrate laterally from the site through diffusive/advective processes as well as through preferential pathways (refer to **Section 5.5**). Should elevated levels of volatile contaminants in soil be identified, then soil vapour impacts and potential off-site migration of these constituents will require further consideration.

5.5 Potential Receptors and Exposure Pathways

Potential human receptors present within the site include site development/maintenance workers and future site occupants (site workers, visitors, maintenance people, etc) who may potentially be exposed to COPCs through direct contact with impacted site soils and/or inhalation of dusts/vapours/fibres associated with impacted soils.

Potential ecological receptors include flora and fauna present across the site and in nearby topographically down-gradient areas.

Based on the contaminants of potential concern identified in soil media not currently within designated containment cells (i.e. asbestos), the exposure pathways for contamination at the site during and following development works will likely be limited to potential inhalation of asbestos fibres where respirable asbestos fibres may be released during disturbance and abrasion of asbestos at the ground surface or in subsurface soils where fibres may become airborne.

Exposure to potentially contaminated soils within the containment cells will be managed in accordance with the IEMP (JBS&G 2026a) during the current earthworks and therefore will be limited to conditions should there be a requirement to breach the containment cell.

5.6 Preferential Pathways

Preferential pathways have been identified as natural and/or man-made pathways that result in the preferential migration of COPCs as either liquid, gas or fibres.

In the context of the site, the preferential pathways include:

- Areas of previously disturbed soils that may be acting as a higher permeability pathway for liquid or gas contamination (if present) than the natural clay/shale lithologies;
- The natural clay/shale walls of former quarry voids, acting as a low permeability barrier to contaminant migration from potentially impacted backfilled materials within the void, resulting in localised sinks; and
- Areas around/overlying the capped TRH/HGG containment cell, where a low permeability liner has been placed in accordance with the RAP and RAP Addendum #2 (JBS&G 2023a and 2024d) resulting in low permeability across the containment cell area.

Given the main contaminant of concern, asbestos, is a solid form contaminant, the potential for migration of contaminants is considered to not be influenced by preferential pathways at the site typically associated with areas of greater soil permeability and/or flow paths.

It should be noted that, in the event of unexpected finds being encountered other than asbestos in soil/fill, during site remediation/construction earthworks, the potential presence of other contaminants of potential concern may require consideration of the presence of preferential pathways inclusive of areas of historical backfilling, below ground services infrastructure, overland flow/discharge pathways etc, where the potential for migration of contamination is greater than would be expected in surrounding undisturbed soil profiles.

6. Remediation Action Plan

Based on the historical investigation results (**Section 4**), contaminants on the site comprise primarily ground surface asbestos/ asbestos impacted soils at various locations. As such, a specific remedial options assessment has been undertaken to identify the preferred remedial options.

As noted above in **Section 5.1**, ongoing fill characterisation associated with quarry rehabilitation works will be completed in accordance with the site FMP (**Appendix E**). If material is identified as not suitable for beneficial reuse in accordance with the FMP, the Unexpected Finds Protocol (**Section 6.11.7**) will be enacted to further assess the identified material and support confirmation of appropriate remedial/ management requirements. In lieu of current information, it is anticipated that should COPCs be identified, consistent with those in **Table 6.1**, the decision making guidance provided herein will remain valid. In the event of different/additional COPCs, the UFP process may require a specific remedial options assessment, potentially via implementation of a RAP addenda or standalone UFP or similar, in consultation with the appointed site auditor. Notwithstanding, it is anticipated that any further unexpected impacts beyond asbestos will be relatively isolated and could be appropriately managed through controlled excavation and off-site disposal.

6.1 Remediation Goals

The remediation objectives for site impacts as identified are outlined as follows:

- Removal of unacceptable risks to human health from the identified asbestos contaminated fill, and any other identified areas of concern as may be identified via Unexpected Finds assessments during works, such that the site is suitable for the proposed use;
- Validate the remedial works in accordance with the relevant NSW EPA Guidelines and with reference to the adopted site criteria; and
- Document the validation process.

Furthermore, the remedial strategy should be consistent with Ecologically Sustainable Development (ESD) principles including the onsite reuse and retention of materials where possible (i.e., waste minimisation).

6.2 Guidance Framework

The RAP has been prepared with consideration to the following list of NSW EPA made or approved guidelines:

- *National Environment Protection (Assessment of Site Contamination) Measure 1999, Amendment No.1 2013*, National Environment Protection Council (NEPC 2013).
- *Managing Land Contamination, Planning Guidelines, SEPP 55 – Remediation of Land*. Department of Urban Affairs and Planning. NSW Environment Protection Authority (DUAP 1998);
- *Sampling Design Part 1 – Application, 2022, NSW EPA and Sampling Design Part 2 – Interpretation, 2022*, NSW EPA, together EPA (2022);
- *Consultants Reporting on Contaminated Land, Contaminated Land Guidelines*, NSW EPA May 2020 (EPA 2020).
- *Contaminated Sites: Guidelines for NSW Site Auditor Scheme, 3rd edition*, NSW EPA October 2017 (EPA 2017).
- *PFAS National Environmental Management Plan (NEMP 2.0, 2020) Human Health Screening Values for commercial land use*
- *Guidelines for the Assessment Remediation and Management of Asbestos-Contaminated Sites in Western Australia*, Western Australia Department of Health, 2009 (WA DoH 2009),

- *Health screening levels for petroleum hydrocarbons in soil and groundwater, part 2: application document*. September 2011. Cooperative Research Centre for Contamination Assessment and Remediation of the Environment, Technical Report series, no. 10. (CRC CARE 2011).
- *Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination*. DEC March 2007 (DEC 2007).

In addition, consideration is also required to guidelines made or approved by the EPA under the *Protection of the Environment Operations (POEO) Act 1997* and associated regulations, including the *Waste Classification Guidelines, Part 1 - Classifying Waste* (EPA 2014).

Other guidance that should also be considered in relation to site conditions includes:

- *Work Health and Safety Regulation 2025*. NSW Government Legislation. (WHS Regulations 2025);
- *Code of Practice for How to Manage and Control Asbestos in the Workplace*, SafeWork NSW, December 2022 (SafeWork 2022a); and
- *Code of Practice: How to Remove Asbestos*, SafeWork NSW, December 2022 (SafeWork 2022b).

6.3 Extent of Remediation

The extent of remedial works was determined by a review of the environmental status of the site as identified in the DSI for P5 and the FIC area (JBS&G 2026b), and the validation reports (JBS&G 2026d and JBS&G 2026e) and IEMP for the containment cells (JBS&G 2026a). Additionally, the RAP relevant to Stages 2 and 4 (JBS&G 2023a) was considered with regards to any remaining fill materials that may require assessment to confirm site suitability.

As discussed in **Section 5**, there are a range of site conditions requiring management to address potential site contamination risks such that upon completion of the works, the site can be considered suitable for the proposed commercial/ industrial use. In summary, these comprise:

- Preventing future direct contact by site users to soils known or potentially impacted with asbestos;
- Ensuring the appropriate management of designated containment cells;
- Ensuring the appropriate management and characterisation of existing stockpiles and/or fill materials such that these soils can be demonstrated as suitable with/without ongoing management and be used as engineering fill within the proposed industrial development site; and
- Addressing existing data gaps as detailed in **Section 5.2.1**.

The locations of known areas requiring management are shown in **Figure 3**.

6.4 Assessment of Remedial Options

The *National Environmental Protection (Assessment of Site Contamination) Measure 1999*, as amended 2013 (NEPC 2013) lists the following order of preference for soil remediation and management:

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

Or, if the above options are not practicable:

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

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

Remedial options have been assessed for the proposed development as detailed in **Table 6.1** below.

It is noted that the TRH/HGG impacted soils are already contained within the FIC area and no further consideration to remedial options is required. Therefore, TRH/HGG impacted soils are not discussed further in the table below.

Table 6.1: Remediation Options Assessment Matrix

Remedial Option	Applicability	Assessment
1. On-site treatment so that the contaminants are either destroyed or the associated hazards are reduced to an acceptable level.	There is no known technology to remove unbound (friable) asbestos fibres from soils and they cannot feasibly be manually separated from bulk soil(s). Asbestos present in non-friable forms may be remediated by screening to remove oversize materials and/or manually picking ACM fragments. However, this requires suitable space to spread/stockpile materials and time to process and validated the material. In addition, where friable asbestos impacts have been identified to potentially co-occur with ACM fragments, screening of impacted material increases the risk of exposure to site workers and migration of fibres within the works area. Onsite bonded ACM impacted soils may be treated via an emu-picking method. The efficacy of this remedial method will be dependent on a range of factors including volume of ACM impacted soils, concentration of bonded ACM, co-location of bonded ACM with friable asbestos, co-location of bonded ACM with other anthropogenic inclusions, fill material type (sand, silt or clay) and moisture of the fill materials (e.g., wet, sticky clays).	On-site treatment is not a viable option for friable asbestos impacted soils. May be an option for bonded ACM impacted soils with the efficacy depending on a range of factors. On this basis, whilst this is a potential option, this is not preferred with regard to the current site remediation requirements.
2. Off-site treatment so that the contaminants are either destroyed or the associated hazards are reduced to an acceptable level, after which the soil is returned to the site.	There are no energy efficient means of destroying contaminants (including asbestos) in large volumes of soils. There are no licensed facilities in proximity of the site that could complete this form of treatment.	Not appropriate/suitable.
3. On-site in situ management of the soil by physical separation, and ongoing management.	Asbestos contamination present as ACM and/or FA/AF in soil is readily managed at the site via placement of material beneath a permanent physical barrier such that there are no complete exposure pathways upon completion of the development. On this basis, the contaminated soils are suitable for retention on the site in areas where human exposures can be restricted. Containment requires long term site management and notification on title and planning certificates which can be readily implemented and managed should this be acceptable to the site owner and associated stakeholders.	This is the preferred option for any asbestos containing soil materials requiring management/remediation at the site, consistent with the existing arrangement of the existing containment cells, this will continue to be the preferred option. The retention of the materials will reduce the waste generation and resource requirements of the remediation of the site, as consistent with the ESD objectives. The proposed development levels allow for substantial placement of fill material, in addition to significant building and paved areas, where applicable. which will provide physical separation between site users and retained fill materials.

Remedial Option	Applicability	Assessment
		This option is a potential option with respect to the ESD principles due to the low waste volumes and energy use. It is noted that as this option may result in the need for a Long-Term Environmental Management Plan (LTEMP) and Asbestos Management Plan (AMP) that would be noted on documents. Therefore, it is not desirable to include containment within areas where future warehousing (and associated tenants) is proposed. Containment of any asbestos impacted materials would be designated to areas within the broader OEIE site, consistent with the current containment cells within the northern FIC area.
4. Excavation and off-site removal of the impacted material.	For this option, material is required to be transported to a facility lawfully able to accept the type of waste subject to payment of associated fees including government waste levies. There are facilities within the Sydney region able to accept material classified as General Solid Waste (GSW), Special (asbestos) Waste, Restricted Solid Waste (RSW) and certain types of Hazardous Waste. In the unlikely event that material is identified to be impacted such that contaminant concentrations that exceed the thresholds for characterisation as GSW, or GSW mixed with Special waste, material may require to be treated prior to off-site disposal to a lawful facility as discussed above. This option is suitable to manage the site human health risks, via the off-site removal of material and is a rapid and final solution, not requiring ongoing management of site conditions. However, it does not meet ESD objectives and is the most costly practicable option.	This is a suitable contingency option for any materials requiring management/remediation at the site. Given the costs associated with off-site disposal and the ESD considerations, whilst this is a feasible option, it ranks less favourably than the above on-site containment option.

6.5 Preferred Remediation Approach

The preferred remediation strategy to mitigate the risks associated with the currently identified (and any future identified) asbestos on site includes identification, excavation, consolidation and relocation of asbestos impacted soils into a containment cell to be situated within the northern portion of the site, where the material will be subject to in-situ management of the soil by capping and cover with ongoing management.

This proposed remediation methodology aligns with the order of preference for soil remediation and management provided in NEPC (2013) and the proposed OEIE redevelopment, and provides for the client to manage all concerns and associated impacted material in a controlled manner within its operational site and as such is considered most appropriate for the identified impacts at the site.

6.6 Data Gap Investigation Works

6.6.1 Existing 330 kV Earthing Tower Exclusion Zone

A site fill material characterisation data gap remains as associated with limited accessibility in proximity of the existing 330 kV earthing tower exclusion zone in the eastern portion of the site within P5 (**Figure 3**), associated with the inferred filling of a former dam identified in the DSI (JBS&G 2024c). Accessible sampling locations were advanced within the former dam footprint as part of the DSI that were external to the earthing tower exclusion zone which did not identify soil contamination above the adopted site criteria.

Current information provided to JBS&G has indicated that no specific development works will be undertaken as part of the proposed Precinct 5 development within the 330 kV earthing tower exclusion zone. On this basis and noting the strict approvals permitting requirements of the infrastructure owner with ground disturbance in this portion of the site, it is considered that only where specific proposed ground disturbance is proposed, would further investigation to close this data gap be required. Alternatively, in the event that no works will be undertaken it is assumed that security fencing as would be maintained/installed surrounding this infrastructure that will appropriately remove any complete exposure pathways to future Precinct 5 site users. On this basis, no further investigation would be considered necessary should this continue to be the future land use scenario.

However, should future ground disturbances be required as part of the redevelopment, liaison would be undertaken with the infrastructure owner to develop a suitable program of intrusive investigation such that an appropriate data set can be collected for characterisation of potential risks associated with the ground disturbance works and any ongoing complete exposure pathways to enable conclusions to be drawn with regard to the suitability of the site in the long term in addition to identification of management requirements during the ground disturbance works.

6.6.2 Unexpected Find within P5 Northern Bund

On 4 March 2025, JBS&G was notified by Austral Brickworks of the presence of ACM fragments in fill materials in the northern portion of the P5 site. It is understood that the Principal Contractor of the P5 site (Wearn, formerly known as Mulgoa Quarries) was completing minor earthworks in this area to maintain rainwater drainage lines. Several ACM fragments were observed within material located in a raised area as shown on **Figure 3**. It is noted that specific intrusive investigation of this raised area was excluded from the DSI (JBS&G 2024a) due to the location being in a Transgrid easement in close proximity to 330 kV powerlines and a stanchion restricting permitted works (as noted in **Section 5.2.1**). As a result, the presence of the ACM fragments was deemed an UF in accordance with the RAP (JBS&G 2024d). It is further noted that the area is located approximately 40 m west of the P5-TP01 asbestos remediation area which underwent excavation and validation as detailed in the validation summary letter (JBS&G 2024e). Following identification of the UF, the impacted area was cordoned off with flagging and signage. The area has remained unchanged since March 2025, except for some vegetation growth which now covers the area.

Asbestos quantification and delineation investigations are required to be conducted to assess the extent of the asbestos contamination. At present, the designated UF area is approximately 400 m² and it is anticipated that the depth of fill is approximately 3-4 metres based on observations from the Precinct 5 DSI (JBS&G 2024c) and P5-TP01 asbestos delineation investigations (JBS&G 2024e). However, it is possible that the asbestos contamination is not present throughout the entire fill profile in this area. It is also possible that the raised area to the north of the asbestos UF, as shown in **Figure 3** with an approximate volume of 2,500 m³, contains asbestos contamination.

The asbestos remediation approach of the UF will need to consider the potential development scenario on this area (i.e. whether any significant earthworks are required), the electrical safety restrictions imposed by Transgrid and whether any identified/suspected asbestos contamination can be managed in-situ with/without an LTEMP under Goodman commercial agreement terms. This will require specific discussion with the Site Auditor once development considerations are understood.

If earthworks are required, then the asbestos impacted material will need to undergo characterisation assessment to inform decision making. Any excavations formed by the removal of asbestos impacted material will also require validation in accordance with the current RAP.

6.6.3 Inground Water Quality Infrastructure in Areas of Ecological Significance

An inground water tank and associated pipes and pits were observed in the northwest portion of the site, within the FIC area, as described in **Section 2.2.2** (Figure 3). The tank is located outside of the development boundary within an area of ecological significance, and as such intrusive investigation works to date have been limited. Further intrusive investigation works will need to be established in consultation with the project Ecologist to ensure there is no ongoing unacceptable risk posed by the inground infrastructure.

6.6.4 Uncontrolled Fill

Assessment of the underlying soil profile will be required consistent with the scope and nature of investigation completed for the balance of the quarry area as documented in the DSI for the FIC portion of the site (JBS&G 2026b) and P5 DSI (JBS&G 2024c). This will include systematic grid sampling across each footprint/consolidated areas consistent with the FMP (**Appendix E**).

Subject to advice from the client/Contractor as to the proposed use/reuse/ disposal of the material, the characterisation data will be evaluated against either appropriate landuse exposure criteria as adopted for the site, or alternatively for off-site disposal in accordance with EPA (2014) or alternative beneficial reuse exemption as may be appropriate for the material. The density of sampling to be completed will be defined by the nature and extent of the material, in addition to the proposed purpose to ensure sufficient data is available to enable decision making.

6.7 Remedial Scope of Works

Should further impacted material, not previously identified in historical investigations, be identified as part of an unexpected find during data gap investigations, remediation and/or civil construction works, the remedial options screening matrix in **Table 6.1** will be required to be reviewed. Notwithstanding, it is anticipated that any impacts will be relatively isolated and could be appropriately managed through the controlled excavation and either on-site containment and/or off-site disposal of impacted/contaminated materials.

This proposed remediation methodology aligns with the proposed OEIE development and provides for the client to manage all concerns and associated impacted/contaminated material in a controlled manner within its operational site and as such is considered most appropriate for the identified impacts at the site.

6.7.1 Site Establishment

All safety and environmental controls are to be implemented as the first stage of remediation works, as outlined in **Section 8**. It is anticipated that all remedial/management works will be undertaken concurrently with site preparation and construction works, and will include, but not be limited to:

- Locate and isolate all required utilities in the proximity of the works, including above ground water pump lines;
- Assess need for traffic controls and specific traffic management plans for heavy vehicles working in the vicinity;
- Work area security fencing if required;
- Site signage and contact numbers; and
- Sediment fencing (attached to security fencing) if required.

6.7.2 Establishment of Asbestos Works Areas

Establishment of asbestos removal works areas with temporary exclusion measures will be required. Given the size and complexity of the site, it is anticipated that remediation areas will be identified and implemented on a progressive basis across the site based on an overall program of exposure, management/remediation and clearance.

Due to the nature of the site, requirements for establishment of the asbestos works area may vary dependent upon the location of the works area. It is anticipated that the extent of the asbestos works zone will be defined by formalised hazard mesh fencing with appropriate marked signage.

Prior to asbestos removal works, an Asbestos Management Plan (AMP) will be prepared by the appointed asbestos removalist or NSW Licensed Asbestos Assessor (LAA). Friable asbestos removal works is to be completed by an NSW Class A Asbestos Removalist under the supervision of a LAA. All control measures, monitoring and PPE requirements will be reviewed and endorsed by the appointed NSW LAA.

Bonded asbestos removal work is to be completed by at a minimum a NSW Class Class B Asbestos Removalist under the supervision of a NSW Competent Person.

Independent of the fencing arrangements, the requirements for establishment of asbestos removal areas prior to asbestos removal works will be required as follows:

- The zone will be established by the contractors with sufficient room to enable machinery to work wholly within the zone. Asbestos removal caution signage will be posted at the works area extent and remain in place until a clearance is provided by the LAA (for friable works), or a Competent Person as appropriate;
- A decontamination area shall be established for asbestos removal areas for personnel to enter and exit the asbestos removal area;
- A similar plant/machinery decontamination area shall also be established as appropriate to enable decontamination of plant/machinery prior to exit from the works area;
- Static air monitoring shall be completed at locations surrounding all the asbestos remediation works. Air monitoring shall be conducted for the duration of each shift and shall be completed in accordance with the *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC: 3003(2005)]* for the duration of asbestos removal works;
- The remediation contractor shall be responsible for undertaking a pre-start 'toolbox' talk with all personnel involved. No unauthorised/non-inducted personnel may enter any asbestos removal area;

- Prior to excavation and removal works occurring, the appointed asbestos removal contractor shall conduct a site induction and toolbox talks to make workers aware of the presence of asbestos at the site and of the required procedures to work safely with respect to the risks posed by asbestos. No unauthorised/non-inducted personnel may enter the asbestos removal area; and
- The asbestos removal contractor shall ensure that sufficient asbestos related personal protective equipment (PPE), in addition to normal site PPE requirements, is available for all personnel for the duration of the proposed asbestos remediation works including:
 - Disposable coveralls must be worn (Type 5, Category 3 or better);
 - Disposable gloves – non disposable gloves must be cleaned within the decontamination unit;
 - P2 class respirator or higher – non disposable respirators must be cleaned in the decontamination area. Respirators should be issued for personal use only and shall be kept in a clean condition; and
 - Laceless steel capped rubber soled work shoes or gumboots.
- Plant operators undertaking sub-surface intrusive works must close cabin doors and windows and set air conditioning to re circulate when operating within the asbestos work zone or alternatively, the plant must be fitted with HEPA filters to the air conditioner inlet vents to ensure a suitable air supply. Should plant operators need to leave the isolated cabin within the asbestos removal works zone, they will be required to don the PPE requirements as outlined above.

Employees must receive instruction in the correct method of using the respirator and on the importance of correct facial fit and maintenance. No person with a beard shall be allowed within the asbestos work area except using an approved positive pressure continuous airflow hood. Alcohol based antiseptic swabs should be made available for the cleaning of respirators. Any respirator defects should be reported for subsequent repair. They should be maintained in a clean and safe working condition.

It is further noted that, as part of the WorkSafe NSW permitting process, additional PPE may be required. If this occurs, then the above PPE requirements will be upgraded to reflect SafeWork NSW requirements.

The decontamination procedures specified below will be followed whenever personnel, plant or equipment leave the asbestos works areas:

Personnel

The following steps should be taken to ensure personnel do not leave the works areas with potentially contaminated clothing:

- Wash boots with clean water;
- Remove non-disposable outer gloves and store for reuse;
- Remove disposable overalls and place in the skip for the asbestos wastes for disposal;
- Remove respirator and goggles (if used) and store clean for reuse or decontamination, as appropriate; and
- Thoroughly wash hands and face.

Vehicle, Plant and Equipment

All equipment, including personal protective equipment, will be washed or otherwise cleaned to ensure that contaminated soil, water or dust is removed before it leaves the asbestos works area. All plant and equipment will have their outer bodies thoroughly cleaned of soil and sediment before moving away from the asbestos works area.

6.7.3 Asbestos Excavation Activities

The known areas of asbestos impact are shown on **Figure 3**. Excavation works for asbestos impacted soil may include one or more of moving the impacted material via temporary stockpiling, or alternatively, loading directly into transport vehicles fitted with suitable covers for movement to the containment cell placement location (preferred option). During these works the following procedures will apply:

- The asbestos removal contractor shall have total control of the asbestos work area for the duration of the asbestos remediation works and shall undertake all works in accordance with the requirements of their license;
- All personnel entering the asbestos remediation area shall do so through the decontamination area/unit and wear the required PPE at all times when within the asbestos removal area;
- The proposed asbestos removal area shall be kept damp by water spraying at all times during disturbance to reduce the possibility of dust generation;
- Excavated asbestos impacted soils shall be loaded directly into suitable transport vehicles for immediate movement to the placement area within the works zone. Subject to vehicles not being required to leave the works zone, the vehicles will not require to be covered, however the material should be sufficiently damp so as to minimise the potential for dust generation during movement/placement.
- When excavation works approach the vertical and/or lateral extent of the known/suspected impact, the Environmental Consultant/LAA will monitor the excavation work activities and provide advice on appropriate removal depths based on visual observations in conjunction with the licensed removal contractor;
- Excavation works will continue until such time as the side and base margins of the excavation are visually free of asbestos containing material. Where required, excavation stability will be discussed with the client and its contractors and appropriate measures implemented to ensure appropriate management of excavation stability at all times;
- Following the removal of asbestos impacted materials, the post excavation surface will be required to be cleared and validated as per **Section 7** below.

The final site surface within the subject site will also be required to be cleared of visible asbestos in accordance with the validation procedures in **Section 7**.

6.7.4 On-site Containment

The current and additional proposed containment cell locations are shown on **Figure 3**. Two containment cells are currently present within the future FIC area. Any remaining asbestos impacted materials identified on site as requiring containment will either be added to the current asbestos containment cell, or a new containment cell proposed to be constructed.

Given the Silverback site is situated within the larger OEIE site premises, it is considered that the implementation of asbestos containment measures consistent with that as documented in the Precincts 2-4 RAP (JBS&G 2023a) and the associated RAP addenda #2 (JBS&G 2024b) will be undertaken for any remaining asbestos impacted soils requiring containment.

6.7.5 Long Term On-site Containment of Asbestos Impacted Material

Final Containment Areas

There are currently two constructed containment cells, with a capped and contained ACM bund on one of the cells, located within the northern portion of the site boundary, within the FIC area with a combined total storage to date of 121,472 m³, currently managed under an IEMP. A third additional containment cell to permanently manage asbestos contaminated material (ACM), with concentrations of asbestos above the

adopted site criteria, is proposed to be constructed adjacent to the current asbestos containment cell. The current containment cells and additional nominated cell location are presented in **Figure 3**. The additional proposed asbestos containment cell has been designed with a sloped surface with an upper elevation of approximately 77.5 m AHD. The base of the proposed cell is 65.2 m AHD. An additional cell has also been proposed for the storage of asbestos impacted material (AIM) with concentrations of asbestos below the adopted site criteria, requiring management from a WHS perspective but suitable for commercial/industrial land use. It is understood that the proposed purpose of this cell is to contain AIM spoil from piling activities through known areas of AIM fill within the Stage 2 and Stage 4 redevelopment boundaries after bulk earthworks activities are completed. The proposed AIM cell is positioned to the east of the additional ACM cell with an AIM minimum elevation of approximately 56.4.

Detailed designs for the proposed additional ACM and AIM containment cells have been undertaken by suitably qualified engineers (Costin Roe Consulting Pty Ltd) and are provided in **Appendix C**.

It is anticipated that advice on preparation of the placement area and requirements for placing the material will be provided under a separate cover by the project geotechnical and design engineers and as such these considerations are beyond the scope of this RAP. It is anticipated the detailed design of the containment cell will be endorsed by the appointed site auditor prior to construction.

Temporary Stockpile Management

It is anticipated that the works will be sequenced where possible to provide for the direct excavation, transport and placement of material at the final containment location, without the need for significant temporary stockpiling of large quantities of materials. However, it is acknowledged that as a result of accessibility and requirements for construction of a new containment cell in conjunction with bulk earthworks schedules across the broader quarry portion, that there will be instances where temporary stockpiling of material will occur. Nominated stockpile locations will be based on site space availability. In these instances, the following procedures will be followed:

- The condition of the temporary stockpiles will be monitored and damped down as required to minimise the potential for dust (airborne asbestos fibre generation);
- Should works cease, or stockpiles remain, for more than a day, consideration of longer term dust management measures will be required, comprising cover of the stockpiles with a more durable cover, such as a UV resistant pegged geotextile or heavy duty plastic sheeting, Dustblock spray, sacrificial non-asbestos impacted clay cover (say 50 mm in thickness), or similar; and
- Regular inspections of the stockpile conditions be undertaken to identify any obvious signs of breaches/deterioration of the interim covering measures. Should any deterioration be identified, rectification of the surface condition will be required as soon as practicable. The frequency of inspections will be dependent upon the cover measures and weather conditions. A written record of completion of the inspections and any management measures should be maintained.

Final Containment Area Placement

It is anticipated that MQB JV will facilitate excavation of the proposed placement area to produce a void of the required volume prior to the commencement of asbestos material movement activities. The non-impacted excavated material generated in construction of the cell void will be utilised elsewhere within the broader redevelopment site.

Works associated with placement of the asbestos contaminated/impacted material at this final location will comprise a repeat of procedures as outlined above for the temporary storage of the material in addition to the following:

- Material will be placed within the containment area in a manner consistent with requirements to be confirmed by project civil/geotechnical engineers;

- Where feasible, it is anticipated that works will be sequenced in a manner to place the friable asbestos impacted material at greater depth, followed by material known to be contaminated with bonded asbestos and then material potentially impacted with asbestos;
- Once all asbestos contaminated and potentially impacted material has been removed from the known areas of impact, the contractor will work to clear the balance of the asbestos removal works zones of any residual asbestos impacted materials to ensure the resulting ground surfaces are successfully validated as being free of asbestos fibre impacts prior to placement of the final containment cell capping;
- Upon completion of all known asbestos or potentially impacted material within the containment area, the final surface will be covered with a marker layer consistent with an easily identifiable non-woven permeable polyester continuous filament or PET (such as non-woven geotextiles). The marker layer must:
 - Be easily recognisable within soils (e.g., bright orange in colour, or otherwise contrasting with the surrounding soil colour);
 - Be durable as a long term marker layer (i.e., > 140 grams per square metre);
 - Be sufficiently permeable to allow water to penetrate through; and
 - Maintain integrity during remedial/civil works such as capping layer installation.
- The LAA shall inspect and document the installation of geofabric marker layers, including collection of a photographic record of site conditions during/following placement of the marker layer;
- A registered surveyor will be required to survey the elevation and upper lateral extent of the containment area and provide this to the client and the Environmental Consultant;
- The specific details of the marker layer are required to be included in subsequent LTEMP documents as discussed in **Section 7.5.2**;
- Subsequent to placement of the marker layer, a capping layer with a minimum thickness of 0.5 m (after compaction) of non-impacted material will be placed above the marker layer. Material selected for use as a capping layer will be required to be environmentally and geotechnically suitable engineered fill, sourced from either the broader site, or lawfully imported under the project consent. Following, the installation of the capping layer, a final clearance inspection will be completed by the LAA, with details to be included in the final validation report; and
- Where the final finished levels of the capping profile are mounded and/or battered above surrounding ground level, installation of the marker layer and subsequent capping layer will be required to be achieved to the equivalent thickness on all physical extents of the capped profile, thereby providing a durable physical barrier between contained asbestos impacted material and subsequent site users/workers.

6.7.6 Material Tracking Requirements

The movement of all earth/aggregate based materials on the site, to the site, and from the site is required to be subject to a Material Tracking Plan (MTP).

Material tracking shall be required for all materials that are moved / excavated from a location on the site and not wholly replaced in the same locations within 12 hours of material movement (i.e., soils excavated for test pitting / assessment do not require material tracking, however all other material will require tracking).

To this extent, all excavation and filling works as undertaken for the purposes of site remediation require the following information to be recorded by the Contractor on Material Tracking Forms (MTFs) and in an electronic Material Tracking Spreadsheet (MTS) and verified by the Environmental Consultant, with respect to material placement activities:

- Date (yyyy/mm/dd);
- Unique MTF identification (starting at 001);
- Site figure showing source (cut) and placement (fill);
- Estimated volume (cubic metres);
- Type of material;
- Depth of source (RL)
- Depth of placement (RL);
- Source (from) information in terms of MGA56 co-ordinates as established by site GPS and/or survey;
- Placement (to) information in terms of MGA56 co-ordinates as established by site GPS and/or survey;
- Source (from) information in terms of site feature (e.g. Remedial Zone);
- Placement (to) information in terms of site feature (e.g. Remedial Zone);
- Source (from) information from off-site source site (e.g., Quarry A);
- Placement (to) information for off-site disposal (e.g., tip, EPA tracking number, docket reference);
- Reference document (where necessary, i.e., virgin excavated natural material / excavated natural material classification);
- Purpose of placement (i.e., containment, surplus to site requirements etc); and
- Comments (when required).

For material which has been removed for the purposes of environmental remediation and is proposed to be moved again subsequent to the completion / validation of environmental remediation works, MTFs for the replacement of the material shall make reference to the initial MTFs generated by the excavation of the materials for remediation. As part of the validation of the material tracking forms, mass / material balances shall be assessed at each stage where additional material tracking forms are generated for particular site material.

It is the responsibility of the Contractor to ensure the MTF(s) are completed and submitted to the Environmental Consultant at the end of each day's work. The Environmental Consultant has ownership of the MTFs on receipt of all the necessary information from the Contractor.

The Environmental Consultant is required to review the submitted MTFs and to investigate/resolve any discrepancies. Following this review, a copy of the MTFs will be forwarded to the Principal. Ideally this would occur within two days of the Environmental Consultant verifying the MTFs from the Contractor.

The MTP is considered an active process and revisions of the MTP will be undertaken to improve the MTFs and MTS to ensure comprehensive and efficient material tracking.

6.7.7 Waste Management / Off-site Disposal

Though a remedial approach has been prepared which proposes the remediation of contaminated materials on-site and retention of treated materials within the site to the extent practicable, there is a potential for generation of significant waste quantities with the proposed works within the contingency plans for this project. . Specific provisions have been adopted to ensure the appropriate management of these wastes. This shall include:

- Waste classification reporting requirements in accordance with EPA Waste Classification Guidelines;
- Description of material handling and tracking plan including detailed description of the proposed site cut / fill balance and the material tracking system to be implemented during site remediation works;

- Statements regarding materials being disposed via an appropriately licensed facility or re-used under an EPA resource recovery order or exemption. Waste classifications and available waste facilities shall require to be identified in proposed works plans; and
- Requirements for recording waste disposal dockets or other waste documentation for any disposed waste.

6.7.8 Site Disestablishment

On completion of the remediation works all plant/equipment and safety/environmental controls shall be removed from the site by the appointed Contractor. All equipment used during remediation works will need to be appropriately decontaminated or disposed of as waste by the Remediation Contractor, in accordance with relevant waste regulations.

6.8 Material Importation

Based on the scope of remedial works described herein, and with regard to the overall project requirements, bulk fill material importation will be required to achieve the SSDA proposed bulk earthworks levels. The procedures and processes to be followed for the selection and management of fill importation activities are included in the FMP (**Appendix E**), noting that the current RAP (JBS&G 2023a) requirements will be in-force prior to the approval of this RAP. As presented in detail in the FMP, it is anticipated that imported material will require to be demonstrated as compliant with one of the following:

- Virgin Excavated Natural Material (VENM) as defined in the POEO Act 1997, adopting in the minimum requirements for characterisation stipulated in the FMP (**Appendix E**); or
- Material compliant with a Resource Recovery Order (RRO) issued by the NSW EPA under the POEO framework, as documented in a compliance statement provided by the supplier in accordance with the relevant RRO, that has been further assessed as suitable for use at the site for the proposed purpose via adopting at least the minimum requirements as stipulated in the FMP. Materials anticipated to be covered by a RRO comprise, but will not necessarily be limited to, excavated natural material – ENM, tunnel spoil, recycled aggregate, basalt fines, compost, mixed organic waste, pasteurised garden organics and recovered fines, with reference to the list of current orders and exemptions on the NSW EPA website.

In addition to the testing completed by the supplier, compliance assessment activities as detailed in the FMP will provide suitable evidence that the specific material proposed to be imported to ensure that the incoming material does not pose an unacceptable risk to human health and/or environment at the placement site and is therefore suitable for use. The assessment activities will include visual inspections, representative sampling and laboratory analysis of material to demonstrate the material meets the requirements of this RAP as per the detail presented in the FMP (**Appendix E**).

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

6.9 Validation

Validation of the remedial works will be conducted by the Environmental Consultant to demonstrate the remediation/management objectives have been achieved and to document the final condition of the site on the completion of works such that conclusions may be drawn on the end use suitability of the site for the proposed development. Details of the validation program are provided in **Section 7**.

6.10 Validation in Stages/Development Lots

Given the size of the site and proposed development scenario resulting in subdivision of the site into commercial/industrial development lots and associated ancillary areas, it is anticipated the remediation/validation assessment report documentation will be broken into a number of lots as per the development plans (**Appendix D**).

As such, where staged signoffs are to occur, there is the potential that remediated areas may abut those that are yet to be remediated, or are in the progress of being remediated and possibly filled, to complete the rehabilitation works scope. Where contaminated soil and/or ground surface impacts within a proposed remedial/validation assessment sign-off stage that extends beyond the nominated boundary of works, make safe arrangements will require to be undertaken at the boundary with the broader site so as to minimise the potential for contamination exposure to future construction workers, commercial/industrial site users and/or migration of contamination onto the validated Lot/stage.

This may comprise implementation of excavations battered back from the boundary, or alternatively temporary shoring for excavations completed beyond the sign-off extent boundary such that impacted material may remain beyond the site at the time of validation, whilst enabling the remedial objectives for the signoff site to be achieved.

Where such conditions occur, the extent of the impacted material to remain beyond the signoff boundary will be surveyed for the reference of Goodman and its future remediation contractors, noting that such works are not required to be documented in the final validation report for the signoff site (as it is beyond the boundary of the validation assessment).

Other than installation of appropriate security fencing at the sign off boundary to prevent unauthorised access to the validated site, there is not anticipated to be any requirement for interim management of site contamination conditions within the broader site, beyond those applicable under standard construction arrangements.

6.11 Contingency Plan

Given the available site history information, consideration has been given to the potential for additional small-scale issues that may arise during works (from a contamination viewpoint). Contingency plans for a range of potential identified scenarios are discussed following to ensure firstly the safety and health of people and the environment and secondly that the overall project objectives are achieved. Notwithstanding, where contamination materially exceeds the extent/volume assessed in the approved documentation, further assessment and the potential requirement for amendments to the RAP and project approvals may be necessary.

6.11.1 Excessive Quantities of Asbestos Impacted Soils

Based substantially on the findings of all works on site to date, asbestos impacts have been assumed to be present in only in isolated impacted material finds within remaining stockpiles/fill areas. However, it is acknowledged that there is a potential of greater volumes of asbestos impacted soils to be present on the site given the quantity of remaining inaccessible areas at this time of preparation of this RAP. As such, the current anticipated volume of asbestos impacted soils is modest when compared to the quantum of non-virgin soil/material at the site that will require characterisation/validation for beneficial reuse at the site.

As a contingency, the additional containment cell has been initially developed to provide a storage capacity of up to 40,000 m³. Based on data collected to date it is not envisaged the upper storage capacity proposed will be realised.

Containment will be preferred until not possible any more to ensure that waste minimisation objectives of the project are able to be met. Consideration may be further given by the client to the on-site treatment of additional material volumes and/or construction of additional containment cell locations within the site. In

such instances, it is noted that a RAP addenda process would be followed to ensure the appropriate parameters are established with regard to project objectives for the location and specification of additional cell requirements in addition to obtaining modification approvals as appropriate from the consent authority, NSW EPA (EPL amendment) and site auditor.

6.11.2 Emissions / Pollution

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

- Odour emissions arising from handling of malodorous soil;
- Noise and vibration arising from remedial excavations or other works required for remediation (noting that in the context of an operational quarry, this is unlikely to occur); and/or
- Dust emissions arising from remedial excavation, material handling and placement.

Monitoring of potential environmental emissions from the site shall be undertaken during the remedial works as detailed below in **Section 8** and appropriate actions taken to further control emissions following receipt of a complaint. The management plan will be specific to remedial works and not to quarry rehabilitation or future construction works. The management plan shall contain provision for contingency actions where excessive emissions occur, however it is anticipated that one or more of the following actions will be considered:

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

6.11.3 Material Storage Breach

In the event that any materials storage containment controls are breached and stockpiled materials classified as asbestos contaminated soil or otherwise have escaped (or have the potential to escape), then the management controls shall be rectified, and investigations undertaken as directed by the Project Superintendent to review the adequacy of the controls and any identify the opportunity for process improvements to be implemented. It is envisaged that the project team would work together to achieve best practice resolution of any incidents.

6.11.4 Identification of Oily Materials

In the event that oily materials are encountered, the provisions outlined in the unexpected finds protocol will be implemented, comprising inspection, testing and appropriate action as advised by the Environmental Consultant.

Any suspected oily materials must be segregated from other excavated materials and placed in a designated area with appropriate odour and sediment controls until such time as appropriate assessment is completed and a methodology is confirmed for their appropriate management. In the event that the oily materials do not meet the Site Validation Criteria, then they shall be removed from the site and disposed of at an appropriately licensed facility.

6.11.5 Emissions Complaints

Due to the nature of the activities and type of contaminants identified at the site, it is unlikely that there will be complaints received from members of the public relating to environmental emissions.

6.11.6 Excavation Validation Failure

In the unforeseen event that the proposed remediation works do not meet the validation criteria, or if the selected remedial strategy is unsuccessful, the following actions will be considered to ensure firstly the safety and health of people and the environment and secondly that the overall project objectives are achieved:

- Continued controlled excavation and on-site containment, off-site disposal or treatment of impacted/contaminated material until validation is achieved; and/or
- Reassessment of remedial options for excavated materials, including:
 - Alternate on-site treatment options; and/or
 - On-site containment.

In the event that excavation cannot be further completed in one or more directions as a result of access limitations, such as electrical infrastructure exclusion zones, boundaries to the ecological communities, etc, documentation of the extent of remediation works successfully will be completed, followed subsequently by appropriate assessment and characterisation of the nature and extent of the contaminated material remaining in the relevant area. Where potentially complete exposure pathways remain with regard to the future development scenario, further consideration will be required to implementation of appropriate long term access control measures to manage the residual risk to future site occupants/users and the potential for contaminant migration such that the RAP objectives can be met and the site made suitable for the proposed use, subject to ongoing management.

6.11.7 Unexpected Finds Protocol (UFP)

It is acknowledged that previous investigations of the site have been undertaken to assess the identified contaminants of potential concern. However, ground conditions between sampling points may vary, and further hazards may arise from unexpected sources and / or in unexpected locations during remediation. The nature of any residual hazards which may be present at the site are generally detectable through visual or olfactory means, for example:

- Excessive quantities of construction/demolition waste that represents an aesthetics issue beyond that reported to date (visible); and/or
- Buried defective product waste, inclusive of the broader business lines of the former owners, including bricks, roofing tiles, clay pipes, etc and discarded machinery/plant/equipment parts including tyres, etc placed as backfill to reinstate historical quarrying pits; and/or
- Bottles / containers of chemicals (visible);
- Asbestos containing materials (which have not been previously identified);
- Ash and/or slag and/or tar contaminated soils / fill materials (visible);
- Drums, waste pits, former pipework or unrecorded USTs (visible); and
- Volatile organic compound (VOC) contaminated soils (odorous) and vapours.

As a precautionary measure to ensure the protection of the workforce and surrounding community, should any of the abovementioned substances be identified (or any other unexpected potentially hazardous substance), the procedure summarised in **Flowchart 6.1** is to be followed.

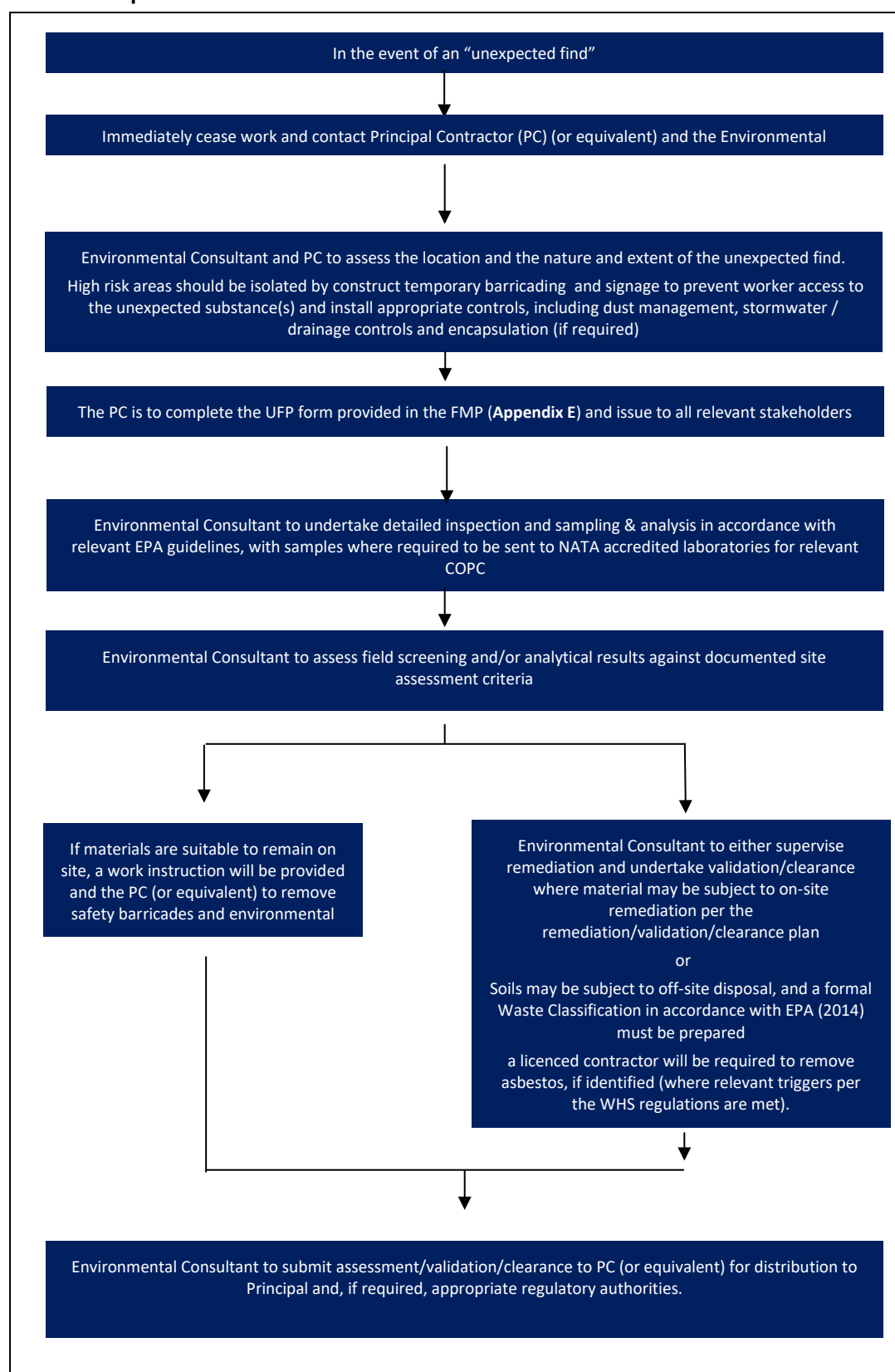
An enlarged version of the unexpected finds protocol, suitable for use on-site, should be posted in the site office and referred to during the site-specific induction by the remedial / principal contractor.

The sampling strategy for each “unexpected find” shall be designed by a suitably qualified environmental consultant. The strategy will, however, be aimed at determining the nature of the substance – that is, is it

hazardous and, if so, is it at concentrations which pose an unacceptable risk to human health or the environment.

The sampling frequency of the identified substance/materials shall meet the minimum requirements outlined in EPA (2022) in addition to those outlined in **Section 7**.

Flow Chart 6.1 Unexpected Finds Protocol



7. Validation Plan

Data will be required to be collected during remediation and civil construction works to assess the effectiveness of the implemented management actions and document the final condition of the site at the completion of all works. Such information will allow conclusions to be drawn on the end suitability of the site for the proposed use. The general principles to be implemented with regard to the validation assessment are discussed in accordance NSW EPA *Guidelines for the NSW Site Auditor Scheme (3rd edition)* (NSW EPA 2017) requirements in the following sections.

It is anticipated that the validation assessment will be required to address the following broad issues:

- Confirm the site conditions are consistent with those identified during previous site investigation activities as documented herein;
- Data gap investigation outcomes and confirmation of requirements for management of additional material as may be identified via completion of the additional investigation activities once access to relevant sections of the site is available;
- The success of all on-site contaminated material treatment activities and confirming the suitability of material for beneficial reuse, either with or without ongoing management;
- Documentation of installation of containment measures where required (marker and barrier layers);
- Characterisation and off-site disposal and/or beneficial use of materials excess to construction requirements, including contaminated material nominated for off-site disposal (where relevant); and
- Characterisation of material required to be transferred from other portions of the OEIE site and/or imported to achieve remedial and construction objectives to demonstrate its suitability for use at the site.

7.1 Data Quality Objectives

Data Quality Objectives (DQOs) were established for the validation of soil impacts. NEPC (2013) describes the DQO process as a seven-step iterative planning approach which is used to determine the type, quantity, and quality of data required to inform decisions relating to the environmental condition of a site. The seven steps of the DQO process are documented in the following sections.

7.1.1 State the Problem

The site is currently in the process of earthworks under existing project arrangements and as identified in previous sections further management of site contamination issues is required such that at the completion of works, a final validation assessment may confirm the suitability of the site for the proposed commercial/industrial use.

As such, during remediation activities, sufficient validation of site remedial/management actions are required to demonstrate that the identified environmental impacts and associated health risks to site receptors have been adequately managed to render the site suitable for the proposed land use.

7.1.2 Identify the Decision

The following decisions are required to be made during the validation works:

1. Are there any unacceptable risks to future on-site receptors? This includes from any residual contamination following the implementation of the rehabilitation and remediation scope at the site, and relocation of all asbestos contaminated/impacted materials.
2. Were all materials (both from the wider site and/or imported) used as fill appropriately assessed in accordance with the RAP requirements as suitable for use without ongoing management?

3. Was all material appropriately tracked to interim or final placement in accordance with RAP requirements?
4. Were the impacted/surplus materials (if any) classified and disposed off-site to a facility licensed to accept the classified waste, or appropriately stored on-site?
5. Has any impacted material proposed to be retained under management on the site been suitably placed within an appropriate containment structure(s)?
6. Are there any impacts of chemical mixtures that could increase potential contamination risks?
7. Is there any evidence of, or potential for, migration of contaminants from the site?
8. Was all validation data considered reliable?
9. Is the site suitable for the proposed use?

During the remediation/management activities, sufficient validation of site activities is required to demonstrate that the identified environmental and health-based risks to future on-site receptors have been adequately managed to render the site suitable for the proposed land use.

7.1.3 Identify Inputs to the Decision

The inputs to the decisions are:

- Previous investigation results as discussed in **Section 4**;
- Survey information with respect to the lateral extent of the site area, and final proposed landform and site features;
- Field observations of the final ground surface of the subject site;
- Field observations in relation to inspection of all excavation bases, walls and stockpiles for odours, sheen, discolouration, and other indicators of potential contamination;
- Environmental data as collected from the validation of remedial excavations;
- Waste classification and material characterisation data obtained during assessment of surplus material (if any) prior to off-site disposal;
- Disposal dockets and relevant documents in relation to appropriate disposal of material to be removed from site as part of the remediation works (landfill dockets, beneficial reuse / recycling dockets, etc.);
- Material tracking data associated with the movement/placement of all material within the site, inclusive of asbestos impacted soils;
- Material tracking records and survey information confirming the placement of material the subject of containment within the broader site containment area, including the height and lateral extent of the marker and barrier layers (as appropriate);
- Material characterisation data (including field observations, sampling and analytical data) obtained during assessment of material proposed to be imported to the site;
- Relevant guideline criteria for validation and waste classification;
- Management measures documented within an Environmental Management Plan (EMP) (if required) to be prepared for the site following remediation to ensure the site remains suitable for the proposed use; and
- Data quality indicators (DQIs) as assessed by quality assurance / quality control (QA/QC).

7.1.4 Define the Study Boundaries

The validation study boundaries are restricted to the lateral extent the subject site as shown on **Figure 2**. The vertical extent of the validation study is anticipated to be:

- Stage 2 and Stage 4 (proposed Lot PT110 south and proposed Lot 113): Lower elevation of levels outlined in DA 347.1/2021 and upper elevation of levels required to achieve site validation requirements.
- Other areas (proposed Lot 111 and proposed Lot PT110 north): the maximum elevation ranges of excavation works/stockpile movement activities required to achieve site validation requirements.

Due to the nature of potential contaminants identified, temporal variables will not be assessed as part of the validation assessment activities. The temporal boundaries of investigations will be limited to the period of field validation assessment works.

7.1.5 Develop a Decision Rule

A summary of the decision rules to be adopted for each of the environmental issues required to be addressed are outlined in **Table 7.1** below.

Table 7.1: Summary of Decision Rules

Decision Required to be Made	Decision Rule
1. Are there any unacceptable risks to onsite future receptors? This includes from any residual contamination following the implementation of the rehabilitation and remediation scope at the site, and relocation of contaminated materials for future management.	Analytical data for imported/relocated fill and characterisation/validation works will be reviewed for their conformance with the RAP and SMF protocols, and site criteria nominated in Section 7 . If there is residual contamination identified, the answer to the decision is Yes . Otherwise, the answer to the decision is No .
2. Were all materials (both from the wider site and/or imported) used as fill appropriately assessed in accordance with the RAP requirements as suitable for use without ongoing management?	Analytical data sets and inspection data will be reviewed for each proposed material type/source against established definitions for acceptable material (i.e., VENM, ENM, etc) and also EPA endorsed criteria established in the RAP (and Section 7) as validation criteria. If the complete data set for the applicable material meets the requirements relevant to the material type, the answer to the decision is Yes . If the data set exceeds the adopted criterion, the answer to the decision is No .
3. Was all material appropriately tracked to interim or final placement in accordance with RAP requirements?	Review of documentation from the project team including the dates, volume and surveyed locations of the relevant material was required to facilitate the decision. If the data assessment indicated the material is appropriately characterised in accordance with the RAP/SMF/FMP and if material tracking records are appropriate to confirm the placed location (either temporary or final) of the material within the site boundary, the answer to the decision is Yes . If the material tracking records are not supplied and/or were unsatisfactory, the answer to the decision is No .
4. Were the impacted/surplus materials (if any) classified and disposed off-site to a facility licensed to accept the classified waste, or appropriately stored on-site?	Soil analytical data for COPCs will be compared against EPA (2014 ³⁷) criteria. Statistical analysis (comprising a review of 95% UCL of the mean, standard deviation and maximum values of dataset) of the data in accordance with relevant guidance documents will be undertaken, where appropriate, to facilitate the decisions (as detailed above). Documentation from the operation receiving the material including the dates, tonnage and classification of the accepted material will be required to facilitate the decision.

³⁷ *Waste Classification Guidelines, Part 1: Classifying Waste*. NSW Environmental Protection Authority. November 2014. (EPA 2014)

	If the statistical criteria stated above are satisfied, the answer to the decision is Yes, and if receipts are provided recording the disposal of material to an off-site licensed facility, the second decision is Yes. If the material exceeds the criteria, and/or no disposal receipts are provided, the answer is No.
5. Has any impacted materials proposed to be retained under management on the site been suitably placed within an appropriate containment structure(s)?	The sub-questions will be used to evaluate all works and associated documentation to enable a decision: Does material tracking data as prepared/provided by the contractor indicate the impacted materials were placed within the designated containment cell? Has appropriate evidence been recorded of the marker layer installation across the complete extent of the containment cell requiring capping? Was the marker layer a sufficiently bright colour to adequately warn/indicate to future maintenance intrusive workers of the presence of the marker layer? Does survey information indicate the marker layer was installed at an appropriate elevation with respect to the RAP objectives and covered by the designated minimum physical covering of suitable material? If the answers to the above questions are Yes, the answer to the decision is Yes. Otherwise, the answer to the decision is No.
6. Are there any chemical mixtures that could increase potential contamination risks?	Is there more than one group of contaminants present which increase the potential risk of harm? If there is, the answer to the decision is Yes. Otherwise, the answer to the decision is No.
7. Is there any evidence of, or potential for, migration of contaminants from the site?	Based on assessment results, was there any evidence of, or the potential for, migration of unacceptable contaminant concentrations to migrate from the site? If yes, the answer to the decision was Yes. Otherwise, the answer to the decision was No.
8. Was all characterisation/validation data considered reliable?	Did analysis of the Data Quality Indicators as provided in Table 7.2 indicate the validation data is reliable? If Yes, the answer to the decision is Yes. Otherwise, the answer to the decision is No.
9. Is the site suitable for the proposed use?	If the answers to Question 1 and Questions 6 to 9 were No, and all other answers were Yes, then the answer to the decision is also Yes. Otherwise, the answer to the decision is No. In this instance further remediation/management actions will be required to be implemented and appropriately documented such that a future review of the above decisions may result in a different decision outcome.

7.1.6 Specify Limits of Decision Error

This step is to establish the decision maker's tolerable limits on decision errors, which are used to establish performance goals for limiting uncertainty in the data. Data generated during this project must be appropriate to allow decisions to be made with confidence.

Specific limits for this project have been adopted in accordance with the appropriate guidance from the NSW EPA, NEPC (2013), appropriate indicators of data quality (DQIs used to assess quality assurance / quality control) and standard JBS&G procedures for field sampling and handling.

To assess the usability of the data prior to making decisions, the data will be assessed against pre-determined DQIs for to precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS parameters). The acceptable limit on decision error is 95% compliance with DQIs.

The pre-determined DQIs established for the project are discussed below in relation to the PARCC parameters and are shown in **Table 7.2**.

- **Precision** - measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percent Difference (RPD³⁸) of duplicate samples.
- **Accuracy** - measures the bias in a measurement system. The accuracy of the laboratory data that are generated during this study is a measure of the closeness of the analytical results obtained by a method to the 'true' value. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards.
- **Representativeness** –expresses the degree which sample data accurately and precisely represent a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy.
- **Comparability** - expresses the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in techniques used to collect samples; and ensuring analysing laboratories use consistent analysis techniques; and reporting methods.
- **Completeness** – is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal is set at there being sufficient valid data generated during the study.
- **Sensitivity** – expresses the appropriateness of the chosen laboratory methods, including the limits of reporting, in producing reliable data in relation to the adopted site assessment criteria.

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

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Where C₀ is the analyte concentration of the original sample
 C_d is the analyte concentration of the duplicate sample

Table 7.2 Summary of Quality Assurance / Quality Assurance Program

Data Quality Objectives	Frequency	Data Quality Indicator
Precision		
Split duplicates (intra laboratory)	1 / 20 samples (1/10 samples for PFAS)	<50% RPD ¹
Blind duplicates (inter laboratory)	1 / 20 samples (1/10 samples for PFAS)	<50% RPD ¹
Laboratory Duplicates	1 / 20 samples	<50% RPD ¹
Accuracy		
Surrogate spikes	All organic samples	70-130% recovery
Laboratory control samples	1 per lab batch	70-130% recovery
Matrix spikes	1 per lab batch	70-130% recovery
Representativeness		
Sampling appropriate for media and analytes	All samples	.. ²
Samples extracted and analysed within holding times.	-	pH, conductivity, VOCs – 7 days TRH/BTEX/PAHs/OCPs – 14 days Heavy metals/PCBs/CEC – 28 days PFAS -28 days Asbestos – no holding time
Laboratory Blanks	1 per lab batch	<LOR
Trip blanks	1 per lab batch	<LOR
Trip spike	1 per lab batch	70-130% recovery
Storage blank	1 per lab batch	<LOR
Rinsate sample	1 per sampling event/media	<LOR
Comparability		
Standard operating procedures for sample collection & handling	All Samples	All Samples
Standard analytical methods used for all analyses	All Samples	NATA accreditation
Consistent field conditions, sampling staff and laboratory analysis	All Samples	All samples ²
Limits of reporting appropriate and consistent	All Samples	All samples ²
Completeness		
Sample description, monitoring and field reporting sheets and Chain of Custody (COCs) completed and appropriate	All Samples	All samples ²
Appropriate documentation	All Samples	All samples ²
Satisfactory frequency and result for QC samples		95% compliance
Data from critical samples is considered valid	-	Critical samples valid
Sensitivity		
Analytical methods and limits of recovery appropriate for media and adopted site assessment criteria	All samples	LOR<= site assessment criteria

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

² A qualitative assessment of compliance with standard procedures and appropriate sample collection methods will be completed during the DQI compliance assessment.

7.2 Optimise the Design for Obtaining Data

The purpose of this step is to identify a resource-effective field investigation sampling design that generates data that are expected to satisfy the performance criteria, as specified in the preceding steps of the DQO Process.

For these works, after the removal of impacted fill materials, the resultant excavation walls/base/stockpile footprint will be inspected/sampled in accordance with **Table 7.3** with the results assessed against the validation criteria in **Section 7.4**.

Imported materials will also require validation to ensure their appropriateness (from a contamination perspective) as consistent with the FMP (**Appendix E**).

Materials requiring offsite disposal are required to be classified in accordance with EPA (2014) Waste Classification Guidelines, with further consideration to the requirements of EPA (2017) and EPA (2022) with regard to sample densities, analysis and documentation. Sample densities are outlined in **Table 7.3**.

Table 7.3 Validation Analytical Schedule

Item	Sampling Frequency			Analytes
	Excavation Base	Excavation Walls	Materials	
Asbestos Impacted Materials				
Excavations formed by the removal of friable Asbestos impacted soils	1 sample / 100 m ² (10 m grid), minimum of 2 per base (density may be reduced for large areas)	1 sample / 10 linear metres; and 1 sample / 1 m depth	N/A	Asbestos (500 ml) for validation of friable impacted soils. As determined by the nature of the impact
Excavations formed by the removal of bonded asbestos impacted materials.	Confirmation that the excavation walls and base are free of visible ACM impacts.			Visual Inspection required.
Stockpile footprints	1/100 m ² (10 m grid) with a minimum of 2 samples	N/A	N/A	Relevant COPCs as per impacted material type
Removal of Unexpected Finds				
Excavations formed by the removal of non-asbestos related unexpected find	1 sample / 100 m ² (10 m grid), minimum of 2 per base (may be reduced for large areas)	1 sample / 10 linear metres; and 1 sample / 1 m depth	N/A	Dependant on the nature of the unexpected finds (TBC by the supervising Environmental Consultant)
Miscellaneous				
Unassessed site materials	1 / 400 m ² (20 m grid)	N/A	N/A	Heavy Metals TRH/BTEX OCPs/PCBs PAHs Asbestos (500mL)

Item	Sampling Frequency			Analytes
	Excavation Base	Excavation Walls	Materials	
				(plus other COPCs as appropriate)
Waste classification of materials requiring offsite disposal	N/A	N/A	Sampling density of 1/100 m ³ , consistent with Stages 2-4 RAP (JBS&G 2023a)	Heavy Metals TRH/BTEX OCPs/PCBs PAHs Asbestos (500mL) (plus COPCs as appropriate to material source)

7.3 Validation Inspections and Sampling

Validation inspections and associated sampling activities as outlined in the following sections will be undertaken by an appropriately trained and experienced environmental consultant. Soil logs and sample registers will be prepared for each location showing soil description, sampling depths and sampling intervals. Photographic records will also be maintained. Aesthetic indicators of impact will be assessed for all soils consistent with the parameters identified in **Section 7** as appropriate to assist with validation assessments.

The soil sampling method shall be determined by the Remedial Consultant as consistent with the observations and appropriate to generate representative samples. The soil sampling method shall be consistent with the methodology in **Section 7.3.6**.

Soil will be sampled whilst wearing disposable nitrile gloves and placed into laboratory prepared sampling containers. All samples will be labelled with a unique identifier consisting of the sample location and date and time of sampling. Samples will be placed directly into a chilled esky following collection and transported to a National Association of Testing Authorities, Australia (NATA) accredited laboratory under Chain of Custody protocols.

The decontamination of personnel, PPE and sampling equipment (if used) will be in accordance with JBS&G's standard procedures to minimise risks to health and safety and cross contamination. Where dedicated disposable sampling equipment cannot be used, non-dedicated sampling equipment will be scrubbed and washed in Liquinox solution and rinsed with de-ionised water. Disposable equipment will not require decontamination and reuse (i.e., nitrile gloves).

7.3.1 Validation of Asbestos Impacts

Known asbestos impacted soils identified during previous site assessment activities, in addition to additional asbestos impacted soils as may be identified during future redevelopment works are proposed to be relocated to a suitable location on site (i.e. containment cell). Following relocation of the identified asbestos impacted material at each location, validation of the excavated areas will comprise a site walkover on a 10 x 10 m perpendicular transects to inspect the site surface for any residual fill-based soils, ACM or anthropogenic inclusions. Should ACM or fill materials be observed to remain on the ground surface – the area will require further scraping/removal works until the surface is confirmed as comprising of natural materials and free of visible ACM. The person completing the inspection will be required to be a Competent Person (bonded ACM impacts only) or LAA and will provide a clearance when the validation objectives have been met.

Validation and Clearance of Friable Asbestos Impacted Areas

Excavation of friable asbestos impacted soils will be undertaken within dedicated exclusion areas, following which the exclusion zone will be required to be successfully validated to demonstrate the removal of all asbestos containing materials prior to removal of the friable control conditions.

Validation will comprise:

- Inspection of the exposed ground surface, excavation base and walls by a LAA. If any ACM, friable asbestos and/or building debris impacted fill material is observed at the extent of the excavation, then the excavation will be extended prior to completion of the visual validation inspection;
- Once a visual validation is successfully completed, soil samples will be collected from the footprint at the density outlined in **Table 7.3**. Samples will be collected consistent with the requirements of NEPC (2013), inclusive of 500 mL volume soil samples and analysed for asbestos in soil by a NATA accredited laboratory. The excavation will be considered validated if all samples are reported by the laboratory as free of detectable asbestos;
- If one or more validation samples identifies the presence of asbestos in soil, the excavation in the vicinity of the remaining impact will be extended a minimum of 1 m, or until visible clearance is again achieved, following which the above validation sampling procedure will be repeated until such time as the excavation can be successfully validated; and
- Following confirmation of the visual and validation sample clearance, clearance airborne asbestos fibre monitoring must be conducted upon completion of management works in areas of known friable asbestos impact, with the clearance air monitoring results to be less than 0.01 f/mL as per WHS regulatory guidance.

Validation and Clearance of Bonded Asbestos Impacted Areas

Following excavation works to remove the extent of bonded asbestos impact and surrounding areas within the asbestos removal works zone that may have become impacted with asbestos, validation of the successful removal of all asbestos containing material will be undertaken as follows:

- Inspection of the exposed ground surface, excavation base and walls by a Competent Person or LAA. If any ACM, or building debris impacted fill material is observed at the extent of the excavation, then the excavation will be extended prior to completion of the visual validation inspection; and
- Following confirmation of the visual clearance of the successful removal of all visible bonded ACM, the surrounding materials will be considered successfully validated.

It is noted that if suspected friable impacts are observed during excavations formed for the removal of bonded ACM impacts, then the validation procedures established for friable areas above will be required to be applied.

7.3.2 Validation of Stockpile Footprints

Where stockpiles formed as a result of remediation activities have been stored on hardstand, geo-textile or plastic lining, visual validation will be used for validation of the stockpile footprint. Validation sampling would only occur when a breach of the containment method is identified.

Where impacted material has temporarily been stored on unsealed ground surfaces, the validation program for the footprint of contaminated stockpiles is:

- Inspection of the stockpile footprint by a suitably trained and experienced person. If impacted material is identified, surface soils are required to be scraped (100 mm), and the footprint re-inspected until such time as visual validation is obtained;

- Following visual validation, soil samples will be collected from the footprint on a 10 m x 10 m grid, and analysed in accordance with **Table 7.3**, based on the material type previously stockpiled; and
- If contamination is identified in a validation sample at concentrations above the site validation criteria, the soil represented by the failed validation sample will be scraped and managed (via onsite containment or offsite disposal), and the validation inspection and sampling process repeated for the failed area. Alternatively, where contamination is not identified in the samples by laboratory analysis, the footprint will be deemed to have been successfully validated.

7.3.3 Validation of Additional Impacted Material (If identified) Removal

The validation program for the removal of impacted materials, should they be identified as an unexpected find, will comprise the following general procedures:

- Inspection of the excavated areas by a suitably trained and experienced environmental consultant to confirm the extent of potentially impacted materials have been removed. If additional potentially impacted material is identified, further excavation will be conducted, and the affected area will be re-inspected until such time as visual and olfactory validation is obtained.
- Following visual and olfactory validation, soil (as appropriate to the nature of the impact) samples will be collected from the remediation area walls at a rate as nominated in **Table 7.3**;
- Excavation validation samples will be analysed at a laboratory NATA accredited for the required analyses. If the concentration of COPCs are identified in any of the excavation validation samples exceeding criteria, then the soils will be excavated 0.3 m further in the direction of failure and the validation process repeated. Alternatively, where impact exceeding criteria is not identified by the laboratory, the remedial areas will be deemed to have been successfully remediated and validated; and
- Excavated soils shall be stockpiled and the materials will be required to be classified in accordance with NSW EPA (2014) and disposed off-site to a facility legally able to accept the waste.

7.3.4 Validation of Soil Containment Measures

Where on-site containment of impacted material is undertaken during the remediation activities, validation of the implemented measures will be required as per the following.

Marker Layer

Visual inspection will be undertaken by the Environmental Consultant to verify the suitable installation of the marker layer across required areas. Photographic records and a survey prepared by a Registered Surveyor of the marker layer installation, including vertical and lateral extents will be organised by the Contractor and submitted to the Client and Environmental Consultant for inclusion in the validation report.

Capping Material

Material to be used as a capping layer must be validated by the Environmental Consultant as environmentally suitable, consisting of VENM, suitable on-site materials (i.e., treated material, validated brickmaking material, or VENM from the site) or material considered suitable for importation to the site via a resource recovery order/exemption issued by NSW EPA. Additionally, contaminant concentrations in any capping layer material must not exceed the adopted site validation criteria for soils.

The capping layer must be placed at the minimum thickness of 0.5 m across the marker layer extent to provide the permanent physical barrier. Photographic records and a survey of the capping layer installation, which details the final thicknesses of the capping layer, including the vertical and lateral extents must be prepared for/by the Contractor and provided to the Client and Environmental Consultant for inclusion in the validation report.

Surveys

The Remedial Contractor must provide a survey of the marker layer and capping layer prepared by a registered surveyor that demonstrates the lateral and vertical extents each layer to a known datum. The capping layer survey must demonstrate that the minimum capping thicknesses have been achieved.

7.3.5 Imported Materials

Validation of imported material(s) will be required as consistent with the FMP (**Appendix E**).

Fill materials imported on site are required to be either VENM, ENM or any other suitable material. Imported materials will require validation prior to being imported to site.

Imported material source sites will be visited by the Environmental Consultant prior to confirmation of approval to import. Supporting documentation must be provided by the Contractor for imported materials to be assessed against the validation plan, relevant guidelines/exemptions and adopted site criteria.

The Environmental Consultant will collect additional samples and prepare appropriate documentation for imported materials in lieu of adequate information provided by the Contractor to ensure all material imported to site is appropriately validated prior to importation.

7.3.6 Soil Sampling Methodology

The soil sampling methods shall be determined by the Environmental Consultant as consistent with the observations of the site sub-surface and appropriate to generate representative samples.

Samples are anticipated to be collected via test pitting (the preferred methodology for asbestos characterisation), via drill rig or direct sampling of stockpiles as per the methodology provided below. Re-usable equipment shall require to be decontaminated between sampling locations.

Samples of near surface material and stockpiled soils shall be collected by appropriately trained and experienced personnel using a stainless steel hand trowel. The hand trowel will be thoroughly decontaminated using phosphate free detergent and distilled water before each sample is collected. Where deeper soil samples are required from excavation walls or floor, the material shall be retrieved using an excavator. Samples of the retrieved material shall be collected from the centre of the excavator bucket ensuring that no part of the sample has contacted the sides of the excavator bucket.

Sufficient sample material will be collected to allow both field and laboratory analyses. Additional samples will be collected from any soil horizons which exhibit staining, odours, or other physical evidence of potential contamination.

During the collection of soil samples, features such as seepage, discolouration, staining, odours and other indications of contamination will be noted on the field documentation. Collected soil samples will be immediately transferred to laboratory supplied sample jars which will be sealed with screw closures or zip-lock plastic bags as appropriate. The sample containers will be transferred to a chilled esky for sample preservation prior to and during shipment to the testing laboratory. A chain-of-custody form will be completed and forwarded with the samples to the testing laboratory.

7.3.7 Laboratory Analyses

All laboratories to be used for the analysis of primary and secondary samples obtained during the remediation works are required to be National Association of Testing Authorities (NATA) registered for the relevant analyses. Appropriate methods and LORs are required for comparison to relevant criteria noting that the LORs will be required to be less than the validation criteria.

7.4 Validation Criteria

7.4.1 Regulatory and Technical Guidelines

The investigation will be undertaken with consideration to aspects of the guidelines, as relevant, presented above in **Section 6.2**:

7.4.2 Assessment Criteria

The site is to be used for a commercial/industrial land-use and as such is required to be validated as suitable for this land use pursuant to the NEPC (2013). On this basis, validation criteria have been derived from the following:

- Health Investigation Levels (HILs) for commercial/industrial land use (NEPC 2013) HIL-D ;
- Health Screening Levels (HSLs) for commercial / industrial land use (HSL-D) with bonded asbestos of 0.05% w/w, friable asbestos of 0.001% w/w and no visible asbestos for surface soil;
- HSL for petroleum hydrocarbons considering potential for vapour intrusion, coarse grained soil for commercial / industrial land use at 0.0-1.0 m depth;
- Management limits for TRH fractions for a commercial/industrial land use, fine soils, or for coarse soils where relevant;
- Derived ecological investigation levels (EILs) and ecological screening Levels (ESLs) for commercial/industrial land use (NEPC 2013);
- PFAS National Environmental Management Plan, HILs for soil, commercial/industrial land use (HIL-D) (NEMP 2020); and
- PFAS National Environmental Management Plan Ecological Guideline Values for soil, Ecological direct exposure– all land uses (NEMP 2020).

Where there are no NSW EPA approved thresholds for individual contaminants, the laboratory LOR will be adopted as an initial screening value, above which further consideration of the potential risk will be assessed on a site specific basis in accordance with the NEPC (2013) framework.

For soils to be considered as meeting the adopted validation criteria (i.e., not posing an unacceptable risk), the following statistical criteria will be adopted for all suitable chemical analysis data sets:

- Either:
 - All contaminant concentrations will be less than the adopted site assessment criteria,
- Or:
 - The upper 95 % confidence limit on the average concentration for each analyte (calculated for samples collected from consistent soil horizons, stratigraphy or material types) is below the adopted criterion;
 - No single analyte concentration exceeded 250 % of the adopted criterion; and
 - The standard deviation of the results is less than 50 % of the criterion.

In addition to the above, for material assessed as ENM, the materials should be assessed as per the requirements presented in the NSW EPA ENM Order and Exemption (NSW EPA 2014³⁹). For material assessed as VENM, reference will be made to EPA requirements in accordance with the POEO Act (1997).

³⁹ Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014- The excavated natural material exemption/order 2014. NSW EPA 2014 (NSW EPA 2014).

7.5 Reporting

7.5.1 Validation Report(s)

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

- Update relevant portions of the site description and contamination status as prepared in this RAP to the condition of the validation assessment footprint at the time of the validation assessment;
- Present all sampling field notes and laboratory data including calibration certificates for field monitoring equipment, environmental monitoring etc.;
- Undertake an assessment of QA/QC of analytical data generated by the works and identify data that is reliable for use in characterising the site;
- Sort data into data sets as required by the decision rules;
- Assess whether sufficient data has been obtained to meet required limits on decision error;
- Undertake assessment to the decision rules;
- Provide a summary of waste disposal/off-site removal activities (if any) and volumes of material removed from the site including supply of all waste disposal dockets confirming final waste disposal/landfill destination;
- Provide a summary of material imported to site for remediation (if any) including material source, type, assessment of suitability, approximate quantities, date of importation and final placement location;
- Details of the remediation works conducted;
- Information demonstrating that the objectives of the RAP have been achieved, in particular the validation sample results and assessment of the data against both the pre-defined data quality objectives and the remediation acceptance (validation) criteria;
- Information demonstrating compliance with appropriate regulations and guidelines;
- Document any variations to the strategy undertaken during the implementation of the remedial works;
- Details of any environmental incidents occurring during the course of the remedial works and the actions undertaken in response to these incidents;
- Other information as appropriate, including requirements (if any) for ongoing monitoring / management; and
- Provide a comment on the suitability of the site for the proposed use and requirements for any ongoing monitoring/management (where applicable).

The report will serve to document the remediation works for future reference.

7.5.2 Long Term Environmental Management Plan

At the conclusion of remediation/validation works, a LTEMP will be prepared according to the requirements outlined *NSW EPA Guidelines for the NSW Site Auditor Scheme* (3rd edition) (NSW EPA 2017) to detail the required measures to ensure the continued suitability of any areas within the final site boundaries where material has been retained in-situ under management. The LTEMP will apply only to those portions of the site where material will require ongoing management.

This document shall contain the following elements (as appropriate) based on the extent of data that will be available at the cessation and validation of remediation works:

- A statement of the objectives of the EMP – i.e., to ensure continued suitability of the site;
- Identification of residual environmental contamination issues at the site that require ongoing management/monitoring to meet the EMP objectives, including the type of contamination and location within the site (including survey plans). This should further include characterisation of the material in-situ on the site as consistent with the extent of validation data proposed to be collected;
- Mechanisms for legal enforcement and public notification;
- Documentation of environmental management measures which have been implemented to address the identified environmental issues at the site;
- Description of management controls to limit the exposure of site users to known areas of contamination to acceptable levels;
- Description of responsibilities for implementing various elements of the provisions contained in the EMP;
- Timeframes for implementing the various control/monitoring elements outlined in the EMP;
- Environmental monitoring and reporting requirements (if required) for the future management of environmental impact underlying the site including:
 - Appropriate monitoring locations and depth within and down-gradient of any residual contamination;
 - Relevant assessment criteria to be used in evaluating monitoring results;
 - Frequency of monitoring and reporting;
 - Process for reviewing monitoring data and how decisions will be made regarding the ongoing management strategy;
 - The length of time for which monitoring is expected to continue;
 - The regulatory authorities involved and the management inputs required from each;
 - The integration of environmental management and monitoring measures for groundwater;
- Health and safety requirements for particular activities;
- A program of review and audits; and
- Corrective action procedures to be implemented where LTEMP assessment criteria are breached.

It is noted that currently an Interim EMP (IEMP) applies to the existing containment cell areas within the FIC land. The IEMP provides information and establishes requirements with regard to the management of the containment cells present in this portion of the site given that future works are still required to establish the final capping and landscaping arrangements. Upon completion of these activities, the final validation assessment report for these portions of the site will provide a recommendation that the IEMP is no longer required, subject to finalisation of the LTEMP and issue of the associated Site Audit Statement.

8. Site Management Plan

8.1 Overview

The Fairfield Citywide Development Control Plan (2024) has been considered with respect to site management controls to be implemented during the remediation works below. The controls discussed below have been developed in addition to the requirements with respect to the establishment of appropriate works zones as discussed for specific site areas in **Section 7**.

8.2 Hours of Operation

All remediation works shall be conducted within permitted site operation hours as established by the SSD consent.

8.3 Erosion and Sediment Control Policy

All works shall be conducted in general accordance with, as a minimum *Soils and Construction Managing Urban Stormwater Standards* (Landcom 2004) or as updated. In practice, measures will require to be consistent with commitments made within the EIS and the subsequent SSD Conditions.

8.4 Stockpile Management

All materials stockpiled onsite will be managed by the Contractor. Unique numbers will be provided for each stockpile, the source of the stockpile, its estimated volume, material characterisation and its location onsite will also be recorded within the material tracking system.

The following general procedures will be implemented by the Contractor:

- No stockpiles of soil or other materials shall be placed on footpaths or road reserves unless prior Council approval has been obtained; and
- All stockpiles of soil or other materials shall be placed away from drainage lines, gutters or stormwater pits or inlets.

8.5 Site Access

All vehicle access to the site shall be stabilised to prevent the tracking of sediment onto the roads and footpaths. All materials must be removed from the roadway on a daily or as required basis. All vehicles leaving the asbestos works area must be decontaminated in accordance with the procedures in **Section 6.7.2**.

8.6 Excavation Dewatering

No dewatering is specifically proposed to facilitate the requirements of this RAP, albeit there is a potential for minor quantities of seepage to enter the deepest excavations. This is not anticipated to affect the undertaking of the works and will be able to be managed in lieu of a requirement to dewater.

8.7 Noise

Remediation work shall not give rise to 'offensive noise' as defined in the *Protection of the Environment Operations (POEO) Act 1997*. All equipment and machinery associated with the remediation work shall be operated by the Contractor in accordance with the POEO Act (1997) and its *Noise Control Regulations 2000*.

Noise generated should be managed so as not to adversely impact the amenity or residents/businesses adjoining or nearby the site.

All machinery and equipment used on site will be in good working order and fitted with appropriate silencers when necessary.

8.8 Vibration

Vibration generated should be managed so as not to adversely impact the amenity or residents/ business adjoining or nearby the site.

8.9 Odour / Volatile Emissions Control

No odours should be detectable at the site boundary and volatile emissions of other potentially volatile substances shall be controlled. Appropriate actions will be taken by the contractor to reduce the odours, which may include odour suppressants or maintenance of equipment. Where possible, stockpiles of malodorous material shall be transferred to off-site locations as soon as possible.

Equipment and machinery will be adequately maintained to minimise exhaust emissions. No materials shall be burnt on the site.

8.10 Dust Control

During the remedial works, as necessary, excavation areas will be wetted down using a water spray to minimise the potential for dust to be generated by the Contractor. A wetting or bonding agent may be used to further bind the soil to minimise asbestos fibre release.

All asbestos impacted soils must be wetted (but not flooded) prior to and during excavation and movement of the soils. To control dust in significant areas of exposed asbestos contaminated fill, industrial misting fans, placed at the outer extents of remedial/excavation areas, must be utilised by the Contractor.

Dust shall also be controlled by ensuring vehicles leave via the designated (stabilised) site access and all equipment have dust suppressors fitted by the Contractor.

Where significant fugitive emissions are observed from asbestos inspection / treatment pads, or bioremediation areas, these areas shall be wetted and/or covered by the Contractor.

Meteorological conditions will be monitored by the Environmental Consultant and Contractor. Remedial work will be stopped or modified where meteorological conditions are adverse (i.e., dry conditions and strong winds towards sensitive receptors).

Plant and vehicles should limit their speed when working within asbestos exclusion zones and only traverse wetted haul roads. Only essential vehicles are permitted to traverse the asbestos exclusion zone.

8.11 Air Quality

8.11.1 Airborne Asbestos Fibre Monitoring

Airborne asbestos fibre monitoring will be conducted in accordance with the requirements of the National Occupational Health and Safety Commission (NOHSC) *Asbestos Code of Practice and Guidance Notes*, in particular the *Guidance note for the estimation of airborne asbestos dust* [NOHSC 3002:2005]. The consultant shall undertake airborne asbestos fibres monitoring at a minimum of five static locations daily during remediation works that will disturb asbestos impacted or contaminated materials. Monitoring locations will include site perimeter locations and downwind locations. Wind Rose information available from the Bureau of Meteorology (BOM) for the nearest weather stations will be used to determine common prevailing winds in the area.

Air filters shall be analysed by a NATA accredited laboratory and results shall be required to be below 0.01 fibres/mL. All detections of fibres shall be further analysed by scanning electron microscope (SEM) to confirm whether the fibres are asbestos.

If respirable asbestos fibres are confirmed and present between 0.01 and 0.02 fibres/mL, the following controls must be implemented by the licensed asbestos removalist, in accordance with the *WHS Regulations 2025*;

- Review control measures;
- Investigate the cause; and
- Implement controls to eliminate or minimise exposure and prevent further release.

If respirable asbestos fibres are confirmed and present above 0.02 fibres/mL, the following controls must be implemented by the licensed asbestos removalist, in accordance with *WHS Regulations 2025*;

- Stop removal work;
- Notify SafeWork NSW by phone, then by fax or written statement that work has ceased;
- Investigate the cause;
- Implement controls to eliminate or minimise exposure and prevent further release; and
- Do not recommence removal work until further air monitoring is conducted and fibre levels are detected below 0.01 fibres/mL.

A daily report air monitoring report will be prepared documenting the previous/same days airborne asbestos fibre air monitoring results. This report will be made available to all relevant stakeholders.

8.11.2 Dust Monitoring

Dust emissions shall be confined within the site boundary. The following dust control procedures may be employed to comply with this requirement:

- Erection of dust screens around the perimeter of the site;
- Securely covering all loads entering or exiting the site;
- Use of water sprays across the site to suppress dust;
- Covering of all stockpiles of contaminated soil remaining more than 24 hours (where practical); and
- Keeping excavation surfaces moist.

8.12 Transport of Material Offsite

In the event that materials are required to be transported off-site, all trucks will be loaded in designated areas and decontaminated (when leaving the asbestos works area) in accordance with site management procedures. The Contractor shall ensure that there is no material tracked out onto the street and that the load is securely covered. In addition, all site vehicles must leave the site in a forward direction.

The Contractor shall also log truck movements and approximate volume, via registration number and consignment number (where applicable), into and out of the site. Truck load details will be included as part of the Validation Report.

All appropriate road rules shall be observed, and state roads will be selected as far as practicable over local roads when deciding on the transport route to the off-site material disposal location.

All plant and vehicles will be required to obey all Austral site-specific rules when travelling within the site. In addition, all plant and vehicles should limit their speed when working within asbestos exclusion zones and only traverse designated paths.

8.13 Hazardous Materials

Hazardous and/or intractable wastes arising from the remediation work shall be removed and disposed of in accordance with the requirements of NSW EPA, SafeWork NSW and the relevant regulations by the Contractor.

In particular, any hazardous wastes will be transported by an NSW EPA licensed transporter.

8.14 Disposal of Contaminated Soil

All soils will be classified, managed and disposed in accordance with the *Waste Classification Guidelines* (EPA 2014). Documentary evidence for all soil disposal shall be kept for inclusion in the Validation Report.

Trucks will be loaded in designated areas. The Contractor shall ensure that there is no material tracked out onto the street and that the load is securely covered. In addition, all site vehicles must leave the site in a forward direction.

The Contractor shall also log truck movements and approximate volume, via registration number and consignment number (where applicable), into and out of the site.

All appropriate road rules shall be observed, and state roads will be selected as far as practicable over local roads when deciding on the transport route to the off-site material disposal location.

Plant and vehicles should limit their speed when working within asbestos exclusion zones and only traverse designated paths.

Integrated Waste Tracking Solutions (IWTS) is now operational within NSW and any loads of asbestos waste that trigger the values of IWTS must be tracked via the online system.

8.15 Site Signage and Contact Numbers

A sign/s shall be displayed adjacent to the site access point/s throughout the duration of the works with the contact details of the Contractor and project manager as provided and maintained by the Contractor.

8.16 Site Security

The remedial areas shall be secured against unauthorised access by means of an appropriate fence or barricade or other means by the Contractor. All persons working in asbestos remedial areas must be inducted, have undertaken required training and don appropriate PPE. The access gates to the site will be locked at all times when remedial works are not occurring.

8.17 Community Consultation

Site workers within the broader site will be advised via an internal consultation process of the intention to complete works at least 7 days prior to the commencement of site remediation activities. In addition, owners and/or occupants of adjacent premises and across the road from the site will be notified at least 7 days prior to the commencement of preparation for the remediation works. As a minimum, the notification shall include the details of an appropriate contact person.

8.18 Health and Safety Management

A Work Health & Safety Management Plan (WHSP) shall be prepared by the Contractor prior to commencement of remediation works on the site. The Plan shall contain procedures and requirements that are to be implemented as a minimum during the works.

The objectives of the WHSP are:

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

These objectives will be achieved by:

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

9. Regulatory Approvals / Licensing

9.1 Resilience and Hazards SEPP

From review of the proposed activities, the site wide remediation works are expected to include the containment of >30,000 m³ of contaminated soils (current allowance for planning purposes, comprises 40,000 m³ cell capacity). The extent of remedial works, being to treat and/or otherwise store greater than 30,000 m³ of contaminated soil originating exclusively from the site triggers obligations under Schedule 1 of the Protection of the Environment Operations (POEO) Act 1997. It is unknown whether all of the contaminated materials originated exclusively from the site and, at the time of preparation of this report, consultation is occurring with EPA and other stakeholders to confirm interpretation of the regulatory requirements. Depending on the outcome of this consultation, the works may be classed as Category 1 remediation as per the meaning provided in State Environment Planning Policy (Resilience and Hazards) 2021 (SEPP R&H), being works requiring development consent. All remediation works are proposed to be integrated into this SSDA 120888992.

9.2 Contaminated Land Management Act 1997

Whilst it is understood that Section 4.10(2) of the EP&A Act confirms State Significant Development (SSD) is not classified as Designated Development, it is noted that the EIS will address the POEO Act (1997) Schedule 1 triggers as discussed below in any event.

As noted in Section 9.1, the current estimated volume of contaminated soils – which may or may not have originated exclusively from on-site - being proposed to be treated and stored is anticipated may trigger the legislated threshold of 30 000 m³. If this is the case, evaluation of the bulk earthworks SSDA (120888992) will include consideration of obligations to modify the current site EPL for quarrying activities to facilitate consent for completion of the remediation works.

9.3 Environment Planning and Assessment Regulation 2000 – Schedule 3 Designated Development

Whilst it is understood that Section 4.10(2) of the EP&A Act confirms State Significant Development (SSD) is not classified as Designated Development, it is noted that the EIS will address the POEO Act (1997) Schedule 1 triggers as discussed below in any event.

As noted above, the current estimated volume of contaminated soils being proposed to be treated onsite is anticipated to exceed the legislated threshold of 30 000 m³. As such, it is anticipated that evaluation of the bulk earthworks SSDA (120888992) will include consideration of obligations to modify the current site EPL for quarrying activities to facilitate consent for completion of the remediation works.

9.4 Protection of the Environment Operations Act 1997

All potential discharges from the remediation works will require to be maintained below applicable assessment criteria/threshold guidelines during the remediation works. This would apply to potential emissions in air and water. Levels of discharges are typically assessed at a site boundary, noting that there is an existing EPL for the site quarrying activities in force prior to commencement of the remedial works, and as noted above, it is expected this will be varied upon issue of the bulk earthworks SSD consent to consider the nature/scale of the remediation works and associated potential impacts.

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

In addition, as discussed in Sections 9.1 and 9.3, given remediation of the currently identified and unidentified contamination will include the construction of a containment cell with a capacity of greater than

30,000 m³, then depending on whether the material is determined to have originated exclusively on site, this may trigger a Scheduled Activity as defined in the POEO Act (1997) Schedule 1. Should this be the case, this will require the grant of an Environmental Protection License (or alternatively, amendment of the existing premises based Licence).

9.5 Protection of The Environment Operations (Waste) Regulation 2022

It is noted that the requirements of the *Protection of the Environment Operations (Waste) Regulation 2022* and associated Acts apply to waste. The remedial works comprise on-site management of contaminated (and impacted) material within the premises and as such the material does not trigger the definition of waste as presented in the *Protection of the Environment Operations (Waste) Regulation 2014*, the associated Act and the General Regulation as the material is being managed appropriately under the *Contaminated Land Management Act* (1997) framework.

The overall premises has been defined as the OEIE redevelopment site and includes the current Silverback site boundary and a number of redevelopment stages. Current and future stages of the OEIE redevelopment will occur and are considered part of the overall OEIE redevelopment site.

Material contained on-site/proposed for containment, and/or re-use as part of the overall remedial and design strategy is not considered to be waste, and as such may also be temporarily stored within designated locations on the broader OEIE redevelopment site.

9.6 Waste Classification Guidelines (EPA 2014)

All wastes generated and proposed to be disposed offsite shall be assessed, classified and managed in accordance with this guideline. Where wastes require immobilisation prior to offsite disposal (to reduce waste classifications) an immobilisation approval shall be sought in accordance with Part 2 of this guideline. Immobilisations are only anticipated to be required with unexpected finds that cannot be retained on site and cannot be disposed directly offsite to a licensed facility.

9.7 Asbestos Removal Regulations and Codes of Practice

The remediation of fill containing asbestos will be managed in accordance with the *Work Health and Safety Act 2011* (WHS Act) and associated Work Health and Safety (WHS) Regulation (2025) including those related to asbestos. Noting that asbestos impacts (both friable and bonded) have been identified within site soils, and works that will result in the disturbance of these soils will be required to be managed in accordance with the WHS Act, Regulations and Code of Practice How to Manage and Control Asbestos in the Workplace (SafeWork 2022a) and Code of Practice How to Safely Remove Asbestos (SafeWork 2022b).

Excavation, onsite remediation and removal/containment of asbestos impacted soils are required to be conducted by a Class A (for friable impacted soils) or B (for bonded impacted soils) Asbestos Removal licensed contractor.

All airborne asbestos fibre monitoring works must be undertaken by a competent person or Licenced Asbestos Assessor, in accordance with SafeWork NSW requirements.

Before starting the affected works, licensed asbestos removal contractor shall be responsible for submitting the appropriate SafeWork NSW permit (friable and non-friable) to remove asbestos at least seven days prior to the proposed works where required.

9.8 Water Management Act 2000

No dewatering of groundwater is anticipated with the remedial works. A dewatering licence will not be required for the remedial works to proceed. It is anticipated that small discontinuous pockets of seepage water, may be encountered by the proposed scope of remedial works, which is anticipated to be dewatered by the removal of the associated saturated soils from this area. Some minor additional pump out may be required where seepage water re-accumulates in trenches/remedial excavations. This seepage water is not associated with regional groundwater, or otherwise sub-surface water that would be described as groundwater.

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

10. Conclusions and Recommendations

With reference to the limitations in **Section 11**, the following conclusions and recommendations are provided.

10.1 Conclusions

Overall, it is considered that the proposed actions outlined in this RAP conform to the requirements of the *Contaminated Sites Guidelines for the NSW Site Auditor Scheme* (3rd Edition) (EPA 2017) because they are: technically feasible; environmentally justifiable; and consistent with relevant laws policies and guidelines made and approved by NSW EPA.

Subject to the successful implementation of the measures described in this RAP and with consideration to the Limitations presented in **Section 11**, it is considered that the site can be made suitable for the intended uses and that the risks posed by the identified contamination can be managed in such a way as to be adequately protective of human health and the environment.

10.2 Recommendations

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

- Continuing review of the appropriateness of the remedial strategy is undertaken by consultation with the Site Auditor;
- An AMP is prepared to control the exposure to the asbestos hazard prior to the commencement of remedial works; and
- An LTEMP requires to be prepared to ensure the long-term integrity of the containment measure to cause preclusion of access to impacted soils retained within constructed containment cells. The LTEMP requires to be endorsed by the Site Auditor prior to occupation of the site.

11. Limitations

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

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

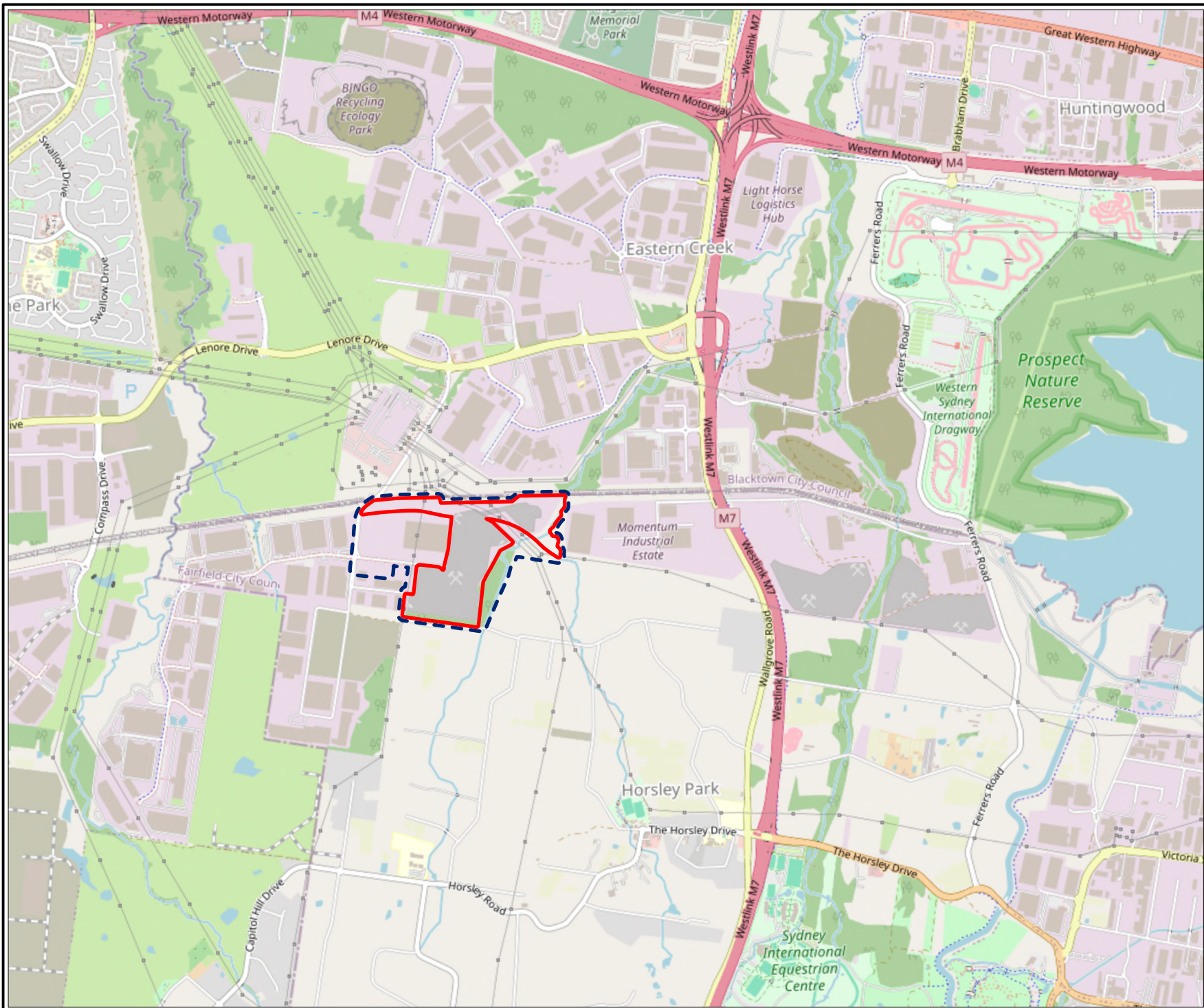
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the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

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

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

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

Appendix A Figures



Legend:
 Approximate Site Boundary
 Approximate OEIE Site Boundary



Job No: 71973

Client: Silverback

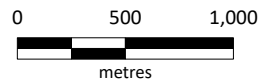
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Date 19/05/2026

Drawn By: AB

Checked By: ST

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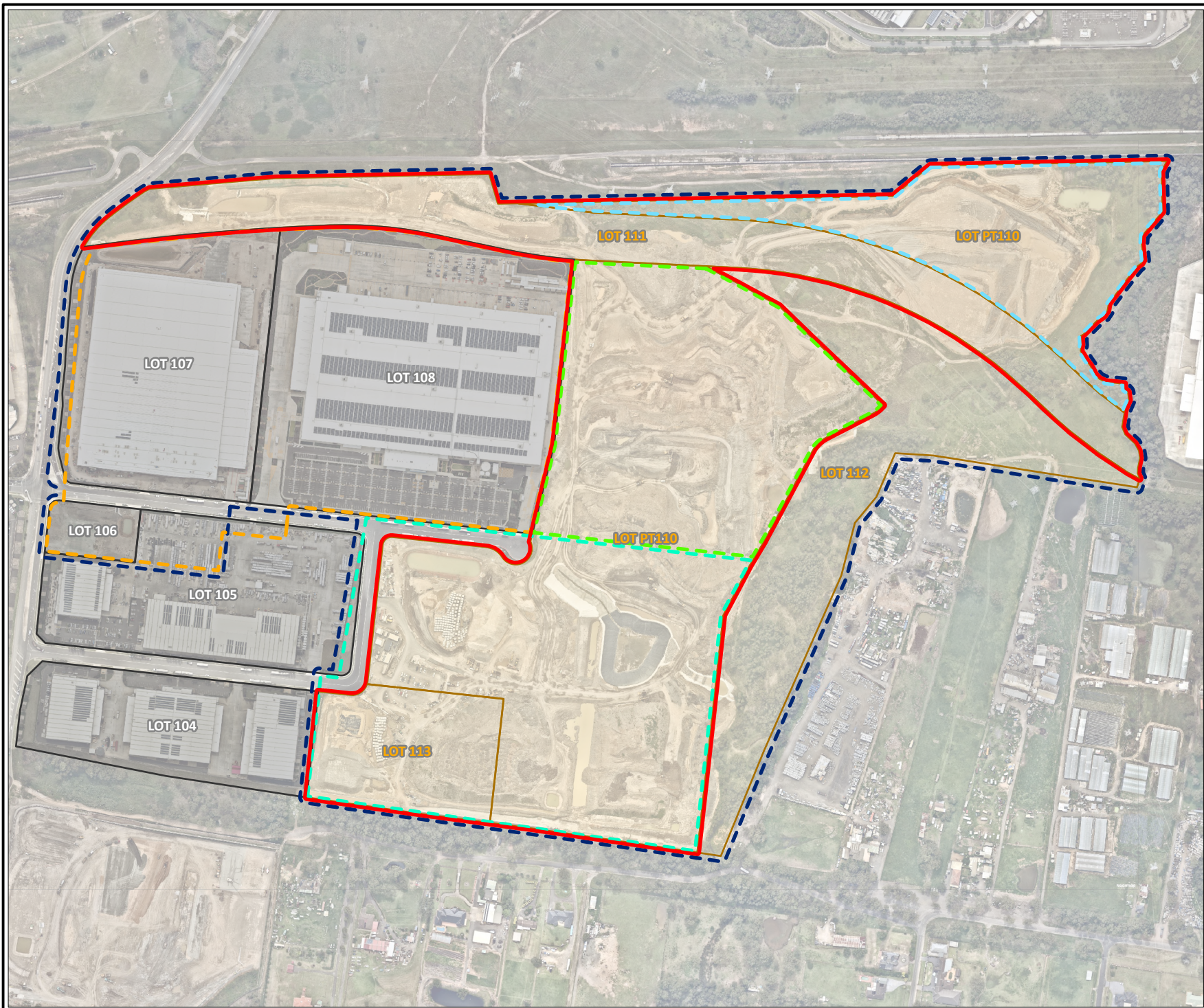


Coord. Sys. GDA 1994 MGA Zone 56

**Old Wallgrove Road
Horsley Park, NSW**

SITE LOCATION

FIGURE 1



Legend:

- Approximate Site Boundary
- Approximate OEIE Site Boundary
- OEIE Redevelopment Stage Boundaries**
 - Stage 2
 - Stage 3
 - Stage 4
 - Stage 5

Subdivisions

- Lot 109 in DP1293112 Proposed Subdivision Plan
- DP1293112 - Current Subdivision



Job No: 71973

Client: Silverback

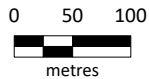
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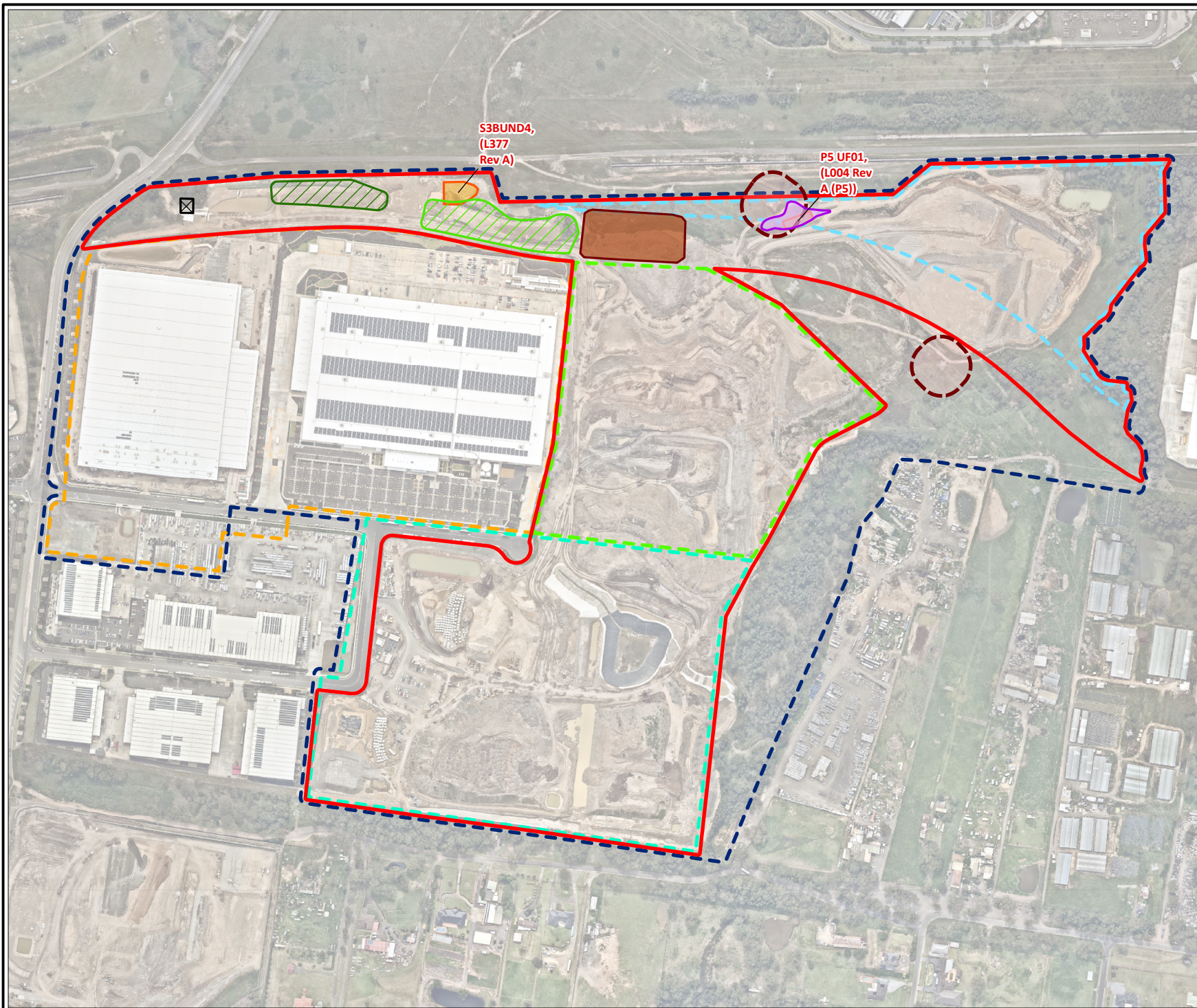


Coord. Sys. GDA 1994 MGA Zone 56

**Old Wallgrove Road
Horsley Park, NSW**

SITE LAYOUT

FIGURE 2



- Legend:**
- Approximate Site Boundary
 - - - Approximate OEIE Site Boundary
 - OEIE Redevelopment Stage Boundaries**
 - - - Stage 2
 - - - Stage 3
 - - - Stage 4
 - - - Stage 5
 - Site Features**
 - Area Requiring Remediation
 - 330kV Towers Earthing - 30m Exclusion Zone
 - ✕ Former Wash Bay Area
 - Inaccessible Bund
 - Existing Onsite Containment Cells**
 - TRH/HGG Containment Cell
 - Asbestos Containment Cell
 - Proposed Containment Cells**
 - Proposed Additional Containment Cell



Job No: 71973

Client: Silverback

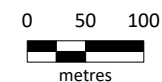
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Date 19/05/2026

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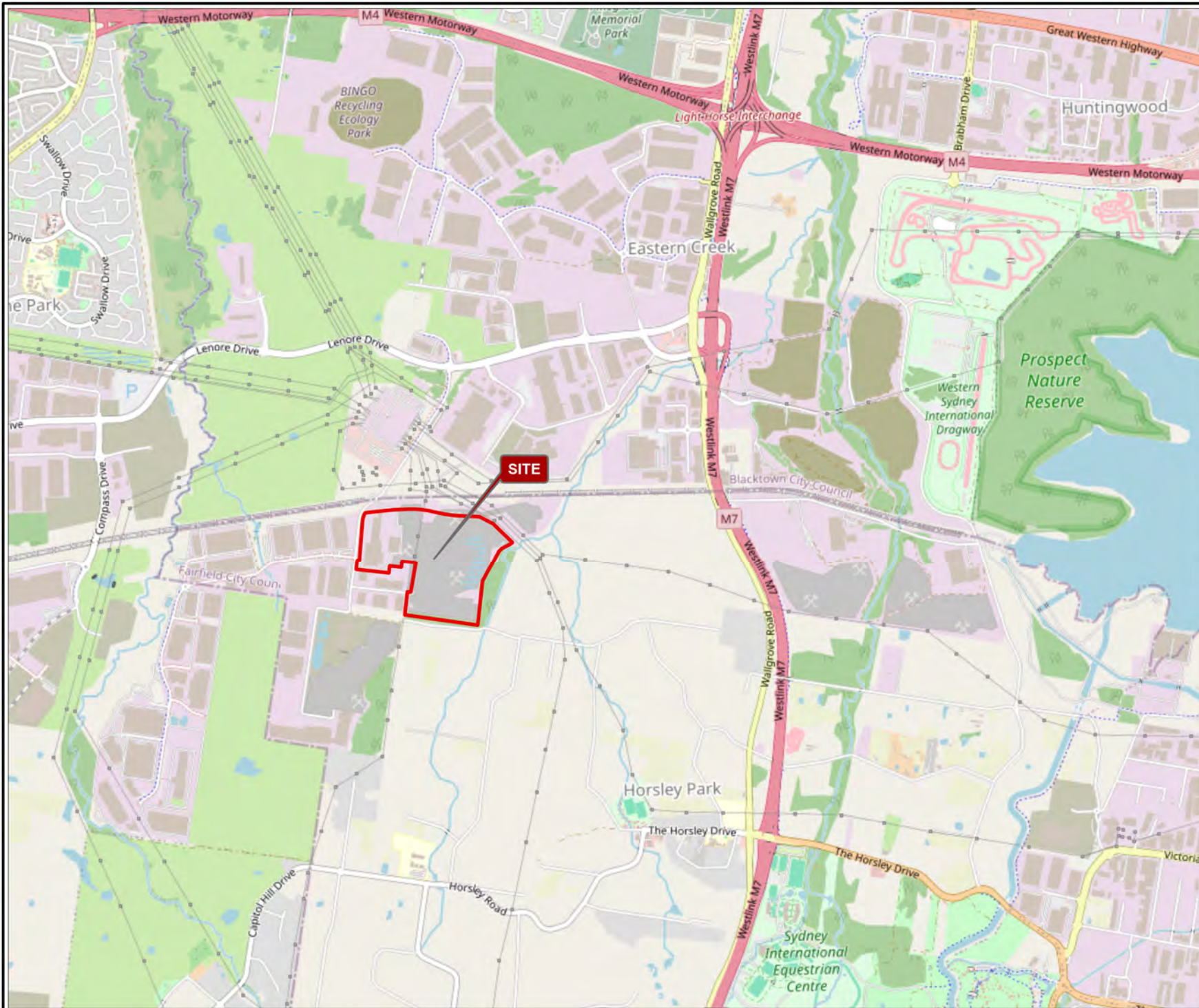
Coord. Sys. GDA 1994 MGA Zone 56

**Old Wallgrove Road
Horsley Park, NSW**

AREAS REQUIRING REMEDIATION

FIGURE 3

Appendix B Areas of Known Contamination Figures and Analytical Summary Tables



Legend:
 Approximate Site Boundary



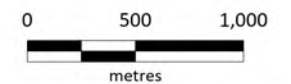
Job No: 60530

Client: Goodman

Version: MCF39 Rev A Date 12/12/2023

Drawn By: JL Checked By: JS

Scale 1:35,000



Coord. Sys. GDA 1994 MGA Zone 56

**Old Wallgrove Road
Horsley Park, NSW**

SITE LOCATION

FIGURE 1



- Legend:**
- Approximate Site Boundary
 - Redevelopment Stage Boundaries**
 - Stage 2
 - Stage 3
 - Stage 4
 - Stockpile Location
 - S3BUND4



Job No: 60530

Client: Goodman

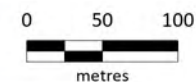
Version: MCF39 Rev A

Date 12/12/2023

Drawn By: JL

Checked By: JS

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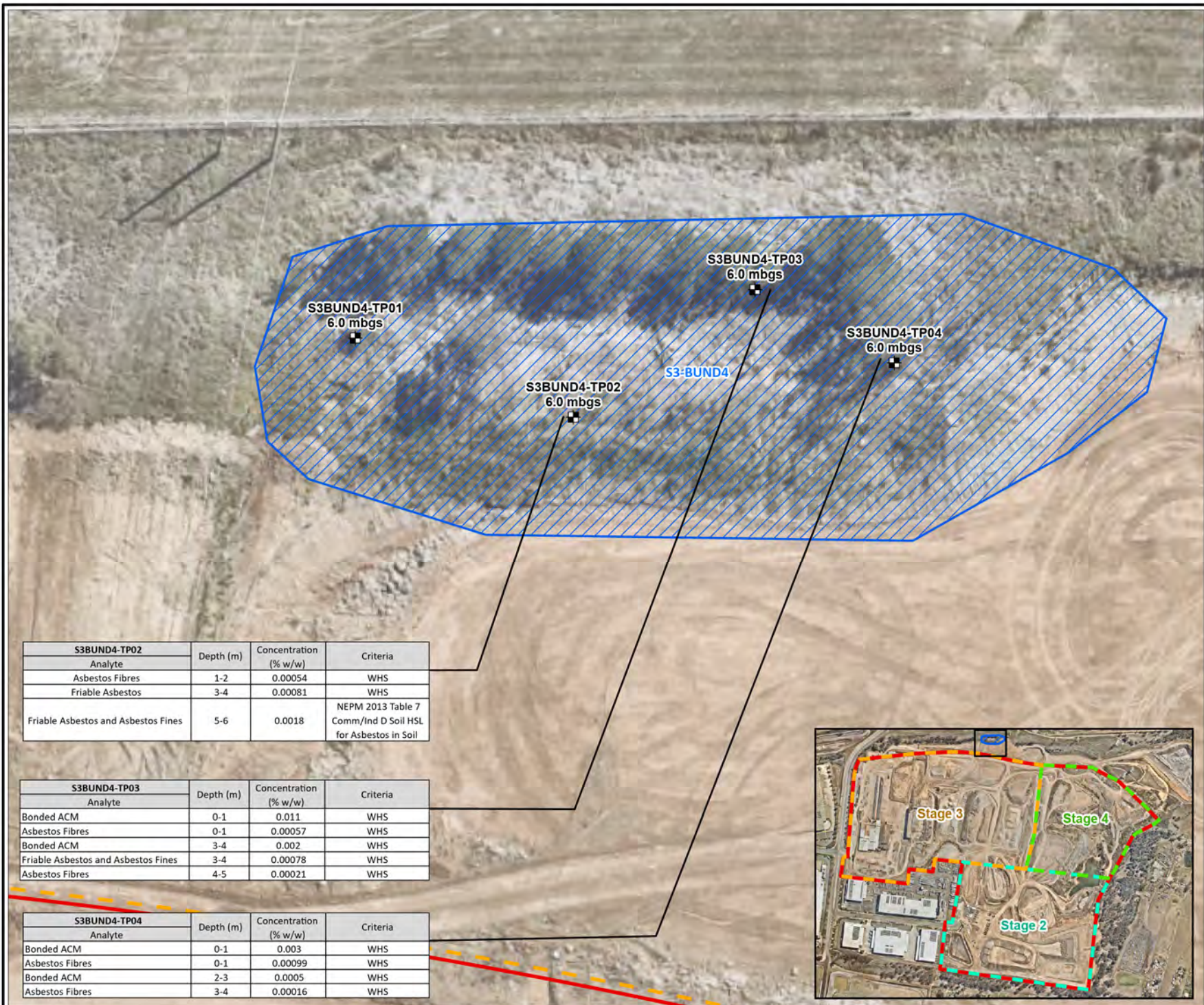


Coord. Sys. GDA 1994 MGA Zone 56

Old Wallgrove Road
Horsley Park, NSW

**SITE LAYOUT AND STAGE 3 BUND 4
AREA**

FIGURE 2



S3BUND4-TP02			
Analyte	Depth (m)	Concentration (% w/w)	Criteria
Asbestos Fibres	1-2	0.00054	WHS
Friable Asbestos	3-4	0.00081	WHS
Friable Asbestos and Asbestos Fines	5-6	0.0018	NEPM 2013 Table 7 Comm/Ind D Soil HSL for Asbestos in Soil

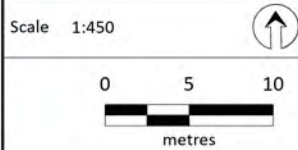
S3BUND4-TP03			
Analyte	Depth (m)	Concentration (% w/w)	Criteria
Bonded ACM	0-1	0.011	WHS
Asbestos Fibres	0-1	0.00057	WHS
Bonded ACM	3-4	0.002	WHS
Friable Asbestos and Asbestos Fines	3-4	0.00078	WHS
Asbestos Fibres	4-5	0.00021	WHS

S3BUND4-TP04			
Analyte	Depth (m)	Concentration (% w/w)	Criteria
Bonded ACM	0-1	0.003	WHS
Asbestos Fibres	0-1	0.00099	WHS
Bonded ACM	2-3	0.0005	WHS
Asbestos Fibres	3-4	0.00016	WHS

- Legend:**
- Approximate Site Boundary
 - Redevelopment Stage Boundaries**
 - Stage 2
 - Stage 3
 - Stage 4
 - Stockpile Location
 - S3-BUND4
 - Sample Locations
 - Test Pit Sample Location
 - 0.5 Depth of Fill Assessed (m bgs, natural not reached)



Job No: 60530
Client: Goodman
Version: MCF39 Rev A Date 12/12/2023
Drawn By: JL Checked By: JS



Coord. Sys. GDA 1994 MGA Zone 56

Old Wallgrove Road
Horsley Park, NSW
S3 BUND 4 - TEST PIT LOCATIONS

FIGURE 3

Table D: Field Asbestos Quantification Results (Stage 3 Bund 4)
Job Number: 60530

Health Screening Level Asbestos Concentration in Soil (% w/w)	
Category	
FA and AF in soils	0.001
Bonded ACM in soils	0.05
Bonded ACM in soils (above 1/5 criteria)	0.01
Bonded ACM in soils (below 1/5 criteria)	<0.01

Sample Information							
Sample ID	Date	Fill Type	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)*	Asbestos from ACM in soil (%w/w)
TP01	7/12/2023	0-1: Gravelly Silty Clay, dark brown	50	81500	0	0	0.00
		1-2: Gravelly Silty Clay, dark brown	50	81500	0	0	0.00
		2-3: Gravelly Silty Clay, dark brown	50	81500	0	0	0.00
		3-4: Gravelly Silty Clay, dark brown	50	81500	0	0	0.00
		4-5: Gravelly Silty Clay, light grey	50	81500	0	0	0.00
		5-6: Gravelly Silty Clay, light grey	50	81500	0	0	0.00
TP02	7/12/2023	0-1: Gravelly Silty Clay, brown	50	81500	0	0	0.00
		1-2: Gravelly Silty Clay, brown	50	81500	0	0	0.00
		2-3: Gravelly Silty Clay, brown	50	81500	0	0	0.00
		3-4: Gravelly Silty Clay, brown	50	81500	0	0	0.00
		4-5: Gravelly Silty Clay, brown	50	81500	0	0	0.00
		5-6: Gravelly Silty Clay, brown	50	81500	0	0	0.00
TP03	7/12/2023	0-1: Gravelly Silty Clay, brown/red	50	81500	62.25	9.34	0.011
		1-2: Gravelly Silty Clay, brown/red	50	81500	0.0	0.0	0.00
		2-3: Gravelly Silty Clay, brown/red	50	81500	0	0	0.00
		3-4: Gravelly Silty Clay, brown/red	50	81500	10.37	1.56	0.00
		4-5: Gravelly Silty Clay, brown/red	50	81500	0	0	0.00
		5-6: Gravelly Silty Clay, brown/red	50	81500	0	0	0.00
TP04	7/12/2023	0-1: Gravelly Silty Clay, brown/black	50	81500	17.09	2.56	0.00
		1-2: Gravelly Silty Clay, brown/black	50	81500	0	0	0.00
		2-3: Gravelly Silty Clay, brown/black	50	81500	2.68	0.40	0.00
		3-4: Gravelly Silty Clay, brown/black	50	81500	0	0	0.00
		4-5: Gravelly Silty Clay, brown/black	50	81500	0	0	0.00
		5-6: Gravelly Silty Clay, brown/black	50	81500	0	0	0.00

Table A: Chemical Laboratory Results

Project Number: 60530

Project Name: Plant 23 (Stages 2-4)





	Metals & Metalloids								TPHs (NEPC 1999)					TRHs (NEPC 2013)						
	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum of Total)	C6-ClO	C10-C16	C16-C34	C34-C40	C10-C40 (Sum of total)	F1 (C6-C10 minus BTEX)	F2 (C10-C16 less Naphthalene)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	2	0.4	5	5	5	0.1	5	5	20	20	50	50	50	20	50	100	100	100	20	50
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil	3000	900	3600	240000	1500	730	6000	400000												
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay 0-1m																			310	NL
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind	160		310	85	1800		55	110												
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil																2500	6600		215	170
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil														800	1000	5000	10000			

Field ID	Sampled Date	Lab Report Number	6.3	0.5	14	67	46	0.1	17	200	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
S3BUND4-TP01-0.5-0.6	7/12/2023	1051721	16	0.6	22	70	120	<0.1	21	190	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
S3BUND4-TP01-2-2.1	7/12/2023	1051721	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3BUND4-TP01-3-3.1	7/12/2023	1051721	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S3BUND4-TP01-4-4.1	7/12/2023	1051721	6.1	<0.4	8.4	20	23	<0.1	6	40	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
QC20231207_01 (duplicate of S3BUND4-TP01-4-4.1)	7/12/2023	1051721	8.5	<0.4	12	24	27	<0.1	9.2	55	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
QA20231207_01 (triplicate of S3BUND4-TP01-4-4.1)	7/12/2023	339819	7	<0.4	9	23	24	<0.1	6	39	<25	<50	<100	<100	<50	<25	<50	<100	<100	<50	<25	<50
S3BUND4-TP01-5.9-6	7/12/2023	1051721	13	<0.4	17	48	35	<0.1	16	150	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
S3BUND4-TP02-0-0.1	7/12/2023	1051721	7.8	<0.4	14	38	41	<0.1	12	81	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
S3BUND4-TP02-1-1.1	7/12/2023	1051721	13	<0.4	22	50	61	0.1	19	150	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
S3BUND4-TP02-3-3.1	7/12/2023	1051721	10	35	17	78	70	<0.1	21	220	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
S3BUND4-TP02-5-5.1	7/12/2023	1051721	9.4	1.9	17	200	100	<0.1	26	520	<20	<20	63	65	128	<20	<50	<100	<100	<100	<20	<50
S3BUND4-TP03-0-0.1	7/12/2023	1051721	9.5	<0.4	17	37	39	<0.1	16	100	<20	<20	<50	<50	<50	<20	79	<100	<100	<100	<20	79
S3BUND4-TP03-1-1.1	7/12/2023	1051721	8.3	<0.4	18	54	150	0.1	13	120	<20	<20	58	<50	58	<20	<50	<100	<100	<100	<20	<50
S3BUND4-TP03-3-3.1	7/12/2023	1051721	6.9	1.4	14	120	71	<0.1	30	260	<20	<20	82	61	143	<20	140	120	<100	260	<20	140
S3BUND4-TP03-5-5.1	7/12/2023	1051721	6.4	0.5	14	83	75	<0.1	17	170	<20	<20	<50	55	55	<20	<50	<100	<100	<100	<20	<50
S3BUND4-TP04-0-0.1	7/12/2023	1051721	7.6	1.2	19	130	81	<0.1	21	300	<20	<20	64	<50	64	<20	54	<100	<100	<100	<20	54
S3BUND4-TP04-1-1.1	7/12/2023	1051721	8.8	0.9	16	130	74	<0.1	27	270	<20	<20	<50	<50	<50	<20	<50	<100	<100	<100	<20	<50
S3BUND4-TP04-3-3.1	7/12/2023	1051721	6.8	1	16	100	140	0.1	18	260	<20	<20	91	66	157	<20	<50	120	<100	120	<20	<50
S3BUND4-TP04-5-5.1	7/12/2023	1051721	11	3.6	14	27	56	0.1	12	120	<20	<20	98	64	162	<20	<50	140	<100	140	<20	<50

Table A: Chemical Laboratory Results

Project Number: 60530

Project Name: Plant 23 (Stages 2-4)





	BTEXN										PAHs																	
	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene_VOC	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ calc (Zero)	Benzo(b+j)fluoranthene	Benzo(b+j+k)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil												40	40	40														4000
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay 0-1m	4	NL	NL			NL	NL																		NL			
NEPM 2013 Table 1B(1-5) Generic EIL - Comm/Ind							370																		370			
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Fine Soil	95	135	185			95						1.4																
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																												

Field ID	Sampled Date	Lab Report Number																													
S3BUND4-TP01-0.5-0.6	7/12/2023	1051721	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	0.5	1.1	
S3BUND4-TP01-2-2.1	7/12/2023	1051721	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
S3BUND4-TP01-3-3.1	7/12/2023	1051721	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S3BUND4-TP01-4-4.1	7/12/2023	1051721	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
QC20231207_01 (duplicate of S3BUND4-TP01-4-4.1)	7/12/2023	1051721	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
QA20231207_01 (triplicate of S3BUND4-TP01-4-4.1)	7/12/2023	339819	<0.2	<0.5	<1	<1	<2	<1	<1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.5	<0.5	<0.5	-	<0.2	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	
S3BUND4-TP01-5-9-6	7/12/2023	1051721	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
S3BUND4-TP02-0-0.1	7/12/2023	1051721	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	0.6	0.7	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	0.9	3.1	
S3BUND4-TP02-1-1.1	7/12/2023	1051721	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	0.5	0.5	1.2	0.9	0.6	<0.5	-	0.5	0.7	0.6	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	1.1	5	
S3BUND4-TP02-3-3.1	7/12/2023	1051721	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
S3BUND4-TP02-5-5.1	7/12/2023	1051721	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	0.8	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	0.9	2.6	
S3BUND4-TP03-0-0.1	7/12/2023	1051721	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	0.7	1.4	
S3BUND4-TP03-1-1.1	7/12/2023	1051721	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	0.9	<0.5	1	<0.5	<0.5	<0.5	<0.5	1	2.9	
S3BUND4-TP03-3-3.1	7/12/2023	1051721	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
S3BUND4-TP03-5-5.1	7/12/2023	1051721	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.5	
S3BUND4-TP04-0-0.1	7/12/2023	1051721	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
S3BUND4-TP04-1-1.1	7/12/2023	1051721	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
S3BUND4-TP04-3-3.1	7/12/2023	1051721	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	0.9	1.4	2.4	2.1	1.9	1.2	-	1.8	1.5	1.8	<0.5	2.9	<0.5	0.9	<0.5	0.7	2.9	16	
S3BUND4-TP04-5-5.1	7/12/2023	1051721	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.6	<0.5	<0.5	-	<0.5	<0.5	0.6	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	2

Project Number: 60530
Project Name: Plant 23 (Stages 2-4)

[illegible][illegible]

Table B: PFAS Laboratory Results (Stage 3 Bund 4)
Project Number: 60530
Project Name: Plant 23 (Stages 2-4)

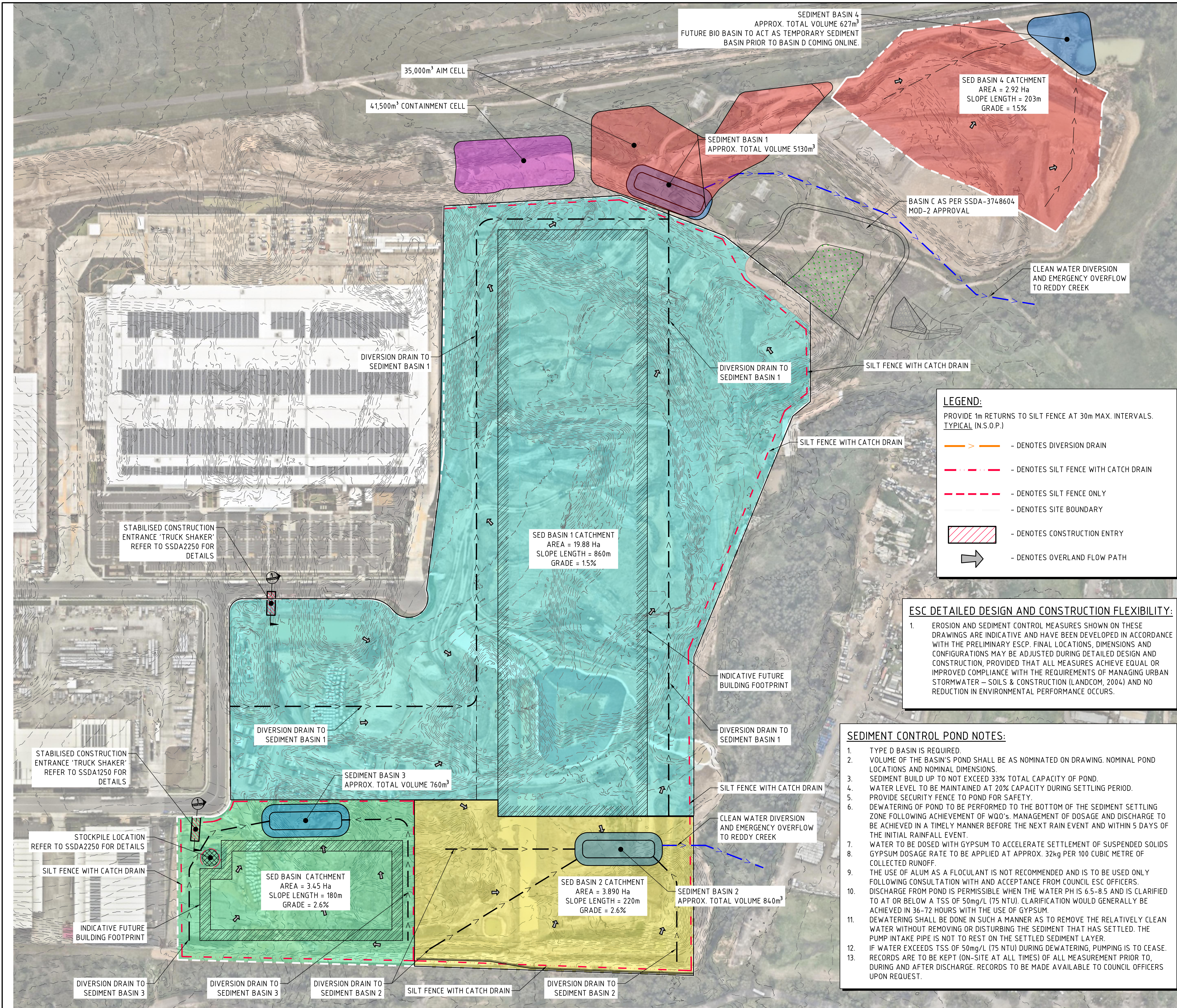


				PFAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
				Perfluorobutanoic acid (PFBA)	mg/kg	0.005	Perfluoropentanoic acid (PFPeA)	mg/kg	0.005	Perfluorohexanoic acid (PFHxA)	mg/kg	0.005	Perfluoroheptanoic acid (PFHpA)	mg/kg	0.005	Perfluorooctanoic acid (PFOA)	mg/kg	50	Perfluorononanoic acid (PFNA)	mg/kg	0.005	Perfluorodecanoic acid (PFDA)	mg/kg	0.005	Perfluoroundecanoic acid (PFUnDA)	mg/kg	0.005	Perfluorododecanoic acid (PFDoDA)	mg/kg	0.005	Perfluorotridecanoic acid (PFTriDA)	mg/kg	0.005	Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.005	Perfluorooctane sulfonamide (FOSA)	mg/kg	0.005	N-Methyl perfluorooctane sulfonamide (NMeFOSA)	mg/kg	0.005	N-Ethyl perfluorooctane sulfonamide (NEFOSA)	mg/kg	0.005	N-Methylperfluorooctanesulfonamidoethanol (N-MeFOSE)	mg/kg	0.005	N-ethylperfluorooctanesulfonamidoethanol (NEFOSE)	mg/kg	0.005	N-methylperfluorooctane sulfonamidoacetic acid (NMeFOSAA)	mg/kg	0.01	N-ethyl-perfluorooctanesulfonamidoacetic acid (NEFOSAA)	mg/kg	0.01	Perfluoropropanesulfonic acid (PFPrS)	mg/kg	0.005	Perfluorobutanesulfonic acid (PFBS)	mg/kg	0.005	Perfluoropentanesulfonic acid (PFPeS)	mg/kg	0.005	Perfluorohexanesulfonic acid (PFHxS)	mg/kg	20	Perfluoroheptane sulfonic acid (PFHpS)	mg/kg	0.005	Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.005	Perfluorodecanesulfonic acid (PFDS)	mg/kg	0.005	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTSA)	mg/kg	0.005	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2 FTSA)	mg/kg	0.01	1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2 FTSA)	mg/kg	0.005	1H,1H,2H,2H-perfluorododecanesulfonic acid (10:2 FTSA)	mg/kg	0.005	Sum of PFHxS and PFOS	mg/kg	20	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	mg/kg	0.005	Sum of US EPA PFAS (PFOS + PFOA)*	mg/kg	0.005	Sum of WA DWER PFAS (n=10)*	mg/KG	0.01	Sum of PFAS	mg/kg	0.05	Perfluorononanesulfonic acid ion	mg/kg	0.005																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Project Name: Plant 23 (Stages 2-4)

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Appendix C Proposed Additional Containment Cell Design



EROSION CONTROL NOTES:

ALL CONTROL WORK INCLUDING DIVERSION BANKS AND CATCH DRAINS, V-DRAINS AND SILT FENCES SHALL BE COMPLETED DIRECTLY FOLLOWING THE COMPLETION OF THE EARTHWORKS.

- SILT FENCES AND SILT FENCE RETURNS SHALL BE ERECTED CONVEX TO THE CONTOUR TO POND WATER.
- HAY BALE BARRIERS AND GEOFABRIC FENCES ARE TO BE CONSTRUCTED TO TOE OF BATTER, PRIOR TO COMMENCEMENT OF EARTHWORKS, IMMEDIATELY AFTER CLEARING OF VEGETATION AND BEFORE REMOVAL OF TOP SOIL.
- ALL TEMPORARY EARTH BERMS, DIVERSION AND SILT DAM EMBANKMENTS ARE TO BE MACHINE COMPACTED, SEEDED AND MULCHED FOR TEMPORARY VEGETATION COVER AS SOON AS THEY HAVE BEEN FORMED.
- CLEAR WATER IS TO BE DIVERTED AWAY FROM DISTURBED GROUND AND INTO THE DRAINAGE SYSTEM.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND PROVIDING ON GOING ADJUSTMENT TO EROSION CONTROL MEASURES AS REQUIRED DURING CONSTRUCTION.
- ALL SEDIMENT TRAPPING STRUCTURES AND DEVICES ARE TO BE INSPECTED AFTER STORMS FOR STRUCTURAL DAMAGE OR CLOGGING, TRAPPED MATERIAL IS TO BE REMOVED TO A SAFE, APPROVED LOCATION.
- ALL FINAL EROSION PREVENTION MEASURES INCLUDING THE ESTABLISHMENT OF GRASSING ARE TO BE MAINTAINED UNTIL THE END OF THE DEFECTS LIABILITY PERIOD.
- ALL EARTHWORKS AREAS SHALL BE ROLLED ON A REGULAR BASIS TO SEAL THE EARTHWORKS.
- ALL FILL AREAS ARE TO BE LEFT WITH A BUND AT THE TOP OF THE SLOPE AT THE END OF EACH DAYS EARTHWORKS. THE HEIGHT OF THE BUND SHALL BE A MINIMUM OF 200mm.
- ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND HYDROMULCHED WITHIN 10 DAYS OF COMPLETION OF FORMATION.
- AFTER REVEGETATION OF THE SITE IS COMPLETE AND THE SITE IS STABLE IN THE OPINION OF A SUITABLY QUALIFIED PERSON ALL TEMPORARY WORK SUCH AS SILT FENCE, DIVERSION DRAINS ETC SHALL BE REMOVED.
- ALL TOPSOIL STOCKPILES ARE TO BE SUITABLY COVERED TO THE SATISFACTION OF THE SITE MANAGER TO PREVENT WIND AND WATER EROSION.
- ANY AREA THAT IS NOT APPROVED BY THE CONTRACT ADMINISTRATOR FOR CLEARING OR DISTURBANCE BY THE CONTRACTOR'S ACTIVITIES SHALL BE CLEARLY MARKED AND SIGN POSTED, FENCED OFF OR OTHERWISE APPROPRIATELY PROTECTED AGAINST ANY SUCH DISTURBANCE.
- ALL STOCKPILE SITES SHALL BE SITUATED IN AREAS APPROVED FOR SUCH USE BY THE SITE MANAGER. A 6m BUFFER ZONE SHALL EXIST BETWEEN STOCKPILE SITES AND ANY STREAM OR FLOW PATH. ALL STOCKPILES SHALL BE ADEQUATELY PROTECTED FROM EROSION AND CONTAMINATION OF THE SURROUNDING AREA BY USE OF THE MEASURES APPROVED IN THE EROSION AND SEDIMENTATION CONTROL PLAN.
- ACCESS AND EXIT AREAS SHALL INCLUDE SHAKE-DOWN OR OTHER METHODS APPROVED BY THE SITE MANAGER FOR THE REMOVAL OF SOIL MATERIALS FORM MOTOR VEHICLES.
- THE CONTRACTOR IS TO ENSURE RUNOFF FROM ALL AREAS WHERE THE NATURAL SURFACE IS DISTURBED BY CONSTRUCTION, INCLUDING ACCESS ROADS, DEPOT AND STOCKPILE SITES, SHALL BE FREE OF POLLUTANTS BEFORE IT IS EITHER DISPERSED TO STABLE AREAS OR DIRECTED TO NATURAL WATERCOURSES.
- THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SLOPES, CROWNS AND DRAINS ON ALL EXCAVATIONS AND EMBANKMENTS TO ENSURE SATISFACTORY DRAINAGE AT ALL TIMES WATER SHALL NOT BE ALLOWED TO POND ON THE WORKS UNLESS SUCH PONDING IS PART OF AN APPROVED ESCP / SWMP.
- ESC PLANS ARE SUBJECT TO CHANGE SHOULD CPESC SIGNOFF BE RECEIVED

SEDIMENTATION BASIN NOTES:

- REFER TO SEDIMENT & EROSION CONTROL NOTES.
- FOR SEDIMENT AND EROSION CONTROL DETAILS, REFER TO THE LANDCOM 'BLUE BOOK' AND EXTRACTS ON DRAWING SSDA1250.
- SEDIMENTATION BASIN SIZING BASED ON RECOMMENDATIONS OF 'SOILS AND CONSTRUCTION, MANAGING URBAN STORMWATER-THE BLUE BOOK'. CAPACITY BASED ON 5-DAY RAINFALL DEPTHS AT 85th PERCENTILE INTENSITY (32.2mm) IN THE LIVERPOOL CATCHMENT AREA.

NOTES:

- ASSUME TYPE D SOIL (CLAY/SILTY CLAY)
- ASSUME GROUP D SOIL (HIGH PLASTICITY AND SHRINK/SWELL PROPERTIES)
- REFER TO DRAWING SSDA1250 FOR SEDIMENTATION BASIN CALCULATIONS

SEDIMENT CONTROL BASIN NOTES:

- TYPE D BASIN IS REQUIRED.
- VOLUME OF THE BASINS SHALL BE AS NOMINATED ON DRAWING. NOMINAL POND LOCATIONS AND NOMINAL DIMENSIONS.
- SEDIMENT BUILD UP TO NOT EXCEED 33% TOTAL CAPACITY OF BASIN.
- DEWATERING OF BASIN TO BE PERFORMED TO THE BOTTOM OF THE SEDIMENT SETTLING ZONE FOLLOWING ACHIEVEMENT OF WQO's. MANAGEMENT OF DOSAGE AND DISCHARGE TO BE ACHIEVED WITHIN 5 DAYS OF THE INITIAL RAINFALL EVENT.
- FOLLOWING DEWATERING PER NOTE 4, WATER LEVEL TO BE MAINTAINED AT 20% CAPACITY AFTER A FOUR DAY SETTLING PERIOD FOLLOWING A STORM EVENT.
- WATER TO BE DOSED WITH GYPSUM TO ACCELERATE SETTLEMENT OF SUSPENDED SOLIDS AS REQUIRED.
- GYPSUM DOSAGE RATE TO BE APPLIED AT APPROX. 32kg PER 100 CUBIC METRE OF COLLECTED RUNOFF.
- THE USE OF ALUM (OR ANY OTHER ALTERNATIVE) AS A FLOCCULANT IS NOT RECOMMENDED. ALUM OR ANY OTHER FLOCCULANT IS TO BE USED ONLY FOLLOWING CONSULTATION WITH AND ACCEPTANCE FROM COUNCIL ESC OFFICERS.
- DISCHARGE FROM POND IS PERMISSIBLE WHEN THE WATER PH IS 6.5-8.5 AND IS CLARIFIED TO AT OR BELOW A TSS OF 50mg/L. CLARIFICATION WOULD GENERALLY BE ACHIEVED IN 36-72 HOURS WITH THE USE OF GYPSUM. CORRELATION TESTS MUST BE UNDERTAKEN ON SITE TO ENSURE THIS IS ACHIEVED.
- DEWATERING SHALL BE DONE IN SUCH A MANNER AS TO REMOVE THE CLEAN WATER (BEING WATER WITHIN THE ADOPTED CRITERIA) WITHOUT REMOVING OR DISTURBING THE SEDIMENT THAT HAS SETTLED. THE PUMP INTAKE PIPE IS NOT TO REST ON THE SETTLED SEDIMENT LAYER.
- IF WATER EXCEEDS TSS OF 50mg/L DURING DEWATERING, PUMPING IS TO CEASE. RECORDS ARE TO BE KEPT (ON-SITE AT ALL TIMES) OF ALL MEASUREMENT PRIOR TO, DURING AND AFTER DISCHARGE. RECORDS TO BE MADE AVAILABLE TO COUNCIL OFFICERS UPON REQUEST.
- PROVIDE SECURITY FENCE TO BASIN FOR SAFETY.

LEGEND:

PROVIDE 1m RETURNS TO SILT FENCE AT 30m MAX. INTERVALS. TYPICAL (N.S.O.P.)

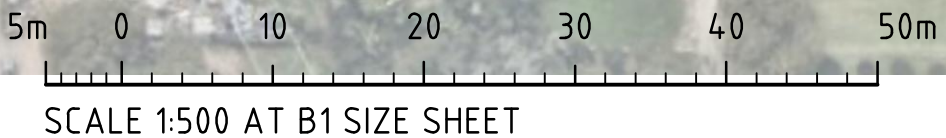
- DENOTES DIVERSION DRAIN
- DENOTES SILT FENCE WITH CATCH DRAIN
- DENOTES SILT FENCE ONLY
- DENOTES SITE BOUNDARY
- DENOTES CONSTRUCTION ENTRY
- DENOTES OVERLAND FLOW PATH

ESC DETAILED DESIGN AND CONSTRUCTION FLEXIBILITY:

- EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THESE DRAWINGS ARE INDICATIVE AND HAVE BEEN DEVELOPED IN ACCORDANCE WITH THE PRELIMINARY ESCP. FINAL LOCATIONS, DIMENSIONS AND CONFIGURATIONS MAY BE ADJUSTED DURING DETAILED DESIGN AND CONSTRUCTION, PROVIDED THAT ALL MEASURES ACHIEVE EQUAL OR IMPROVED COMPLIANCE WITH THE REQUIREMENTS OF MANAGING URBAN STORMWATER - SOILS & CONSTRUCTION (LANDCOM, 2004) AND NO REDUCTION IN ENVIRONMENTAL PERFORMANCE OCCURS.

SEDIMENT CONTROL POND NOTES:

- TYPE D BASIN IS REQUIRED.
- VOLUME OF THE BASIN'S POND SHALL BE AS NOMINATED ON DRAWING. NOMINAL POND LOCATIONS AND NOMINAL DIMENSIONS.
- SEDIMENT BUILD UP TO NOT EXCEED 33% TOTAL CAPACITY OF POND.
- WATER LEVEL TO BE MAINTAINED AT 20% CAPACITY DURING SETTLING PERIOD.
- PROVIDE SECURITY FENCE TO POND FOR SAFETY.
- DEWATERING OF POND TO BE PERFORMED TO THE BOTTOM OF THE SEDIMENT SETTLING ZONE FOLLOWING ACHIEVEMENT OF WQO's. MANAGEMENT OF DOSAGE AND DISCHARGE TO BE ACHIEVED IN A TIMELY MANNER BEFORE THE NEXT RAIN EVENT AND WITHIN 5 DAYS OF THE INITIAL RAINFALL EVENT.
- WATER TO BE DOSED WITH GYPSUM TO ACCELERATE SETTLEMENT OF SUSPENDED SOLIDS
- GYPSUM DOSAGE RATE TO BE APPLIED AT APPROX. 32kg PER 100 CUBIC METRE OF COLLECTED RUNOFF.
- THE USE OF ALUM AS A FLOCCULANT IS NOT RECOMMENDED AND IS TO BE USED ONLY FOLLOWING CONSULTATION WITH AND ACCEPTANCE FROM COUNCIL ESC OFFICERS.
- DISCHARGE FROM POND IS PERMISSIBLE WHEN THE WATER PH IS 6.5-8.5 AND IS CLARIFIED TO AT OR BELOW A TSS OF 50mg/L (75 NTU). CLARIFICATION WOULD GENERALLY BE ACHIEVED IN 36-72 HOURS WITH THE USE OF GYPSUM.
- DEWATERING SHALL BE DONE IN SUCH A MANNER AS TO REMOVE THE RELATIVELY CLEAN WATER WITHOUT REMOVING OR DISTURBING THE SEDIMENT THAT HAS SETTLED. THE PUMP INTAKE PIPE IS NOT TO REST ON THE SETTLED SEDIMENT LAYER.
- IF WATER EXCEEDS TSS OF 50mg/L (75 NTU) DURING DEWATERING, PUMPING IS TO CEASE. RECORDS ARE TO BE KEPT (ON-SITE AT ALL TIMES) OF ALL MEASUREMENT PRIOR TO, DURING AND AFTER DISCHARGE. RECORDS TO BE MADE AVAILABLE TO COUNCIL OFFICERS UPON REQUEST.



FOR DEVELOPMENT APPLICATION

ISSUED FOR STATE SIGNIFICANT DEVELOPMENT APPLICATION	29.05.26	F
ISSUED FOR STATE SIGNIFICANT DEVELOPMENT APPLICATION	28.05.26	E
ISSUED FOR INFORMATION	26.05.26	D
ISSUED FOR INFORMATION	22.05.26	C
ISSUED FOR INFORMATION	08.05.26	B
ISSUED FOR INFORMATION	01.05.26	A
AMENDMENTS	DATE	ISSUE

ARCHITECT
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CLIENT
Goodman

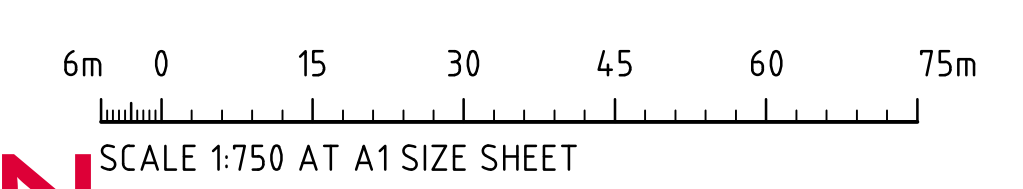
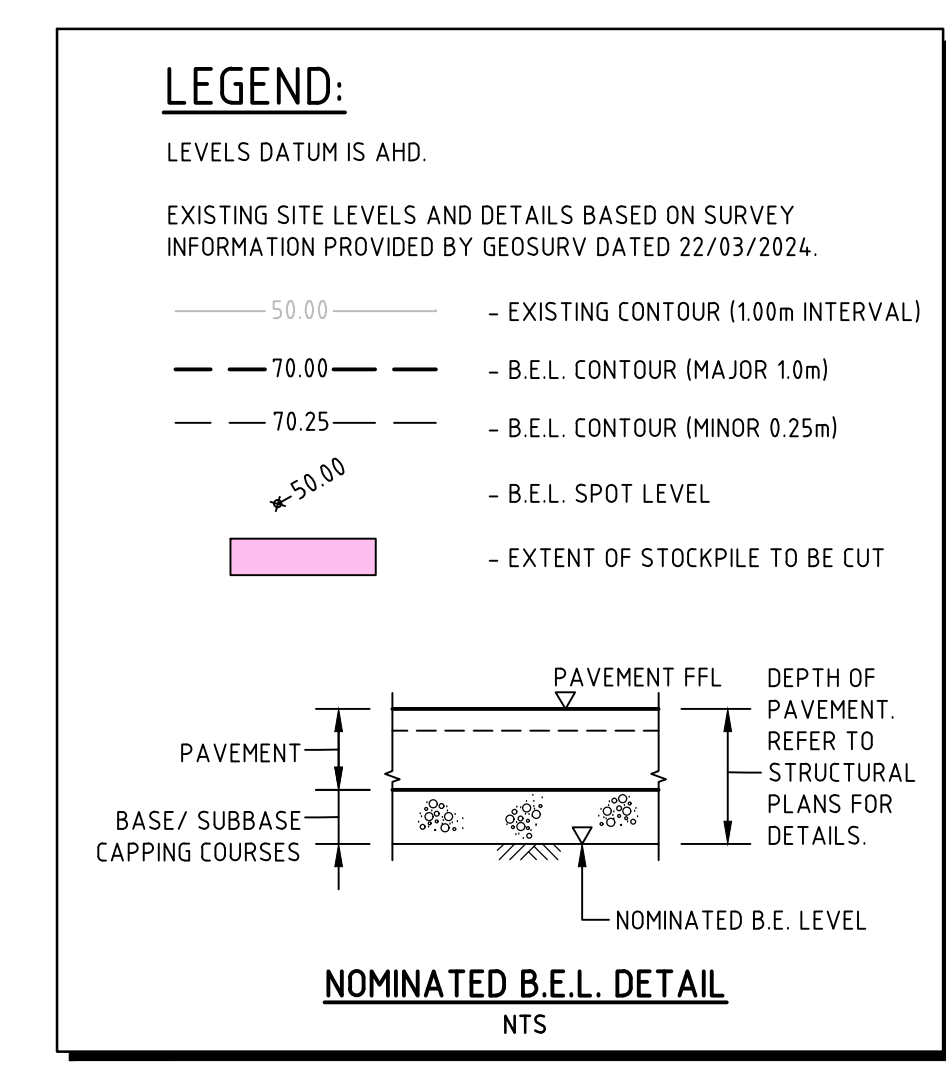
PROJECT
PROJECT SILVERBACK
PRECINCT 2, 4 & 5 OAKDALE EAST INDUSTRIAL ESTATE, LATITUDE ROAD, HORSLEY PARK, N.S.W. 2175

CONSULT
AUSTRALIA

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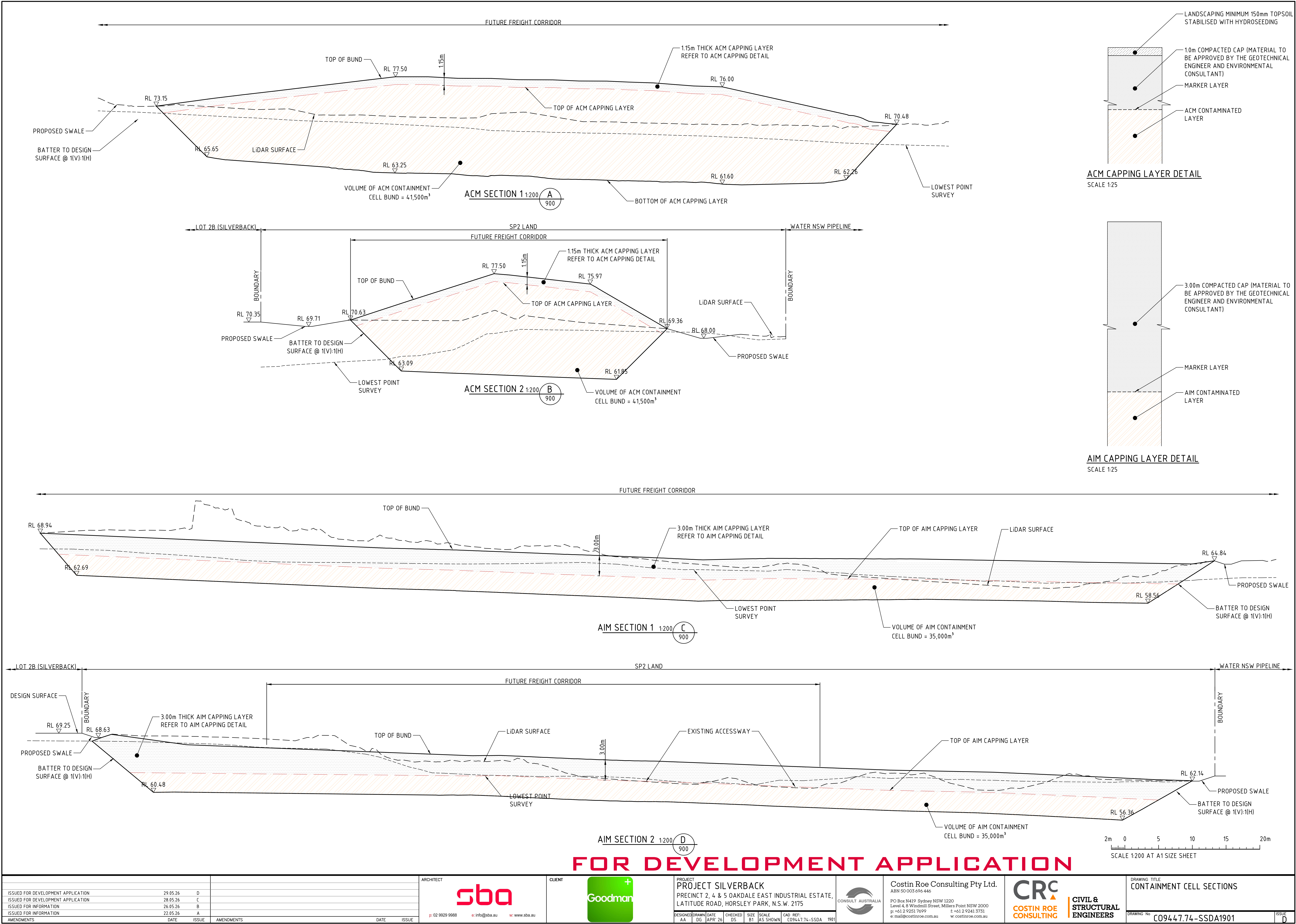
CRC
COSTIN ROE CONSULTING
CIVIL & STRUCTURAL ENGINEERS

DRAWING TITLE
EROSION AND SEDIMENT CONTROL PLAN
DRAWING No
C09447.74-SSDA1200
ISSUE
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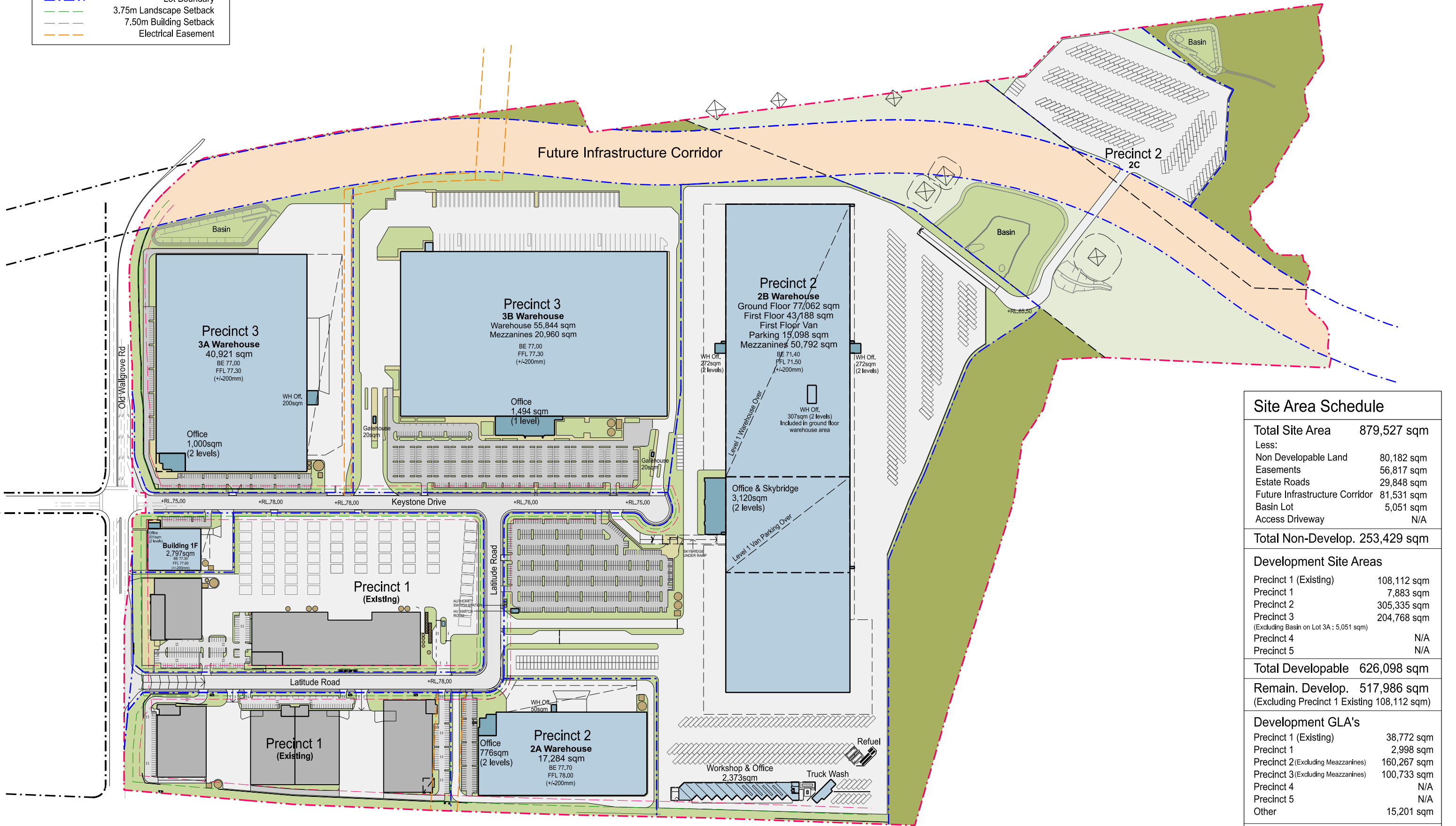
FOR DEVELOPMENT APPLICATION

ISSUED FOR STATE SIGNIFICANT DEVELOPMENT APPLICATION29.05.2026E			ARCHITECT		CLIENT		PROJECT PROJECT SILVERBACK PRECINCT 2, 4 & 5 OAKDALE EAST INDUSTRIAL ESTATE, LATITUDE ROAD, HORSLEY PARK, N.S.W. 2175		Costin Roe Consulting Pty Ltd. ABN 50 003 696 446 PO Box N419 Sydney NSW 1220 Level 4, 8 Windmill Street, Millers Point NSW 2000 p: +61 2 9251 7699 e: mail@costinroe.com.au w: costinroe.com.au	 CIVIL & STRUCTURAL ENGINEERS	DRAWING TITLE	BULK EARTHWORKS PLAN CONTAINMENT CELL	ISSUE	
ISSUED FOR STATE SIGNIFICANT DEVELOPMENT APPLICATION28.05.2026D											DRAWING No	C09447.74-SSDA1304		
ISSUED FOR INFORMATION26.05.2026C														
ISSUED FOR INFORMATION22.05.2026B														
ISSUED FOR INFORMATION08.05.2026A														
AMENDMENTS	DATE	ISSUE	AMENDMENTS	DATE	ISSUE	DESIGNED/DRAWN	DATE	CHECKED	SIZE	SCALE	CAD REF.			
	AA	DG	APR '26	DS	B1	AS SHOWN	C09447.74-SSDA	1304						F



Appendix D Lot 109 Subdivision and Proposed Development Masterplan

Legend	
	Site Boundary
	Lot Boundary
	3.75m Landscape Setback
	7.50m Building Setback
	Electrical Easement



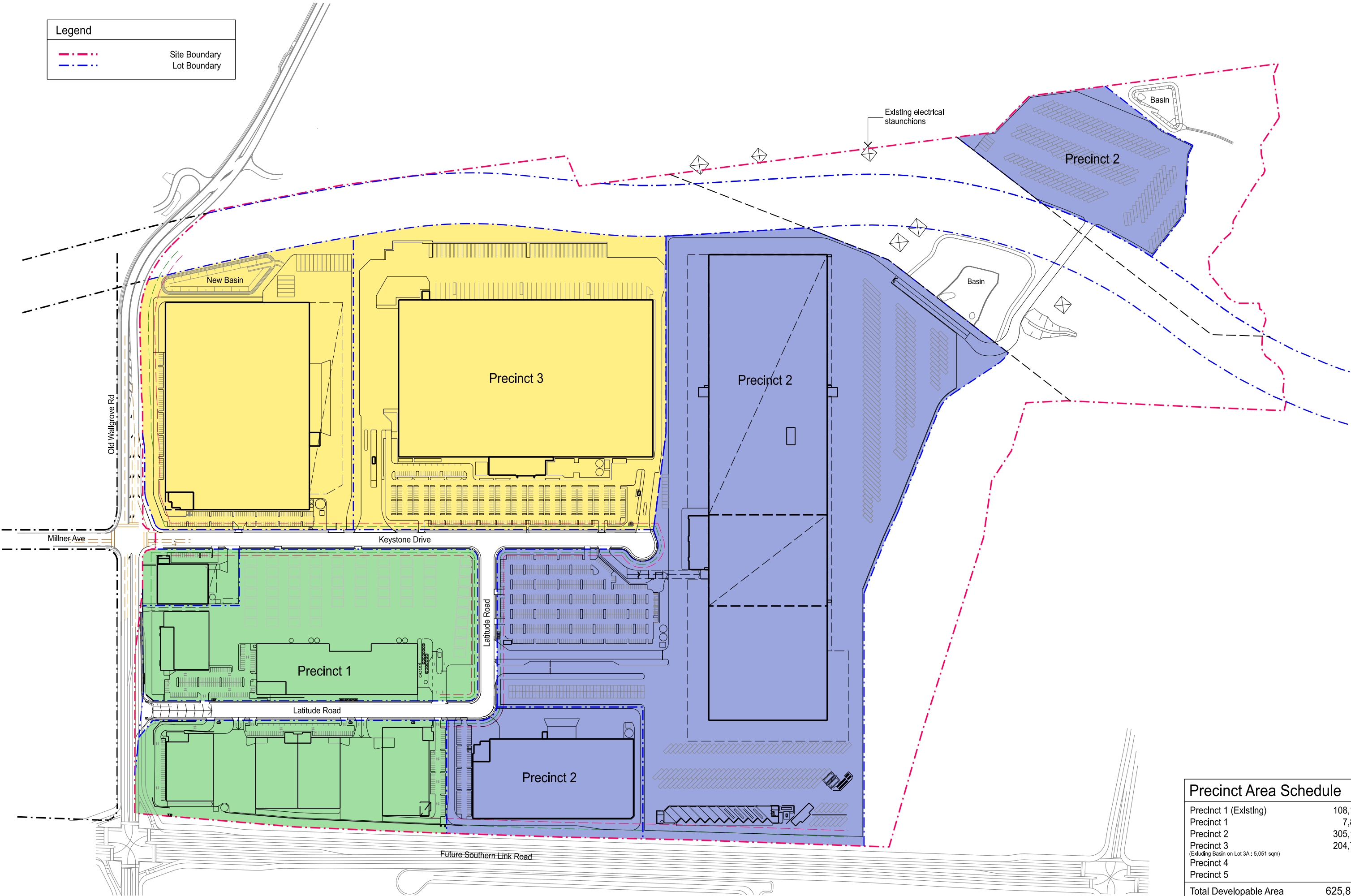
Site Area Schedule	
Total Site Area	879,527 sqm
Less:	
Non Developable Land	80,182 sqm
Easements	56,817 sqm
Estate Roads	29,848 sqm
Future Infrastructure Corridor	81,531 sqm
Basin Lot	5,051 sqm
Access Driveway	N/A
Total Non-Develop.	253,429 sqm
Development Site Areas	
Precinct 1 (Existing)	108,112 sqm
Precinct 1	7,883 sqm
Precinct 2	305,335 sqm
Precinct 3	204,768 sqm
(Excluding Basin on Lot 3A : 5,051 sqm)	
Precinct 4	N/A
Precinct 5	N/A
Total Developable	626,098 sqm
Remain. Develop.	517,986 sqm
(Excluding Precinct 1 Existing 108,112 sqm)	
Development GLA's	
Precinct 1 (Existing)	38,772 sqm
Precinct 1	2,998 sqm
Precinct 2(Excluding Meazzanines)	160,267 sqm
Precinct 3(Excluding Meazzanines)	100,733 sqm
Precinct 4	N/A
Precinct 5	N/A
Other	15,201 sqm
Total GLA	317,971 sqm
Remaining GLA	279,199 sqm
(Excluding Precinct 1 Existing GLA 38,772 sqm)	



Legend

Site Boundary

Lot Boundary



Precinct Area Schedule	
Precinct 1 (Existing)	108,112 sqm
Precinct 1	7,883 sqm
Precinct 2	305,116 sqm
Precinct 3	204,768 sqm
(Excluding Basin on Lot 3A : 5,051 sqm)	
Precinct 4	N/A
Precinct 5	N/A
Total Developable Area	625,879 sqm



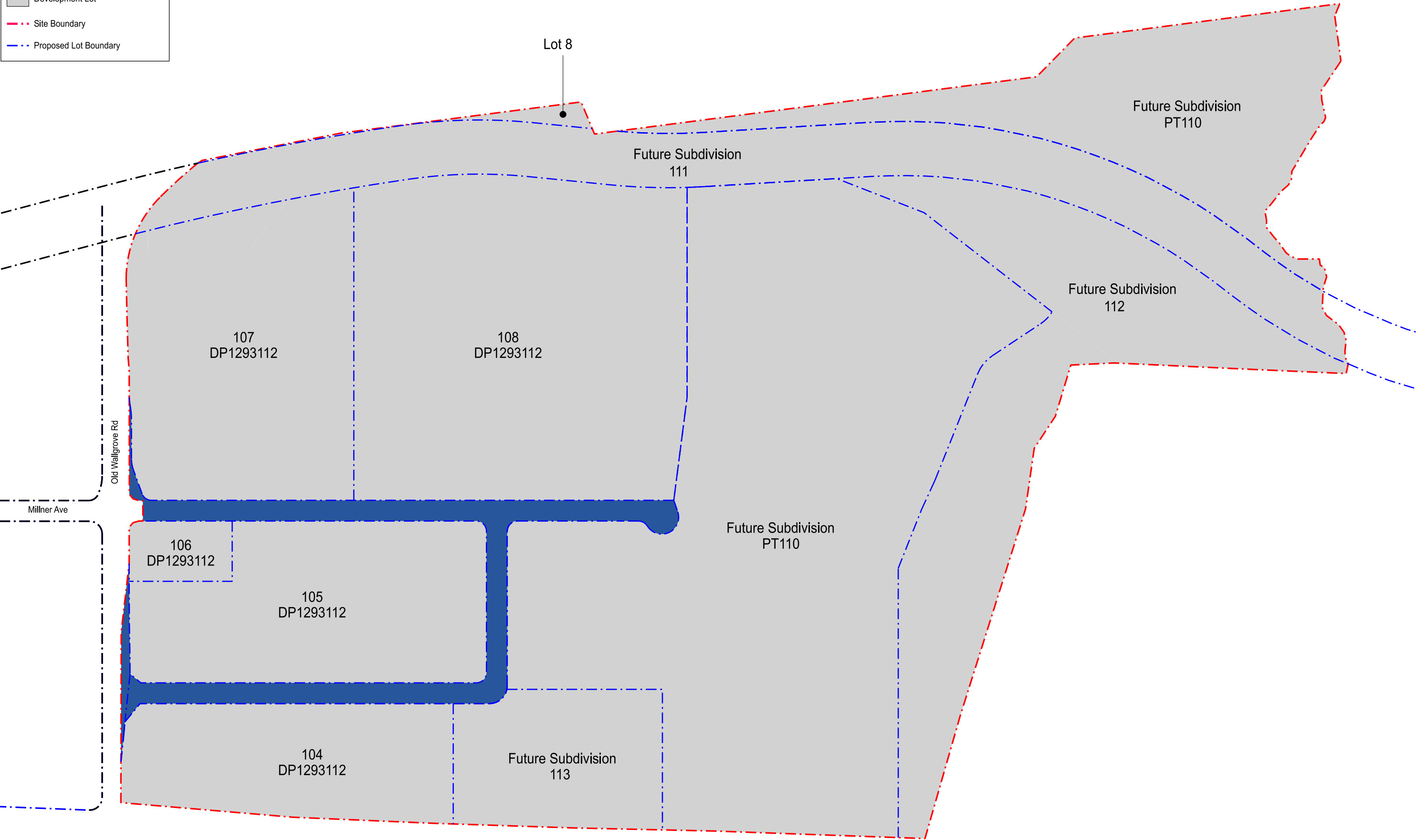
Legend

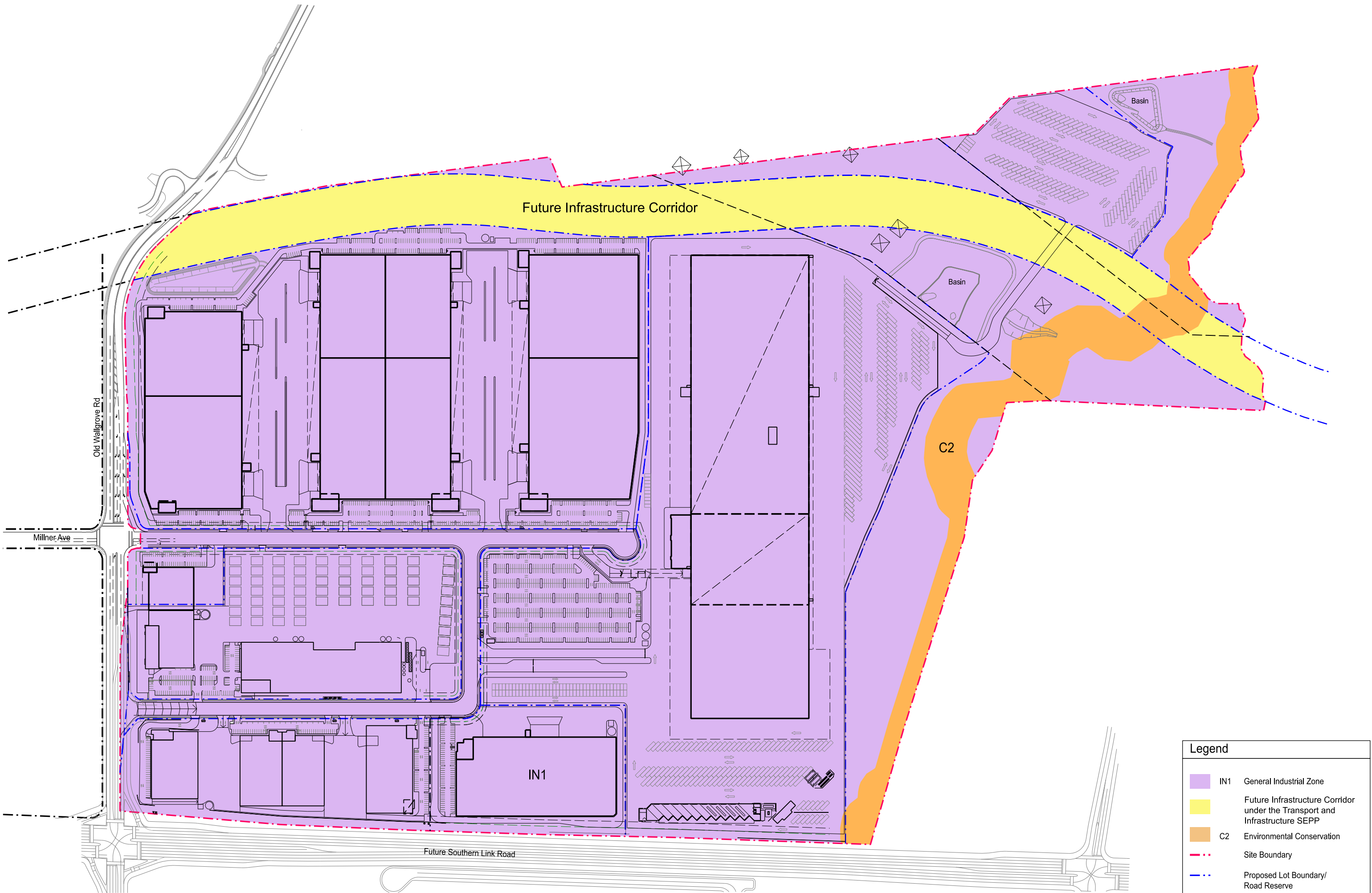
Estate Road

Development Lot

Site Boundary

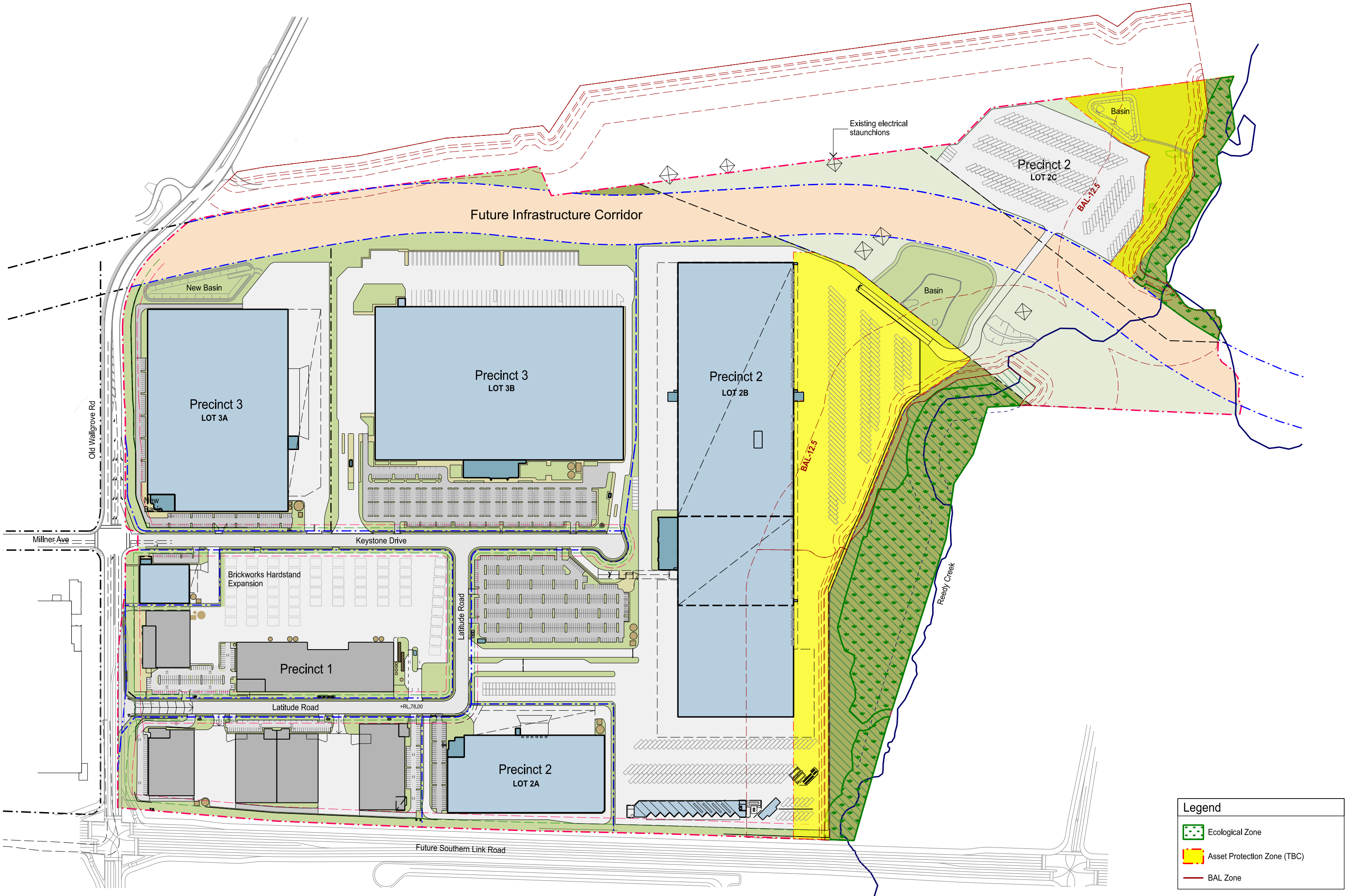
Proposed Lot Boundary



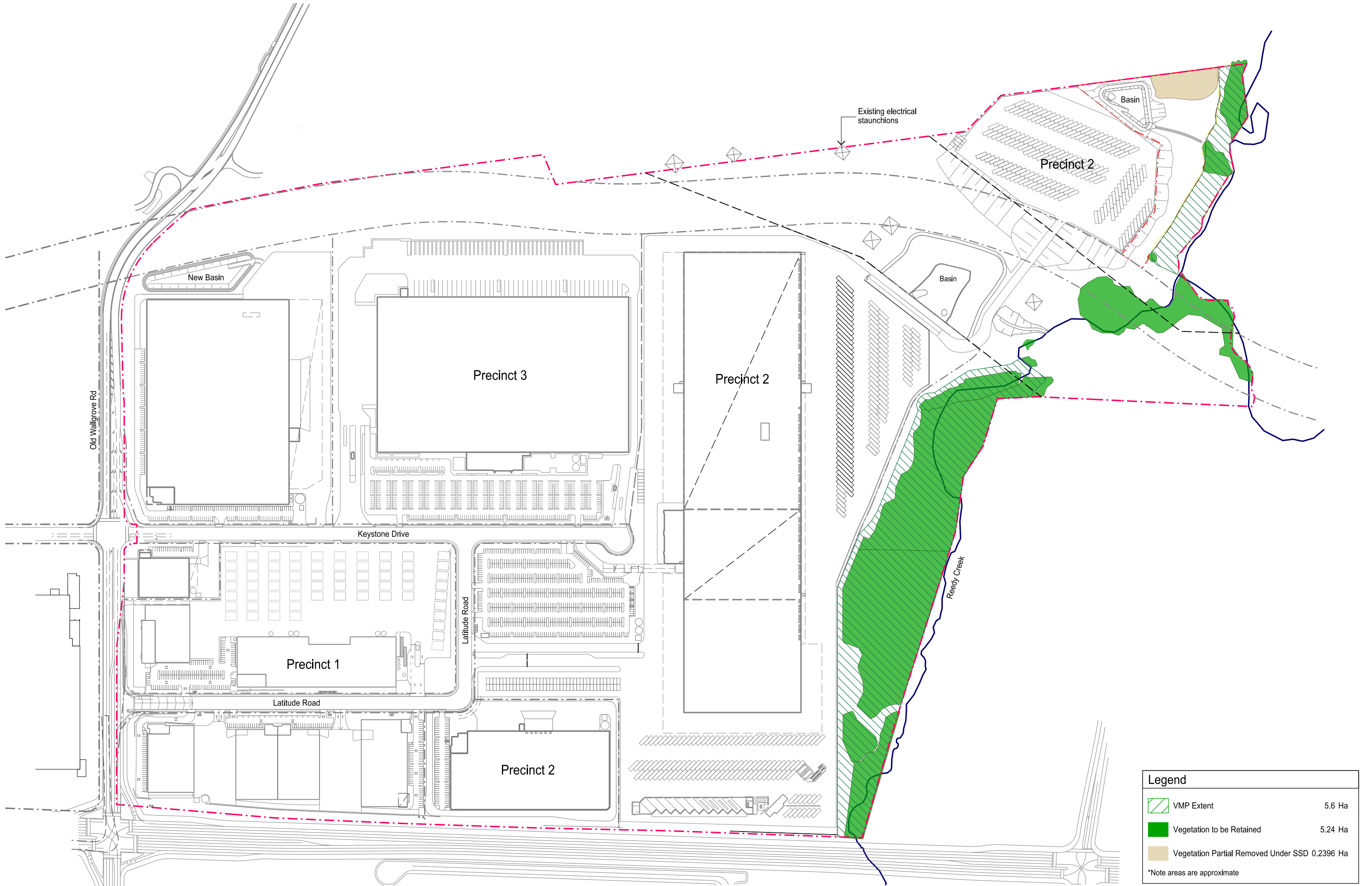


Legend

IN1	General Industrial Zone
	Future Infrastructure Corridor under the Transport and Infrastructure SEPP
C2	Environmental Conservation
---	Site Boundary
---	Proposed Lot Boundary/ Road Reserve



Legend	
	Ecological Zone
	Asset Protection Zone (TBC)
	BAL Zone



Legend		
	VMP Extent	5.6 Ha
	Vegetation to be Retained	5.24 Ha
	Vegetation Partial Removed Under SSD	0.2396 Ha
*Note areas are approximate		



Appendix E Fill Management Plan

Oakdale East Industrial Estate (OEIE) – Horsley Park, NSW

Goodman Property Services (Aust) Pty Ltd
Fill Management Plan

71973 | 175,833 (Rev 1)

2 July 2026





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

We pay our respect to Elders past, present and emerging and in the spirit of reconciliation we commit to working together for our shared future where every person is respected, valued and has strong sense of belonging.

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

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Abbreviations

Term	Definition
AQ	Asbestos Quantification
ASS	Acid Sulfate Soils
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CLM Act	Contaminated Land Management Act 1997
CoC	Conditions of consent
COPC	Contaminant of Potential Concern
CRS	Chromium Reducible Sulfur
DA	Development Application
ENM	Excavated Natural Material
EPA	Environment Protection Authority
EPL	Environmental Protection License
FA/AF	Fibrous Asbestos/Asbestos Fines
FMP	Fill Management Plan
Goodman	Goodman Property Services (Aust) Pty Ltd
ha	Hectare
HIL	Health Investigation Level
HSL	Health Screening Level
JBS&G	JBS&G Pty Ltd
MTP	Material Tracking Plan
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection (Assessment of Site Contamination) Measure
OCPs	Organochlorine Pesticides
OEIE	Oakdale East Industrial Estate
PAHs	Polyaromatic Hydrocarbons
PASS	Potential Acid Sulfate Soils
PC	Principal Contractor
PCBs	Polychlorinated Biphenyls
PFAS	Per and Polyfluoroalkyl substances
POEO Act	Protection of the Environment Operations Act 1997
PPE	Personal Protective Equipment
RAP	Remedial Action Plan
RMP	Rehabilitation Management Plan
RRO/RRE	Resource Recovery Order / Resource Recovery Exemption
SAS	Site Audit Statement
SEPP R&H 2021	State Environmental Planning Policy (Resilience and Hazards) 2021
SMF	Stockpile Management Framework
SPOCAS	Suspension Peroxide Oxidation Combined Acidity and Sulfur

Term	Definition
SSDA	State Significant Development Application
TPH/TRH	Total Petroleum Hydrocarbons/Total Recoverable Hydrocarbons
UCL	Upper Confidence Limit
UFP	Unexpected Finds Protocol
VENM	Virgin Excavated Natural Material
VOCs	Volatile Organic Compounds
WA DoH	Western Australia Department of Health
WHS	Work, Health and Safety

1. Introduction

1.1 Background

JBS&G Australia Pty Ltd (JBS&G) was engaged by Goodman Property Services (Aust) Pty Ltd (Goodman, the client) to prepare a Fill Management Plan (FMP) to support the redevelopment of a portion of the property located at the Oakdale East Industrial Estate at Horsley Park, NSW (the OEIE site). The site location and layout are shown on **Figure 1** and **2** respectively.

The portion of the OEIE site that is subject to this FMP comprises a 42.7 hectare (Ha) parcel of land, formally identified as part of Lot 109 in DP 1293112 (the Silverback site). The southern portion of the Silverback site currently comprises an operating bulk earthworks site where works are progressing under an approved development application (DA) for OEIE Stages 2-4 rehabilitation works (DA 347.1/2021). The northern portion of the Silverback site (also known as Stage 5, OEIE) comprises a separate bulk earthworks site undergoing quarry remediation works under a rehabilitation management plan (RMP, RW Corkery&Co 2024) based on requirements under the current Austral Brickworks mining lease (M(MO)L7). The northern and southern portions of the Silverback site are separated by a portion of the OEIE site proposed as a future infrastructure corridor known as Proposed Lot 111 DP 1293112.

It is understood that the client proposes to modify the current OEIE Stages 2-4 and Stage 5 redevelopment strategy via a new State Significant Development Application (SSDA) for the Silverback site. Based on communications with the client, the site is proposed to be developed for a revised commercial/industrial scheme. This FMP is required as an appendix to the Remedial Action Plan (RAP) for the site to support the proposed SSDA.

The FMP supersedes the current framework for the site in relation to fill management, including the Stockpile Management Framework (SMF, JBS&G 2022¹), Remedial Action Plan under the rehabilitation DA (DA 347.1/202) (RAP, JBS&G 2023a²) and Imported Fill Protocol (IFP, JBS&G 2023b³). In development of this FMP, JBS&G has taken into consideration ongoing site fill management practices, such that this document remains a practical and site-specific management plan, while also applicable to the proposed SSDA requirements.

The FMP details the requirements for assessment and characterisation of:

- Fill and excavated natural materials (ENM) currently located on site as associated with former brickmaking activities to confirm their suitability for re-use as part of rehabilitation works, from a contamination perspective;
- Materials proposed to be imported to the site for use as engineered fill as part of quarry rehabilitation and SSDA works;

¹ *Stockpile Management Framework, Austral Bricks Plant 23 Quarry, 10 Old Wallgrove Road, Horsley Park, NSW 2175.* 5 July 2022. JBS&G Australia Pty Ltd. Ref: 60530-142726, Rev 1. (JBS&G 2022)

² *Remedial Action Plan, Austral Bricks Plant 23 and Quarry, 10 Old Wallgrove Road, Horsley Park, NSW 2175.* 1 May 2023. JBS&G Australia Pty Ltd. Ref: 60530-139263, Rev 3 (JBS&G 2023a)

³ *Imported Fill Protocol, Oakdale East Stages 2, 3 and 4, 10 Old Wallgrove Road, Horsley Park, NSW.* 19 June 2023. JBS&G Australia Pty Ltd. Ref: 60530/152550, Rev A. (JBS&G 2023b)

1.2 Objectives of the FMP

The objectives of the FMP are to identify and document:

- Details of the site and potential materials to which this protocol will apply;
- Parties responsible for implementation of the nominated protocols, safeguards and monitoring during works activities;
- Aspects of environmental legislation and project site approvals relevant to the importation and on-site management of fill;
- Requirements as are appropriate for the management of imported and site-won uncontrolled fill material such that the material may be demonstrated as environmentally suitable for placement to the satisfaction of an independent site auditor(s) or alternatively to demonstrate material has been lawfully removed from the site;
- Requirements for assessing, recording, handling and managing contamination on site, where identified as either an unexpected find and/or as may be known to be present as documented in the site Remedial Action Plan (RAP); and
- Environmental safeguards required to be implemented by the Contractor during works in order to reduce the impacts to the environment, site worker and/or the surrounding neighbours to the extent practicable.

1.3 Regulatory Compliance

Within the site, all excavated material will be managed under the requirements of the contaminated land management guidance framework as per the *Contaminated Land Management Act 1997* (CLM Act).

All materials imported to the site must firstly be identified as able to lawfully be imported and also be appropriately characterised with required evidence to demonstrate the material does not represent an unacceptable contamination risk (to human health and/or the environment) in relation to the proposed future use of the material in the proposed placement location.

Appropriate characterisation of all materials to be disposed off-site (including for beneficial reuse) is required in accordance with the *Protection of the Environment Operation (Waste) Regulation 2014*.

The FMP has been developed to address future anticipated SSD conditions of consent (CoC) as will apply to the SSDA. All works must consider relevant regulatory guidelines and legislation as outlined in **Section 2**.

2. Regulatory Requirements

Relevant regulatory requirements which are applicable to the scope of works outlined in this FMP are detailed below. Works completed in accordance with the FMP will be completed with reference to the following guidelines and legislation:

- *State Environmental Planning Policy (Resilience and Hazards) 2021* (SEPP R&H 2021) under the *Environmental Planning and Assessment Act 1979*;
- *Protection of the Environment Operations Act 1997* (POEO Act);
- *Contaminated Land Management Act 1997* (CLM Act);
- *Protection of the Environment Operations (Waste) Regulation 2014* (EPA 2014a);
- *Managing Land Contamination, Planning Guidelines, SEPP 55 – Remediation of Land*. Department of Urban Affairs and Planning and NSW Environment Protection Authority (DUAP 1998);
- *Waste Classification Guidelines Part 1: Classifying waste 2014* NSW EPA (EPA 2014b)
- *Addendum to the Waste Classification Guidelines (2014) – Part 1: classifying waste*. NSW EPA October 2016 (EPA 2016)
- *Consultants Reporting on Contaminated Land Contaminated Land Guidelines*, NSW Environment Protection Authority, EPA, April 2020, updated 5 May 2020 (EPA 2020);
- *Guidelines for the Assessment Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. Western Australia Department of Health (DoH), May 2009 (WA DoH 2009);
- *Sampling Design Part 1 – Application, 2022*, NSW EPA and *Sampling Design Part 2 – Interpretation, 2022*, NSW EPA, together EPA (2022);
- *Contaminated Land Management Guidelines for the NSW Site Auditor Scheme (3rd edition)*, EPA, October 2017 (EPA 2017);
- *National Environment Protection (Assessment of Site Contamination) Measure, 1999* (as amended 2013), National Environment Protection Council (NEPC 2013); and
- *Work Health and Safety Act 2011* and *Work Health and Safety Regulation 2025* and associated Safe Work Australia guidance specific to asbestos.

3. Implementation

3.1 Overview and Period of Implementation

This FMP will apply upon commencement of the new SSDA and shall be in effect for the duration of development works within the site during ground disturbance phases. In general, the FMP will cease to apply at such time as the final validation report(s) and associated SAS is issued for the site, associated with completion of the inground works.

It is further noted that the responsibilities for site management as nominated in this FMP are identified only with regard to the management of in-situ and excavated/stockpiled material and do not apply to normal construction/development site operations that may be the subject of separate management requirements (as may be covered by SSDA CoCs).

The estimated volume of materials proposed to be imported to the site during the SSDA bulk earthworks scope is approximately 550,000 m³.

3.1.1 FMP Review

The FMP should be reviewed periodically (as appropriate) by the project team (**Section 3.2**) in the context of the following scenarios (although not limited to those listed below):

- Change in scope of work;
- Change in consent conditions;
- Change in legislation;
- Following significant environmental incidents or non-compliances; and/or
- At the end of each phase of works (if deemed necessary).

The review should include an evaluation of environmental controls and procedures to ensure their efficacy.

3.2 Responsibilities

3.2.1 Site Owner

The Site Owner is ultimately responsible under the CLM Act for ensuring that site is suitable for the proposed use at the completion of development activities. The Site Owner is also responsible under the POEO Act (1997) and associated regulations for management of any waste transported to/from the premises.

The Site Owner will be responsible for providing the FMP as part of tender/contract documents for all packages where ground disturbance works will occur such that excavated material may be generated, or material placed at the site. It is expected that such activities will include remediation, bulk excavation/filling works, services installation, vegetation rehabilitation, etc.

It is anticipated that during implementation of the FMP, the Site Owner will be responsible for all community consultation and public information distribution to be undertaken prior/during the site works by the appointed project site Principal Contractor (PC).

3.2.2 Superintendent/Site Manager

The Superintendent will be responsible for coordinating the Principal Contractor and any relevant subcontractors including the Environmental Consultant and Geotechnical Consultant to enable issue of formal contractual instructions to the Principal Contractor and/or its subcontractors.

The materials tracking documentation supplied by the Principal Contractor must be checked by the Superintendent to confirm that it meets the FMP requirements.

The Superintendent (and/or Principal Contractor) will also be responsible for notifying the Site Owner and Site Auditor in consultation with the Environmental Consultant without delay of non-conformances with the FMP and ensuring non-conformance corrective actions are carried out. This may also include actions to notify the consent authority/ies under relevant law/regulation and or specific CoCs as may be included in the project approval/future EPL.

3.2.3 Principal Contractor (PC)

The PC for the site will be responsible for implementation of the overall management of on-site procedures and protocols as defined in the FMP documentation, resulting in compliance with the project designs and specifications.

Further, the PC will be required to ensure:

- All site project staff have received an appropriate induction and associated training with regard to their individual roles in with respect to implementation of this plan;
- All personnel are competent in performing allotted tasks;
- On a daily basis via pre-start toolbox talks or similar, that all site workers are aware of any areas/materials of concern that have been identified, quarantined/isolated, undergoing treatment/remediation, and associated procedures with such activities;
- Clear lines of communication exist between itself, the Superintendent and all other relevant parties in the supply, receipt and/or disposal of excavated materials as required to meet the project objectives;
- That only approved materials are imported to/transported from the site. Ensure that appropriate documentation has been received from relevant sub-consultants prior to importation/ disposal, inclusive of maintaining all material characterisation and/or movement records related to implementation of the FMP;
- Fulfil the role of the Material Tracking Plan (MTP) co-ordinator, or else engage a suitably qualified and experienced subcontractor to complete this role, and ensure the subsequent provision of such documents to the MTP co-ordinator as required to facilitate management/movement of material in accordance with the project objectives;
- Assistance with the investigation and documentation of areas/materials of concern as may be encountered during works;
- Appropriate timely isolation of identified areas/materials of concern until such time as the relevant Consultant can complete further assessment of the area/materials of concern and provide instruction on its management;
- Where areas/materials of concern are identified and isolated, only authorised people enter the area, that they are provided with appropriate Personal Protective Equipment (PPE) and there are appropriate decontamination facilities available;
- Implementation (where appropriate) of remedial actions as instructed by the Superintendent/Consultant in relation to management, treatment and/or removal of areas/materials of concern;
- Maintenance of documentation and material tracking/disposal records as relevant to facilitate and document the movement and placement of material in accordance with project objectives; and
- Recommend any modifications to documentation and/or procedures that would further improve environmental outcomes without compromising the standard of works required to achieve project objectives, regulatory obligations and/or the ability to document the nature of material placed during the project.

- Inform the Superintendent and relevant regulatory authorities (as appropriate) of any non-conformances with the procedures and requirements of the FMP in accordance with the procedures outlined in this document and NSW regulations; and
- Retain records of any contingency actions.

3.2.4 Subcontractor(s)

Where required to meet project requirements, the PC or Superintendent may engage appropriately qualified and experienced sub-contractors to complete project activities. All subcontractors engaged by the Superintendent or PC will be required to operate in accordance with the requirements of the FMP and will sign their agreement to abide by the requirements and responsibilities of this FMP as informed by the Superintendent/PC.

Subcontractors should undertake no ground disturbance works until they have been satisfactorily briefed by the Superintendent/PC with respect to the operation of the FMP to ensure materials disturbed during site activities are appropriately managed and documentation of such activities is appropriately completed.

All subcontractors will be responsible for ensuring they are competent to perform their role in the works to the standard necessary to facilitate implementation of this FMP and to report any situation or potential situation that may arise that is inconsistent with the objectives of this FMP.

3.2.5 Environmental Consultant

In relation to the FMP, the Environmental Consultant will be responsible for:

- Undertaking assessment, monitoring and surveillance as may be required by this FMP to evaluate the effectiveness of environmental controls implemented during works;
- Undertake source site inspections and review of imported materials as required under the FMP;
- Providing sound environmental advice and recommendations arising from assessment, monitoring and/or inspections completed in compliance with the FMP to the Superintendent;
- Ensuring a waste classification as per NSW EPA (2014⁴) is provided for any material requiring off-site disposal (i.e. material that must be disposed of from the site to a facility lawfully able to accept the waste), or alternatively provide one or more of a VENM certificate or resource recovery order compliance statement to support the off-site removal of material suitable for beneficial reuse that is identified as excess to site requirements;
- Verifying on-site re-use of materials and maintaining the required assessment/quality documentation for the inclusion in the final site validation reports as appropriate to each development lot/stage; and
- Notifying the Superintendent in a timely manner should conditions indicate a potential non-conformance with respect to the requirements of the FMP and for providing subsequent assistance to the Superintendent with regard to rectification/contingency actions associated with non-compliances to ensure that upon completion of the project, a validation report may be issued.

3.2.6 Geotechnical Consultant

In relation to the FMP, the Geotechnical Consultant will be responsible for:

- Completing Level 1 geotechnical supervision;

⁴ *Waste Classification Guidelines Part 1: Classifying Waste*, NSW EPA 2014 (NSW EPA 2014)

- Specify and design the compaction works and monitor all processes affecting the compaction of filling placed on site, including testing to ensure the finished filling volume satisfies the final development requirements;
- Specify and monitor technical specifications for filling; and
- Notifying the Superintendent in a timely manner should conditions indicate a non-conformance with respect to the requirements of the FMP and other geotechnical advice, and for providing subsequent assistance to the Superintendent with regard to rectification/contingency actions associated with non-compliances to ensure that upon completion of the project, a geotechnical report may be issued.

3.2.7 All Site Workers

In addition to its WHS obligations, to ensure the successful implementation of this plan, it is required that all site workers in relevant roles undertake specific job training with regard to implementation of this SMF. For all site works, site specific contamination awareness training to be delivered as part of the induction will include:

- Discussion of the potential for materials as identified in **Section 5** of the RAP (JBS&G 2026⁵) to occur within the fill material;
- Direction to immediately communicate identification of finds to ensure material is not spread/mixed further;
- An overview of the procedures, including isolation of the area/material until an assessment may be completed by suitably trained staff, and preparation of management advice for implementation such that the material may be permanently separated; and
- Brief mention of the potential requirements for additional health and safety or environmental management measures during handling of such materials dependent upon the type of contamination identified within the material.

In instances where areas/material of concern have been identified and isolated, or are at the time, undergoing treatment/removal, etc, toolbox talks will be undertaken to inform staff of special arrangements and additional procedures, presenting information on the environmental and WHS aspects of the management actions. Where required, specific training will be provided to the relevant personnel on hazards associated with specific tasks and the controls to be implemented to minimise environmental harm.

⁵ Remedial Action Plan – Project Silverback Oakdale East Industrial Estate (OEIE) – 10 Old Wallgrove Road, Horsley Park NSW. JBS&G Pty Ltd. 14 May 2026. 60530/175646 Rev 2 (JBS&G 2026)

4. Importation Requirements

4.1 Overview of Regulatory Requirements

The permissibility of importation of material to the site is regulated by the POEO Act and associated Regulations in addition to any SSD CoC. The following regulatory instruments/guidelines applying to imported materials were considered in preparation of the importation requirements for the site:

- *Protection of the Environment Operations (Waste) Regulation 2014* and relevant associated resource recovery order and exemptions (RRO/RRE);
- *National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council, 1999, as amended 2013 (NEPC 2013);
- *Contaminated Land Management Guidelines for the NSW Site Auditor Scheme*, 3rd edition (NSW EPA 2017);
- *Sampling Design Part 1 – Application. Contaminated Land Guidelines*. August 2022 NSW Environment Protection Authority (EPA 2022); and
- Consent conditions as relevant to the site, noting that this FMP may require revision upon approval of the SSD.

4.2 Approved Imported Fill Material Types

Imported material will only be accepted to the site if it:

- Meets the definition of Virgin Excavated Natural Material (VENM) as defined in relevant legislation (**Section 4.2.1**); or
- Meet the definition of Excavated Natural Material (ENM) as defined in *The Excavated Natural Material Order 2014* (ENM Order) or Site-Specific ENM Order (NSW EPA 2025⁶) (**Section 4.2.2**); or
- Materials are compliant with a NSW EPA Resource Recovery Order (RRO) / Resource Recovery Exemption (RRE) (**Section 4.2.3**); or
- Are fresh quarried products from a commercial quarry (**Section 4.2.4**); and
- Appropriate documentation verifying the relevant classification is provided to and approved by the Environmental Consultant prior to importation (**Section 4.3.5**).

It is understood that the SSD determination may detail site-specific fill importation requirements/conditions whereby some of the below fill types may not be suitable for importation to the redevelopment for future use. Should the conditions detail that one or a number of the below imported fill types are not suitable, this report will be updated accordingly prior to commencement of works.

4.2.1 Virgin Excavated Natural Material (VENM)

The *Protection of the Environment Operations Act 1997* (Schedule 1) defines VENM as:

‘Natural material (such as clay, gravel, sand, soil or rock fines):

⁶

- *That has been excavated or quarried from areas that are not contaminated with manufactured chemicals or process residues, as a result of industrial, commercial, mining or agricultural activities; and*
- *That does not contain any sulfidic ores or soils or any other wastes.'*

Material proposed to be imported to the site as VENM must meet this definition, consistent with the documentation requirements as outlined in EPA (2017). It is noted that as per current EPA advice, material produced by a commercial quarry operation does not require to be assessed as VENM (refer to **Section 4.2.4** below).

4.2.2 Excavated Natural Material (ENM)

ENM is defined under the *Resource Recovery Order under Part 9, Clauses 91, 92 and 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – The excavated natural material order 2014* (or as may be varied by the EPA) as:

'Naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has:

- *Been excavated from the ground, and*
- *Contains at least 98 % (by weight) natural material, and*
- *Does not meet the definition of Virgin Excavated Natural Material in the Act.*

Excavated natural material does not include material located in a hotspot; that has been processed; or that contains asbestos, Acid Sulfate Soils (ASS), Potential Acid Sulfate soils (PASS) or sulfidic ores.'

Further, in order to consider material as ENM, the material must also have been assessed as free of asbestos containing material, such that the requirements of the POEO Act/POEO Regulations in relation to management/disposal of asbestos containing material do not apply.

4.2.3 Other Resource Recovery Exemptions

Material proposed to be imported under all other Resource Recovery Orders must be demonstrated as compliant with the definition presented in the relevant NSW EPA issued Order and a compliance statement provided as per the terms of the Order, whether comprising a general Order published on the NSW EPA website, or issued to a specific premises by the EPA and provided by the Supplier.

Examples of current general NSW EPA RRO/RRE classes comprise those listed on the NSW EPA website (EPA 2023⁷) in addition to generator specific RRO/RREs as may be obtained from the NSW EPA by discrete suppliers.

4.2.4 Commercially Quarried Products

All commercially quarried products must be confirmed by the supplier as material that has been quarried from a commercial rock/soil quarry operation prior to importation and not mixed or otherwise processed with recycled/recovered resource materials.

⁷ <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/resource-recovery-framework/current-orders-and-exemption>

4.3 Imported Material Requirements

As detailed below, appropriate documentation verifying the relevant classification of all materials must be completed and provided by the PC to the Superintendent, Environmental Consultant and Geotechnical Consultant (where relevant) for approval prior to authorisation for importation of the materials to the site. Alternatively, the Environmental Consultant may be directed by the Superintendent to complete an appropriate source site assessment as relevant to achieve the FMP objectives prior to final authorisation for importation of the material. It is anticipated that a separate process of approval by the Geotechnical Consultant will require to be completed prior to final approval by the Superintendent to accept the material.

4.3.1 VENM Assessment

Assessment of VENM materials must consider the requirements of NEPC (2013) and EPA (2017⁸) and incorporate a review of the source site history and inspection of materials prior to, as well as during, importation onto the site. A NSW VENM Certificate must also be provided by the supplier to the Environmental Consultant for approval prior to importation of any VENM.

The VENM assessment completed by the Environmental Consultant will consist of the following, prior to import:

- Review of the supplier provided NSW EPA VENM Certificate by the Environmental Consultant in conjunction with details relating to the source site history, environmental setting, generation history and the potential for impact from activities at the source site and surrounds;
- If sampling and analysis of the material has been undertaken by the supplier or its appointed consultant, the Environmental Consultant will review the analytical data (including the sampling strategy and data quality) to assess if the results are consistent with the material being classifiable as VENM and that the material meets the land use criteria (**Section 6**) for import and use on the site:
 - The review will evaluate whether the sampling completed addresses any identified potential sources of contamination and associated COPC;
 - If identified as being required, the Environmental Consultant may conduct additional check sampling to address any gaps in information provided;
 - Any additional sampling requirements should be commensurate with a risk-based approach following review of the source site and the potential for contamination as a result of identified historical/current on and/or off-site activities;
 - The rate of any additional check sampling will be conducted with consideration to EPA (2022) guidance inclusive of relevant statistical procedures, and should consider the overall quantum of material proposed for import; and
 - Sample analytical results must not be detectable at levels above laboratory limits of reporting⁹, with the exception of heavy metals.

Consistent with the POEO Act, VENM may be defined on the basis of a qualitative assessment. As such, should the Environmental Consultant consider the pre-import documentation to be sufficient to conclude the material meets the definition of VENM and that the source site poses a low potential risk of contamination, the material may be approved for import without the requirement for further analytical assessment. Additional qualitative assessment of the material to ensure the imported remains consistent with that outlined in pre-importation documentation will be required during importation (**Section 4.3.10**).

⁸ Contaminated Land Management Guidelines for the NSW Site Auditor Scheme (3rd edition), EPA, October 2017 (EPA 2017)

⁹ Detections that are shown to be from natural sources and not anthropogenic contamination can be considered VENM.

If the site history review identifies the potential for an increased risk of contamination and/or potential variability in the material quality from a source site (i.e., different material types and/or material generated from above and below the water table), additional check sampling including laboratory analysis for relevant COPC may be required to ensure the Environmental Consultant can verify the ongoing suitability of material from the source site as excavation works progress. The requirement for and rate of any additional check sampling will be evaluated by the Environmental Consultant on site-by-site basis. The Site Auditor may be consulted to confirm the verification strategy for any sites which may pose a moderate to high risk of variability, as identified by the Environmental Consultant.

The pre-approval review will also include evaluation of provided documentation to ensure proposed material does not contain acid sulfate soils (ASS) or potential acid sulfate soils (PASS), with reference to the ASSMAC (1998) *Acid Sulfate Soil Manual* and additional sample analysis by SPOCAS method, if required (i.e. where pH of material is less than 5 and/or review of applicable ASS Risk Maps indicates the potential presence of ASS, as per the ENM Order 2014).

4.3.2 ENM Assessment

The requirements of ENM assessment are prescribed in *The Excavated Natural Material Order 2014* and associated ENM Exemption 2014, or as updated. It is the obligation of the Supplier to provide all documentation required under the Order inclusive of a Written Statement of Compliance to demonstrate the material comprises ENM. This statement is required to include an ENM Assessment Report prepared by a suitably qualified Environmental Consultant (which must include an assessment of the environmental setting and potential for historical contaminating activities at and surrounding the source site, summary data tables, sampling plan, figures showing source site location and sampling locations, and laboratory reports from a NATA accredited laboratory).

In addition to the Supplier provided Statement of Compliance and to ensure the material is demonstrated as suitable for use at the site following importation, discrete samples must be collected and analysed for asbestos (500ml sample as per NEPC 2013) confirming the absence of asbestos in the material (as ACM and/or fibrous asbestos/asbestos fines (FA/AF)).

The ENM assessment data must meet all applicable land use criteria including those regarding aesthetics in addition to being defined as ENM.

4.3.3 Other Resource Recovery Products

Sampling of materials as per an EPA RRO is required to be undertaken by the Supplier in accordance with the relevant RRO/RRE. In addition, where materials are proposed for beneficial reuse under a NSW EPA exemption (i.e. imported to the site), fill material will need to be further assessed by the Environmental Consultant for land use suitability. This will include collection of a minimum of three samples per material type/source per import regime and analysis for heavy metals, TRH/BTEX, PAHs, OCPs/PCBs, and asbestos (500mL) prior to import to confirm the material meets the land use suitability criteria outlined in **Section 6** and in the RAP (JBS&G 2026). Further check sampling during import will, where appropriate, ensure ongoing suitability and consistency of material character over the import period (**Section 4.3.10**).

4.3.4 Quarried Products/Materials

Quarried Materials to be imported to the site requires confirmation that the material is commercially quarried sand/rock (VENM) prior to approval to import. A source site inspection and visual confirmation of material upon receipt are to be documented by an Environmental Consultant.

Where there is uncertainty as to whether the material has potentially been impacted via source site activities, inclusive of processing nearby to and/or blending with material imported to the source site, further assessment, including possible sampling and laboratory analyses may be required, dependent upon observations during inspection of the source site and nature of the material.

4.3.5 Supporting Documentation

All materials proposed to be imported to site must be accompanied by appropriate supporting documentation which demonstrates the materials conformance to all regulatory requirements.

The supporting documentation must be provided to the Environmental Consultant at the earliest practical date. The Consultant will review the supporting documentation and advise whether the material and documentation satisfy all regulatory requirements and is suitable for importation and use at the site.

As a minimum, importation documentation will be required to include:

- Location of the source site;
- Source site history and potentially contaminating activities;
- Material description/observations and volume imported;
- Sampling density, pattern and methodology;
- Summary of analytical results (including analysis by NATA accredited laboratories); and
- Material Classification.

4.3.6 Source Site Material Inspections

Each source site of imported material must be inspected by the Environmental Consultant prior to import (if possible). Should a source site inspection be unable to be completed for a site where required supplied information is complete, the Environmental Consultant must complete a detailed review of available aerial imagery of the source site to evaluate the potential occurrence of any 'red flag' conditions (risk of historical site features, observations of material processing and/or spills etc as may be apparent) prior to inspection of the first load delivered to the site at the gate to confirm consistency with that outlined in provided documentation.

4.3.7 Non-Conformances Prior to Import

In the event materials do not meet the definition of VENM, ENM or another RRO/RRE and/or appropriate assessment documentation is not available and/or an inspection of the materials indicate they are inconsistent with provided documentation, the materials will not be approved for importation to the site. Provision of additional information and/or removal of material from the source site (to waste facilities and/or other sites) may enable a second/subsequent re-evaluation of a site, as consistent with the above process.

4.3.8 Approval Prior to Importation

The Environmental Consultant is required to provide written correspondence to the Superintendent and PC approving each material type for importation to the site prior to the commencement of importation. These documents will form part of the validation of the site.

4.3.9 Transport Requirements

The supplier/importer/transporter of fill will be responsible for ensuring appropriate transport of approved fill directly from the source site to the site and, where fill is deemed unsatisfactory upon arrival and is to be returned to the source site or disposed lawfully. This includes ensuring the receiving site is accepting fill at the time.

4.3.10 Imported Materials On-Site Inspections and Check Sampling

Imported materials from each discrete source will require to be inspected by the Environmental Consultant on a weekly basis during each importation event. The inspection will be documented inclusive of photographic evidence that the material delivered to site remains consistent with that outlined in pre-

approval documentation provided. For materials imported under a relevant RRO/RRE, the supplier must continue to provide the most recent sampling / analysis results conducted to ensure compliance with the RRO/RRE.

If deemed to be required, following a risk-based evaluation of the source site and the potential for variation in material which may be imported from a single source site, check sampling including analysis for relevant COPC may be required. The need for additional or ongoing check sampling will be evaluated by the Environmental Consultant on a site-by-site basis, with consultation with the Site Auditor on the proposed approach as appropriate. Generally, recycled materials are considered to pose a greater potential risk of variability and potential contamination.

The weekly inspections and any additional check sampling (if required) will ensure the materials are consistent with the provided documentation, source site inspection and initial characterisation data. If deemed to be required by the Environmental Consultant, additional source site inspections during the import event may be required, particularly with reference to those sites whereby there are several material types and/or the groundwater table may be intercepted during excavation works.

Minimum recommended check sampling rates per material type are:

- 1 check sample per 10,000 cubic metres for non-recycled products (e.g. ENM and RRO Tunnel spoil sandstone); and
- 1 check sample per month for recycled products.

Samples should be analysed in accordance with the COPCs relevant to the source site and material type (i.e. VENM, ENM, or RRO/RRE requirements plus asbestos).

4.3.11 Reporting

A consolidated summary letter outlining compliance with the above requirements will be completed for each import site to enable Superintendent approval of a source site.

4.3.12 Material Tracking

All imported materials will be subject to material tracking requirements as described in the RAP and **Section 5**.

5. Assessment of Existing Site Materials

Due to the limitations in accessing some materials as part of previous investigations, and noting the potential for additional contamination that has not been identified as present, the following assessment protocols have been established to confirm the suitability of site soils in accordance with NEPM (2013), considering the proposed commercial/industrial land use (HIL-D and HSL-D) scenario. The Environmental Consultant must confirm the suitability of all site-won fill materials prior to reuse in accordance with the procedures below.

5.1 In-Situ Sampling Procedures

For materials requiring assessment prior to relocation within the site, the following procedures are proposed to be adopted, based on what is most practical during site assessment.

5.1.1 Test Pits

Test pit sampling is proposed to be conducted across the unassessed portions of the redevelopment site immediately prior to commencement of bulk earthworks (i.e. when access is available given the limited reach of on-site plant). A 20 m sampling grid will be adopted and test pits advanced to the full reach of the available excavator (usually 8 m) or to 0.5 m beyond the depth of natural material, whichever is shallower. The test pit program will be repeated in 'slices' (based on test pit depth limitations) until natural materials are reached across the entirety of the assessment area.

Asbestos field quantifications (AQs) will be carried out as described in **Section 5.1.4**, with the adoption of 50 L of soil in place of 10 L soil based on the larger volume of spoil generated from test pits compared to boreholes. Chemical samples will also be collected at the frequency specified in **Table 5.1** below.

5.1.2 Boreholes

Where boreholes are proposed to be advanced across the unassessed portions of the site as an initial assessment, the adopted sampling grid will be based on the intended material characterisation and use:

- In areas where material is being assessed for classification as suitable for reuse across the redevelopment, a systematic sampling grid of 20 m will be adopted in accordance with **Table 5.1** below; and
- In areas where material is being assessed for classification as ENM, a systematic grid meeting the minimum sampling grid spacing in accordance with the ENM order will be adopted using the nominated assessment area, unless the assessment area exceeds 6,000 m², in which case, the adopted sampling grid will be 20 m.

Boreholes will be advanced to a total depth of 0.5 m into natural materials or until prior refusal. If natural materials are not encountered before refusal, a data gap will remain at the relevant location and depths which will require additional sampling at depth for complete assessment.

The proposed drilling methodology consists of boreholes via solid flight auger or sonic rig with a minimum diameter of 150 mm in accordance with Table 6 of the *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (WA DoH 2009¹²). Discrete chemical and foreign material samples will be collected as outlined in **Table 5.1** below, or the ENM Order (2025).

Where boreholes are proposed, test pits must also be completed as per **Section 5.1.1** for field asbestos quantification only.

¹² *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. May 2009. Department of Health, Western Australia. (DoH WA 2009).

5.1.3 Inspection

Following borehole and test pits investigations, where material is identified as suitable for reuse, excavation of the material will be approved, during which the material will be inspected by JBS&G several times daily to ensure conditions remain consistent with the assessed materials during borehole and test pit investigations.

5.1.4 Asbestos Quantification (AQ) Sampling

It is proposed that at each borehole or test pit sampling location, material from the assessment profile (from each metre) will be collected and a soil volume of 10 L for boreholes and 50 L for test pits will be subsequently spread out on a contrasting-coloured tarp in the field to visually inspect and identify any asbestos containing material (ACM) fragments or visual fibrous asbestos (FA) as per the methodology defined in WA DoH (2009). Where identified, visible asbestos fragments will be collected by the field scientist and placed in a dedicated laboratory supplied polyethylene zip-lock sample bag labelled with the sampling location, depth increment, sampler's name and sampling date.

A representative 500 mL volume sample of material from each interval will then be collected and placed in a separate dedicated laboratory supplied polyethylene zip-lock sample bag and appropriately labelled. The soil samples will then be submitted under chain of custody to the testing laboratory for analysis to assess the presence and concentration of fibrous asbestos/asbestos fines (FA/AF) within soil, in accordance with WA DoH (2009).

Where observed, collected non-friable (bonded) ACM fragments and FA/AF will be collected from each sampling location/sample interval and weighed in-house by JBS&G personnel using an externally calibrated scale (1 g accuracy) with the mass of asbestos in each increment sample recorded.

The soil volume will be calculated based on a sample of approximately 10 L volume for boreholes, and 50 L volume for test pits. For soil density, reference was made to *User's Guide for Evaluating Subsurface Vapour Intrusion into Buildings*. US EPA Office of Emergency and Remedial Response (US EPA 2003) to derive a suitable average density based on the predominant soil type of each sample such that volumes may be calculated (e.g. 1.63 g/cm³ for silty clay).

Asbestos percentage will be calculated as per the formula below:

$$\%w/w \text{ asbestos in soil} = \% \text{ asbestos content} \times \frac{(\text{bonded ACM or FA})(\text{kg})}{\text{soil volume (L)} \times \text{soil density (kg/L)}}$$

For observed bonded ACM, an asbestos content of 15 % will be used, in accordance with enHealth (2005¹³).

Laboratory estimations of asbestos content in bonded ACM, FA and AF will be used for all analytical data calculations.

In addition to field AQs, during the collection of soil samples, features such as seepage, discolouration, staining, odours and other indicators of contamination will be noted, with additional samples collected for chemical analysis from each sampling location.

¹³ *Management of asbestos in the non-occupational environment*, enHealth, Department of Health and Ageing (enHealth 2005).

5.2 Sampling and Analysis Frequencies

The sampling and assessment methodologies as detailed in **Section 5.1** are proposed to be employed across the site as required for the assessment of fill material proposed to be re-used across the redevelopment site.

Table 5.1 summarises the sampling and analytical frequencies as based on previous investigations completed at the site.

Table 5.1: Proposed Sampling and Analysis Frequencies

Sample Type	Material Classification	Sampling Frequency	COPC	Approximate Analysis Density
Unassessed materials – test pit slices (without boreholes)	Fill	20 m grid	Asbestos Field Quantification (50 L samples)	1 / 350 m ³
			Asbestos Laboratory Analysis (500 mL NEPM WA)	1 / 700 m ³
			Heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn), Polycyclic Aromatic Hydrocarbons (PAHs), Total Recoverable Hydrocarbons (TRHs)	1 / 700 m ³
			Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Organochlorine Pesticides/Polychlorinated Biphenyls (OCPs/PCBs)	1 / 1,400 m ³
			Per- and poly-fluoroalkyl substances (PFAS)	Judgemental*
			Volatile Organic Compounds (VOCs)	Judgemental†
	ENM	<u>Lateral:</u> 20 m grid minimum, or in accordance with ENM Order. <u>Vertical:</u> Every metre in accordance with ENM Order.	Asbestos Field Quantification (50 L samples)	1 / 400 m ³
			Asbestos Laboratory Analysis (500 mL NEPM WA)	1 / 400 m ³
			Heavy metals, PAHs, TRHs, BTEX, pH and electrical conductivity and foreign materials	In accordance with the ENM order
			PCBs and OCPs	1 / 1,400 m ³
			PFAS	Judgemental*
			VOCs	Judgemental†
Unassessed materials – Boreholes and test pit slices	Fill	<u>Test pits:</u> 20 m grid	Asbestos Field Quantification (50 L samples)	1 / 400 m ³
			Asbestos Field Quantification (10 L samples)	1 / 400 m ³
		<u>Boreholes:</u> Minimum 20 m grid	Asbestos Laboratory Analysis (500 mL NEPM WA)	1 / 700 m ³
			Heavy metals, PAHs, TRHs	1 / 700 m ³
			BTEX, OCPs, PCBs	1 / 1,400 m ³
			PFAS	Judgemental*
			VOCs	Judgemental†

Sample Type	Material Classification	Sampling Frequency	COPC	Approximate Analysis Density
	ENM	<u>Test pits:</u> 20 m grid	Asbestos Field Quantification (50 L sample)	1 / 400 m ³
			Asbestos Field Quantification (10 L sample)	1 / 400 m ³
		<u>Boreholes:</u> Lateral - 20 m grid minimum, or in accordance with ENM Order. Vertical - Every metre in accordance with ENM Order.	Asbestos Laboratory Analysis (500 mL NEPM WA)	1 / 400 m ³
			Heavy metals, PAHs, TRHs, BTEX, pH and electrical conductivity and foreign materials	In accordance with the ENM order
			PCBs and OCPs	1 / 1,400 m ³
			Per- and poly-fluoroalkyl substances (PFAS)	Judgemental*
			Volatile Organic Compounds (VOCs)	Judgemental†
Waste classification for off-site disposal	Waste	Sampling frequency based on soil volume requiring classification	Heavy Metals TRH/BTEX OCPs/PCBs PAHs Asbestos (500mL) (plus, COPCs as appropriate to material source)	1/100 m ³ with a minimum of 3 samples

* Judgemental based on material types identified

† Judgemental based on PID readings/field observations

5.3 Waste Classification

In the event that soils do not meet site criteria, remediation or off-site disposal may be required. Remediation should be completed in accordance with the principles established in the site RAP. Soils requiring off-site disposal should be classified in accordance with the *NSW EPA Waste Classification Guidelines* (NSW EPA 2014) and disposed to a suitably licensed landfill.

6. Assessment Criteria

Soils should be screened against health investigation and screening levels as relevant to commercial / industrial land use, based on the proposed future site land use. Criteria are provided in **Tables 6.1** and **6.2**.

In the event that materials are imported for use as growing media and/or are proposed to be placed within portions of the site considered to have a greater ecological sensitivity (i.e, open space / recreational areas), then comparison of the data to the respective ecological criteria outlined in NEPC (2013) will be required (**Table 6.3**). With respect to benzo(a)pyrene (B(a)P), advice from the NSW EPA (2019)¹⁴ has indicated that ESL the NEPC (2013) derived criterion of 0.7 mg/kg is likely to be overly conservative and that a B(a)P criteria of 20 mg/kg is more appropriate. As such, this criteria has been adopted.

PFAS criteria as per (NEMP 2020¹⁵) have also been considered and is provided in **Table 6.4**. Where there are no NSW EPA made or approved thresholds, the laboratory limit of reporting (LOR) will be adopted as an initial screening value for the purposes of the assessment.

Table 6.1: Summary of Commercial / Industrial HILs and HSLs (NEPC 2013)

Analyte	HIL-D Criteria	HSL-D (Coarse Soils, 0-1.0m depth ¹⁶) Criteria
Heavy metals		
Arsenic	3,000 mg/kg	-
Cadmium	900 mg/kg	-
Chromium	3,600 mg/kg	-
Copper	240,000 mg/kg	-
Lead	1,500 mg/kg	-
Mercury	730 mg/kg	-
Nickel	6,000 mg/kg	-
Zinc	400,000 mg/kg	-
TRH/BTEXN		
F1 C6-C10	-	260 mg/kg
F2 C10-C16	-	NL ¹⁷
Benzene	-	3 mg/kg
Toluene	-	NL ¹⁴
Ethylbenzene	-	NL ¹⁴
Xylenes	-	NL ¹⁴
Naphthalene	-	NL ¹⁴
PAHs		
Benzo(a)pyrene TEQ	40 mg/kg	-
Total PAHs	4,000 mg/kg	-

¹⁴ Review of CRC CARE Technical Report 39: Risk-based management and remediation guidance for BaP, NSW Office of Environment and Heritage, Environment Protection Science Branch, presented 29 March 2019 (NSW EPA 2019)

¹⁵ PFAS National Environmental Management Plan (NEMP 2.0, 2020) Human Health Screening Values for commercial land use

¹⁶ All data should be initially compared to the shallowest depth range, with any failures further considered based on the expected depth of soils below design levels.

¹⁷ Non-limiting (i.e. the soil vapour concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario)

Analyte	HIL-D Criteria	HSL-D (Coarse Soils, 0-1.0m depth ¹⁶) Criteria
OCPs		
DDT+DDE+DDD	3,600 mg/kg	-
Aldrin and Dieldrin	40 mg/kg	-
Chlordane	530 mg/kg	-
Endosulfan	2,000 mg/kg	-
Endrin	100 mg/kg	-
Heptachlor	50 mg/kg	-
HCB	80 mg/kg	-
Methoxychlor	2,500 mg/kg	-
Mirex	100 mg/kg	-
Toxaphene	160 mg/kg	-
Asbestos		
Bonded ACM	-	0.05% w/w
Fibrous Asbestos /Asbestos Fines (FA/AF)	-	0.001% w/w
Surface asbestos	-	No visible ACM

Table 6.2: Summary of Commercial / Industrial Management Limits (NEPC 2013)

Analyte	Management Limits (Coarse Soils) ¹⁸
TRH Fractions	
C6-C10	700 mg/kg
C10-C16	1,00 mg/kg
C16-C34	3,500 mg/kg
C34-C40	10,000 mg/kg

Table 6.3: Summary of Commercial / Industrial EILs and ESLs (NEPC 2013)

Analyte	EIL Criteria	ESL (Coarse Soils) Criteria
Heavy metals		
Arsenic	160 mg/kg	-
Cadmium	-	-
Chromium	Site-Specific	-
Copper	Site-Specific	-
Lead	1,800 mg/kg	-
Mercury	-	-
Nickel	Site-Specific	-
Zinc	Site-Specific	-
TRHs		
C16-34	-	1,700 mg/kg

¹⁸ Adopted as the most sensitive criteria. Values based on fine soils will be applicable depending on material type.

Analyte	EIL Criteria	ESL (Coarse Soils) Criteria
C34-40	-	3,400 mg/kg
F1 (C6-C10 minus BTEX)	-	215 mg/kg
F2 (C10-C16 less Naphthalene)	-	170 mg/kg
BTEX		
Benzene	-	75 mg/kg
Toluene	-	135 mg/kg
Ethylbenzene	-	165 mg/kg
Xylene Total	-	180 mg/kg
OCPs		
DDT	640 mg/kg	-
PAHs		
Naphthalene	370 mg/kg	-
Benzo(a)pyrene	-	20 mg/kg

Table 6.4: Summary of PFAS Criteria (NEMP 2020)

Analyte	HIL-D (Commercial/Industrial) Criteria	Ecological direct exposure– all land uses Criteria
Perfluorooctanoic acid (PFOA)	50 mg/kg	10 mg/kg
Perfluorohexanesulfonic acid (PFHxS)	20 mg/kg	-
Perfluorooctanesulfonic acid (PFOS)	20 mg/kg	20 mg/kg
Sum of PFHxS and PFOS	20 mg/kg	-

6.1.1 Aesthetic Considerations

Reference should be made to NEPC (2013) under the adopted land use setting to establish what constitutes an aesthetics issue. It is anticipated that the criteria will comprise significant proportions of non-soil inclusions containing, but not limited to:

- Materials that may cause injury to people, including metal, glass or other sharp objects;
- Visible ACM present at concentrations below the adopted HSL-D criteria; and/or
- Building and demolition materials such as concrete, brick, terracotta and plastic.

The presence of soil discolouration/staining associated with chemical causes, and/or the presence of odorous or otherwise unpleasant olfactory characteristics of soils will also be considered with regard to aesthetic characteristic concerns.

If an aesthetic assessment does not indicate a risk to human health or the environment (e.g. inert foreign material) then soils may still be suitable to remain on site. Soils placed at depths greater than 3 m below the final surface are not considered to impact the aesthetic features of the future intended land use scenario.

6.1.2 Statistical Criteria

Statistical analysis of the data should be completed, where appropriate, in accordance with relevant EPA made or approved guidance, to facilitate data assessment. The statistical criteria applicable to each population data set will be applied during the assessment:

Either:

- the reported concentrations are all below the site criteria;

Or:

- no single analyte concentration exceeds 250 % of the adopted site criterion;
- the standard deviation of the results is less than 50 % of the site criterion; and
- the 95 % UCL of the average concentration for each relevant analyte is below the adopted site criterion.

Statistical assessment will not be undertaken for asbestos in soil.

7. Material Management Procedures

7.1 Overview

The management of materials from the source location to the final placement location will be controlled by the procedures as documented in the RAP (JBS&G 2026), inclusive of the materials tracking procedure, preparation of material characterisation and tracking forms.

All materials which are approved for on-site re-use and/or importation to the site must be tracked to final placement. Tracking will also be required for unexpected finds. Prior to final placement of material, the placement area is required to be documented by recording the destination site reference (or GPS/survey information) and where possible, a spot height recorded prior to placement with survey documentation confirming placement relative levels (RLs) for materials placed as part of quarry rehabilitation/bulk earthworks.

Material tracking shall be required for all materials that are imported to / moved / excavated from a location on the site and not wholly replaced in the same location within 12 hours of material movement (i.e. soils excavated for potholing/ test pitting / assessment do not require material tracking). However, all other material will require tracking to complete quarry rehabilitation, bulk earthworks and to achieve design levels ready for associated infrastructure works.

Temporary stockpiling and material movement will require to be managed in accordance with the procedures outlined in the RAP for the site.

The anticipated process for material management and relevant hold points is outlined as follows:

1. Source Identification and Approval

- Identify source site and material classification (e.g. ENM / VENM / RRO/RRE) and/or on-site fill material.
- Review source documentation (analytical data, site history).
- Visual inspection of material at source (for import sites).
- **Hold Point:** Environmental Consultant/Geotechnical Consultant to approve source material prior to import and/or approve site won materials for re-use.

2. Transport and Tracking

- All import loads tracked via register system (origin, volume, date, transporter).
- All on-site relocation of fill material loads tracked (source, volume, date, placement location).

3. Receipt and On-Site Inspection

- Visual inspection by PC of each load upon arrival for import.
- Weekly inspection by Environmental Consultant with collection of periodic check samples for imported materials (as needed).

4. Stockpiling (if required)

- **Hold Point:** Segregation of materials by source and classification (if possible) until all check samples received.
- Surveying of stockpiled material and/or placed material to confirm volumes imported / site won materials proposed for re-use.

5. Placement of Fill

- **Hold Point:** Placement areas designated and surveyed prior to placement.

- Controlled compaction in accordance with geotechnical requirements.
 - **Hold Point:** Geotechnical inspection/testing prior to placement of subsequent layers (where required).
6. Survey and Verification
- Survey of placed fill to confirm extent and levels.
 - **Hold Point:** Survey verification of final levels and placement extent.
7. Documentation and Reporting
- Compilation of tracking records, inspection logs, validation results and survey data.
 - Preparation of fill summary / validation report (as required).

7.2 Approvals

All site-won and imported fill materials will require the approval of the Environmental Consultant, Geotechnical Consultant, and Superintendent prior to reuse on site. Any soils identified to be non-compliant are to be isolated and subject to further investigation as per the unexpected finds protocol (UFP) in **Section 6** of the RAP (JBS&G 2026).

7.3 Non-conformances

During importation, if any VENM, ENM or material classified under an RRO/RRE is identified to contain foreign materials (other than specified under ENM or Resource Recover Order) and/or other indicators of contamination then importation will cease and the area isolated for further investigation by the Environmental Consultant.

Non-compliant imported fill should be classified as per NSW EPA (2014) *Waste Classification Guidelines* and lawfully disposed off-site. Any non-conformances must be reported on and addressed in accordance with the requirements set out in **Section 4.3.7**.

During reuse of site-won and imported materials, the UFP as detailed in **Section 6** of the RAP (JBS&G 2026) should be followed should any indicators of contamination be identified.

All non-conformances will be reported to the Superintendent, who will be responsible for notifying the Site Owner, and ensuring corrective actions are closed out.

All non-conformances with management protocols observed during the monitoring and quality control procedures will be recorded. An incident report should be completed which includes details of the filling supplier, truck configuration, truck and trailer registration, material type, reason for non-compliance, and the appropriate corrective actions taken by the assigned responsible party(ies).

8. Limitations

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

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

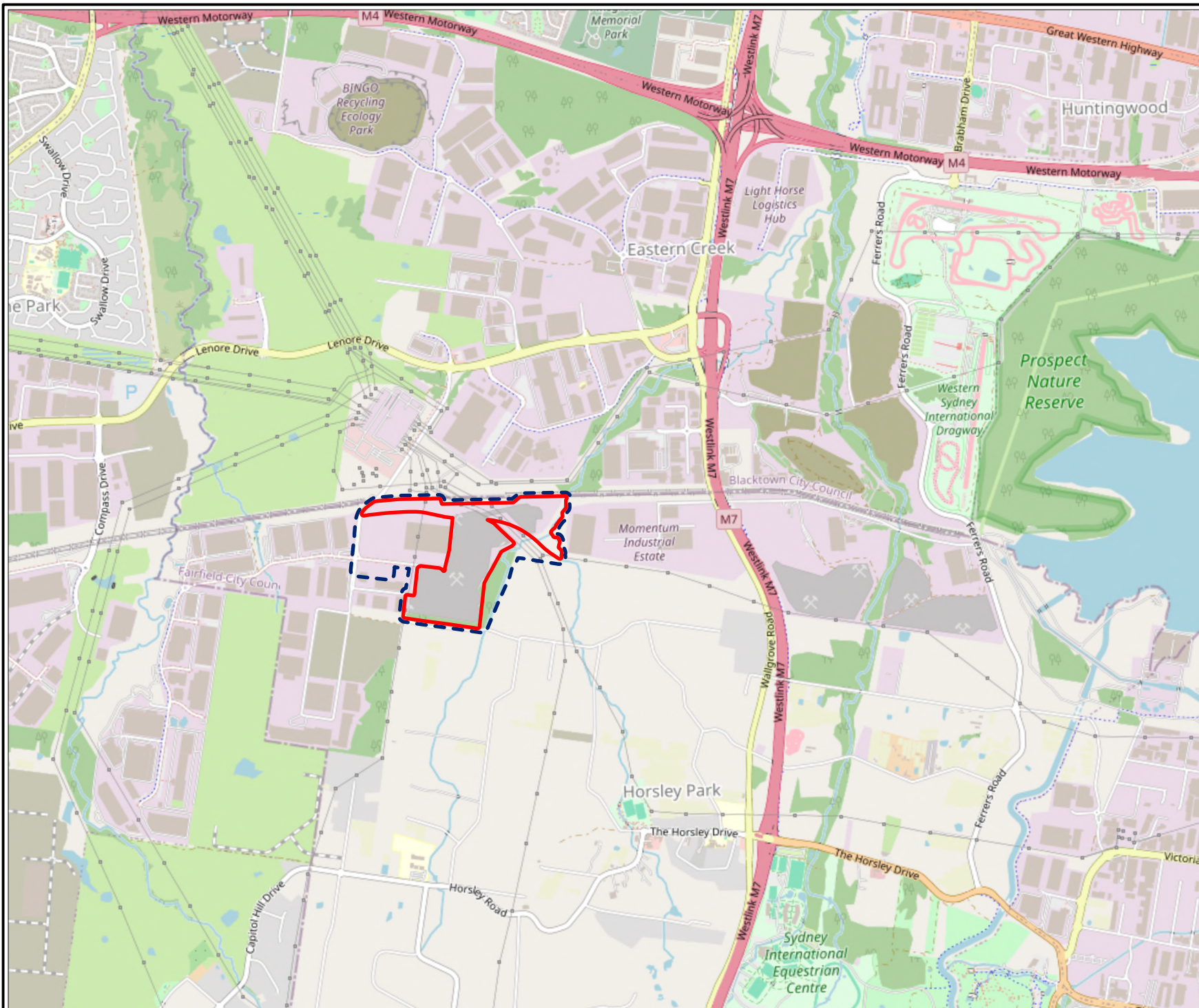
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the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

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

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

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

Figures



Legend:
 Approximate Site Boundary
 Approximate OEIE Site Boundary



Job No: 71973

Client: Silverback

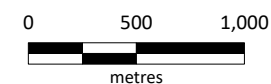
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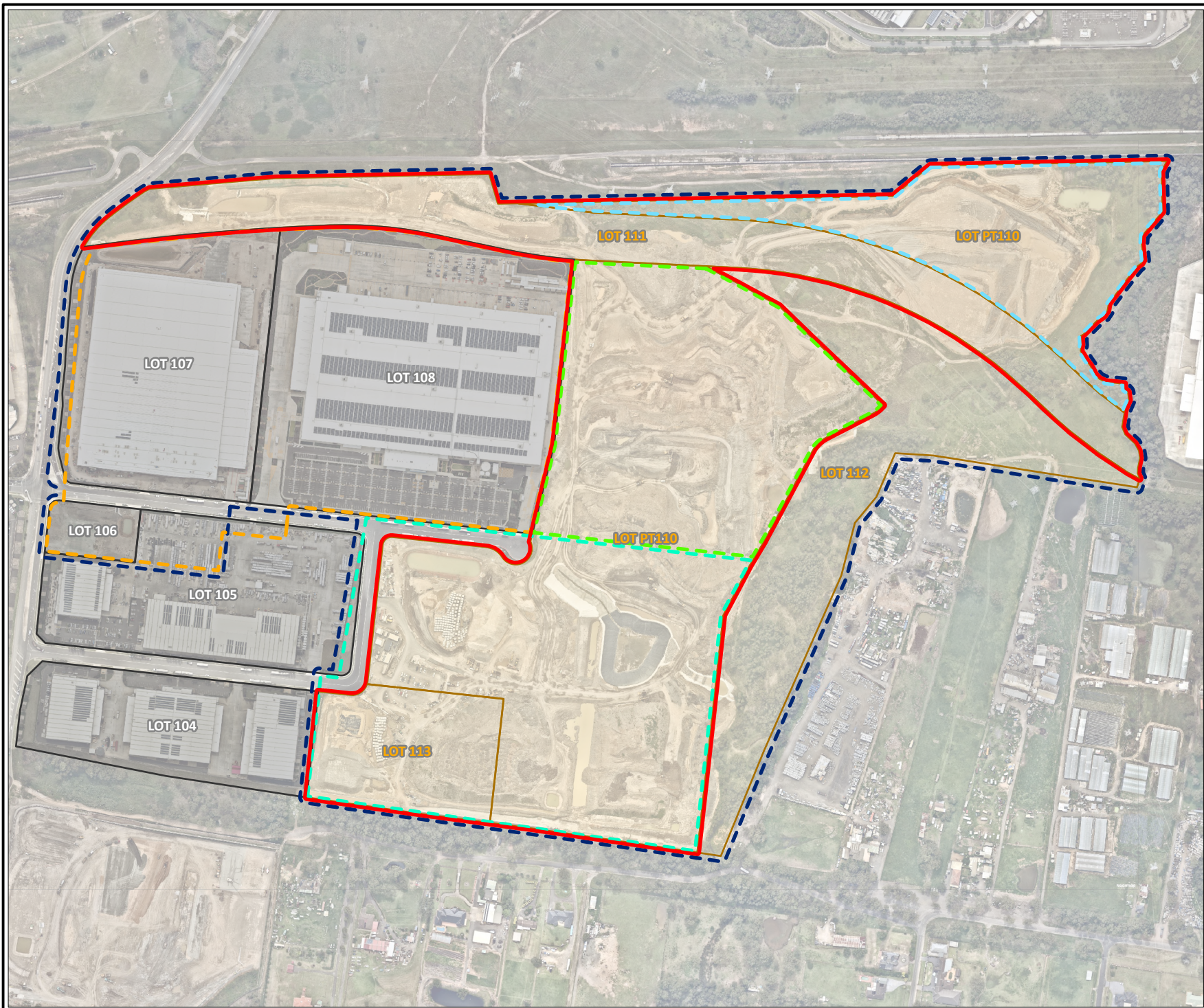


Coord. Sys. GDA 1994 MGA Zone 56

**Old Wallgrove Road
Horsley Park, NSW**

SITE LOCATION

FIGURE 1



Legend:

-  Approximate Site Boundary
-  Approximate OEIE Site Boundary
- OEIE Redevelopment Stage Boundaries**
-  Stage 2
-  Stage 3
-  Stage 4
-  Stage 5

Subdivisions

-  Lot 109 in DP1293112 Proposed Subdivision Plan
-  DP1293112 - Current Subdivision



Job No: 71973

Client: Silverback

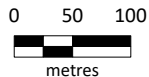
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**Old Wallgrove Road
Horsley Park, NSW**

SITE LAYOUT

FIGURE 2

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