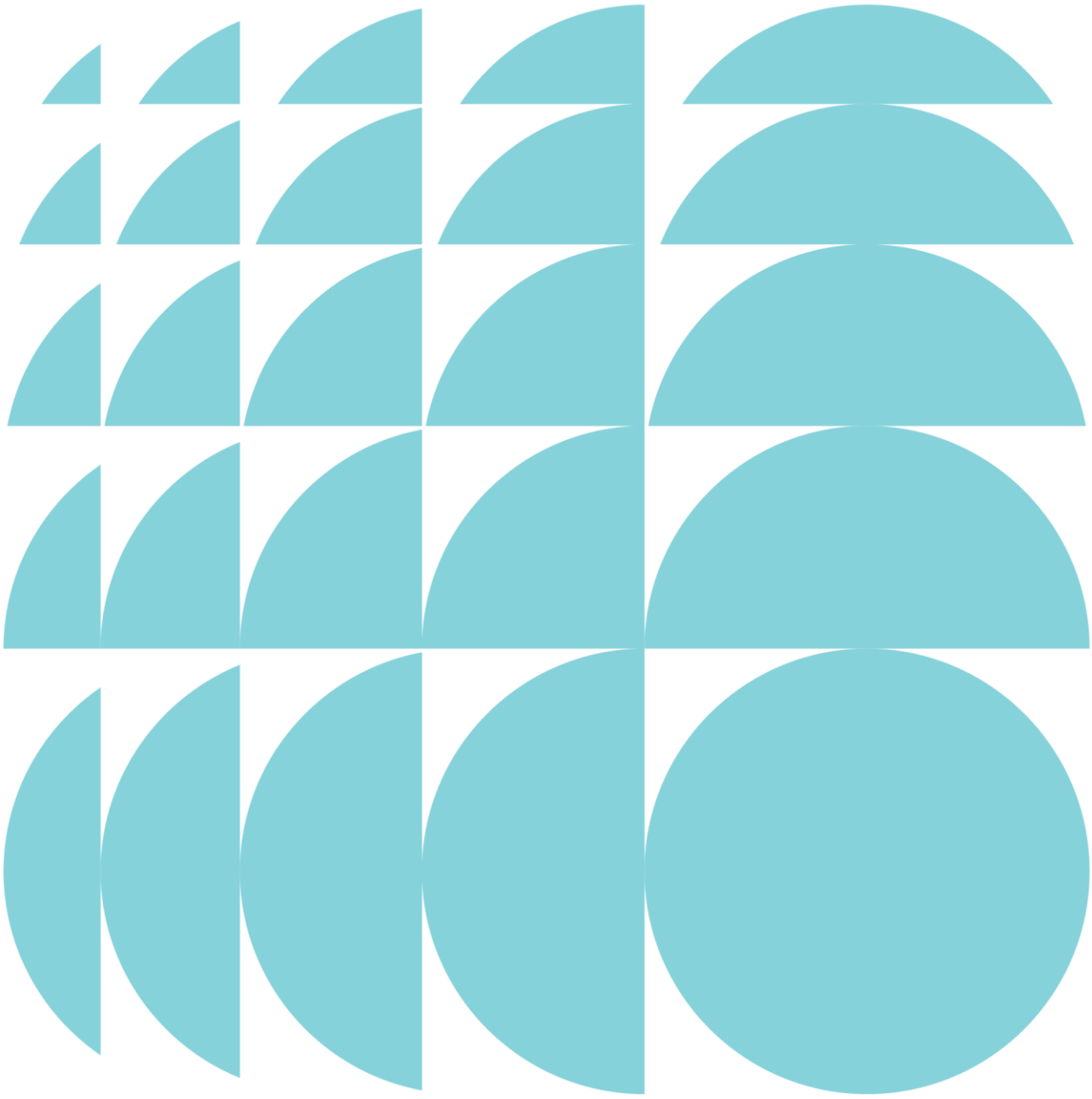
ETHOS URBAN

Environmental Impact Statement

1669-1732 Elizabeth Drive, Badgerys Creek
Waste Management Facility
Elizabeth Enterprise Precinct

Submitted to Penrith City Council
On behalf of Mirvac Projects Pty Ltd

19 February 2020 | 218005



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Development Application Details	
Applicant name	Mirvac Projects Pty Ltd
Applicant address	Level 28, 200 George Street, Sydney NSW 2000
Land to be developed	1669-1732 Elizabeth Drive, Badgerys Creek, Lot 5 of DP860456
Proposed development	Bulk earthworks and filling as described in **Section 3.0** of this Environmental Impact Statement
Prepared by	
Name	Christopher Curtis
Qualifications	BUrbanEnvPlan, DipPM
Address	173 Sussex Street, Sydney
In respect of	Designated Development Application
Certification	
	I certify that I have prepared the content of this EIS and to the best of my knowledge: it is in accordance with Schedule 2 of the Environmental Planning and Assessment Regulation 2000; all available information that is relevant to the environmental assessment of the development to which the statement relates; and the information contained in the statement is neither false nor misleading.
Signature	
Name	Christopher Curtis
Date	19/02/2020

Executive Summary

Purpose of this Report

This submission to Penrith City Council comprises an Environmental Impact Statement (EIS) for a Development Application under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). It relates to development of a waste disposal facility at 1669-1732 Elizabeth Drive, Badgerys Creek for the disposal of clean waste spoil material resulting from the construction of critical State Significant Infrastructure and building projects. The proposed development involves the importation, placement and compaction of clean disposal spoil materials including some onsite ancillary cut to fill works as detailed within the AT&L Civil Engineering documentation.

The proposed development will provide a disposal facility for clean spoil (as defined within the Fill Management Protocol included within Appendix M) generated offsite from large State Significant Infrastructure projects such as Westconnex, Sydney Metro and other proposed and planned critical infrastructure and building projects. The importation of clean spoil will not impede or limit the development of the site for existing permissible uses or preclude future alternate uses subject to envisaged rezoning consistent with the Western Sydney Aerotropolis Land Use Infrastructure Implementation Plan. It would instead enable the site to be a readily available disposal facility for excess spoil material, thereby enabling the development of a circular economy and promoting the orderly and economic use of the site in the interim without limiting its use in the future use.

The proposed development is permissible with consent under the Infrastructure SEPP and is classified as Designated Development under Schedule 3 of the Environmental Planning and Assessment Regulations 2000 (EP&A Regulation). Under Clause 32(1)(d) of Schedule 3 in the EP&A Regulation, the project constitutes a Waste Management Facility (being a Waste Disposal Facility), located within 100m of a natural waterbody, being South Creek, and also within 250m of a dwelling house not associated with the development. Accordingly, the proposed development is Designated Development and requires the preparation of an EIS.

Nothing under this application precludes the current or future development of the site for permissible or future permissible land uses in accordance with the Western Sydney Aerotropolis Plan and the proposed Western Sydney Airport State Environmental Planning Policy. No permanent physical structures are proposed under this application.

A request for the issue of Secretary's Environmental Assessment Requirements (SEARs) was sought on 21 December 2018. Accordingly, the SEARs were issued on 20 February 2019. This submission is in accordance with Schedule 2 of the EP&A Regulation and is lodged under Part 4 of the EP&A Act, and addresses the issues raised in the SEARs.

Overview of the Project

The Development Application (DA) seeks approval for a waste disposal facility including:

- The demolition and removal of existing rural structures;
- Heritage salvage works, subject to a separate s140 permit and an AHIP being obtained, if required;
- Clearing of existing vegetation on the subject site and associated dam dewatering and decommissioning;
- The importation, placement and compaction of clean waste spoil material, in accordance with the Fill Management Plan in **Appendix M**;
- Ancillary onsite cut to fill bulk earthworks associated with the disposal of spoil;
- An ancillary temporary site office building and compound;
- Connection and augmentation of services and utilities to the site; and
- Construction of stormwater, erosion and sediment control systems.

The Site

The site is located at 1669-1732 Elizabeth Drive, Badgerys Creek within the Penrith City Council Local Government Area (LGA), approximately 15km south-east of the Penrith CBD and 40km west of the Sydney CBD.

The site is within proximity of the future Western Sydney Airport, approximately 800m west of the site and the Western Sydney Aerotropolis Plan (WSAP) area, partially located within the Badgerys Creek and Wianamatta-South Creek Precincts.

The site is legally described as Lot 5 of DP860456 with an area of approximately 54.41ha. The site is irregular in shape, with a frontage to Elizabeth Drive (southern boundary) of approximately 540m and an access road (western boundary) of approximately 590m. The site's eastern boundary of approximately 1.6km is formed by the alignment of South Creek, while the northern boundary of approximately 1km abuts adjoining rural lands.

Planning Context

Section 5.3 of the EIS considers all applicable legislation in detail. The proposal is consistent with the requirements of all relevant SEPPs. The site is zoned RU2 – Rural Landscape and E2 – Environmental Conservation noting works are occurring within the RU2 Rural Landscape zone only. The proposal is permissible with consent and meets the objectives of the subject zone.

Environmental Impacts and Mitigation Measures

This EIS provides an assessment of the environmental impacts of the project in accordance with the SEARs and sets out the undertakings made by Mirvac Projects Pty Ltd to manage and minimise potential impacts arising from the development.

Stormwater and Flooding
The proposed development is located on lands which are identified as flood affected under the PLEP 2012, given the site's proximity to South Creek. The proposed development has been designed to reduce the extent of works within areas of the site that are flood effected. The proposed works are entirely above the 100-year ARI flood extent, to ensure minimal impact on South Creek.

Air Quality
Dust emissions will be generated during operation or construction of the project, mainly through fill placement and compaction activities. Potential dust emission sources during construction works include:

- Wind-generated dust from disturbed surfaces and stockpiles; and
- Wheel-generated dust and particulate matter emissions in diesel exhaust emissions from on-site plant and equipment and construction traffic movements.

The general area itself has been given a sensitivity rating of low for dust soiling and low for health effects, due to its rural setting, with a low risk rating of adverse impacts in terms of dust soiling and human health effects at the off-site sensitive receiver locations, if no mitigation measures were implemented. However, to manage potential impacts on sensitive receivers from dust and emissions, a range of mitigation measures are proposed including site preparation and maintenance, vehicle movement emission control and dust emission management.

Noise and Vibration
Construction activities will generally occur during standard construction hours in accordance with the EPA's Interim Construction Noise Guideline (ICNG) recommended standard hours, with noise generated through the use of heavy equipment and machinery. This will impact on sensitive receivers including nearby residential properties to the south of the site. A range of specialised mitigation measures are proposed which include ongoing monitoring of noise levels and letterbox drops.

The main vibration generating equipment to be used at the site will include trucks during operation and rollers and dozers during the bulk earthworks phase of the project.

The nearest structure to the site is located approximately 50m from its boundary. Subsequently, it is considered that vibration levels from the proposed works will be below the criteria for 'minimal risk of cosmetic building damage' at the nearest residential neighbour.

Heritage

There are two items of locally listed heritage values under the Penrith LEP 2010 identified within 650m-1km of the site, however none identified on the site. The land containing the study area was the location of James Badgery's landholdings, who used the land for farming purposes. It was on this land that Badgery established 'Exeter Farm'. The impact on these items is considered negligible in terms of visual amenity on the heritage values.

Furthermore, four Aboriginal sites and three Potential Archaeological Deposits were identified on the site. A total loss of value of two of these Potential Archaeological Deposits would occur due to the proposed works.

More detailed archival research is required to prepare an archaeological research design to be submitted with an application for a s139 exception or a s140 permit for test excavation. This process will be undertaken outside of this development application.

Visual Impact

The site is situated on land with low rolling topography, sloping down towards the site's alignment with South Creek. The land is identified as a 'rural landscape' with areas aligning with South Creek identified as a 'creek corridor'.

The proposed development involves a change to the existing landform. Given the scale of change, visual impacts of a generally moderate degree are associated with the proposal. Temporary earth bunding is proposed along Elizabeth Drive frontage during the works to mitigate visual impacts.

While the proposed development will result in a moderate-high visual impact on one surrounding sensitive receiver, this impact is considered appropriate given the nature of the site and the consistency of the proposal with the broader vision for the area. Mitigation measures relating to temporary visual impacts are proposed including the perseveration of existing road planting and the selection of appropriate vegetation.

Conclusion and Justification

The EIS addresses the SEARs, and the proposal provides for the proposed waste disposal facility on the site. The potential impacts of the development are acceptable and are able to be managed. The proposed spoil reuse to support the development of a circular economy is at core in alignment with the objectives and planning priorities within the Greater Sydney Commission's *A Metropolis of Three Cities* and *Western City District Plan*. Given the planning merits of the proposal, the proposed development warrants approval by Penrith City Council.

1.0 Introduction

This Environmental Impact Statement (EIS) is submitted to the Penrith City Council pursuant to Part 4 of the E*nvironmental Planning and Assessment Act 1979* (EP&A Act) in support of an application for Designated Development located at 1669-1732 Elizabeth Drive, Badgerys Creek (the site).

The proposed development is classified as Designated Development under Schedule 3 of the Environmental Planning and Assessment Regulations 2000 (EP&A Regulation). Under Clause 32(1)(d)(i) of Schedule 3 in the EP&A Regulation, the project constitutes a Waste Management Facility (being a waste disposal facility) that is located within 100m of a natural waterbody. Accordingly, the proposed development is Designated Development and requires the preparation of an EIS.

The report has been prepared by Ethos Urban on behalf of Mirvac Projects Pty Ltd, and is based on the Civil Engineering Plans prepared by AT&L (see **Appendix C**) and other supporting technical information appended to the report (see Table of Contents).

This EIS has been prepared in accordance with the requirements of Part 4 of the EP&A Act, Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation), and the Secretary's Environmental Assessment Requirements (SEARs) for the preparation of the EIS, which are included at **Appendix A**. This EIS should be read in conjunction with the supporting information and plans appended to and accompanying this report.

1.1 Overview of Proposed Development

This application seeks approval for a waste disposal facility including:

- The demolition and removal of existing rural structures;
- Heritage salvage works, subject to a separate s140 permit and an AHIP being obtained, if required;
- Clearing of existing vegetation on the subject site and associated dam dewatering and decommissioning;
- The importation, placement and compaction of clean spoil material in accordance with the Fill Management Plan in **Appendix M**;
- Ancillary onsite cut to fill bulk earthworks associated with the disposal of spoil;
- An ancillary temporary site office building and compound;
- Connection and augmentation of services and utilities to the site; and
- Construction of stormwater, erosion and sediment control systems.

The application does not seek consent for the creation of building pads, warehouse buildings or internal road networks and only seeks consent for a waste disposal facility. Any detailed site-specific building works will be the subject of future development applications for the site.

The proposed development is further described in **Section 3.0**.

1.2 Background to the Development

The site is located within a broader area undergoing significant transition from existing rural and agricultural lands to the Western Sydney Aerotropolis. The site is strategically included within the area subject to the draft Western Sydney Aerotropolis Plan (WSAP, refer to **Section 5.4.3**), the proposed Western Sydney Airport State Environmental Planning Policy (WSA SEPP) and the State Environmental Planning Policy (Western Sydney Employment Area) 2009 (WSEA SEPP, refer to **Section 5.3.3**). These plans are underpinned by the objectives and priorities of both the *A Metropolis of Three Cities – the Greater Sydney Region Plan* (refer to **Section 5.4.1**) and its associated *Western City District Plan* (refer to **Section 5.4.2**), both prepared by the Greater Sydney Commission. The future WSA (currently under construction) is approximately 800m to the west of the site.

The proposed development seeks consent for a Waste Disposal Facility that will import, place and compact clean spoil material which is generated by various State Significant Infrastructure projects such as Westconnex and the Sydney Metro tunnels, among other planned critical infrastructure and building projects within WSA region. The proposed development will provide an appropriate means of disposal of clean spoil using a suitable approvals

process thereby creating a circular economy. It is intended that the disposal activities will be complete prior to the WSA commissioning phase forecast for 2025.

1.3 Secretary's Environmental Assessment Requirements

In accordance with section 4.39 of the EP&A Act, the Secretary of the Department of Planning and Environment issued the requirements for the preparation of the EIS on 20 February 2019. **Table 1** provides a detailed summary of the individual matters listed in the SEARs and identifies where each of these requirements have been addressed in this report and the accompanying technical studies. A copy of the SEARs are included in **Appendix A**.

Table 1 Secretary's Environmental Assessment Requirements

Requirements	Section Addressed	Supporting Technical Study (Appendix)
General		
The Environmental Impact Statement (EIS) must meet the minimum form and content requirements in clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000.	This EIS has been prepared in accordance with the relevant clauses of the Environmental Planning and Assessment Regulation 2000.	
Key Issues		
The EIS must include an assessment of all potential impacts of the proposed development on the existing environment (including cumulative impacts if necessary) and develop appropriate measures to avoid, minimise, mitigate and/or manage these potential impacts. As part of the EIS assessment, the following matters must also be addressed: strategic context - including: • a detailed justification for the proposal and suitability of the site for the development; • a demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, development control plans (DCPs), or justification for any inconsistencies; • strategic justification for the proposal with regards to the Western Sydney Aerotropolis - Land Use and Infrastructure Implementation Plan Stage 1: Initial Precincts, and • a list of any approvals that must be obtained under any other Act or law before the development may lawfully be carried out.	Strategic justification for the proposal is included in **Section 5.4**. The proposed development's consistency with applicable environmental planning instruments and development control plans is included in **Section 5.3**. The proposed development's consistency with the Western Sydney Aerotropolis - Land Use and Infrastructure Implementation Plan and WSAP (as exhibited in December 2019) is included in **Section 5.4.3**. Mitigation measures for potential impacts of the development are provided in **Section 8.0**.	
waste management - including: • details of the type, quantity and classification of waste to be received at the site; • details of waste handling including, transport, identification, receipt, stockpiling and quality control; and • the measures that would be implemented to ensure that the proposed development is consistent with the aims, objectives and guidelines in the NSW Waste Avoidance and Resource Recovery Strategy 2014-21.	Waste management is addressed in **Section 6.3**.	The proposed development is supported by a Waste Management Plan, prepared by SLR and included in **Appendix H.**
erosion and sediment control - including: • measures implemented to prevent any impact on adjoining properties and infrastructure from the cut and fill earthworks being undertaken; • measures implemented to mitigate potential impacts to South Creek; and • erosion and sediment control measures are to be consistent with the Landcom Blue Book, Managing Urban Stormwater Soils and Construction (Vol 14th ed., 2004).	Erosion and sediments control are addressed in **Section 6.2.**	The proposed development is supported by a Civil Drawings and Civil report, prepared by AT&L and included in **Appendix C** and **Appendix D** respectively.

Requirements	Section Addressed	Supporting Technical Study (Appendix)
		The proposed development is also supported by a Flood Impact Assessment, prepared by Cardno and included in **Appendix G** .
soil and water - including: • a description of local soils, topography, drainage and landscapes; • details of water usage for the proposal including existing and proposed water licencing requirements in accordance with the Water Act 1912 and/or the Water Management Act 2000; • an assessment of potential impacts on floodplain and stormwater management and any impact to flooding in the catchment; • a detailed site water balance; • an assessment of potential impacts on the quality and quantity of surface and groundwater resources; • details of the proposed stormwater and wastewater management systems (including sewage), water monitoring program and other measures to mitigate surface and groundwater impacts; • characterisation of the nature and extent of any contamination on the site and surrounding area; and • a description and appraisal of impact mitigation and monitoring measures.	Soils and water are addressed in **Section 6.2**.	In respect of soils and water, the proposed development is supported by the following technical studies: Flood Impact Assessment, prepared by Cardno and included in **Appendix G.** Erosion and Sediment Control Plan, prepared by AT&L and included in **Appendix C.**
traffic and transport - including: • a traffic impact assessment in accordance with Roads and Maritime Services guidelines; • details of road transport routes and access to the site; • road traffic predictions for the development during the proposed works and operation; • an assessment of impacts to the safety and function of the road network and the details of any road upgrades required for the development; and • plans demonstrating how all vehicles associated with the proposed works and operation awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network.	Traffic and transport impacts associated with the proposal are addressed in **Section 6.4.**	The proposed development is supported by a Construction Traffic Management Plan, prepared by Ason Group and included in **Appendix K.**
air quality and odour - including: • a quantitative assessment of the potential air quality, dust and odour impacts of the development in accordance with relevant Environment Protection Authority guidelines. This is to include the identification of existing and potential future sensitive receivers and consideration of approved and/or proposed developments in the vicinity; and • a description and appraisal of air quality impact mitigation and monitoring measures.	Air quality and odour is addressed in **Section 6.5**	The proposed development is supported by a Air Quality Impact Assessment, prepared by SLR and included in **Appendix N.**
hazards and risk - including: • an assessment of the risk of bushfire, including addressing the requirements of Planning for Bush Fire Protection 2006 (RFS) or its replacement. Any proposed Asset Protection Zones must not adversely affect environmental objectives (e.g. buffers); • any geotechnical limitations that may occur on the site and if necessary, appropriate design considerations to address this; and • an assessment of flood risk on the site. The assessment should determine: the flood hazard in the area; address the impact of flooding on the proposed development, and the development's impact (including filling) on flood behaviour of the site and adjacent lands; and address adequate egress and safety in a flood event.	The risk and impacts of bushfire associated with the proposed are addressed in **Section 6.11.1** Geotechnical limitations relating to the proposal are addressed in **Section 6.11.2** Flooding and flood risk are addressed in **Section 6.11.3**	The proposed development is supported by a Bushfire Assessment, prepared by ABPP and included in **Appendix Q.** The proposed development is supported by a Geotechnical Investigation, prepared by Pells Sullivan Meynink and included in **Appendix P**.

Requirements	Section Addressed	Supporting Technical Study (Appendix)
		The proposed development is supported by a Flood Risk Assessment, prepared by Cardno and included in **Appendix G**
noise and vibration - including: • a quantitative assessment of noise and vibration impacts during the proposed works and from transport in accordance with relevant Environment Protection Authority guidelines. This is to include the identification of existing and potential future sensitive receivers and consideration of approved and/or proposed developments in the vicinity; • details and justification of the proposed noise mitigation and monitoring measures; and • specify the times of operation for all phases of the development and for all noise producing activities.	Noise and vibration impacts associated with the proposed development are addressed in **Section 6.6** Construction management relating to the proposal is addressed in **Section 3.9**	The proposed development is supported by a Construction Noise and Vibration Assessment, prepared by SLR and included in **Appendix O**.
biodiversity - including: • assessment of biodiversity impacts in accordance with the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR).	Biodiversity and riparian impacts are addressed in **Section 6.7**	The proposed development is supported by a Biodiversity Development Assessment Report, prepared by EcoLogical and included in **Appendix F**.
contamination – including; • a detailed assessment of the extent and nature of any contamination of the soil, groundwater and marine sediments;	Impacts associated with contamination are addressed in **Section 6.8**	The proposed development is supported by a Contamination Assessment, prepared by JBS&G and included in **Appendix L**.
heritage – including; • including Aboriginal (preparation of an Aboriginal Cultural Heritage Assessment Report) and non-Aboriginal cultural heritage items and values of the site and surrounding area in accordance with the relevant Office of Environment and Heritage guidelines.	Impacts relating to environmental heritage are addressed in **Section 6.10**	The proposed development is supported by a Statement of Heritage Impact (**Appendix J**) and Archaeological Survey Report (**Appendix I**), prepared by Artefact
visual – including; • including an impact assessment at private receptors and public vantage points with consideration given to Elizabeth Drive and its role as a key boulevard traversing the Aerotropolis and as a potential road link into Western Sydney Airport.	Visual impacts associated with the proposed development are included in **Section 6.9**	The proposed development is supported by a Visual Impact Assessment, prepared by Clouston Associates and included in **Appendix R**.
Environmental Planning Instruments and other policies		
The EIS must assess the proposal against the relevant environmental planning instruments, including but not limited to: • State Environmental Planning Policy (Infrastructure) 2007; • State Environmental Planning Policy (Western Sydney Employment Area) 2009; • State Environmental Planning Policy No 33 - Hazardous and Offensive Development; • State Environmental Planning Policy No 55 - Remediation of Land; • Sydney Regional Environmental Plan No 20 - Hawkesbury-Nepean River (No 2-1997);	The proposed development's consistency with applicable policies, environmental planning instruments and development control plans is included in **Section 5.0**	

Requirements	Section Addressed	Supporting Technical Study (Appendix)
• A Metropolis of Three Cities; • Western City District Plan; • Western Sydney Aerotropolis - Land Use and Infrastructure Implementation Plan - Stage 1: Initial Precincts; • Penrith Local Environmental Plan 2010; and • relevant development control plans and section 7 .11 plans.)		
Guidelines		
During the preparation of the EIS you should consult the Department's Register of Development Assessment Guidelines which is available on the Department's website at planning.nsw.gov.au under Development Proposals/Register of Development Assessment Guidelines. Whilst not exhaustive, this Register contains some of the guidelines, policies, and plans that must be taken into account in the environmental assessment of the proposed development.	Noted. The guidelines have been incorporated into the preparation of this EIS.	
Consultation		
During the preparation of the EIS, you must consult the relevant local, State and Commonwealth government authorities, service providers and community groups, and address any issues they may raise in the EIS. In particular, you should consult with the: • Environment Protection Authority; • Office of Environment and Heritage; • Department of Primary Industries; • Department of Industry; • Department of Planning and Environment - Aerotropolis Activation • Roads and Maritime Services; • WaterNSW; • Rural Fire Service; • Fire & Rescue NSW; • Penrith City Council; • Liverpool City Council; and • the surrounding landowners and occupiers that are likely to be impacted by the proposal. Details of the consultation carried out and issues raised must be included in the EIS.	Consultation is addressed in **Section 1.4**.	
Further consultation after 2 years		
If you do not lodge an application under Section 4.12(8) of the Environmental Planning and Assessment Act 1979 within 2 years of the issue date of these SEARs, you must consult with the Planning Secretary in relation to any further requirements for lodgement.	-	-

1.4 Consultation

As part of the preparation of the EIS, several agencies have been consulted with as summarised in **Table 2** below.

Table 2 Consultation activities

Agency	Consultation
Environment Protection Authority (EPA)	The EPA were consulted during the SEARs request and provided the following response: "*Based on the information provided, the EPA does not believe the proposed works trigger environment protection licensing under Schedule 1 of the Protection of the Environment Operations Act 1997 (POEO Act). Therefore, the EPA will not be providing SEARs for this proposal"* No further consultation is proposed to be undertaken with the EPA.

Agency	Consultation
Office of Environment and Heritage	A phone call occurred on Friday 15th March 2019. OEH advised that all comments were provided as part of the SEARs. No further consultation is to be undertaken with OEH.
Department of Industry / Natural Resources Access Regulator (NRAR)	Response to SEARs issued 15 February 2019. No further consultation to date
Department of Planning and Environment - Aerotropolis Activation	This team has now been embedded within the Planning Partnership. Mirvac met the Planning Partnership on 21 March 2019.
Roads and Maritime Services	Meetings have been held with RMS on 10 December 2018 and 4 February 2019.
WaterNSW	A copy of this EIS package has been sent to WaterNSW for comment.
RFS / Fire & Rescue NSW	A copy of this EIS package has been sent to the RFS for comment.
Penrith City Council	Pre-lodgement meeting held with Penrith City Council on 27 November 2018. Council's comments have been addressed throughout this application. A separate meeting was held with Penrith City Council on 23 October 2019 to discuss the Waste Management Facility development application and requirement for spoil sites to support state significant infrastructure and building projects throughout Sydney.
Liverpool City Council	A copy of this EIS package has been sent to Liverpool City Council.
Surrounding landowners	Consultation to be undertaken as part of exhibition process with all surrounding landowner comments to be addressed in the Response to Submissions.

1.5 Integrated Development

The proposed development is 'integrated development' in accordance with Section 4.46 of the EP&A Act. In addition to development consent, the development requires a controlled activity approval (CAA) in accordance with section 91 of the *Water Management Act 2000* (WMA 2000) as the proposal involves works within 'waterfront land' associated with the works within 40m of a water course, being South Creek to the east of the works.

2.0 Site Analysis

2.1 Site Location and Context

The site is located at 1669-1732 Elizabeth Drive, Badgerys Creek within the Penrith City Council Local Government Area (LGA). The site is located approximately 15km south-east of the Penrith CBD and 40km west of the Sydney CBD.

The site is also located within proximity of the future Western Sydney Airport, located approximately 800m west of the site as shown in **Figure 1**. Further, the site is also identified within the area subject to the WSAP, partially located within the Badgerys Creek and Wianamatta-South Creek Precincts. The site is also located within and adjacent to identified corridors associated with the future airport and the Western Sydney Aerotropolis. These include the construction and upgrade of roads including the M12 and M9 motorways, and the construction of a new North South rail link.

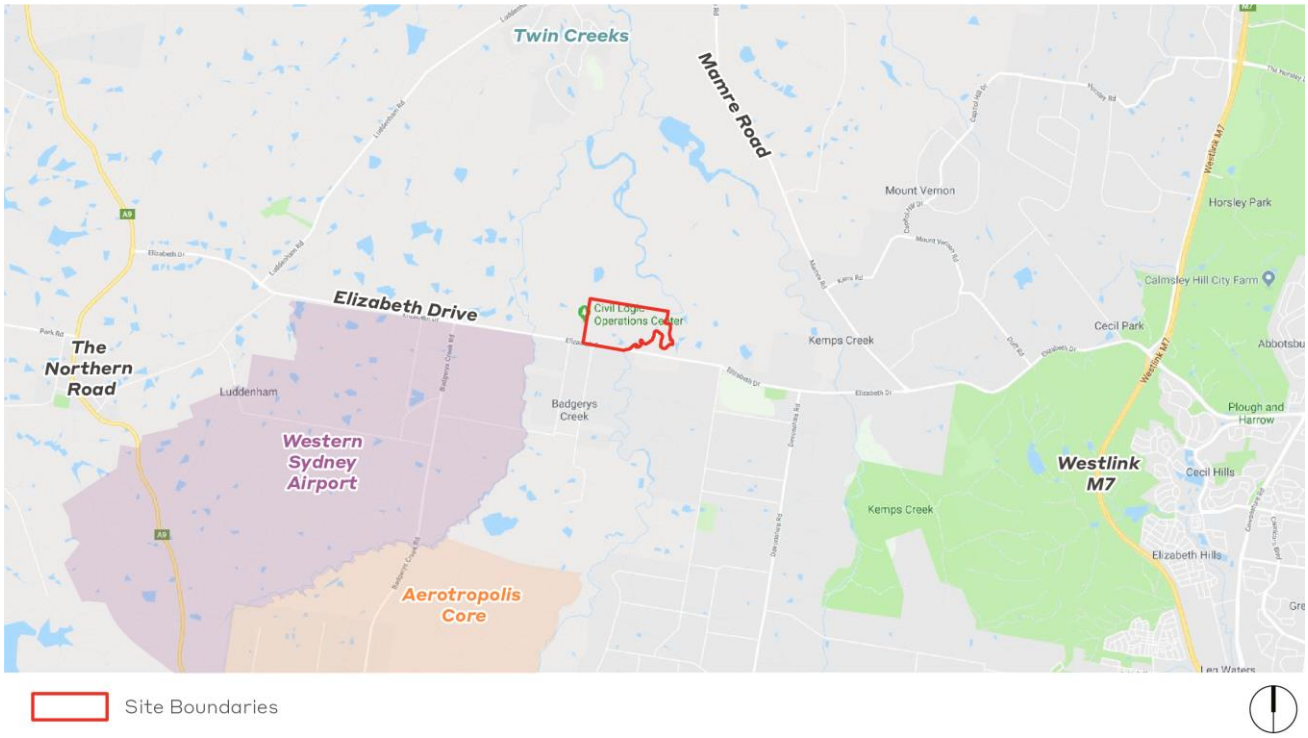


Figure 1 The site within its surrounding context

Source: Google, edits by Ethos Urban

2.2 Site Description

The site is legally described as Lot 5 of DP860456. The site's area is approximately 54.41ha. The site is irregular in shape, with a frontage to Elizabeth Drive (southern boundary) of approximately 540m and an access road (western boundary) of approximately 590m. The site's eastern boundary of approximately 1.6km is formed the alignment of South Creek, while the northern of approximately 1km abuts adjoining rural lands.

Existing development on the subject site consists of a single storey farm shed located towards the site's western boundary, surrounded by smaller storage sheds. Surrounding this built form are paddocks utilised for grazing. Several dams are located within the subject site. The site's primary access is via Elizabeth Drive, with a driveway located 50m east of the Elizabeth Drive and Martin Road intersection. Access to the site is also provided by a driveway off the public access road which runs along the site's western boundary, located approximately 340m north of the road's intersection with Elizabeth Drive.

A survey plan is located at **Appendix B**. An aerial photo of the site is shown at **Figure 2**.

Figure 2 Aerial photograph identifying the site extents and the immediate surrounds

Source: Nearmap, edits by Ethos Urban

Figure 3 View of site looking east with the riparian lands in background

Source: Ethos Urban

Figure 4 The site's western boundary (looking north) and frontage to existing access way

Source: Ethos Urban

Figure 5 The site's western boundary (looking south) and frontage to existing access way

Source: Ethos Urban

Figure 6 View of the south-west extent of the site

Source: Ethos Urban

Figure 7 The site's frontage to Elizabeth Drive at South-west boundary

Source: Ethos Urban

Figure 8 The site's frontage to Elizabeth Drive and existing access driveway, along the site's southern boundary

Source: Ethos Urban

Figure 9 Riparian plantings associated with South Creek

Source: Ethos Urban

Figure 10 Riparian lands of South Creek, as viewed from the neighbouring site further east

Source: Ethos Urban

2.2.1 Topography

The site slopes from west to east, with its highest points located at the site's south-west boundary (approximately RL 63.71), sloping towards the site's eastern boundary (approximately RL 38.09). This results in an east-west crossfall of approximately 25m, noting the site is located adjacent the South Creek alignment. The site is generally undulating, assisting the creation of various farm dams throughout the site (as illustrated in **Figure 2**).

2.2.2 Vegetation

Vegetation on the subjects site consists of grassed paddocks with some established trees and shrubs. Significant riparian vegetation associated with South Creek is concentrated along the site's eastern boundary. Within the site are three native Plant Community Types, being:

- PCT 725 – Broad-leaved Ironbark – Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion;
- PCT 849 - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion; and
- PCT 1071 – Phragmites australis and Typha orientalis coastal freshwater wetlands of the Sydney Basin Bioregion.

PCT 835 – Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion is present within the study area however is not located on the site.

PCT 849 features the critically endangered ecological community (CEEC) Cumberland Plain Woodland in the Sydney Basin Bioregion (CPW). PCT 835 features the endangered ecological community (EEC) River Flat Eucalypt Forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregion. These Plant Type Communities are known habitats of the Cumberland Plain Land Snail and Green and Golden Bell Frog, which are identified threatened species, however no specimens were recorded on the site as part of the targeted survey.

2.2.3 Soils and Ground Condition

The proposed development supported by a Geological Investigation Report prepared by Pells Sullivan Meynink, included in **Appendix P**. A study of 13 test pits and 8 boreholes within the site found that the soils are generally in the following conditions (refer to **Table 3**). A detailed description of soils is included in **Section 6.2**.

A previous approval (DA08/0691) was granted by Penrith City Council on 30 October 2008 for 'earthworks – pasture improvement to improve drainage', with filling works being carried out between 2009 and 2011 under this consent. Refer to **Appendix P** for further details.

Table 3 Summary of general soil condition

Inferred Unit	Inferred Top of Unit Depth Below Ground Surface (m)	Description
Topsoil	0.0	Clayey sand to sandy clay.
Fill	0.0	Sandy clay to gravelly clay and ripped shale fill.
Natural Soil	0.1 to 5.5	Clayey sand to clay and Gravelly clay.
Bedrock	1.0 to 8.5	Shale and Sandstone

Source: Pells Sullivan Meynink

The report also finds that no indicators of salinity were observed during a site inspection. This is attributed to the site being covered by grasses and vegetation. Further, groundwater was not observed in any of the test locations. The location of test pits and boreholes are shown in **Figure 30**.

2.2.4 Heritage and Archaeology

The proposed development is supported by a Non-Aboriginal Statement of Heritage Impact (SOHI) and an Archaeological Survey Report (ASR) prepared by Artefact and included in **Appendix I** and **J**.

The site is not identified as an item of local or State heritage significance under the Penrith LEP 2010. Notwithstanding this, the site is understood as having potential heritage value as it contains the former location of Exeter Farm (and farmhouse), which was once occupied by James and Elizabeth Badgery. The site was visited by Governor Macquarie in 1810. However, it is noted that the original farmhouse has since been demolished.

The ASR indicates the potential for Aboriginal archaeological items within the site, given the site's proximity to South Creek. Heritage and potential impacts associated with the proposed works are is addressed in **Section 6.10**.

2.3 Surrounding Development

Development surrounding the site predominantly consists of rural/agricultural lands and various industrial developments.

To the north of the site continues agricultural lands including grassed paddocks and established crops. Located to the north-west of the subject site is the SUEZ Resource Recovery centre, incorporating earthworks and treatment ponds. Further north of the site, approximately 7km, is rural residential community within the suburb of Erskine Park and WaterNSW Warragamba pipelines infrastructure running in an east-west direction.

Located immediately east of the subject site is South Creek, a significant watercourse within western Sydney. The South Creek alignment forms the eastern boundary of the site. Further east of the site are agricultural lands with established crops, some industrial development and rural-residential communities within the suburb of Kemps Creek. These typologies of development continue further east.

Immediately south of the site are industrial developments associated with the surrounding agricultural lands. Located further south of the site are agricultural lands, some industrial development and rural-residential communities within the suburb of Badgerys Creek. Further south-west of the subject site are the lands identified for the future development of the WSA. Works associated with the WSA have begun, with various earthworks noted within the WSA site. Surrounding development is shown in **Figure 11** to **Figure 16**.

Figure 11 Intersection of Mamre Road and Abbott Road, located north-east of the site

Source: Ethos Urban

Figure 12 Signposted property 149A Elizabeth Drive, located east of the site

Source: Ethos Urban

Figure 13 Entry to Kemps Creek Quarry, located east of the site

Source: Ethos Urban

Figure 14 Industrial development east of the site

Source: Ethos Urban

Figure 15 Construction of Western Sydney Airport, located west of the site

Source: Ethos Urban

Figure 16 Rural dwelling located west of the site

Source: Ethos Urban

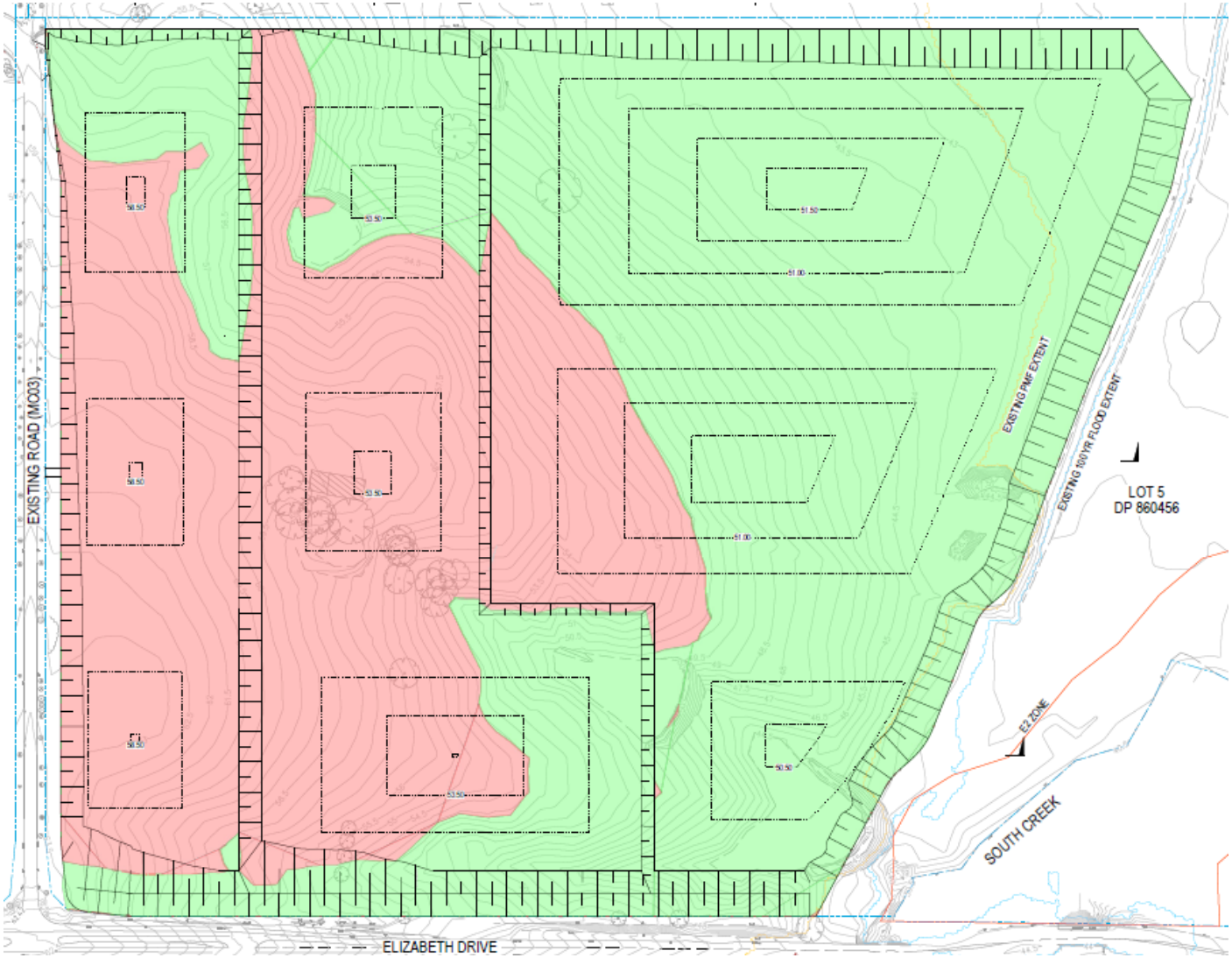
3.0 Description of the Development

The proposed development seeks approval for a waste management facility that includes:

- The demolition and removal of existing rural structures;
- Heritage salvage works, subject to a separate s140 permit and an AHIP being obtained, if required;
- Clearing of existing vegetation on the subject site and associated dam dewatering and decommissioning;
- The importation, placement and compaction of clean spoil material in accordance with the Fill Management Plan in **Appendix M.**
- Ancillary onsite cut to fill bulk earthworks associated with the disposal of spoil;
- An ancillary temporary site office building and compound;
- Connection and augmentation of services and utilities to the site; and
- Construction of stormwater, erosion and sediment control systems.

A site plan of the proposed development is illustrated in **Figure 17**.

The application does not seek consent for the creation of building pads, warehouse buildings or internal road networks and only seeks consent for a waste disposal facility. Any detailed site-specific building works will be the subject of future development applications for the site.



LEGEND

CUT

FILL

OVERALL EARTHWORKS VOLUMES			
CUT	-448,166	m3	
FILL	976,968	m3	
BALANCE	528,803	m3	(IMPORT)

Figure 17 The proposed filling works

Source: AT&L

3.1 Development Objectives

The development objective for this proposal is to provide a waste disposal facility for disposal of clean fill. In particular, the proposed works will support the development of a circular economy through the re-use of fill generated offsite from nearby large State Significant Infrastructure projects (which identified Western Sydney as a location for disposal of excavated fill), ensuring an efficient and appropriate location for the disposal of fill.

3.2 Design

The proposed design basis is to provide a Waste Management Facility of suitable scale for the disposal of clean waste spoil material. The proposed design and finished surface levels have been selected based on::

- Existing site topography requiring tiering towards South Creek;
- Selected tiering and grading provide best practise outcomes to enable control of stormwater, sedimentation and erosion;
- All works above the 100-year ARI flood extent (Cardno 2018) consistent with the current draft Penrith City Council South Creek Floodplain Risk Management Plan (Advisian 2019);
- Ensuring connectivity to the potential future Elizabeth Enterprise Precinct land adjoining to the north;
- The provision of flexible levels and allotments in line with strategic intent of the future land use, the proposed Flexible Enterprise zoning. The levels proposed are consistent with facilitating future development in line with on-going precinct/master planning work that will be prepared in consultation with Council and the Planning Partnership;
- Enabling connectivity to the future intersection at Elizabeth Drive in accordance with Elizabeth Drive Strategic Design prepared by RMS;
- Provision of a temporary earthworks bund along Elizabeth Drive to mitigate visual and noise amenity to adjoining receivers, while ensuring the prevention of illegal access to the site. This bund will also have the function of a store for surplus topsoil from the site that will be used for future landscaping works and will not preclude potential future Elizabeth Drive road widening;
- Ancillary cut to fill works to ensure consistency of materials throughout site and stormwater management.

3.3 Clean waste fill importation

The key numeric development information is summarised in **Table 4**.

Table 4 Clean fill details

Component	Proposal
Site area	54.41ha
Fill Extents	
Cut Volume	-448,166m^3
Fill Volume	976,968m^3
Net Balance	528,803m^3 (importation)
Transportation	
Typical Capacity of Vehicle	13t single truck, 30t truck and trailer, 42t truck and trailer
Maximum fill importation trucks arriving to the site per hour	60 in/60 out per hour during peak movements
Total truck movements (in and out) per day	300 in/300 out per day maximum

Note the final requirement for fill importation may change as detailed design works are finalised as specified within the Civil Engineering documentation contained within **Appendix C** and **Appendix D**.

3.3.1 Cut and fill works

Approximately 528,803m^3 of fill material is to be imported to make up the bulk of fill material to be used on site.

The site will be benched with approximately 448,166m^3 of existing surface material to be 'cut'. This work relates mainly to the western portion of the site. This material will be reused as fill material. Other portions of the site are also required to be moderately excavated.

The proposed transportation and placement of fill will be undertaken during hours in accordance with **Section 3.4**. Rigid heavy vehicles and 'truck and dog' semi-trailers will be used to import the fill to the site.

Imported fill material will be obtained from outside the site and will be validated in accordance with the requirements within the Fill Management Plan within **Appendix M**.

3.3.2 Earthworks and compaction of fill

The placement, compaction, inspection and testing of fill will be completed in accordance with the specification provided by PSM as contained within **Appendix P.**

A Geotechnical Inspection and Testing Authority (GITA) shall be contracted to document and certify that the works undertaken have been completed in accordance with the relevant design and specifications. The GITA shall adopt Level 1 responsibility as described in Section 8.2 of the AS 3798-2007 'Guidelines on earthworks for commercial and residential developments".

3.4 Construction Hours

All works will be undertaken within the following timeframes:

- Monday to Friday (other than Public Holidays): 7:00am – 6:00pm
- Saturday: 8:00am – 1:00pm
- Sunday & Public Holidays: No works to be undertaken

The above timeframes are in accordance with the Department of Environment & Climate Changes *Interim Construction Noise Guideline.*

Any works to be undertaken outside of the standard construction hours shall be required to obtain an Out of Hours (OOH) approval; any such works would necessarily be undertaken in accordance with the appropriate OOH protocols and approval procedures.

3.5 Construction and Operation Activities

Key activities to be undertaken during the works are outlined below, associated with the relevant activity group:

- Enabling Works
  - Pre-commencement documentation / approvals
  - Community notification of construction commencement
  - Archaeological salvage works (if required)
  - Relocation of flora and fauna species (if required)
  - Dam decommissioning
  - Establishment of survey control
  - Utility relocations / terminations at selected locations
  - Minor clearing works
  - Minor topsoil stripping

  - Construction of minor temporary access roads
  - Investigative drilling (if required)
  - Dwelling demolition works
- Site Establishment
  - Clearing of vegetation and stockpiling of mulch materials
  - Progressive construction of sedimentation and erosion controls as required, including construction of diversion catch drains along the project formation
  - Establishment of temporary on-site compound
  - Installation of temporary construction signage and lighting
  - Fencing of construction areas and site compounds
- Waste Disposal of Clean Fill
  - Stripping of topsoil and stockpiling for reuse in batter stabilisation
  - Progressive construction of sedimentation and erosion controls as required
  - Excavation of cutting and stockpiling of better-quality materials to be used as select fill
  - Construction of fill embankments including foundation drainage
  - Placement and compaction of selected material
  - Importation, placement and compaction clean spoil material in accordance with the Fill Management Plan within **Appendix M**.

3.5.1 Enabling and site preparation

Located within the site are four existing dams. Site preparation works will involve the dewatering and decommissioning of all dams within the site. A Fauna Management Plan to enable dam decommissioning will be prepared prior to dam decommissioning.

3.5.2 Vegetation Clearing

The proposed development includes the clearing of existing vegetation within the site. This includes the removal of established trees and shrubs which are located throughout the site. It is noted that riparian vegetation associated within the alignment of South Creek will remain. Within the site, trees are concentrated around the existing homestead and access paths.

3.5.3 Proposed Layout and Operation

The site is proposed to include an ancillary temporary site office for staff, toilets and a lunchroom for workers on-site. Refer to the Civil documentation (at **Appendix A**) for indicative locations for the supporting facilities on site, generally located in the north-western corner of the site.

No on-site weigh bridge is proposed. All spoil volumes will be validated by the spoil source site using either Loadrite data, external weighbridge dockets or truck onboard loadscale data. The proposal does not trigger the need to provide an onsite weigh bridge under Clause 39(2)(e) of Schedule 1 of the of the *Protection of the Environment Operations Act 1997* (POEO Act), which states that the disposal of VENM is not a controlled activity, therefore there is no requirement for a weighbridge for the disposal of VENM as it only requires a certificate as to origin and content.

The operation of the site will involve disposal of clean waste spoil, spread and compacted in layers. Topsoil would be removed as far as practical prior to the placement of additional/new clean waste spoil material, with any coverage removed in this manner stockpiled for re-use. **Figure 18** below identifies indicative on-site haul routes for disposal of material in a temporary stockpile, prior to the spreading and compaction across the site in accordance with the Civil Engineering Plans at **Appendix C.**

Material imported to the site will be verified to be generally VENM, ENM or materials covered by a specific NSW EPA Resource Recovery Order and Exemption which are suitable for their proposed use. For a complete compliant imported material description and validation procedures refer to Fill Management Plan within **Appendix M**. Prior to the acceptance of material from a source site or generator, assessment of the source site will be undertaken to verify the acceptability of material, with material tracking records and inspection to be undertaken, with a range of criteria contained within the Fill Management Plan at **Appendix M** that outlines the screening and threshold values for fill materials, including sampling density requirements. Gate records including truck movements will be maintained, and will include, though not limited to, the following information:

- Source departure time and date;
- Date and time of truck arrival;
- Source location of the material;
- Truck registration details;
- Material classification/type;
- Approximate volume of material per load;
- Visual assessment of the material at the gate;
- Record of load acceptance/rejection;
- Approximate location of material placement, on a daily basis; and
- Amount of material remaining to be imported.

Any material that is found to be non-compliant with the requirements of the verification process will be rejected and/or removed from site to an approved disposal facility. Importantly, a list of unsuitable materials is provided that will not be accepted (**Appendix M**).

At the completion of importation and disposal of waste materials at the site, a validation report will be prepared to ensure that all materials imported meet the requirements of the Fill Management Plan (**Appendix M**). The site will be subject to an audit process by an NSW EPA accredited Site Auditor.

All traffic and fill importation movements will be completed in accordance with the Construction Traffic Management Plan (CTMP) included within **Appendix K.**

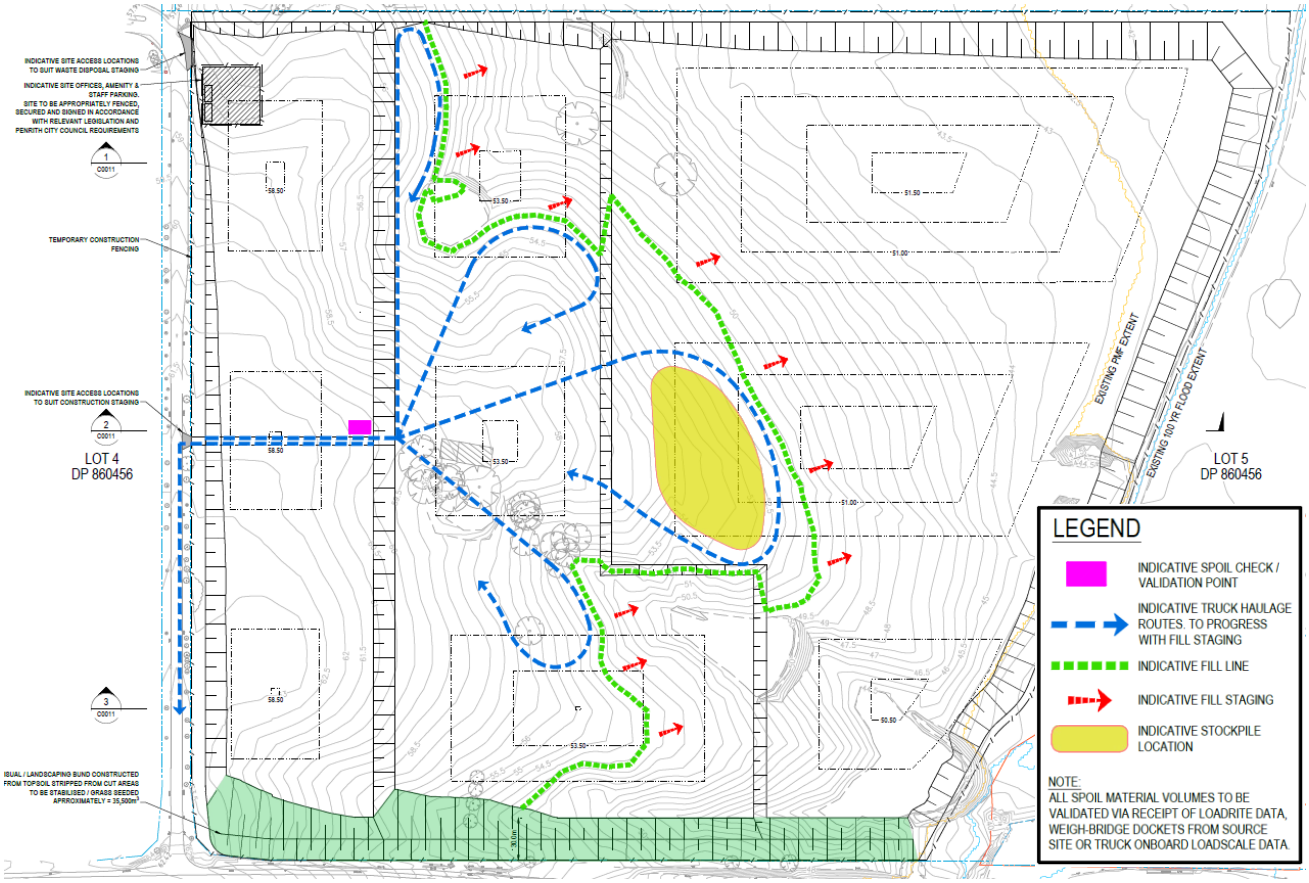


Figure 18 Indicative site layout during operation

Source: AT&L

3.6 Waste Identification Process

The placement, compaction, inspection and testing of fill will be completed in accordance with the specification provided by PSM as contained within **Appendix P**.

The management of unexpected finds will be managed in accordance with the Unexpected Finds Protocol to be prepared and approved by the Certifying Authority prior to commencement of works.

3.6.1 Type of spoil

The imported spoil material will comply with the requirements within the Fill Management Plan within **Appendix M.**

Clean import spoil material generally consisting of the following:

- Virgin Excavated Natural Material (VENM) within the meaning of the POEO Act; and/or
- Excavated Natural Material (ENM) within the meaning of the NSW EPA's Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the POEO (Waste) Regulation 2014 – The Excavated Natural Material Order 2014; and/or
- Materials covered by a site-specific Resource Recovery Order and Exemption as granted by the NSW EPA which are suitable for their proposed use.

All materials to be imported will be accompanied by appropriate reports from qualified Environmental Consultant firms whom hold current membership with the Australian Contaminated Land Consultants Association (ACLCA), verifying the status of the material with respect to contamination, salinity and relevant geotechnical parameters.

Under no circumstance would putrescible or organic waste be imported to site.

For complete spoil importation requirements, refer to Fill Management plan contained within **Appendix M**.

3.6.2 Extent of spoil

The spoil is to be placed entirely within the bounds of Lot 5 DP860456.

The full extent of the proposed cut and fill including depths across the site are shown at **Figure 17**.

3.7 Access

The proposed works involve the transportation of approximately 528,803m^3 of spoil to be deposited on the site. Material will be sourced from various projects throughout greater Sydney. Accordingly, the proposed importation haulage works will be undertaken in accordance with a Construction Traffic Management Plan (prepared by Ason Group and included in **Appendix K**).

The excavated material proposed to be deposited on the site will be transported via a range of trucks – including trucks as small as 7-tonne trucks up to truck-and-dog type vehicles (with a capacity of between 30-42 tonnes per load). It is anticipated that there will be up to approximately 100 truck movements (of varying size) per day (50 in / 50 out) during the demolition phase, and 600 truck movements (300 in/ 300 out) per day during the excavation works. Approximately 50 light vehicles would access the site each day (50 in / 50 out), with these vehicle movements likely outside peak periods in the local network.

Roads and Maritime Services (RMS) performance Based Standards (PBS) level 2A traffic routes will be used to access the site access road.

All vehicles will enter and depart the site in a forward direction. Refer to the Construction Traffic Management Plan within **Appendix K** for swept paths.

The source of fill is from State Significant Infrastructure and building projects such as WestConnex and the Sydney Metro tunnel projects which have identified Western Sydney areas as the appropriate location for disposal and considered this as part of their separate approval processes.

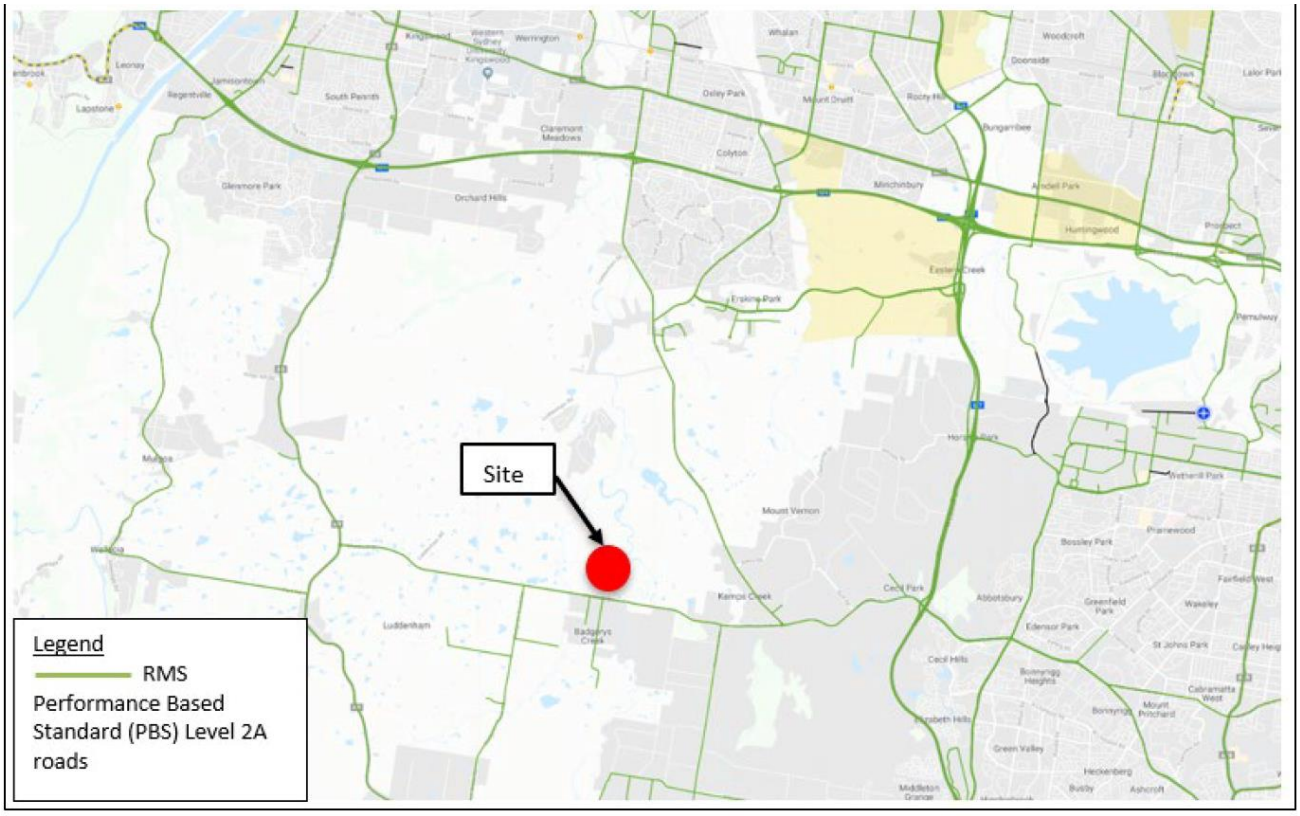


Figure 19 Proposed haul routes

Source: Ason Group

3.8 Stormwater Management

The final landform post-completion of the waste clean spoil disposal works will be developed in a manner that enables overland flows to be maintained across the site towards South Creek to the east. The final landform of the site is shown within the Civil Engineering Plans at **Appendix C**. Sedimentation runoff will be controlled onsite in accordance with the Blue Book to avoid impact on surrounding lands, including South Creek.

3.9 Site rehabilitation, closure and end of use

As defined under schedule 3 of the EP&A Regulation, 'landfill' or 'bulk earthworks' constitutes a 'waste management facility'. This type of characterisation is ordinarily associated with disposal of putrescible or contaminated waste whereby the post closure management of the site's use as a waste management facility is of considerable importance.

However, as an activity which requires filling to be undertaken as part of the site preparation works as distinct from the ongoing storage of waste, the use of 'clean inert fill' does not require any ongoing waste management that would ordinarily be associated with a 'waste management facility or work'.

The Engineering Plans at **Appendix C** show the finalised levels and layout of the site at the completion of the proposed works. Landscaping of individual allotments over the site will be undertaken as part of future and separate applications.

Completion of the operations of the waste management facility, including site stabilisation, is intended to be complete prior to the commissioning phase of the WSA forecast for 2025.

3.10 Construction Management

Approximately 30 to 50 workers would be on-site during the importation and compaction of clean waste spoil material. This includes on-site equipment operators and sub-contractors, as well as people associated with importation of fill. Staff will be able to park on site in designated areas.

3.10.1 Vehicular Access and Site Security

Access to the site off the access road would be restricted by a security gate. At the gate the imported material will be visually validated, and any unsuitable material will be refused.

A temporary compound and amenities would be constructed to accommodate workers and visitor vehicles.

The Fill Management Plan (**Appendix M)** outlines the fill importation process.

The site will be fenced during work as shown on the Engineering Plans at **Appendix C**. Construction works barriers, fences and site hoardings will be maintained as required. Indicative truck haulage routes are shown at **Appendix C**.

3.10.2 Delivery Standards for Vehicles

All vehicles will be required to follow strict road delivery standards, which will be outlined in the Construction Traffic Management Plan contained within **Appendix K**. These standards include:

- following all applicable road rules and laws at all times;
- not use mobile phones while driving;
- following designated haul routes;
- restraining and covering of loads; and
- utilising the shake down/wash areas before leaving the site to prevent migration of dust and soil to the surrounding local road network.

3.10.3 Complaints Handling

A Complaints Handling Procedure will be prepared prior to works. This will include keeping a complaint register to receive, log, track and monitor responses to the complaints during the project lifecycle.

3.10.4 Equipment

The final equipment is subject to contractor engagement and selected staging of works.

4.0 Analysis of Alternatives

Throughout the design evolution and environmental assessment of the project a number of options and alternatives were presented and considered to make the site suitable for future development envisaged by the WSAP. The development of the project was driven by the focus to provide the most appropriate design response to the environmental opportunities and constraints of the site.

4.1 Strategic need for the proposal

The proposal will deliver a new waste disposal facility for 528,803m^3 of clean spoil. The site for the proposed new facility is strategically located in proximity to several State Significant Infrastructure projects such as Westconnex, Sydney Metro and other large-scale greenfield renewal projects which involve extensive bulk excavation works that generate large amounts of excess clean spoil. Several State Significant Infrastructure projects, such as WestConnex and Sydney Metro have identified the Western Sydney area as an appropriate receiver of the excavated spoil for disposal.

In the long term, the proposal does not impede the future redevelopment of the site in line with the WSAP, notwithstanding that within the proposed Enterprise Zoning applying to the land under the intended WSA SEPP a waste and resource management facility is permissible with consent. Nothing under this proposal will inhibit the use of the land for different or uses in the future when any future rezoning proceeds. No permanent buildings or structures are required as part of this proposal that may preclude the redevelopment of the site in the future.

The proposal will promote the orderly and economic use of the site as the proposal will cater to and support the ongoing and planned infrastructure and other development projects within the WSA area in the short term. In the long term, the site may be redeveloped, subject to a separate application, for alternate uses consistent with any envisaged future rezoning. The proposed waste disposal facility is therefore consistent with the WSAP and the intended WSA SEPP provides for the future permissibility for the use within the Enterprise Zone.

4.2 Alternative Options

The alternate options to the proposal above are discussed in this section below. The options being a do-nothing scenario, development of the site for alternative uses or delaying the proposed development.

4.2.1 Do nothing

There are SSI tunnelling projects in Sydney that require the disposal of large volumes of spoil. SSI projects have identified that cumulative impacts would arise if the existing spoil management sites identified reach capacity. Cumulative impacts may also arise where multiple tunnelling projects use the same spoil management sites. These outcomes are inconsistent with the objects of the EP&A Act, the directions of the Metropolitan Plan and Western City District Plan and to this end not an acceptable outcome. A shortage of disposal facilities with capacity can inflate cost associated with disposal of spoil and create challenging market conditions for development that in turn increases the overall cost associated with the infrastructure projects. These outcomes are inconsistent with the objects of the EP&A Act, the directions of the Metropolitan Plan and Western City District Plan and to this end not an acceptable outcome.

4.2.2 Alternative use

There are no realistic alternative uses for the site. The site is earmarked for future rezoning while the current zoning being RU2 Rural Landscape limits permissible development to rural and agricultural land uses. The site comprises undeveloped greenfield land. This proposal is ideal as it proposes a permissible use for the site in the short term that can be readily adapted for future development consistent with the future rezoning.

In contrast, most other alternative uses for the site would require construction of physical buildings and structures to support the proposed uses. This would limit the feasible redevelopment of the site in the near or immediate future. This proposal requires limited construction to prepare the site for the facility and the surplus fill collected on the site will readily enable the site to be developed in the future, subject to a separate application, consistent with the future rezoning.

4.2.3 Delaying the works

In this instance, delaying the works is not a desirable outcome particularly in light of the growing need for appropriate waste disposal facilities that can support the various infrastructure and other building projects. Only a limited number of facilities in proximity to the WSEA are capable of meeting the specific criteria for disposal spoil, with these facilities nearing capacity. Any delay in the delivery of the proposed facility is likely to constrain future development projects in the area as they will be required to find alternate waste disposal facilities located further away from construction sites.

4.2.4 The Proposal

The proposal is the most appropriate option at this time given the overall growth and development planned for the WSA region and the need for such critical support disposal facilities. The site will be capable of accommodating approximately 528,803m^3 of clean disposal spoil from State Significant Infrastructure projects and associated construction sites. Notwithstanding this, the proposal will not preclude the future redevelopment of the site, upon any envisaged future rezoning. The disposal spoil deposited on site will not impede or introduce limitations on the site from being developed for currently permissible and future alternate uses. Additionally, the proposed waste

management facility is intended to be complete and stabilised prior to commencement of airport commissioning phase forecast for 2025, therefore representing no potential risk or impacts to the WSA.

5.0 Planning Context

5.1 Commonwealth Legislation

The Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) requires approval from the Commonwealth Minister for the Environment for actions that will have a significant effect on matters of national environmental significance, including identified threatened species. The proposed development does not impact upon any identified threatened species listed under the EPBC Act. Therefore, the proposal will not have a significant impact on matters of national environmental significance as listed in the EBPC Act and accordingly, a referral is not required to the Commonwealth Minister for the Environment.

5.2 State Legislation

5.2.1 Environmental Planning and Assessment Act 1979

The EP&A Act applies to all development in New South Wales and sets out the procedures and objects for all development. Section 1.3 of the Act sets out the objects of the Act which are as follows:

(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,

(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,

(c) to promote the orderly and economic use and development of land,

(d) to promote the delivery and maintenance of affordable housing,

(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,

(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),

(g) to promote good design and amenity of the built environment,

(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,

(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,

(j) to provide increased opportunity for community participation in environmental planning and assessment.

The proposal seeks to carry out a permissible use under the current zoning on the site while not impeding or limiting the future redevelopment of the site for a use that is more strategically aligned to the envisaged future zoning consistent with the objectives of the WSAP. In this regard, the proposal promotes the orderly and economic use of the site.

Section 4.15 sets out the matters for consideration in determining a development application by a consent authority. The proposal is consistent with the matters in this section, in particular the proposal is consistent with the provisions of the relevant environmental planning instruments (refer to **Section 5.3.3** to **Section 5.3.7** below), draft environmental planning instruments (**refer to Section 5.3.8**), the relevant Development Control Plan (refer to **Section 5.3.9**) and the EP&A Regulations (refer to **Section 5.2.2**). The likely impacts of the development are discussed in **Section 6.0** of this EIS and submission. The proposal is also suitable for the site and is in public interest (refer to **Section 7.5**).

Section 4.10 of the EP&A Act relates to designated development and refers applicants to the EP&A Regulation.

5.2.2 Environmental Planning and Assessment Regulation 2000

Schedule 2 of the EP&A Regulation sets out procedures which relate to the preparation and submission of Environmental Impact Statements. This EIS has been prepared in accordance with Clauses 6 and 7 of Schedule 2 which relate to the form and content of the EIS.

Further, the EP&A Regulation specifies development that is Designated Development. As set out in **Section 1.1** the proposal constitutes a Waste Management Facility that is located within 100m of a natural waterbody and within 250m of an unrelated residential dwelling under Clause 32(1)(d) of Schedule 3 in the EP&A Regulation.

5.2.1 Biodiversity Conservation Act 2016

The Biodiversity Conservation Act 2016 protects threatened species, communities and critical habitat in NSW. It provides protection for species, populations and ecological communities considered endangered and vulnerable.

The site contains three Plant Community Types (PCTs) which are to be cleared for the proposed development. As the area of native vegetation to be cleared is greater than 0.25 ha, the area threshold for the NSW Biodiversity Offset Scheme is passed. A Biodiversity Development Assessment Report (BDAR), consistent with the NSW Biodiversity Conservation Act 2016 (BC Act) and Biodiversity Assessment Method (BAM), has been prepared.

The assessment completed within the BDAR (**Appendix F**) identified direct impacts on 0.69ha of Broad-leaved Ironbark, 1.63ha of Grey Box-Forest Red Gum and 0.85ha of Coastal Freshwater Wetlands. This requires a total of 44 ecosystem credits to be retired, and a further 31 credits for residual impacts on 2.48ha of Southern Myotis.

5.2.2 Protection of the Environment Operations Act 1997

The Protection of the Environment Operations Act 1997 (POEO Act) regulates operations which have the potential to harm the environment. Schedule 1 of the POEO Act specifies development that is classified as a scheduled activity. Pursuant to Schedule 1 Clause 39(2)(e), the proposed development is not classified as a scheduled activity (Waste Disposal (application to land)) as it will involve the storage of clean fill including (VENM or ENM) only, subject to the general exemption on the site. Clause 34 (resource recovery) also does not apply due to the imported material waste being VENM or meeting the conditions of a resource recovery order.

If material is identified as ENM, the ENM Exemption will apply and no licence will be required for the proposed activity. If in the event the excavated material is not classified as VENM, ENM or materials covered by a specific NSW EPA Resource Recovery Order and Exemption, the waste will not be accepted by the proponent and therefore not transported to the site. A Fill Management Plan has been prepared by ADE at **Appendix M**.

5.2.3 Water Management Act 2000

The proposed development requires a controlled activity approval under s91 of the *Water Management Act 2000* for works on waterfront land as it proposes filling works within the 40m buffer zone surrounding South Creek and along mapped watercourses. These works mainly relate to battering of the clean disposal soil collected on the site.

It is also considered that no water use or water supply approval under s89 or s92 of the *Water Management Act 2000* is required as no new water storage structures are proposed that takes water from a river, lake or aquifer.

Additionally, an aquifer interference approval is not considered necessary as no groundwater is anticipated to be impacted by the works as outlined in **Section 6.3**, which confirms no groundwater was identified during test investigations on the site.

5.3 Statutory Planning Instruments and Policy

The site is partially located within the RU2 Rural Landscape zone with the remainder of the site within the E2 Environmental Conservation zone.

Development for the purposes of the disposal of virgin excavated natural material is prohibited under the Penrith Local Environmental Plan 2010 (PLEP 2010) in both the RU2 Rural Landscape zone, or the E2 Environmental Conservation zone. The PLEP 2010 is discussed further in **Section 5.3.8**.

Accordingly, the proposed development relies on both the State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) in determining the current permissibility of the proposed development on the site. This is further discussed below.

5.3.1 State Environmental Planning Policy (Infrastructure) 2007

Clause 121(1) of the State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) states the following:

> *"(1) Development for the purpose of **waste or resource management facilities,** other than development referred to in subclause (2), may be carried out by any person with consent on land in a prescribed zone."*

(**Our emphasis**)

In this case, Clause 120 of the Infrastructure SEPP designates RU2 Rural Landscape as a prescribed zone. It is Noted that E2 Environmental Conservation is not a prescribed zone, however no development is proposed within the E2 zone. The Infrastructure SEPP also notes that waste or resource management facilities have the same meaning as the Standard Instrument, under which they are
defined as follows:

> *"waste or resource management facility means any of the following:*
> *(a) a resource recovery facility,*
> ***(b) a waste disposal facility,***
> *(c) a waste or resource transfer station,*
> *(d) a building or place that is a combination of any of the things referred to in paragraphs (a)–(c)."*

(**Our emphasis**)

Under this definition, the proposal would be considered a waste disposal facility, which comprises the following:

> *"waste disposal facility means a building or place used for the disposal of **waste by landfill,** incineration or other means, including such works as recycling, resource recovery and other resource management activities, energy generation from gases, leachate management, odour control and the winning of extractive material to generate a void for disposal of waste or to cover waste after its disposal."*

(**Our emphasis**)

Given that the proposed development would result in the use of the site as a disposal of waste (by landfill), the proposal would also be permissible by virtue of this pathway.

5.3.2 State Environmental Planning Policy (Western Sydney Employment Area) 2009

The site is located within the Western Sydney Employment Area (WSEA). The WSEA is located 50km west of the Sydney CBD and consists of 11 identified precincts. The site is located within Precinct 11 - Broader Western Sydney Employment Area. Formation of the WSEA is intended to provide employment lands in line with the broader growth in the Western Sydney area.

There are three main provisions of the WSEA SEPP that apply to the site are discussed below, being:

- Clause 8: relationship to other environmental planning instruments;
- Clause 12: relating to unzoned land; and
- Clause 18: requiring the preparation of a DCP.

Under the WSEA SEPP, the site is considered 'unzoned land' per the relevant Land Zoning Map. This is addressed further via Clause 12 of the SEPP:

> ***12 Unzoned land***
> *(1) Development may be carried out on unzoned land only with consent.*
> *(2) Before granting consent, the consent authority:*
> *(a) must consider whether the development will impact on adjoining zoned land and, if so, consider the objectives for development in the zones of the adjoining land, and*
> *(b) must be satisfied that the development is appropriate and is compatible with permissible land uses in any such adjoining land.*

This clause permits development to be carried out on land that is unzoned under the WSEA SEPP only with consent. This does not specify whether this relates to unzoned land under the WSEA SEPP, or unzoned under any other applicable environmental planning instrument. In this specific situation, the land is zoned as RU2 Rural Landscape under the Penrith LEP, and is therefore only unzoned for the purposes of the WSEA SEPP.

Pursuant to clause 12(2)(a), the consent authority, before granting consent, must consider whether the development will impact on adjoining zoned land. All adjoining land surrounding the subject site is unzoned under the WSEA SEPP,. The nearest land zoning that is adjoining and outside of the WSEA SEPP area is to the south of Elizabeth Drive, within the Liverpool LGA, subject to the Liverpool LEP 2008. Under the Liverpool LEP 2008 that land is zoned as RU1 Primary Production and RU4 Primary Production Small Lots. Again, the subject site is zoned under the Penrith LEP as RU2 Rural Landscape.

Clause 8 specifies the relationship of the WSEA SEPP to the Penrith LEP:

> ***8 Relationship to other environmental planning instruments***
> *(1) State Environmental Planning Policy No 1—Development Standards does not apply to the land to which this Policy applies.*
> *(2) This Policy to prevail over LEPs In the event of an inconsistency between this Policy and a local environmental plan or deemed environmental planning instrument that applies to the land to which this Policy applies, this Policy prevails to the extent of the inconsistency.*

Clause 8 confirms that the WSEA SEPP prevails over the Penrith LEP in terms of any inconsistency. However, in this situation, the land is unzoned under the WSEA SEPP (therefore not introducing any specific land uses), but still zoned RU2 under the Penrith LEP.

In this instance, the zoning under the Penrith LEP is not inconsistent with the WSEA SEPP noting that the site is unzoned under the SEPP and therefore there is no inconsistency, given the circumstances, for the WSEA SEPP to prevail over. Clause 8 will only apply in scenarios whereby a use is prohibited under the Penrith LEP and the use is then made permissible under the WSEA SEPP.

Further, the SEPP specifically sets out an approval pathway by virtue of clause 12 for development of unzoned land under the SEPP such as the site subject to a merit assessment (i.e. the site is to be consistent with the objectives of the adjoining zone objectives). However, in this instance, consent is sought for the proposal by way of the ISEPP.

Clause 18 of the WSEA SEPP specifies a requirement for a Development Control Plan (DCP) to be prepared for the land, except in cases where the Director-General notifies the consent authority that one is not required. The requirements in Schedule 4 of the WSEA SEPP apply in relation to any such DCP.

The Penrith DCP 2014 specifically identifies that it applies to all land within the Penrith LGA, and covers the land covered by the WSEA SEPP. A review indicates that this DCP generally achieves the requirements of Schedule 4 of the WSEA SEPP, and as such, can be taken to be the DCP applicable to the land, thereby achieving the requirement of Clause 18.

5.3.3 Proposed State Environmental Planning Policy (Western Sydney Aerotropolis)

The site has been identified within the Discussion Paper on the Proposed State Environmental Planning Policy (Western Sydney Aerotropolis) (WSA SEPP), as released for public comment in December 2019. Pending exhibition and subsequent gazettal, the WSAP (as further discussed in **Section 5.4.3**) informs aspects of the WSA

SEPP which are relevant to the proposal. Specifically, the WSAP details the application of land uses within the WSA SEPP. These include the following land use zones:

- Enterprise zone;
- Mixed Use zone;
- Agribusiness zone;
- SP1 Special Activities zone;
- SP2 Infrastructure zone; and
- Environment and Recreation zone.

The site is identified as being within a future Enterprise Zone and Environment and Recreation Zone under the exhibited WSA SEPP maps. The objectives of the Enterprise Zone as proposed in the exhibited Discussion Paper are:

- To ensure a range of uses that enable successful aerospace and defence industries;
- To manage the transition of land from non-urban uses to employment uses;
- To support the development of well-planned and serviced new urban communities in accordance with the Precinct Indicative Layout Plan;
- To safeguard land used for non-urban purposes from development that could prejudice the use of the land for future commercial land use purposes;
- To encourage a precinct built around professional services, high technology, food production and processing, health and education and creative industries;
- To ensure that land which has the potential to impact environmental conservation areas is developed appropriately and enhance biodiversity outcomes for the Precinct;
- To protect the operations of the Airport, including 24-hour operations, and provide appropriate protections for the community;
- Ensure there are no sensitive land uses (such as residential, aged care, early education and childcare educational establishments and hospital amongst other uses) located within the ANEC 20 and above contours;
- Ensure that land uses up to the ANEC 20 contour are subject to appropriate design and construction standards to reduce any potential for airport noise impacts;

Prevent potential conflicts between airport operations and land use/development outcomes.
The proposed development is not inconsistent with these objectives in that it will not impede or preclude the facilitation of an intended transition from non-urban land to urban lands that is consistent with the broader visions as detailed in the WSAP.

5.3.4 State Environmental Planning Policy No 33 – Hazardous and Offensive Development

State Environmental Planning Policy No. 33 — Hazardous and Offensive Development (SEPP 33) provides a systematic approach to planning and assessing proposals for potentially hazardous and offensive development for the purpose of industry or storage. SEPP 33 applies to any proposals which fall under the policy's definition of 'potentially hazardous industry' or 'potentially offensive industry'. The works are not considered to fall within these definitions.

5.3.5 State Environmental Planning Policy No 55 – Remediation of Land

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) provides that a consent authority must not consent to the carrying out of development on land unless:

(a) it has considered whether the land is contaminated, and
(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and

(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

A detailed assessment is included below at **Section 6.8**. The proposed development is supported by a Preliminary Site Investigation as prepared by JBS&G and including in **Appendix L**.

For this proposal, any remediation works required would be Category 2 under SEPP 55 and therefore not require consent. An appropriate condition of consent would ensure that a detailed site investigation report, and subsequently a Remediation Action Plan, is prepared for the site.

5.3.6 Sydney Regional Environmental Plan No 20 – Hawkesbury-Nepean River (No 2 -1997)

The Sydney Regional Environmental Plan No 20 - Hawkesbury-Nepean River (No 2-1997) (SREP 20) applies to the site. SREP 20 seeks to ensure that the potential impacts to Hawkesbury-Nepean River as caused by development are considered in a regional context.

The general planning considerations prescribed in SREP 20 have been assessed against the proposed development. Part 3 of SREP 20 specifies development controls for works within the SREP area. In accordance with Clause 11(7) of SREP 20, the proposed works are 'Filling'. As the proposed development includes filling of greater that 1m in depth and affecting an area greater than 100m, consent is required.

The proposal satisfies the aim SREP 20 as the potential impact of the project has been assessed in a regional context. SREP 20 also suggests that any feasible alternatives should be considered. A consideration of the alternatives has been undertaken (see Section 1.2) and it has been identified that there is not any other feasible, or more attractive, alternative proposal for the site considering the benefits which the project entails.

Another consideration prescribed in SREP 20 is the relationship between the potential impacts of the development and the environment, and how the impacts will be addressed and monitored. The monitoring of the potential impacts will also be undertaken throughout the life of the project through management plans.

5.3.7 Penrith Local Environmental Plan 2010

The Penrith Local Environmental Plan 2010 (PLEP 2010) is the principal planning instrument that applies to the site, in respect of zoning and development permissibility. Under the PLEP 2010, the site is zoned RU2 – Rural Landscape and E2 – Environmental Conservation, as illustrated in **Figure 20**.

No works or activities are proposed under this application in relation to land zoned E2 – Environmental Conservation.

Under the RU2 Rural Landscape zone, development for the purposes of clean spoil storage by way of a waste disposal facility is prohibited development. However, as described in **Section 5.3.2**, permissibility is available through the ISEPP, being the higher-order planning instrument.

As outlined in **Section 3.0**, the development does not propose any warehousing and distribution facilities, internal roads and / or creation of building pads as part of this application. The proposal will not involve any hard paving or heavy weight structures. Consent is only sought for a waste disposal facility with a temporary ancillary demountable site office building and compound.

Despite being prohibited under the RU2 zone, the proposal is seen to be generally consistent with the objectives of the zone and are compatible and similar to the existing uses on neighbouring sites.

Table 5 RU2 Rural Landscape Zone Objectives

Objective	Assessment
To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.	The proposal involves the stabilisation of filled land and also within the bund fronting Elizabeth Drive, which ensures the site can be maintained as an interim rural use.

Objective	Assessment
To maintain the rural landscape character of the land.	The proposal is to be located adjacent to two existing landfill sites and in the context of the surrounding nature of the land will not seem out of place.
To provide for a range of compatible land uses, including extensive agriculture.	The site is proposed to change to urban land uses under the WSAP, however, the proposed filling is not inconsistent with this in the interim, and does not preclude development from occurring. The proposed filling is permissible by virtue of the State Environmental Planning Policy (Infrastructure) 2007 as previously outlined in planning advice provided to Council.
To minimise conflict between land uses within the zone and land uses within adjoining zones.	The site will ultimately be employment land supporting the Aerotropolis, as will surrounding land also considered appropriate for employment purposes under the WSAP. Additionally, the proposed earthworks are a temporary use of the land until such time as it is rezoned and development for employment purposes.
To preserve and improve natural resources through appropriate land management practices.	The site is proposed to change to urban land uses under the WSAP, however, the proposed filling is not inconsistent with this in the interim, and does not preclude development from occurring.
To ensure development is compatible with the environmental capabilities of the land and does not unreasonably increase the demand for public services or public facilities.	The proposal will not place unreasonable demands on public services or facilities.

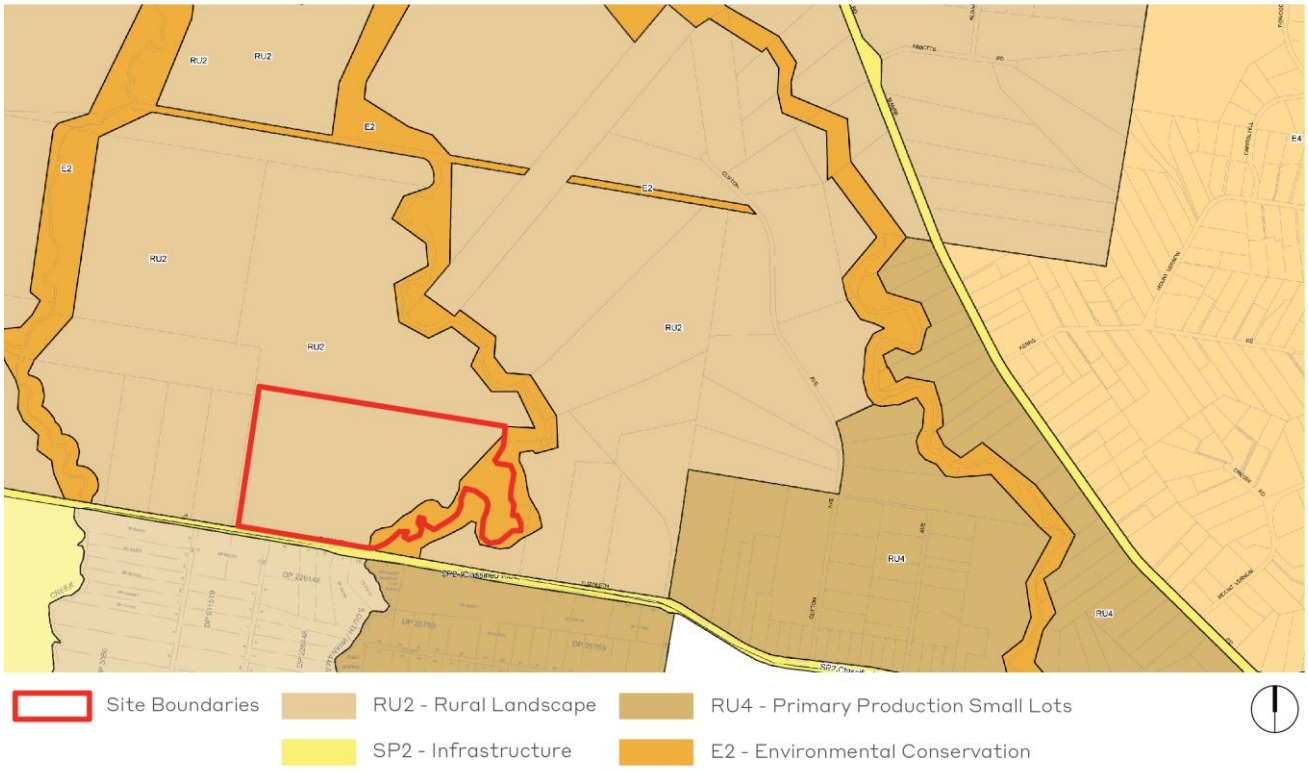


Figure 20 Extract form Penrith LEP 2010 – Land Use Zone

Source: Penrith Local Environmental Plan 2010

The PLEP 2010 specifies the following development controls for the site.

Table 6 Summary of applicable development controls as specified in the PLEP 2010

Clause	Assessment
4.1 - Minimum subdivision lot size	The site is zoned as requiring a minimal lot size of 40.0ha. The proposed development does not include the subdivision of the existing site. Accordingly, no change to the existing lot size is proposed.
4.2 - Rural subdivision	The proposed development does not include the subdivision of the existing site. Accordingly, no change to the existing lot size is proposed.
5.10 - Heritage conservation	The site does not include items of local or State heritage significance.
5.11 - Bush fire hazard reduction	The site is identified as being affected by bushfire, with both Vegetation Category 1 and Vegetation Category 2 identified within the site. Bushfire is addressed in **Section 6.11.1**.
7.1 - Earthworks	The proposed development incorporates earthworks across the site. The management of the proposed earthworks is discussed in **Section 3.2**.
7.2 - Flood planning	The site is identified as a Flood Planning Area under the PLEP 2010. Flooding and stormwater management is further addressed in **Section 6.1**.
7.5 - Protection of scenic character and landscape values	The site is identified as Land with Scenic and Landscape Values under the PLEP 2010. Visual impacts associated with the proposed development is addressed in **Section 6.9**.
7.9 - Development of land in the flight paths of the site reserved for the proposed Second Sydney Airport	The proposed development is largely consistent with the applicable policies, strategies and Directions relating to Western Sydney Airport in that the site is not proposed to be used for any sensitive uses that would be adversely impacted by flight paths but rather for the purposes of a temporary waste disposal facility.

5.3.8 Draft Environmental Planning Instruments

The proposal is generally consistent with relevant draft environmental planning instruments that apply to the site.

The Draft Remediation of Land SEPP will replace the current SEPP55, and important to note is that Clause 7 of SEPP55, as currently requiring contamination and remediation to be considered in determining development applications, will be brought across into the new SEPP, together with clarifications of potentially contaminating activities. A new provision will also be introduced that provides discretion to a consent authority to not require an investigation report if it knows the land the subject of the application to be otherwise suitable for the proposed use.

The Draft Environment SEPP also consolidates a range of existing SEPPs to clarify the intent and provide clear planning principles and controls. Of relevance to this proposal it its replacement of SREP20, as outlined above, and it is considered that the assessment completed of SREP20 will continue to apply to the Draft Environmental SEPP.

5.3.9 Penrith Development Control Plan 2010

The Penrith Development Control Plan 2010 applies to lands within the Penrith LGA including lands within the WSEA. The PDCP 2010 set out the following development principles:

1. Provide a long-term vision for cities, based on sustainability; intergenerational, social, economic and political equity; and their individuality;
2. Achieve long term economic and social security. Recognise the intrinsic value of biodiversity and natural ecosystems, and protect and restore them;
3. Enable communities to minimise their ecological footprint;
4. Build on the characteristics of ecosystems in the development and nurturing of healthy and sustainable cities;
5. Recognise and build on the distinctive characteristics of cities, including their human and cultural values, history and natural systems;
6. Empower people and foster participation;
7. Expand and enable cooperative networks to work towards a common, sustainable future;

8. Promote sustainable production and consumption, through appropriate use of environmentally sound technologies and effective demand management; and
9. Enable continual improvement, based on accountability, transparency and good governance.

The proposed development represents a use of the land appropriate for the site in the interim that will not preclude future development on the site that is consistent with multiple PDCP 2010 principles. The proposed waste disposal facility is not inconsistent with the strategies discussed throughout **Section 5.3**. Specifically, the proposed development will assist in achieving principles relating to economic development/security and ecological/environmental value.

A summary of the applicable development controls and an assessment of the proposed development's compliance with these controls is detailed in **Table 7** and in the relevant section in **Section 6**.

Table 7 Summary of development controls as specified in the Penrith Development Control Plan 2010

Control	Assessment
C1 Site Planning and Design Principles	
1.1.2. Key Areas with Scenic and Landscape Values	The site is identified with within the PLEP 2010 as having Scenic and Landscape Values. A Visual Impact Assessment in support of the proposed has been prepared by Clouston and included in **Appendix R**. Visual Impact is further addressed in **Section 6.9**
1.2.4. Responding to the Site's Topography and Landform	The proposed development will result in a substantial change to the topography of the existing site. It is noted that the proposed development does not incorporate built form, therefore, an assessment of future built forms' response to topography will be addressed within future applications. The extent of works is described in **Section 3.0**. The proposed development's effect on Soils and Water is discussed in **Section 6.2**
C2 Vegetation Management	
2.1. Preservation of Trees and Vegetation	The proposed development will incorporate the removal of trees in order to facilitate earthworks. The proposed development is supported by a Biodiversity Development Assessment Report prepared by Ecological and included in **Appendix F**. Impacts on the proposed development in respect of biodiversity is further is addressed in **Section 6.7.**
2.2. Biodiversity Corridors and Areas of Remnant Indigenous Vegetation in Non-Urban Areas	
2.3. Bushfire Management	The proposed development is within lands that are identified as prone to bushfire risk. The proposed development is supported by a Bushfire Assessment Report as prepared by Australian Bushfire Protection Planners and included in **Appendix Q**.
C3 Water Management	
3.1. The Water Cycle/Water Conservation	The proposed development is located within proximity of South Creek. Further, the proposed modification of the natural ground level will modify the existing water cycles within the area. The proposed development is supported by numerous studies in assessment in respect of water management and discussed throughout this assessment. Specifically: • Stormwater and Flooding is addressed in **Section 6.1** • Soils and Water is addressed in **Section 6.2** • Biodiversity (riparian corridors) is addressed in **Section 6.7**
3.2. Catchment Management and Water Quality	
3.3. Watercourses, Wetlands and Riparian Corridors	
3.4. Groundwater	The proposed development is located within proximity of South Creek. The proposed development is supported by a Geotechnical Investigation undertaken by Pells Sullivan Meynink and included in **Appendix P**. Soils and Groundwater are addressed in **Section 6.2**
3.5 Flood Planning	The site is identified by the PLEP 2010 as being partially flood affected by the 100-year flood extent. However, the proposed works are wholly contained within portions of the site that are above the existing 100 year flood extent (Cardno 2018). Flood risk is further addressed in **Section 6.2** and stormwater management is addressed in **Section 6.1.** Provisions of stormwater management are detailed in the Civil Drawings prepared by AT&L, included in **Appendix C.**
3.6. Stormwater Management and Drainage	
3.7. Water Retention Basins/Dams	
C4 Land Management	
4.1. Site Stability and Earthworks	The proposed development earthworks that will result in significant modifications to the existing ground plane. The extent of the proposed earthworks is detailed in the Civil

Control	Assessment
	Drawings prepared by AT&L (**Appendix C**) and further described in **Section 3.2**. Additionally, Geotechnical investigations in respect of the proposed development is addressed in **Section 6.11.2** with supporting studies found in **Appendix P**.
4.2. Landfill	The proposed development involves the disposal of clean spoil material including VENM/ENM on the site. The proposed waste management facility is detailed in the Civil Drawings prepared by AT&L (**Appendix C**) and further described in **Section 3.2**. The use of VEMN/ENM or materials covered by a specific NSW EPA Resource Recovery Order and Exemption which are suitable for their proposed use generally satisfies the criteria specified in the PDCP 2010. The composition of soils is addressed in **Section 3.2.2**.
4.3. Erosion and Sedimentation	The proposed development incorporates provisions of erosion and sediment control as detailed in the Civil Drawings prepared by AT&L (**Appendix C**). The proposed development is supported by numerous studies in assessment in respect of erosion and sediment control. Specifically: • Stormwater and Flooding is addressed in **Section 6.1** • Soils and Water is addressed in **Section 6.2**
4.4. Contaminated Lands	The proposed development involves the use of clean spoil material including VENM/ENM or materials covered by a specific NSW EPA Resource Recovery Order and Exemption which are suitable for their proposed use as part of the proposed waste management facility. The use of VENM/ENM involves the appropriate certification of potential contaminants prior to its deposit on the site. With respect to the existing site, the proposed development is supported by a Contamination Assessment, prepared by JBS&G and included in **Appendix L**. Contamination is further addressed in **Section 6.8**
4.5. Salinity	The proposed development is supported by Geotechnical investigations as prepared by Pells Sullivan Meynink. Soil Salinity is addressed in **Section 6.2**
C5 Waste Management	
5.1. Waste Management Plans	The proposed development incorporates the disposal of clean spoil material including VENM/ENM or materials covered by a specific NSW EPA Resource Recovery Order and Exemption which are suitable for their proposed use on the site. Accordingly, the proposed development is supported by a Waste Management Plan, prepared by SLR and included in **Appendix H**. Waste Management is addressed in **Section 6.3**
5.2. Development Specific Controls	
5.3. General Controls	
5.4. Hazardous Waste Management	
5.5. On-Site Sewage Management	
C6 Landscape Design	
6.1 Controls	The proposed development represents works that will not preclude future development on the site. Therefore, landscaping works can be incorporated within the future applications related to civil works and the construction of built form.
C7 Culture and Heritage	
7.1. European Heritage	No items of local or State heritage significance have been identified on the site. However, items of heritage significance are identified within the surrounds and potential for archaeological items within the site. The proposed development is supported by a Statement of Heritage Impacts and Archaeological Survey, prepared by Artefact and included in **Appendix I** and **Appendix J**. Heritage Impacts is addressed in **Section 6.10**
7.2. Aboriginal Culture and Heritage	
7.3. Significant Trees and Gardens	The proposed development involves the clearing of some vegetation to facilitate the proposed earthworks. Impacts associated with this clearing are addressed in **Section 6.7.**
C10 Transport, Access and Parking	
A detailed construction traffic management plan is provided at **Appendix K** which undertakes a detailed assessment of construction traffic impacts associated with the development. Traffic impacts associated with the operation of the facility (staff parking) is considered to be nominal and not have any material traffic impacts. No onsite car parking is proposed as part of the facility. Refer to **Section 6.5** for more detail.	
C12 Noise and Vibration	
Refer to the Construction Noise and Vibration Management Plan at **Appendix O**. The reports identified that the proposed development would exceed the relevant noise criteria. To this end appropriate mitigation measures and are proposed to manage impacts. Once applied, the proposal will be able to comply with the aims and objectives of this section.	
C13 Infrastructure and Services Provision	

Control	Assessment
The proposal relates to collection of clean spoil disposal on site. The existing services either have the capacity or can be augmented from existing networks in the area to services the proposed development.	
Part D5.9 Extractive Industries	
This part of the DCP sets out provision that apply to extractive industries. In this instance the proposal relates to a waste disposal facility that will simply collect clean spoil from nearby infrastructure and other building project sites. Matters in relation to dust, noise, transport and washdown/stormwater management are further discussed in **Section 6.0** of this EIS. A Landscape Site Analysis Plan as required under this part has been provided under the VIA (refer to **Appendix R**). A full Construction Environmental Management Plan would be provided pre-commencement of any works to Council and can be conditioned under the DA consent.	

Relationship with the WSEA SEPP

As discussed in **Section 5.3.3**, the PDCP 2010 applies to land across the Penrith LGA including the WSEA land and the site subject to this application. While clause 18 of the WSEA SEPP calls for the preparation of a DCP in accordance with the requirements of Schedule 4, in this instance, the PDCP 2010 satisfies the requirement under the SEPP and as such a separate DCP is not strictly required.

It is also understood that consent was granted to other development applications within the WSEA SEPP area under the Penrith DCP in recent times, thereby demonstrating that the Penrith DCP applies to the site and achieves the requirements of the WSEA SEPP. Notwithstanding, the Western Sydney Aerotropolis DCP as recently exhibited would take precedence. The Western Sydney Aerotropolis DCP identifies a range of matters for consideration as part of development on land within its application area, including:

- Precinct visions and place statements;
- Consideration of the natural environment;
- Risk minimisation and management including aviation safeguarding, flooding, bushfire hazard management and other matters;
- General provisions relating to character and place, urban design, services and utilities;
- Heritage and cultural conservation;
- Subdivision design; and
- An outline of potential development types.

The Western Sydney Aerotropolis DCP has been reviewed and whilst the draft DCP did not contain controls, the proposal is consistent with the draft objectives within the DCP. It is understood further detail will be provided as part of the Phase 2 DCP when released. Note, this proposal was lodged in advance of the release of the draft DCP and WSAP.

5.4 Strategic Policy

5.4.1 A Metropolis of Three Cities – the Greater Sydney Region Plan

A Metropolis of Three Cities – the Greater Sydney Region Plan (GSRP) was released by the Greater Sydney Commission (GSC) in 2018. The GSRP takes a long-term view of changes in policy, trends, directions, and actions that will inform planning and development for the Greater Sydney area for the next 30 years. The plan's vision is underpinned by the concept of a three-city metropolis that enhances Greater Sydney's liveability, productivity and sustainability. This will also be supported through greater infrastructure provision and collaboration throughout the region.

Notably, the WSA is the key catalyst for growth within Western Sydney – described by the GSRP as the 'Western Parkland City'. While the WSA is fundamental to the revisioning of the region, the plan describes growth within the region as being supported by a 'polycentric city' model, capitalising on the established centres of Liverpool, Penrith and Campbelltown-Macarthur. The plan further details the importance of the Western Sydney City Deal and its role in supporting investment within the region, collectively supporting the Western Economic Corridor – underpinned by industries such as defence and aerospace, trade and freight, logistics and manufacturing, health, education and sciences.

To support the vision of boosting Greater Sydney's liveability, productivity and sustainability, the GSC have established ten (10) directions which establish the aspirations for Greater Sydney over the next 40 years. These are:

1. A city supported by infrastructure - providing infrastructure to support new developments to increase 30-minute access to a metropolitan centre;
2. A collaborative city - working together to grow Greater Sydney including the increased use of public resources such as open space and community facilities;
3. A city for people - celebrating diversity and focusing on people, through increasing walkability to local centres;
4. Housing the city - providing housing choices with increase housing completions and the implementation of Affordable Rental Housing Target Schemes;
5. A city of great places - designing places for people and providing increased access to open space;
6. A well-connected city - developing a more accessible and walkable city, focusing on a high percentage of dwellings within a 30-minute public transport area of a centre;
7. Jobs and skills for the city - creating conditions for a stronger economy through increasing jobs in metropolitan and strategic centres;
8. A city in its landscape - valuing green spaces and landscape and improving urban tree canopy cover and an expanded Greater Sydney Green Grid;
9. An efficient city - using resources wisely to reduce transport-related greenhouse gas emissions and reducing energy use per capita; and
10. A resilient city - adapting to a changing world with standardised state-wide natural hazard information.

While the proposed development's primary function will be the disposal of VENM and ENM on the site, this embodies site preparation works that will not preclude, rather will benefit, any future development on the site. Therefore, the proposed development is not inconsistent with the broader strategic vision as detailed in the GSRP, namely by not precluding or impeding development that is complementary of the future WSA and the Aerotropolis. Any future development on the site as facilitated by the proposed development will have the potential to generate employment-based uses, supporting growth in employment and associated economic activity as envisaged for the Aerotropolis.

Objectives

Supporting the ten directions, the GSRP specifies 40 objectives in achieving greater liveability, productivity and sustainability throughout Greater Sydney. Specifically, the proposed development assists in achieving the following objectives:

- Objective 2: 'Infrastructure aligns with forecast growth – growth infrastructure compact';
- Objective 3: 'Infrastructure adapts to meet future needs';
- Objective 5: 'Benefits of growth realised by collaboration of governments, community and business';
- Objective 6: 'Services and infrastructure meet communities' changing needs';
- Objective 13: 'Environmental heritage is conserved and enhanced';
- Objective 20: 'Western Sydney Airport and Badgerys Creek Aerotropolis are economic catalyst for Western Parklands City'
- Objective 22: 'Investment and business activity in centres';
- Objective 25: 'The coast and waterways are protected and healthier';
- Objective 30: 'Urban tree canopy cover is increased';
- Objective 31: 'The Green Grid links parks, open spaces, bushland and walking and cycling paths';
- Objective 34: 'Energy and water flows are captured, used and re-used';

- Objective 36: 'People and places adapt to climate change and future shocks and stresses'; and
- Objective 37: 'Exposure to natural and urban hazards is reduced'.

5.4.2 Western City District Plan

Supporting the objectives of the GSRP are actions and priorities as detailed in a suite of region-specific plans known as the District Plans, released by the GSC in March 2018. The subject site is located within the Western City District. As with the Region Plan, the Western City District Plan (WCDP) places significant emphasis on the WSA as a driver for growth within the region, supported by the established centres of Liverpool, Penrith and Campbelltown-Macarthur.

The provision of the WSA within the Western City, combined with the Aerotropolis investment under the Western Sydney City Deal (WSCD), creates an opportunity for a Western Economic Corridor as described within the GSRP and supported through the WCDP. This corridor would consider the development opportunities arising from a North South Rail Link, from St Marys to the WSA and Aerotropolis, and providing east-west transport links. The creation of new major centres to take advantage of local economic activity along these transport corridors would contribute to the creation of new jobs in a wide and diverse range of fields. The proposed development is therefore located within the Western Economic Corridor. As discussed throughout the assessment, the proposed development embodies site preparation works that will facilitate future development in line with the broader vision for the Western Economic Corridor.

5.4.3 Western Sydney Aerotropolis Plan

The Western Sydney Aerotropolis Plan (WSAP) supersedes the previously exhibited Western Sydney Aerotropolis Land Use and Infrastructure Implementation – Stage 1 Initial Precincts. The WSAP was released by the Department of Planning, Industry (DPIE) in December 2019 and is on public exhibition, concurrent with the release of the Discussion Paper on the Western Sydney Aerotropolis State Environmental Planning Policy and the draft Western Sydney Airport Development Control Plan.

Prepared in response to the broader vision as detailed in GSRP the WSAP provides a foundation for consultation between stakeholders within the region, enabling a collective approach in the delivery of the Western Sydney Aerotropolis. The WSAP includes a Structure Plan, identifying key precincts and their associated land uses. The site is located within two (2) of the proposed precincts within the WSAP, being:

- Badgerys Creek Precinct; and
- Wianamatta-South Creek Precinct.

The WSAP employs a staged approach. Identified Initial Precincts, such as the Aerotropolis Core, Northern Gateway (located west of the subject site), Agribusiness, Mamre Road, Badgery's Creek and Wianamatta-South Creek are understood as priorities in future precinct planning with Western Sydney Planning Partnership indicating rezoning is expected mid-2020 and precinct planning will occur by late 2020. The proposed waste management facility will not preclude any future development on the site subject to the rezoning occurring, noting the proposed importation of fill material is expected to be completed prior to the operation of the Airport. Any future built form application would be subject to assessment under the National Airports Safeguarding Framework, notwithstanding that development on the site is highly unlikely to impact on the Obstacle Limitation Surface, maximum intensity lighting, wildlife attraction restrictions or ANEC/ANEF 20 noise zone

The site is identified to accommodate 'Flexible Employment' land uses (through the Enterprise zoning) within the Badgerys Creek Precinct and Environment and Recreation land uses (via the Environment and Recreation zoning) within the Wianamatta-South Creek Precinct. The importance of the Wianamatta-South Creek Precinct is detailed in the WSAP, specifying the Precinct as critical in achieving objectives as detailed in the GSRP.

Importantly, the Enterprise land use table identifies a 'waste or resource management facility' as permitted with consent under the Discussion Paper for the WSA SEPP.

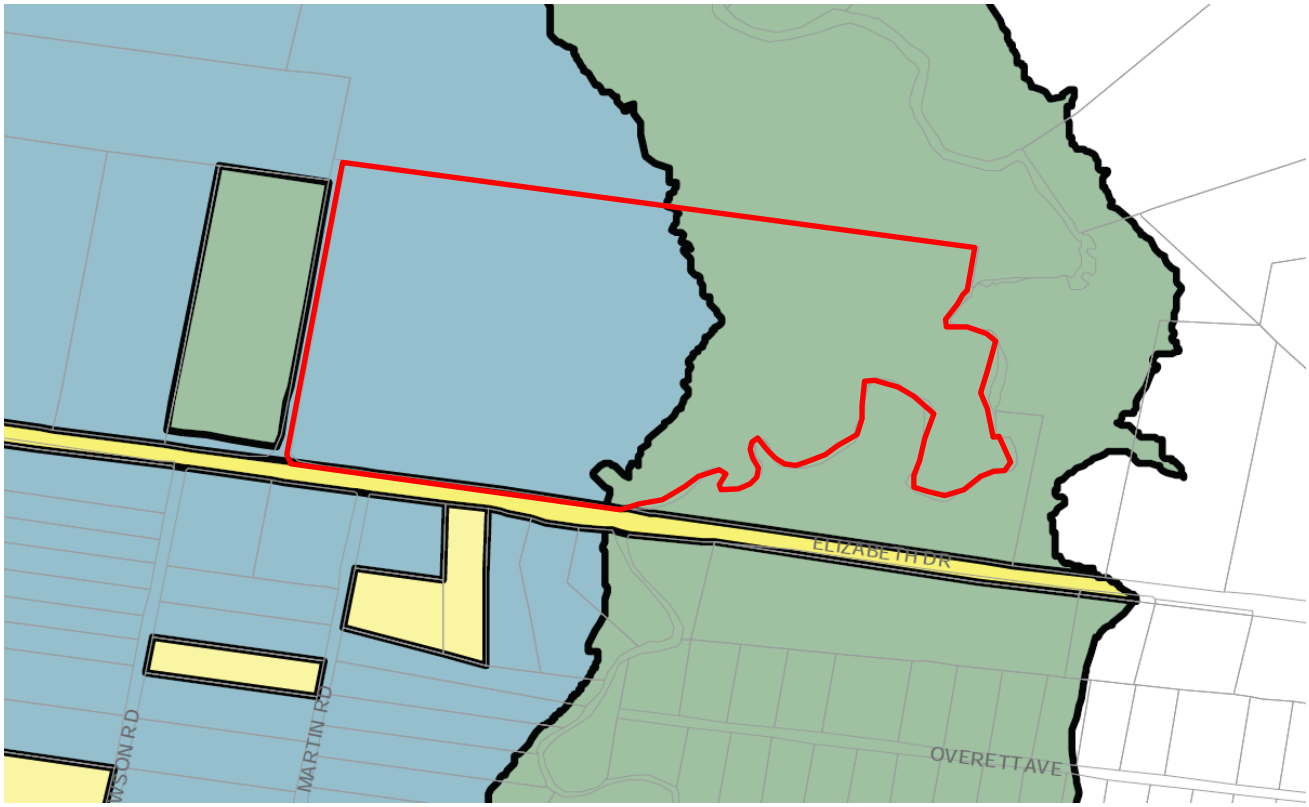


Figure 21 Proposed WSA SEPP land use zoning

Source: DPIE

The WSAP is on exhibition until 28 February 2020 for community and stakeholder feedback.

Infrastructure

The WSAP details provisions of infrastructure to be accommodated within the site. Specific to this development are the provisions of transport and open space. The WSAP seeks to accommodate conservation, open space, infrastructure (wastewater management) and recreation within the Wianamatta-South Creek Precinct.

Beyond this, future development on the site is expected to be serviced by significant transport infrastructure, including the proposed North South Rail Link (Stage 1), the M9 Outer Sydney Orbital Corridor and M12 Motorway linking the WSA with the M7 Western Sydney Orbital. The proposed corridor for the M12 traverses through the site with the nearest interchanges proposed at the WSA entry and Mamre Road via Elizabeth Drive.

Future corridors are proposed for a WSA to Parramatta rail link and a freight rail corridor through Western Sydney. It is understood that these corridors are in the early strategic planning phase.

The proposed development consists of site preparation works that will not preclude future development on the site that is largely consistent with that envisaged by the WSAP and will be supported by various infrastructure as identified in the WSAP. The WSAP sets out a sequenced approach to precinct planning and delivery of activation for the Aerotropolis.

5.4.4 National Airports Safeguarding Framework

The National Airports Safeguarding Framework (NASF) is a national land use planning framework that aims to:

- improve community amenity through minimising the development of noise-sensitive developments near airports; and
- improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions.

The NASF provides a range of guidelines for various critical airport-related impacts to be considered for development situated close to operational airports. Important to note is that the WSA is not expected to be operational until 2026, at which time the proposed waste management facility will be complete and stabilised, and consequently not impact on any operational aspects of the WSA.

The NASF addresses:

- measures for managing impacts of airport noise;
- managing the risk of building generated windshear and turbulence at airports;
- managing the risk of wildlife strikes;
- managing the risk of wind turbine farms;
- managing the risk of lighting distraction to pilots;
- managing the risk of intrusions into the protected airspace of airports;
- protecting aviation facilities in terms of communication, navigation and surveillance; and
- protecting strategically important helicopter landing sites.

Of relevance to the proposed waste disposal facility in terms of the NASF are:

- wildlife strikes due to the nature of the fill material that can be covered by the NSW EPA Resource Recovery Order and Exemption which can include putrescible wastes;
  - It is intended that this type of waste will not be used at the site and as such there will be no increased risk of wildlife strike occurring. Noting this, the facility would be considered as a non-putrescible waste facility – landfill, with a moderate wildlife attraction risk under the NASF, requiring mitigation within the 3km radius (Area A) of the WSA.
- lighting distraction; and
  - lighting distraction will not be a matter of consideration for the proposed development due to its intended completion prior to airport operations commencing at the site;
- Intrusions into protected airspace as defined by the Obstacle Limitation Surface (OLS).
  - Part of the site is within a transitional surface area of 125.5m AHD. The finished surface levels as proposed are up to RL 58.5m AHD which will not penetrate the OLS.

The NASF has been considered as part of the assessment process for the proposed development, notwithstanding that the waste disposal facility will be complete and stabilised prior to the WSA becoming operational in 2026.

6.0 Environmental Assessment

This section of the report assesses and responds to the environmental impacts of the proposed DA. It addresses the matters for consideration set out in the SEARs (see **Section 1.3**). The Mitigation Measures at **Section 8.0** complement the findings of this section.

This chapter addresses the following matters:

- Strategic Planning and Land Use;
- Stormwater and Flooding;
- Soil and Water;
- Waste Management;
- Traffic and Transport;
- Air Quality and Odour;

- Noise and Vibration;
- Biodiversity;
- Contamination;
- Visual Impact;
- Heritage;
- Hazard and Risk; and
- Social and Economic Impacts.

6.1 Strategic Planning and Land Use

As discussed within this EIS, the proposal for a waste disposal facility represents a permissible use within the current planning context. The proposal will not impede or limit the future redevelopment of the site for alternate development uses upon its future rezoning in line with the WSAP and WSA SEPP intended to occur in mid-2020, notwithstanding that the proposed Enterprise Zone on the site will permit with consent the development of a waste or resource management facility. The importation and placement of clean spoil on the site will instead readily enable the site to be developed in the future with limited rehabilitation works such as demolition (since no heavy weight structures or hard surfaces are proposed), remediation, earthworks and other preparatory works required to adapt the site for future redevelopment. Once the facility reaches its maximum capacity, it is anticipated that the site will be closed off and considered for the next highest and best use permissible on the site in line with the site's future zoning.

The location and nature of the proposed facility is also such that it aligns with some important attributes of a waste disposal facility. The site is strategically located within the WSEA which is anticipated to undergo significant growth and development in the near future. As such, the facility will be able to support the growth of the broader area. Importantly, it will provide an economically feasible option for several sites by reducing haulage distances from work sites and also ameliorate traffic impacts on the broader road networks. The clean disposal spoil imported on the site is not proposed to be exported to any external sites. This will further curb impacts (traffic and noise among others) typically associated with such facilities.

It is understood that State Significant Critical Infrastructure projects such as Westconnex would consider the above attributes (traffic, economic feasibility and environmental benefits) to prioritise and select an appropriate disposal facility for the excess clean spoil generated from works on their sites. In this regard, the proposed facility is capable to qualify and service such large scale, critical infrastructure projects.

Given the growing need for suitable and well-located waste disposal facilities, the proposed development represents an orderly and economic use of the site in the interim and supports the development of a circular economy without impeding its future development for alternate uses, upon its future rezoning.

6.2 Stormwater and Flooding

This application does not seek to modify the existing landform of the site below the existing 100-year flood extent (Cardno 2018). The proposal is entirely contained above the existing 100-year flood extent (Cardno 2018). A Flood Risk Assessment and Flood Impact Assessment in support of the application has been prepared by Cardno and are included in **Appendix G**. importantly, the WSAP identifies that the 100-year flood extent has been used for mapping of the Wianamatta-South Creek Precinct boundary, instead of the PMF level used under the previous Stage 1 LUIIP.

6.2.1 Existing Environment

The site is identified as partially flood affected by the 100-year flood extent, as specified in the PLEP 2010 and shown in **Figure 22**.

The site was incorporated within the South Creek Flood Study, prepared for Penrith City Council by WorleyParsons in 2015 utilising Light Detection and Ranging (LiDAR) survey collected between 2002 and 2006. Detailed site survey for the site and adjoining lots has been completed to inform Cardno 2018 Flood studies. Detailed survey

includes for previous land form change to Lot 5 DP860456 (the Site) and Lot 741 DP810111 as approved by Penrith City Council (Ref: DA08/0681) and completed between 2008 and 2010.

Due to the location of South Creek at the eastern extent of the site, the area is subject to flooding under a range of Annual Recurrence Interval (ARI) and Probable Maximum Flood (PMF) events, including 20 year and 100-year ARI rainfall events.

A Flood Risk Assessment in support of the application has prepared by Cardno and is included in **Appendix G**.

Figure 22 Extent of Flood Planning Area

Source: PLEP 2010

6.2.2 Potential Impacts

An assessment of the potential flood impacts relating to the proposed works is provided below.

Penrith City Council's LEP defines the flood planning level as:
"*Flood planning levels means the level of a 1:100 ARI (average recurrence interval) flood event plus 0.5 metres freeboard".*

This application does not seek to modify the existing landform of the site below the existing 100-year flood extent (Cardno 2018). The proposal is entirely contained above the existing 100-year flood extent (Cardno 2018).

The proposed works have been designed to limit exposure to flooding risk associated with the portions of site above the 100-year ARI flood level.

The proposed works result in localised minor increases of PMF flood event depth and velocities adjacent the eastern boundary of site, though it is to be noted the PMF extent is relatively unchanged from existing conditions. The existing 100 year and PMF flood extents and depths are illustrated below in the figures **Figure 23** and **Figure 24**.

A Flood Impact Assessment in support of the application has prepared by Cardno and is included in **Appendix G**.

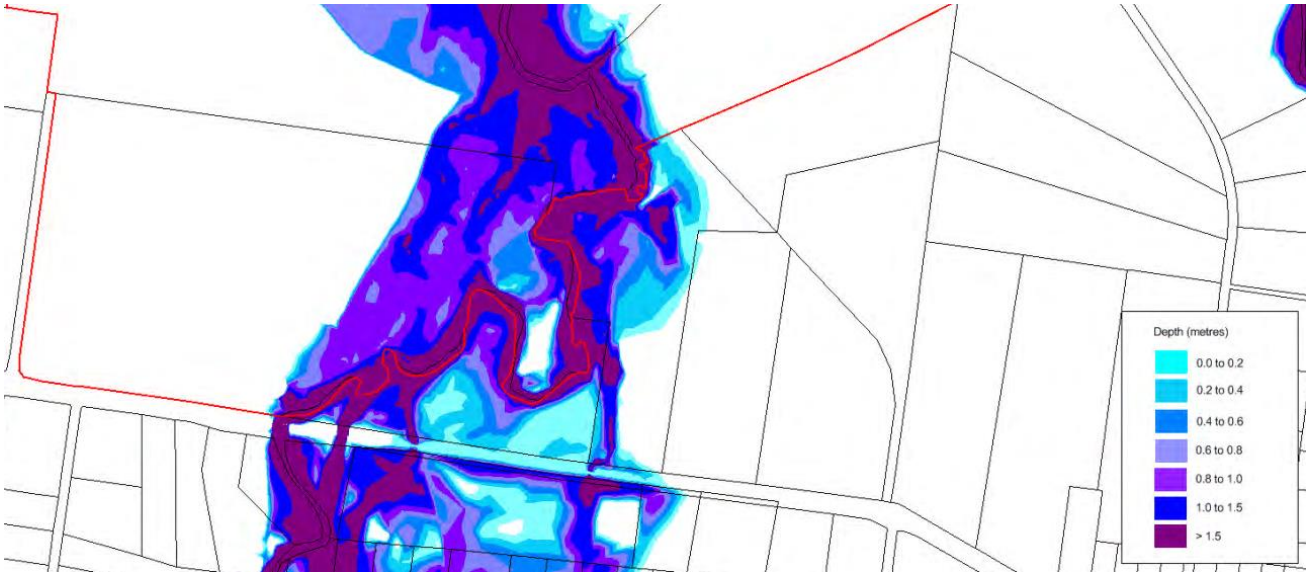


Figure 23 Existing 100 yr ARI Flood Depths – Detailed Survey (2018) Conditions

Source: Cardno

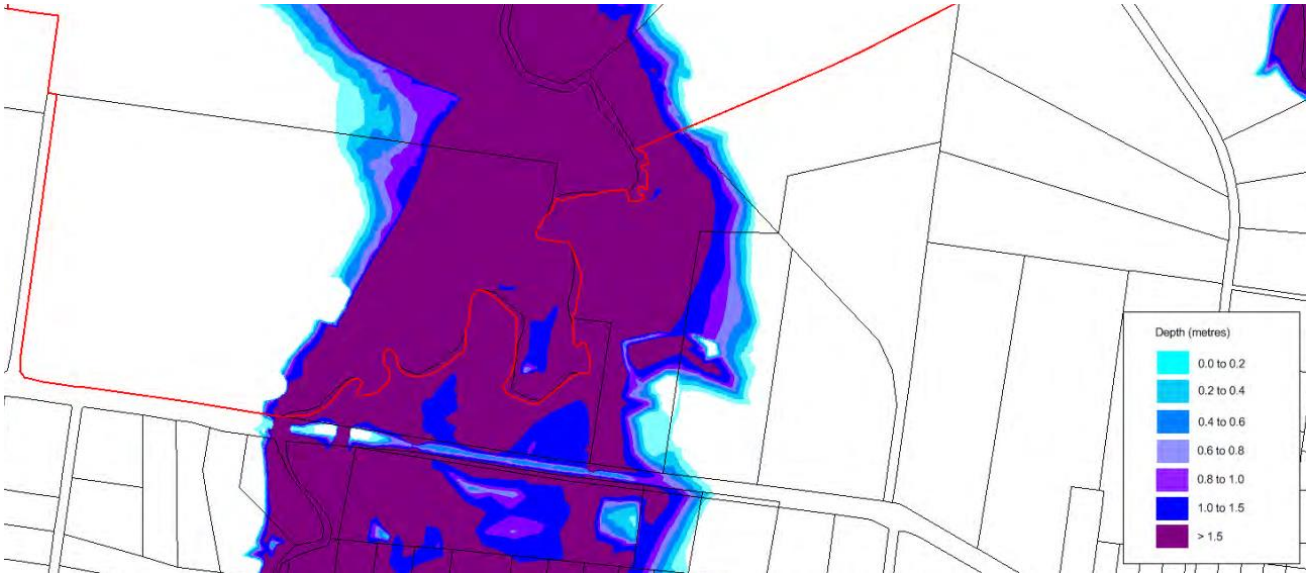


Figure 24 Existing PMF Flood Depths – Detailed Survey (2018) Conditions

Source: Cardno

Importantly, the WSAP utilises the 100-year flood extent, based on a 2015 Worley Parsons flood study. Since then, the Penrith City Council 2019 Draft South Creek Floodplain Risk Management Study has been released for exhibition, which is based on 2018 detailed survey data, however is yet to be reflected in the WSAP though is a matter for consideration. Additionally, the draft WSAP acknowledges that flood extents will be subject to detailed precinct planning. The modelling undertaken for the waste management facility as proposed is based on the 2018 detailed survey data (resulting in the 100-year flood extent), which indicates that all works are outside the 1:100 year flood level. This flood modelling is informed by the accurate and current 2018 detailed survey data and is therefore more consistent with what is envisaged to be reflected within the final WSAP.

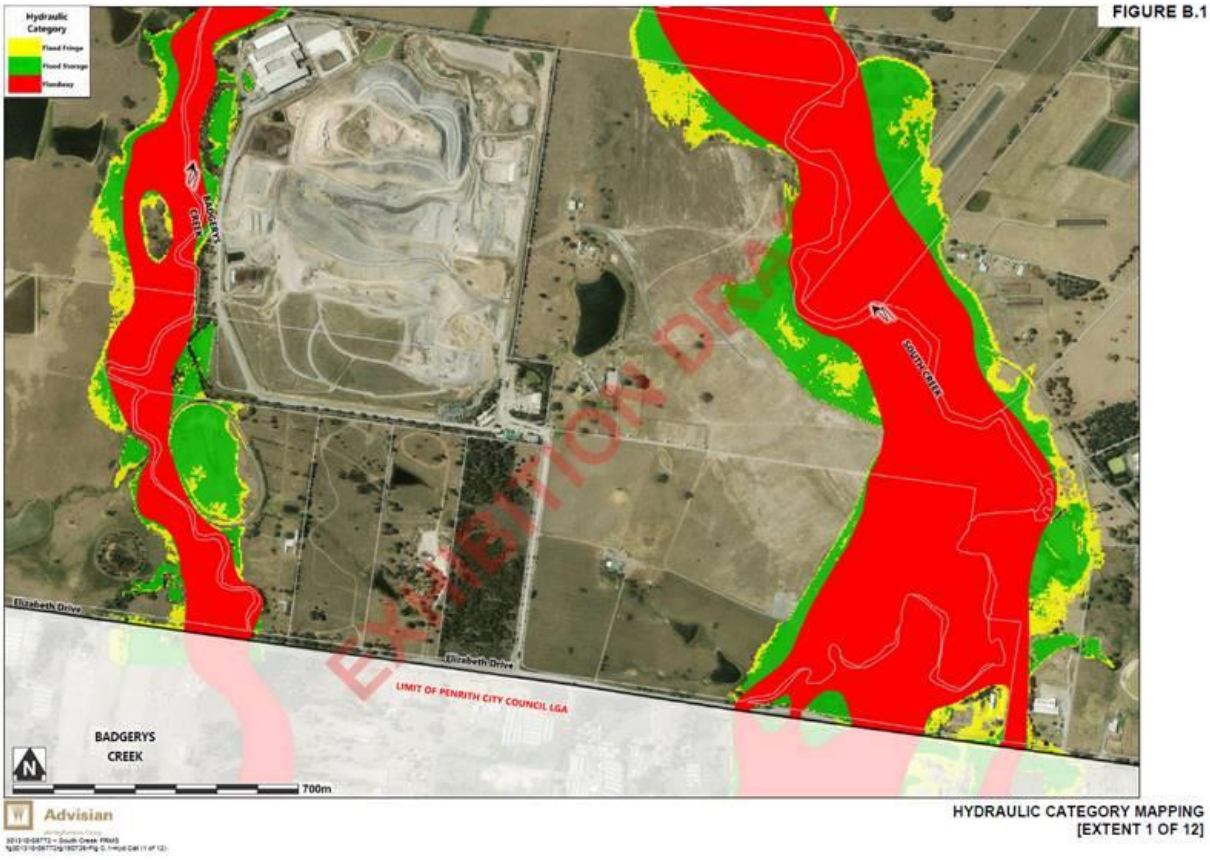


Figure 25 Penrith City Council 2019 Draft South Creek Floodplain Risk Management Study

Source: Penrith City Council/Advisian

6.2.3 Mitigation Measures

This application does not seek to modify the existing landform of the site below the existing 100-year flood extent (Cardno 2018). The proposal is entirely contained above the existing 100-year flood extent (Cardno 2018).

Notwithstanding the minor localised PMF flooding impacts associated with the proposal along the eastern boundary of the site, it is noted that the proposed works as sought under this application relate to a waste management facility with no habitable development or high-risk uses are proposed. Mitigation in respect of flooding impacts within the flood affected portion of the site will therefore be addressed in potential future applications that incorporate built form and associated uses. Provisions of erosion and sediment control are discussed in **Section 6.3**.

6.3 Soil and Water

The proposed development is supported by the following documents;

- Geotechnical Investigation;
- Soil Salinity Investigation;
- Interim Geotechnical Design Advice; and
- Bulk Earthworks Specification.

The reports have been prepared by Pells Sullivan Meynink and are included in **Appendix P**. The investigation is informed by desktop analysis and field work testing.

A Dam Dewatering Management Plan prepared by SLR is provided at **Appendix E** and outlines the process to be undertaken for dewatering the existing four dams on the site.

6.3.1 Existing Environment

The investigation describes fill that partly occurred on the site prior to 2011, and cites the relevant studies undertaken in respect of these works. Accordingly, the assessment confirmed the ground was stripped of top soil and unsuitable material prior to the placement of fill, with 1440 density tests were completed in respect of the works and that the fill was compacted to a medium density ratio.

The study involved the investigation of 13 test pits and 8 boreholes, to depths of 1.5m-3m for test pits and 1.4m-10.2m for boreholes. The location of test pits and boreholes is shown in **Appendix P**.

The investigation found the following subsurface conditions within the test locations.

Table 8 Summary of subsurface conditions

Inferred Unit	Inferred Top of Unit Depth Below Ground Surface (m)	Description
Topsoil	0.0	TOPSOIL; Clayey SAND to Sandy CLAY; low to medium plasticity, brown, trace silt, fine to medium grained sand, dry, soft to firm consistency. Rootlets, grass and organics observed throughout.
Fill	0.0	Sandy CLAY to Gravelly CLAY; low to medium plasticity, brown, fine to medium grained sand, angular shale gravel, dry, stiff consistency. Ripped shale fill; dark grey, highly weathered to slightly weathered, very low to medium strength, angular gravel and cobble with fine sand and clay.
Natural Soil	0.1 to 5.5	Clayey SAND to CLAY; low to high plasticity, orange, pale grey and brown to red-brown, fine to medium grained sand, sub-angular ironstone gravel, dry to moist, firm to hard consistency. Gravelly CLAY; medium plasticity, red brown grey, sub angular ironstone gravel, dry to moist, stiff to very stiff consistency.
Bedrock	1.0 to 8.5	SHALE; pale grey and orange, extremely weathered, extremely low strength. SANDSTONE; pale grey, extremely to highly weathered, very low strength, fine to medium grained.

Source: Pells Sullivan Meynink

Fieldwork include an investigation of soil salinity, incorporating testing of 15 soil samples as collected throughout the site. No indicators of salinity were observed during the fieldwork study. This is attributed to the existing ground cover which was present across the site. No groundwater was identified in test locations. The investigation found the following:

- pH of the soil samples analysed was in the range of 4.9 to 8.9, with an average of 6.7.
- The 1:5 soil to water extraction and subsequent electrical conductivity (EC1:5) of the soil samples analysed to be in the range of 39 µS/cm to 666 µS/cm
- Concentrations of chlorides in samples analysed was in the range of less than 10 mg/kg to 1550 mg/kg
- Concentrations of soluble sulfate in samples analysed was in the range of less than 10 mg/kg to 720 mg/kg
- Cation Exchange Capacity (CEC) in samples analysed was in the range 4.3 meq/100g to 20.6 meq/100g
- Exchange Sodium Percentage (ESP) in samples analysed was in the range of 4.8 % to 27.4 %.

These findings result in the soils on site being classified as “non-saline to moderately saline”.

Existing Dams

There are four existing dams on the site, identified as Dams A, B, C and D. The four dams were investigated on 28 February 2019 with multiple samples undertaken. The water quality within Dam A and B is generally worse than that of Dam C and D with concentration of metals being the differentiating factors.

All four dams were found to be generally brown in colour with vegetation present on the banks.

6.3.2 Potential Impacts

The assessment finds that excavation in the topsoil, fill, natural soils and bedrock is expected to be achievable with conventional earth moving equipment and minor rock breaking. Further, the investigation finds that proposed development is unlikely to encounter groundwater. Notwithstanding this, the investigation details provisions for earth stabilising works including the construction of batter and retaining walls.

The investigation includes interim geotechnical design advice in respect of the proposed bulk earthworks related to the waste disposal.

Dewatering of Dams

The sampling undertaken of the four Dams A, B, C and D indicates the water quality within Dams A and B was generally worse than Dams C and D, with concentration of metals being the primary difference. Total nitrogen levels in all dams would require treatment to meet the water quality requirements for the site as outlined in **Appendix E**. Based on these outcomes, the water quality in the dams is unsuitable for direct discharge to South Creek.

It is therefore proposed to dewater the dams by irrigation across the broader site, using an area of between 14,000 – 20,000m^2. This area should be almost saturated each morning to allow for evapotranspiration to occur throughout the day to reduce soil moisture.

Irrigation rates should be approximately 5L/s over the irrigation area (**Figure 26**). Dams A and B would have one area of 14,000m^2 and Dams C and D a separate 14,000m^2 area for irrigation. It is anticipated that Dams A and B will take approximately 1 week to dewater and Dams C and D will take up to three weeks, assuming no rainfall.

A powered submersible pump would be used (with a pump rate of 5L/s), with the inlet set away from the bank to avoid sucking up sediment and floating plants. Appropriate measures to prevent spills and groundwater contamination will be provided as part of the detailed dewatering plan.

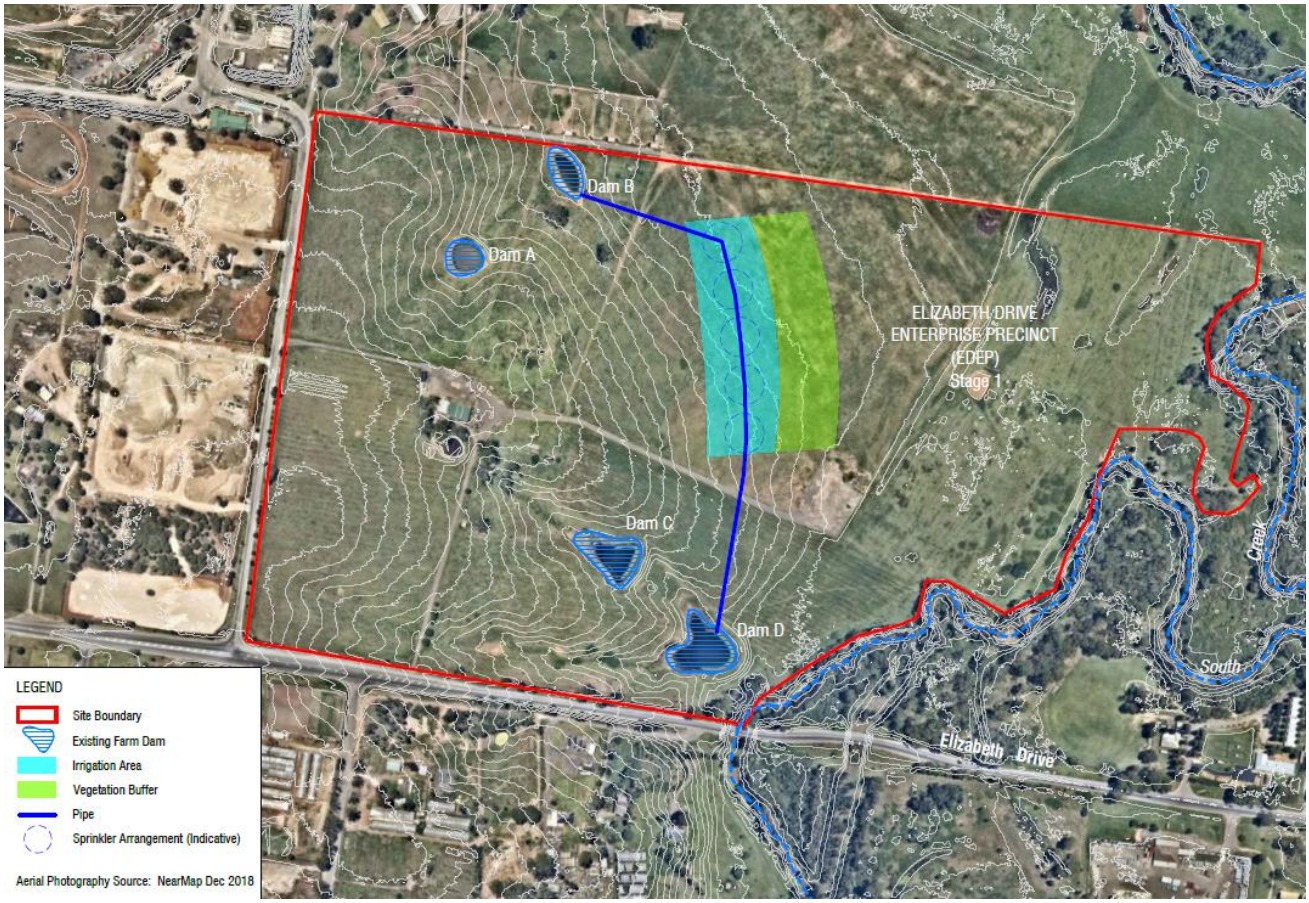


Figure 26 Indicative irrigation concept

Source: SLR

Erosion and Sediment Control

The Civil Report prepared by AT&L and included at **Appendix D**, and the Engineering Drawings at **Appendix C** outline the proposed erosion and sediment control measures to be installed during the proposed works. The following provides an assessment and the mitigation measures as outlined in the Civil Report.

Due to the existing site conditions and the proposed works on site, the proposed works have the potential for stormwater runoff to erode the proposed earthworks, and impact water quality downstream in South Creek, located to the east of the site.

To counteract erosion impacts associated with the proposed vegetation removal and stripping of remaining topsoils over the site AT&L recommend that the following measures be undertaken as outlined in **Appendix D**:

- utilisation of a paved temporary construction entry/exit point off the access road to the west will be used during construction to prevent the most heavily travelled routes from becoming a source of sediment and dust;
- temporary drains and diversion banks will be designed to maintain non-erosive velocities and direct runoff to temporary sediment trapping structures or divert clean runoff to stabilised outlets;
- filters will be located at all downstream locations of disturbed areas;
- runoff from disturbed areas will be diverted to temporary sediment basins located at strategic locations across the site;
- progressive re-vegetation during construction staging will stabilise disturbed areas; and
- stockpiling of material with diversion banks upstream of stockpiles to prevent the stockpiled material being washed away.

The Civil Report at **Appendix D** further outlines that the preparation of a comprehensive Erosion and Sedimentation Control Plan for the site prior to the issue of a construction certificate. This plan will take into account soil characteristics and provides for the implementation of the following measures to mitigate the potential impacts on downstream environments from the potential erosion of soil:

- installation of temporary sediment and erosion control measures prior to commencement of construction operations including:
  - installation of sediment filters to filter coarse sediment, litter and debris;
  - provision of barrier fences
- implementation of land disturbance protection measures including:
  - stockpiling of top soil;
  - minimisation of disturbed areas. Only those areas directly required for construction will be disturbed. Construction boundaries will be marked and no activity will be permitted outside these designated areas. Disturbed areas will be rehabilitated as soon as is practicable through hydroseeding;
- provision of a stabilised entry/exit point onto the access road;
- retention of water in the detention basins to collect sediment;
- staging of construction activities to ensure that the works program takes account of all measures necessary to control erosion on the site and diversion of clean water from undisturbed areas around working areas; and
- maintenance of sediment control structures, particularly after rainfall to ensure their efficiency until their catchment areas are fully stabilised.

The proposed development will be carried in accordance with the abovementioned mitigation measures.

Specifically, the work will be carried out in accordance the erosion and sediment control measures outlined in the stormwater management strategy of **Appendix C.**

6.3.3 Mitigation Measures

A range of mitigation measures are proposed to minimise the impacts from the proposed earthworks.

Table 9 Summary of mitigation measures relating to geotechnical condition and soil salinity

Impact	Environmental Safeguard	Responsibility	Timing
Design of civil earthworks	Minimise cut and fill activities and depths where practical to do so;	Consultant Civil Engineer	Design Phase
Drainage	Ensure the cut surface can readily drain and will not pond water and that retaining walls do not impede subsurface flow;	Contractor	Construction
Disposal of cut subsoil	Consider where cut subsoil will be disposed to, cut saline soil should not be placed on less saline portions of the site;	Contractor	Construction
Future built form	Consider soil management and exposure of subsoils when designing footings, roads and service trenches; and	Contractor	Construction
Future materiality	Consider the suitability of construction materials for the environment and design specifications to meet the expected level of exposure.	Contractor	Construction
Verification of works	The Geotechnical Inspection and Testing Authority (GITA) shall be contracted to document and certify works undertaken by the contractor has been completed in accordance with the relevant design and specification	GITA, Consultant Civil Engineer and Contractor	Design and construction

6.4 Waste Management

This application seeks consent for the importation, placement and compaction of waste material (VENM/ENM) from other sources including large State Significant and Sydney based infrastructure and building projects, to compact and store on the site.

Waste management legislation for NSW identifies waste generation and management, materials reuse and recycling, transport and disposal and outlines a hierarchy for waste minimisation. The hierarchy advocates:

- Avoidance, in preference to
- Recovery, including reuse, recycling, reprocessing and energy recovery, in preference to
- Responsible disposal.

Where disposal remains the only option, the Waste Classification Guidelines 2009 provide for classifying six types of waste: special, liquid, hazardous, restricted solid waste, general solid (putrescible) and general solid (non-putrescible). The classifications determine how the materials are to be stored, transported, management and disposed of.

Further explanation of the waste management hierarchy and the applicable waste management legislation is provided in the Waste Management Plan prepared by SLR Consulting at **Appendix H**.

The demolition of existing structures on the site, and the preparation activities are expected to generate the following waste streams:

- Site clearance and excavation wastes;
- Demolition wastes;
- Construction waste;
- Packaging waste;
- Dam sediments; and
- Work compound from on-site employees.

Potential waste types with their classification are provided in **Table 10**.

Table 10 Potential construction waste generation classifications

Waste Types	NSW Classification	Proposed management method
Site preparatory works		
Green waste	General solid waste (non-putrescible) (garden waste)	Off-site recycling
Clean fill	To be classified subject to test results	Beneficial re-use on site
Contaminated fill	To be classified subject to test results	Off-site treatment or disposal to landfill
ENM or VENM	To be classified subject to test results	Beneficial re-use on site
Construction		
Sediment fencing, geotextile materials	General solid waste (non-putrescible)	Reuse at other sites where possible or disposal to landfill
Concrete	General solid waste (non-putrescible)	Off-site recycling for filling, levelling or road base
Bricks and pavers	General solid waste (non-putrescible)	Off-site recycling: cleaned for reuse, rendered over or crushed for landscaping or driveway use
Gyprock or plasterboard	General solid waste (non-putrescible)	Off-site recycling or return to supplier
Sand or soil	General solid waste (non-putrescible)	Off-site recycling

Waste Types	NSW Classification	Proposed management method
Metals such as fittings, appliances and electrical cabling	General solid waste (non-putrescible)	Off-site recycling
Timber	General solid waste (non-putrescible)	Off-site recycling: Treated: reused for formwork, bridging, blocking, propping or second hand supplier; Untreated: reused for floorboards, fencing, furniture, mulched second hand supplier
Asbestos	Hazardous waste	Removal and off-site disposal by specialist contractors
Paint	Hazardous waste	Off-site recycling, paint back collection or disposal
Plant maintenance		
Empty oil or other drums or containers such as fuel, chemical, paints, spill clean ups	Hazardous wastes: containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid wastes (non-putrescible): containers have been cleaned by washing or vacuuming	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility Note: Discharge to sewer subject to Trade Waste Agreement with local Council
Air filters and rags	General solid waste (non-putrescible)	Off-site disposal
Oil filters	Hazardous wastes	Off-site recycling
Batteries	Hazardous wastes	Off-site recycling: Australian Battery Recycling Initiative
Packaging		
Packaging materials including wood, plastic (stretch wrap etc), cardboard and metals	General solid waste (non-putrescible)	Off-site recycling
Wooden or plastic creates and pallets	General solid waste (non-putrescible)	Reused for similar projects, returned to suppliers or off-site recycling
Work compound and associated offices		
Food waste	General solid waste (non-putrescible)	Disposal to landfill with general garbage
Recyclable beverage containers such as glass bottles, plastic bottles, aluminium cans and steel cans	General solid waste (non-putrescible)	Co-mingled recycling at off-site licensed facility or at local Return and Earn
Clean paper and cardboard	General solid waste (non-putrescible)	Paper and cardboard recycling at off-site licensed facility
General domestic waste	General solid waste (non-putrescible) mixed with putrescible waste	Disposal at landfill

Source: SLR

The site is anticipated to generate a total of between 500 and 1,000 tonnes of demolition waste.

During importation of fill (to obtain the required levels) any topsoil that is stripped will be stockpiled for use as batter stabilisation. Care is to be taken to minimise site disturbance and limit unnecessary excavation.

Further details of specific waste management activities including segregation, storage and servicing, contaminated or hazardous waste management, and roles and responsibilities is provided in the Waste Management Plan at **Appendix H**.

6.4.1 Mitigation Measures

A range of mitigation measures are provided below to manage waste during the works.

Table 11 Summary of mitigation measures relating to waste management

Impact	Environmental Safeguard	Responsibility	Timing
Waste generation during construction	Classify, handle and store all removed waste in the construction compounds/laydown areas in accordance with the NSW Waste Classification Guidelines 2009: Part 1 Classifying Waste (DECCW) and Storing and Handling liquids, Environmental Protection (DECC, 2007).	Construction contractor	Construction
Waste and resource management during construction across the proposal	Prepare a waste and resource management plan (WRMP) as a sub-plan of the CEMP. As a minimum describe the measures for handling, storing and classifying waste when “onsite" and its subsequent disposal offsite to the relevant licenced facility.	Construction contractor	Construction
Waste disposal during construction across the proposal	Send all disposed materials to a suitably licenced waste management/landfill facility.	Construction contractor	Construction
Waste handling and storage during construction across the proposal	Store and segregate all waste at source (e.g. the construction compounds/laydown areas) in accordance with its classification. This includes recycled and reusable materials.	Construction contractor	Construction
Littering and site tidiness during construction and operation	Monitor for waste accumulation, littering and general tidiness to ensure operating standards of the zoo are maintained.	Construction contractor	Construction
Resource recovery during construction across the proposal	Apply resource recovery principles: • Reuse proposal-generated waste materials onsite (e.g. topsoil, recycled aggregate) providing it meets with exemption and classification requirements • Failing that, transfer the materials for use elsewhere on another site under a resource recovery exemption • Employ waste segregation to allow paper, plastic, glass, metal and other material recycling. These materials could be either reused onsite or transferred to a recycling facility • Consider composting general putrescible waste to allow recovery. Transfer these materials offsite to a composting facility.	Construction contractor	Construction
Reducing primary resource demand during construction across the proposal	Use recycled and low embodied energy products to reduce primary resource demand in instances where the materials are cost and performance competitive (e.g. where quality control specifications allow).	Construction contractor	Construction
General waste management	Implement the Waste Management Plan measures as part of the CEMP	Construction contractor	Construction

6.5 Traffic and Transport

A Construction Traffic Management Plan in support of the proposed development has been prepared by Ason Group and included in **Appendix K**.

6.5.1 Existing Environment

The site is accessed by Elizabeth Drive, aligning with the site’s southern boundary with direct site access provided by an unnamed public road located along the western boundary of the site. These roads are described as:

- Elizabeth Drive: a Classified Road (State Road). Dual carriageway road of a predominantly single traffic lane in each direction. Elizabeth Drive widens at various points to accommodate right-turn slip lanes and median strips. Elizabeth Drive runs in an east-west direction, connecting to The Northern Road at its western extent with the Hume Highway at its extent. Elizabeth Drive is approximately 25km in length. The Elizabeth Drive road reserve is approximately 40m at the site. The road is 60km/ph in each direction, increasing to 80km/ph at sections.

Elizabeth Drive is a clearway road. The WCDP identifies the need for the improvement of key transport links to support the Western Economic Corridor, which includes the enhancement of Elizabeth Drive due to its role as a key east-west link supporting the WSA and the broader Aerotropolis.

- Unnamed public road: The unnamed public road is a local road, a dual carriageway road of a single lane in each direction. The road connects the SUEZ Waste Recovery facility to Elizabeth Drive. The accessway is approximately 500m in length and runs in a north-south direction. The road reserve is approximately 20m in width. The road does not feature provisions for turning lanes, median strips or parking lanes. The accessway does not have a sign posted speed limit, therefore it is assumed the speed limit is 50km/ph.

In addition, there are a number of other roads located near to the site which provide access into broader Sydney:

- Westlink M7 Motorway: a high capacity state significant road, providing a key north-south link between the M2 Motorway in the north and the M5 Motorway to the south. The M7 has a posted speed limit of 100km/h with four lanes (two lanes each way);
- M12 Motorway (future): a proposed 16km motorway running east-west between The Northern Road and M7 Motorway;
- Wallgrove Road: an arterial road running in a north-south direction parallel to the M7 Motorway. It connects to the M4 Motorway approximately 2.5km to the north of the site:
- The Northern Road: a three lane (one to two lanes each direction) with a speed limit of 80km/h, it provides a regional north-south link located to the west of the site:
- Western Road: a local road running in a north-south direction from Elizabeth Drive, with two lanes of traffic for two way movement and a speed limit of 80km/h: and
- Mamre Road: an arterial road servicing traffic between the Great Western Highway and M4 Motorway to the north and Elizabeth Drive to the south. It generally provides two lanes for two-way traffic, with a posted speed limit of 80km/h.

Given the site's existing use as agricultural lands, traffic generation associated with its current use is minimal, anticipated to be generated by the site owners/occupiers and a low volume of employees. The site does not include a use that would attract visitors to the site.

6.5.2 Potential Impacts

Vehicle movements to and from the site during the works are likely to include light vehicles from workers and construction staff movements, and delivery of fill heavy vehicles such as truck and dog style vehicles.

Light vehicles are generally anticipated to arrive and exit the site outside of peak travel periods due to the nature of the works, with the majority of trips expected to be between 6.30am and 7.00am, and 6.00pm and 6.30pm.

The proposed works are estimated to generate a maximum demand for up to 300 heavy vehicles per day (300 heavy vehicle movements in and 300 heavy vehicle movement out). This equates to approximately 600 heavy vehicle movements per day with a maximum of 60 heavy vehicles per hour (60 heavy vehicle movements in and 60 heavy vehicle movements out). It is expected there will be a 60/40% split for arrivals and departures in the AM peak, and a 40/60% split for arrivals and departures in the PM peak.

To ascertain the impacts on the local road network, SIDRA modelling was undertaken to establish the existing performance of key intersections within the vicinity of the site. SIDRA modelling provides a range of performance measures as outputs:

- degree of saturation (DOS): where a value of 1.0 represents an intersection at theoretical capacity;
- average vehicle delay (AVD): the average delay per vehicle in seconds which is also used to determine an intersections level of service; and
- level of service (LOS): a comparative measure that provides an indication of the operation performance of an intersection.

Table 12 below provides a summary of RMS LOS criteria for intersections.

Table 12 LOS criteria for intersections

Level of Service	Average delay per vehicle (secs/veh)	Traffic signals, roundabout	Give way and stop signs
A	Less than 14	Good operation	Good operation
B	15 – 28	Good with acceptable delays and space capacity	Acceptable delays and space capacity
C	29 – 42	satisfactory	Satisfactory, but accident study required
D	43 – 56	Operating near capacity	Near capacity and accident study required
E	57 – 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment.

Source: Ason Group

Based on the SIDRA modelling completed, key existing intersections near to the site have been modelled and found to be generally operating at a LOS of between B and D (**Table 13**). These intersections include:

- Wallgrove Road and Elizabeth Drive, approximately 7.5km to the east of the site access;
- Mamre Road and Elizabeth Drive, approximately 4.35km east of the site access; and
- Western Road and Elizabeth Drive, approximately 1.6km east of the site access.

Table 13 Existing intersection performance

Intersection	Control type	Period	Intersection delay	Level of Service
Wallgrove Road and Elizabeth Drive	Signals	AM	41.1	C
		PM	44.8	D
Mamre Road and Elizabeth Drive	Roundabout	AM	15.2	B
		PM	16.1	B
Western Road and Elizabeth Drive	Priority	AM	10.4	B
		PM	17.5	C

Source: Ason Group

To model the future operation of the intersections based on traffic movements associated with the proposed works, heavy vehicles generated by the site have been assigned to the primary construction route. Given there is minimal background growth in traffic movements in the area (with the only known traffic generator at this time being early works for the Western Sydney Airport), it is anticipated that less than 10 vehicles per hour would be generated through these key intersections. These trips have however been assigned to the assessment (arrival and departure).

Table 14 Future intersection performance

Intersection	Control type	Period	Intersection delay	Level of Service
Wallgrove Road and Elizabeth Drive	Signals	AM	40.2	C
		PM	45.0	D
Mamre Road and Elizabeth Drive	Roundabout	AM	18.7	B
		PM	24.7	B
Western Road and Elizabeth Drive	Priority	AM	11.7	B

Intersection	Control type	Period	Intersection delay	Level of Service
		PM	20.2	C

Source: Ason Group

As seen by the SIDRA modelling completed at key intersections near to the site, the proposed earthworks construction traffic will have a negligible impact on traffic volumes, with all intersections remaining at their current LOS rating.

The Transport for NSW *Infrastructure Pipeline 2024*, October 2019 outlook document indicates the concept design and Environmental Assessment for Elizabeth Drive Upgrade between the M7 and the Northern Road to be completed by Quarter 3 2022. The proposed construction timing of the Elizabeth Drive Upgrade is currently unknown at this stage though is expected to commence in 2024 (18 months post EIS). The operational phase of this proposal is forecast to be completed prior to the construction commencement of the proposed Elizabeth Drive Upgrade. Any proposed works will be completed in accordance with the CTMP within **Appendix K.**

6.5.3 Mitigation Measures

Roads and Maritime Services (RMS) were contacted during the preparation of this EIS and have reiterated: "*RMS reiterates the comments provided on 5 February 2019 and has no further comments at this stage*".

In order to manage traffic impacts associated with the proposed soil disposal works, a range of mitigation measures are proposed.

Table 15 Summary of mitigation measures relating to traffic and transport

Impact	Environmental Safeguard	Responsibility	Timing
Traffic Impacts associated with construction phases	Consistent with RMS Guide 'Traffic Control at Worksites', a Vehicle Movement Plan (VMP) will be established. The VMP will detail: • Illustration of preferred travel paths for entry to and exit from the site; • Illustration of vehicle movement within the site, showing general manoeuvrability, accesses and sideroads; • Applicable speed limits within the site; • Safety relating to site entry (visibility and speed from the Elizabeth Drive intersection) • Traffic signals and signage; • Designation of an on-site traffic controller; • Designation of a loading supervisor; and • Pedestrian safety strategy	Construction Contractor	Pre-construction / Construction
Traffic Impacts associated with site management (communication)	A Development of a program to monitor the effectiveness of the Construction Traffic Management Plan is to be established. This process involves communication between the Project Manager and Construction Contractor. Considerations of the program include: • Tracking heavy vehicle movements against the estimated heavy vehicle flows during the 1 works. • The identification of any shortfalls in the CTMP, and the development of revised strategies / action plans to address such issues. • Ensuring that all TCPs are updated (if necessary) by "Prepare a Work Zone Traffic Management Plan" card holders to ensure they remain consistent with the set-up on-site. • Regular checks to ensure all loads are departing the Site covered as outlined within this CTMP.	Project Manager/ Construction Contractor	Pre-construction / Construction
	A Communication Strategy will be established by the Project Manager to ensure appropriate to the community and to	Project Manager	Pre-construction / Construction

Impact	Environmental Safeguard	Responsibility	Timing
	assist the Construction Contractor in achieving minimal impacts on the surrounding road network. This will involve: • The erection of appropriate signage providing advanced notice of works and any traffic control measures to be implemented. • Written notices to surrounding landowners (and tenants) likely to be directly affected by the works, prior to commencement.		
Impacts on stakeholder potentially effected by traffic impacts.	The Project Manager will ensure the appropriate stakeholders are considered in respect of traffic management: • Government Agencies – Roads and Maritime Services (RMS) – Transport Management Centre (TMC) – Department of Planning and Environment (DPE) – Transport for NSW (TfNSW) – Sydney Coordination Office (SCO) • Local Government – Penrith City Council • Emergency Service – Police – Fire and Rescue – Ambulance • Local Schools – Christadelphian Heritage College – Kemps Creek Public School – Irfan College • Surrounding Landowners – SUEZ Kemps Creek – Animal Welfare League NSW – 1970 Badgerys Creek Read – 10B Martin Road	Project Manager	Pre-construction / Construction

6.6 Air Quality and Odour

A Construction Air Quality Management Plan has been prepared by SLR (**Appendix N**) and is summarised below

6.6.1 Air Quality Criteria

The air quality criteria is determined by the National Environment Protection Measures (NEPM) for dust and particulate matter covering PM_{10} and $PM_{2.5}$ annual averages and 24-hour periods. This is supported by the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW by the EPA, which also includes total suspended particles (TSP) and deposited dust criteria, while also being consistent with the NEPM criteria for particulate matter.

Table 16 Applicable air quality criteria

Pollutant	Averaging Period	Assessment Criteria (µg/m^3)
PM_{10}	24 hours	50
	Annual	25
$PM_{2.5}$	24 hours	25
	Annual	8
TSP	Annual	90
Deposited dust	Annual	2 (maximum increase in deposited dust level) 4 (maximum total deposited dust level)

Source: SLR

6.6.2 Existing Environment

Sydney's temperate subtropical climate is generally characterised by very warm summers and mild, warm winters. Meteorological data for the area surrounding the site is recorded at the nearby Badgerys Creek Automatic Weather Station (AWS), operated by the Bureau of Meteorology (BOM), approximately 4.5km south of the site. Temperate data recorded at that site indicates that January is the hottest month with a mean daily maximum temperature of 30.3°C, with July being the coolest month with a mean daily minimum temperature of 4.1°C. On average, there are 22 rain days per year delivering 671mm of rain, with February being the wettest month.

The nearest sensitive receivers to the site are residential properties located approximately 80m to the south across Elizabeth Drive.

Dust and particulate matter

The nearest location where long-term air quality is monitored is the OEH air quality monitoring site at the Bringelly Air Quality Monitoring Station (AQMS), located approximately 5km south of the site. The station monitorsPM_{10} and $PM_{2.5}$, noting the latter only commenced monitoring in July 2016. A summary is provided in **Table 17** below.

Table 17 Bringelly AQMS particulate monitoring data

Pollutant	**PM_{10}**		**$PM_{2.5}$**	
Averaging Period	**Maximum 24-hour**	**Annual**	**Maximum 24-hour**	**Annual**
Units	µg/m^3	µg/m^3	µg/m^3	µg/m^3
2014	42.6	16.6	ND	ND
2015	57.0	15.8	ND	ND
2016	61.6	16.9	21.6	7.6
2017	83.7	19.8	52.5	7.5
2018	92.9	21.2	55.6	8.0
Criterion	**50**	**25**	**25**	**8**

Source: SLR

As noted above there are a number of exceedances of the short-term criteria (24 hour average) for PM_{10} in 2015 through 2018 and for $PM_{2.5}$ in 207 and 2018. Most of these were caused by regional events such as bushfire emergencies or dust storms.

This indicates that during the bulk earthworks for the development there is the potential for increases of particulate matter in the air to occur.

6.6.3 Potential Impacts

Dust emissions will be generated during construction of the project, mainly through the bulk earthworks phase. Potential dust emission sources during construction works include:

- Wind-generated dust from disturbed surfaces and stockpiles; and
- Wheel-generated dust and particulate matter emissions in diesel exhaust emissions from on-site plant and equipment and construction traffic movements.

In addition to these, environmental factors can influence the generation and dispersion of dust including:

- Wind direction;
- Wind speed;
- Surface type;
- Surface material moisture; and
- Rainfall or dew.

The term “particulate matter” refers to a category of airborne particles, typically less than 30 microns (µm) in diameter down to 0.1 µm and is termed total suspended particulate (TSP). Emissions of particulate matter less than 10 and 2.5 microns (µm) in diameter (referred to as PM_{10} and $PM_{2.5}$ respectively) can enter the respiratory system and cause health impacts, particularly $PM_{2.5}$. Deposited dust can also settle on the environment including houses and vehicles, causing nuisance. To calculate this, categorisation of dust emission magnitude has been established per **Table 18**.

Table 18 Categorisation of emission magnitude

Activity	Dust Emission Magnitude	Basis
Demolition	Small	Total building volume <20,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months. *Only one (1) building is to be demolished, assuming an area of 800 m^2 (40 m x 20 m) and height of 10 m, equates to a total volume of ~8,000 m^3.*
Earthworks	Large	Total site area greater than 10,000 m^2, potentially dusty soil type (eg clay, which will be prone to suspension when dry due to small particle size), more than 10 heavy earth moving vehicles active at any one time, formation of bunds greater than 8 m in height, total material moved more than 100,000 t. *Total area where the earthworks will be undertaken at the Development Site is estimated to be approximately 550,000 m^2.*
Trackout	Large	More than 50 heavy vehicle movements per day, surface materials with a high potential for dust generation, greater than 100 m of unpaved road length.

Source: SLR

To assess the impacts on the nearby sensitive receivers, they have been allocated a sensitivity of high for health impacts and high for dust soiling. The general area itself has been given a sensitivity rating of low for dust soiling and low for health effects, due to its rural setting. As seen below in **Table 19** this provides a low risk rating of adverse impacts in terms of dust soiling and human health effects at the off-site sensitive receiver locations, if no mitigation measures were implemented.

Table 19 Preliminary risk of air quality impacts

Impact	Sensitivity of Area	Dust Emission Magnitude			Preliminary Risk		
		Demolition	Earthworks	Trackout	Demolition	Earthworks	Trackout
Dust Soiling	Low	Small	Large	Large	Negligible Risk	Low Risk	Low Risk
Human Health	Low				Negligible Risk	Low Risk	Low Risk

Source: SLR

Implementation of the mitigation measures below in **Section 6.5.4** provides a positive change in the risk assessment completed and results in a negligible impact for air quality from the proposed works (**Table 20**).

Table 20 Air quality impacts including mitigation

Impact	Sensitivity of Area	Residual Risk		
		Demolition	Earthworks	Trackout
Dust Soiling	Low	Negligible Risk	Negligible Risk	Negligible Risk
Human Health	Low	Negligible Risk	Negligible Risk	Negligible Risk

Source: SLR

6.6.4 Mitigation Measures

Table 21 below identifies the proposed mitigation measures for air quality.

Table 21 Summary of mitigation measures relating to air quality

Impact	Environmental Safeguard	Responsibility	Timing
Communications	• Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. • Display the head or regional office contact information. • Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.	Construction contractor	Construction
Site management	• Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. • Make the complaints log available to the local authority when asked. • Record any exceptional incidents that cause dust and/or air emissions, either onsite or offsite, and the action taken to resolve the situation in the log book.	Construction contractor	Construction
Monitoring	• Perform daily on-site and off-site inspections at locations (including roads) where receptors are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary. • Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked. • Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	Construction contractor	Construction
Site preparation and maintenance	• Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. • Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period. • Keep site fencing, barriers and scaffolding clean using wet methods. • Cover, seed or fence stockpiles to prevent wind erosion	Construction contractor	Construction

Impact	Environmental Safeguard	Responsibility	Timing
Air quality emissions through vehicle movements	• Ensure all on-road vehicles comply with relevant vehicle emission standards, where applicable • Ensure all vehicles switch off engines when stationary for periods of more than two minutes - no idling vehicles • Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable	Construction contractor	Construction
Dust emission management	• Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate • Use enclosed chutes and conveyors and covered skips • Minimise drop heights from loading shovels and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate	Construction contractor	Construction
Waste management	• Avoid bonfires and burning of waste materials.	Construction contractor	Construction
Track out	• Use water-assisted dust sweeper(s) on the access and local roads to remove, as necessary, any material tracked out of the site. • Avoid dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Record all inspections of haul routes and any subsequent action in a site log book. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	Construction contractor	Construction
Demolition	• Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust) • Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. • Avoid explosive blasting, using appropriate manual or mechanical alternatives	Construction contractor	Construction

6.7 Noise and Vibration

A Construction Noise and Vibration Management Plan has been prepared by SLR and is at **Appendix O**.

6.7.1 Existing Environment

There were a total of 41 sensitive receivers identified near to the site as shown in **Figure 27**. These all represent residential and commercial properties.

Minimum Rating Background Levels (RBLs) were adopted for the project in accordance with the EPA's NSW Noise Policy for Industry 2017 (NPfI):

- Day: 35
- Evening: 30

- Night: 30

These RBLs have been used for the purpose of noise impact modelling completed within the Construction Noise and Vibration Management Plan at **Appendix O**.

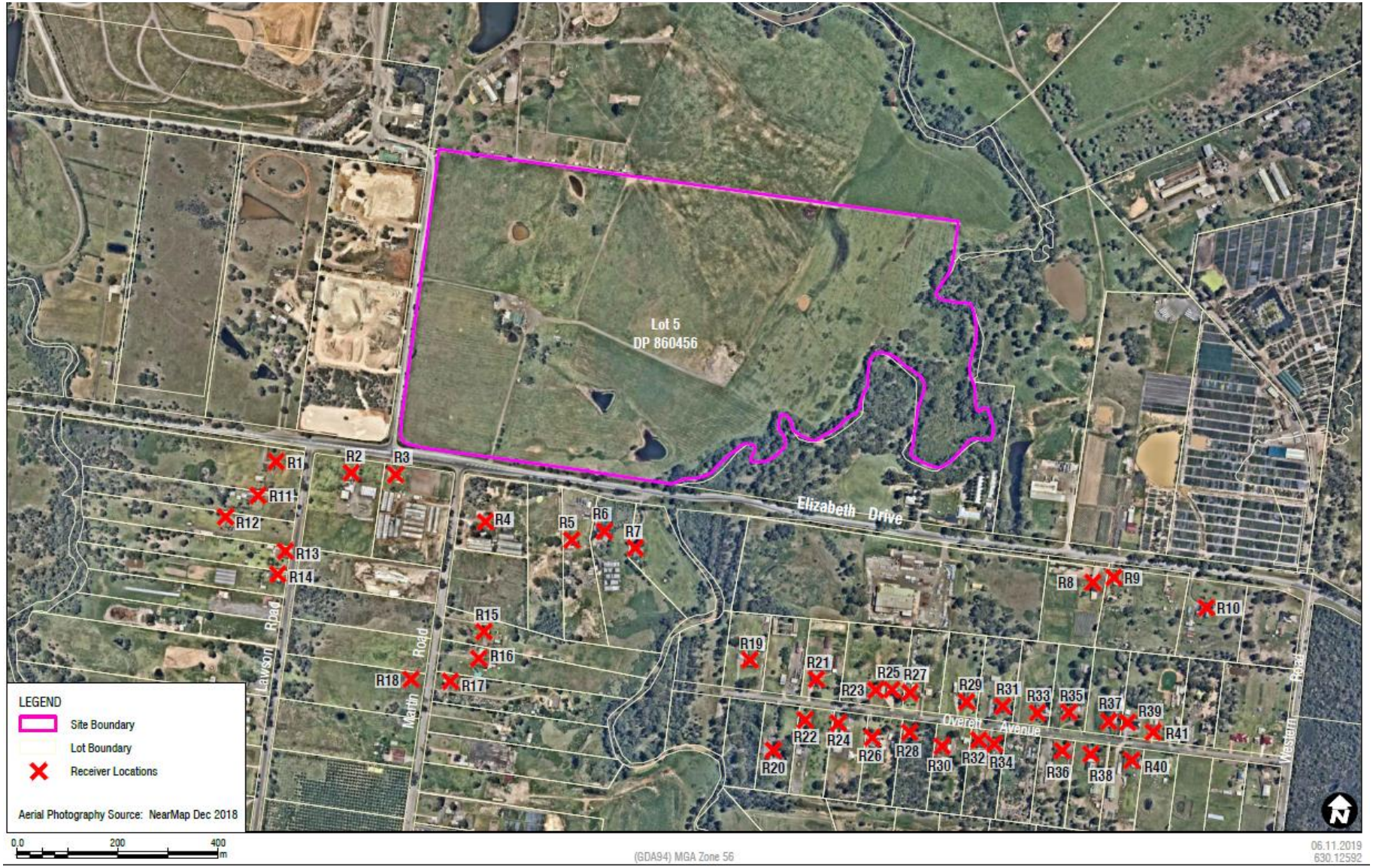


Figure 27 Sensitive noise receiver locations

Source: SLR

6.7.2 Noise Criteria

The EPA's Interim Construction Noise Guideline (ICNG) outlines noise management levels (NMLs) to reduce the impact of noise arising from construction activities (**Table 22**).

Table 22 ICNG Noise Management Levels

Time of Day	Noise Management Level $L_{Aeq(15minute)*}$	How to Apply
Recommended standard hours • Monday to Friday • 7am to 6pm • Saturday 8am to 1pm • No work Sundays or public holidays	Noise Affected RBL** + 10 dBA	The noise affected level represents the point above which there may be some community reaction to noise. • Where the predicted or measured LAeq(15minute) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. • The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly Noise Affected 75 dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. • Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: • times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences. • if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise Affected RBL** + 5 dBA	• A strong justification would typically be required for works outside the recommended standard hours. • The proponent should apply all feasible and reasonable work practices to meet the noise affected level. • Where all feasible and reasonable practices have been applied and noise is more than 5 dBA above the noise affected level, the proponent should negotiate with the community. • For guidance on negotiating agreements see section 7.2.2 of the ICNG.

Source: ICNG

The ICNG recommends restricting construction hours for noise generating activities above the highly affected noise management level. Based on these, project specific NMLs have been determined for the project (**Table 23**) within standard construction hours. These NMLs have been determined on the basis of the RBLs outlined above.

Table 23 Project specific NMLs

Receiver	Assumed Ambient Noise Level – RBL LA_{90}	Noise Management Levels – NMLs $L_{Aeq(15minute)}$	
		Standard Hours Daytime	Highly Noise Affected (Daytime)
Residential	35	45	75
Commercial	N/A	70 (when in use)	

Source: SLR

6.7.3 Potential Impacts

The construction noise assessment identifies the worst-case scenario for noise emissions from the site, assuming all proposed plant and equipment operating simultaneously and at the eastern and southern boundaries of the site (nearest to the sensitive receivers).

Construction activities will generally occur during standard construction hours in accordance with the ICNG recommended standard hours:

Noise will be generated through the use of heavy equipment and machinery, including, though not limited to, the following:

- Skidsteer loader
- Backhoe
- Backhoe + hammer
- Dozer 98 kW – 145 kW
- Dozer 145 kW – 175 kW
- Dozer 220 kW – 305 kW
- Dozer 305 kW – 400 kW
- Grader
- Loader 90 kW
- Roller
- Scraper
- Excavator <10 t + hammer
- Excavator 12 t + hammer
- Excavator 20 t + hammer
- Excavator 30 t + hammer
- Watercart
- Truck 13 t payload
- Truck and Dog 30 t payload
- Air Compressor (without operator) 41 L/s o Generator 6.8 kVA (without operator)

Assumed Sound Power Levels for each piece of equipment and plant were adopted for the purpose of conducting the assessment.

The assessment indicates that noise levels will exceed the adopted NMLs at all sensitive receivers, namely R3 through R7 which see exceedances greater than 10 dBA, due to their close proximity to the site. **Table 24** below provides a summary of the modelled noise impacts.

Receivers R3 through R7 have specialised mitigation measures proposed which include ongoing monitoring of noise levels and letterbox drops.

Table 24 Construction noise predictions

Receiver ID	LAeq(15minute) dBA Noise Level	Standard Hours Daytime NML – LAeq(15minute) dBA	Exceedance of NML $L_{Aeq(15minute)}$ dBA
R1	51	45	6
R2	54	45	9
R3	56	45	11
R4	58	45	13
R5	59	45	14
R6	61	45	16
R7	60	45	15
R8	51	45	6
R9	51	45	6
R10	50	45	5
R11	50	45	5
R12	49	45	4
R13	50	45	5

Receiver ID	LAeq(15minute) dBA Noise Level	Standard Hours Daytime NML – LAeq(15minute) dBA	Exceedance of NML $L_{Aeq(15minute)}$ dBA
R14	50	45	5
R15	53	45	8
R16	52	45	7
R17	51	45	6
R18	51	45	6
R19	54	45	9
R20	51	45	6
R21	53	45	8
R22	52	45	7
R23	52	45	7
R24	52	45	7
R25	52	45	7
R26	51	45	6
R27	52	45	7
R28	51	45	6
R29	51	45	6
R30	50	45	5
R31	50	45	5
R32	50	45	5
R33	50	45	5
R34	50	45	5
R35	49	45	4
R36	49	45	4
R37	49	45	4
R38	48	45	3
R39	48	45	3
R40	48	45	3
R41	48	45	3

Source: SLR

Construction Vibration

The main vibration generating equipment to be used at the site will include trucks during operation and rollers and dozers during the bulk earthworks phase of the project.

The nearest structure to the site is located approximately 50m from its boundary. Subsequently, it is considered that vibration levels from the proposed works will be below the criteria for 'minimal risk of cosmetic building damage' at the nearest residential neighbour. Refer to the Construction Noise and Vibration Management Plan at **Appendix O** for further detail.

6.7.4 Mitigation Measures

Table 25 below outlines the mitigation measures proposed for the works to manage noise impacts.

Table 25 Summary of mitigation measures relating to noise

Impact	Environmental Safeguard	Responsibility	Timing
Impacts at Receivers R3 through R7	• Operator attended monitoring at the sensitive receiver for (at a minimum) one 15-minute period at the commencement of the construction period and at the commencement of any significant operational event. • Letterbox drops to advise of upcoming noisy works	Construction contractor	Construction
Construction noise management	Implement the Construction Noise and Vibration Management Plan	Construction contractor	Construction
Construction noise impacts	Working hours are to be restricted in accordance with the EPA Interim Construction Noise Guideline. Working hours are to be in accordance with: • Between 7.00am and 6.00pm, Monday to Friday. • Between 8.00am and 1.00pm Saturdays. • No work or deliveries on Sunday and/or public holidays. If work is required to be undertaken outside normal work hours, the Contractor will need approval from the Principal. The Contractor is to provide enough information for the Principal to evaluate any potential noise impact from the proposed works.	Construction contractor	Construction
Construction noise impact scheduling	• Scheduling for the higher project specific noise criteria exceedance activities to be undertaken predominantly during less noise-sensitive time periods, where possible. The adjacent noise sensitive receivers should be consulted to assist in identifying their less noise sensitive time periods • Any required night time work predicted to exceed the noise management level should aim to not affect residences for more than two consecutive nights or where possible, more than six nights over a one month period.	Construction contractor	Construction
Construction noise impacts	Briefing of the work team (i.e. tool box talks) in order to create awareness of the locality of sensitive receivers and the importance of minimising noise emissions.	Construction contractor	Construction
Construction noise impacts	Ensuring spoil is placed and not dropped into awaiting trucks.	Construction contractor	Construction
Construction noise impacts	Use of less noise-intensive equipment, where reasonable and feasible.	Construction contractor	Construction
The potential for exceedance of the NMLs across the proposal footprint	Strategically position plant on site to reduce noise levels at the nearest receivers.	Construction contractor	Construction

6.8 Biodiversity

A Biodiversity Development Assessment Report has been prepared by EcoLogical Australia (**Appendix F**) in accordance with the requirements of the BC Act.

6.8.1 Existing Environment

The site has been largely cleared of native vegetation, however both remnant and regrowth vegetation is present around existing drainage lines and dams. The site contains a first order stream in accordance with the Strahler system however this is not considered a watercourse consistent with the Water Management Act 2000.

Site surveys were completed on 14 and 19 March 2018 to identify the existing environment present on the site. A total of four vegetation plots were collected within the development site consistent with the Biodiversity Assessment Method. Additional field work was completed for targeted surveys for threatened flora, Cumberland Plain Land Snail

and the Green and Golden Bell Frog. Further microchiropteran bat (micro bat) Anabat surveys were conducted in February 2019.

The site survey identified that there are three Plant Community Types (PCTs) located on the site:

- PCT 725 – Broad-leaved Ironbark – Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion. This PCT conforms to the endangered ecological community (EEC) Cooks River/Castlereagh Ironbark Forest in the Sydney Basin Bioregion (CRCIF);
- PCT 849 - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion. This PCT conforms to the critically endangered ecological community (CEEC) Cumberland Plain Woodland in the Sydney Basin Bioregion (CPW); and
- PCT 1071 – Phragmites australis and Typha orientalis coastal freshwater wetlands of the Sydney Basin Bioregion.

These three PCTs make up three vegetation zones across the site, noting that PCTs 725 and 849 are considered to be in a degraded state.

PCT 725 covers an area of 0.69ha, PCT 849 covers 1.63ha and PCT 1071 covers 0.85ha. All three are listed as Threatened Ecological Communities under the BC Act.

PCT 835 – Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion is also present within the broader study area (being the entire Lot 5) however is not located within the area proposed to collect / accommodate clean disposal spoil. This PCT conforms to the endangered ecological community (EEC) River Flat Eucalypt Forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregion (RFEF).

The vegetation zones were provided with calculated vegetation integrity scores consistent with the Credit Calculator as shown in **Table 26**.

Table 26 Vegetation zones

Vegetation Zone	PCT	Name	Condition	Area (ha)	Vegetation Integrity Score	Description
1	725	Broad-leaved Ironbark - Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion	Moderate condition - regrowth	0.69	27.5	Characterised by a native canopy of semi-mature trees with a sparse shrub layer and grassy ground layer.
2	849	Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Low condition – exotic understorey	1.63	19.4	characterised by a native canopy of a mature eucalypt species, Eucalyptus tereticornis. Ground stratum dominated by exotic herbs and grasses. Regrowth of eucalypt canopy species is present.
3	1071	Phragmites australis and Typha orientalis coastal freshwater wetlands of the Sydney Basin Bioregion.	Moderate condition	0.89	35.9	Located around dams and waterlogged drainage lines. It is dominated by Eleocharis sphacelata. Other native species present include Juncus usitatus, Alternanthera denticulata and Persicaria sp.

Source: EcoLogical Australia

Several ecosystem credit species are predicted to occur at the subject site, with four of these being recorded during the Anabat surveys completed:

- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle);
  - Listed as Vulnerable under the BC Act;
- *Miniopterus australis* (Little Bentwing-bat (foraging));
  - Listed as Vulnerable under the BC Act;
- *Scoteanax rueppellii* (Greater Broad-nosed Bat); and
  - Listed as Vulnerable under the BC Act;
- *Miniopterus schreibersii oceanensis* (Eastern Bentwing-bat).
  - Listed as Vulnerable under the BC Act;

Additional ecosystem credit species predicted to occur on the site based on the type of vegetation present and other habitual matters include:

- *Glossopsitta pusilla* (Little Lorikeet);
  - Listed as Vulnerable under the BC Act;
- *Haliaeetus leucogaster* (White-bellied Seaeagle (foraging));
  - Listed as Vulnerable under the BC Act;
- *Hieraaetus morphnoides* (Little Eagle (foraging));
  - Listed as Vulnerable under the BC Act;
- *Lophoictinia isura* (Square – tailed Kite (Foraging));
  - Listed as Vulnerable under the BC Act;
- *Mormopterus norfolkensis* (Eastern Freetail-bat);
  - Listed as Vulnerable under the BC Act;
- *Nophema pulchella* (Turquoise Parrot);
  - Listed as Vulnerable under the BC Act;
- *Ninox strenua* (Powerful Owl (Foraging));
  - Listed as Vulnerable under the BC Act;
- *Pandion cristatus* (Eastern Osprey);
  - Listed as Vulnerable under the BC Act;
- *Pteropus poliocephalus* (Grey-headed Flyingfox (foraging));
  - Listed as Vulnerable under the BC Act and Vulnerable under the EPBC Act;
- *Saccolaimus flaviventris* (Yellow-bellied Sheathtail-bat); and
  - Listed as Vulnerable under the BC Act;
- *Tyto novaehollandiae* (Masked Owl (Foraging)).
  - Listed as Vulnerable under the BC Act.

One species credit species was recorded within the site, being Myotis Macropus (Southern Myotis) with a habitat area of 2.48ha. The Southern Myotis is listed as Vulnerable under the BC Act.

No specimens of Cumberland Plain Land Snail or the Green and Golden Bell Frog were identified on site during the surveys.

Figure 28 Plant Community Types on the site

Source: EcoLogical Australia

6.8.2 Potential Impacts

The proposed bulk earthworks associated with the waste disposal have been located in a manner to avoid and minimise biodiversity impacts particularly all impacts to the riparian zone near South Creek, which contains better condition native vegetation. No works are proposed within the riparian zone. Furthermore, the disposal soil works will have only minor impacts to connectivity of habitat. However, the proposed works do result in impacts to potential foraging habitat for the Grey-headed Flying Fox and other threatened microbats.

Additionally, the assessment notes the connectivity of the area proposed to be cleared to the riparian lands associated with South Creek, located east of the site. In respect of potential impacts to the riparian area associated with South Creek, the assessment finds that potential impacts are largely contained to areas that will experience earthworks, and that the existing connectivity of vegetation throughout the site will be maintained. The assessment finds that the existing connections (of vegetation within the site) are unlikely to be used by fauna except for mobile species who would not be impeded by the development. The development will not sever the connectivity for these mobile species.

Direct impacts from the proposed earthworks result in impacts to a total of 3.17ha of PCTs:

- PCT 725 – Broad-leaved Ironbark – Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion: 0.69ha direct impact;
- PCT 849 - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion: 1.63ha direct impact; and
- PCT 1071 – Phragmites australis and Typha orientalis coastal freshwater wetlands of the Sydney Basin Bioregion: 0.85ha direct impact.

This represents the removal of the entire area of each of the PCTs within the footprint of the proposed works, resulting in a future vegetation integrity score of zero for each.

The works will also impact on 2.48ha of threatened species habitat of the Southern Myotis.

There are a number of indirect impacts affecting ecological communities on the site such as:

- Sedimentation and contaminated and/or nutrient rich run-off;
- Noise, dust or light spill;
- Inadvertent impacts on adjacent habitat or vegetation; and
- Transport of weeds and pathogens from the site to adjacent vegetation.

Further assessment of indirect impacts is provided in the BDAR at **Appendix F**.

The impacts of the development on the vegetation zones require offsets in the terms of ecosystem credits based on a Biodiversity Credit Report completed as part of the BDAR. These are summarised below in **Table 27**.

Table 27 Credits required

Vegetation Zone	PCT	Name	Condition	Vegetation Formation	Direct Impact (ha)	Credits required
1	725	Broad-leaved Ironbark - Melaleuca decora shrubby open forest on clay soils of the Cumberland Plain, Sydney Basin Bioregion	Moderate condition - regrowth	Dry Sclerophyll Forests (Shrub/grass sub-formation)	0.69	9
2	849	Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Low condition – exotic understorey	Grassy Woodland	1.63	20

Vegetation Zone	PCT	Name	Condition	Vegetation Formation	Direct Impact (ha)	Credits required
3	1071	Phragmites australis and Typha orientalis coastal freshwater wetlands of the Sydney Basin Bioregion.	Moderate condition	Freshwater Wetlands	0.89	15

Source: EcoLogical Australia

Additionally, 31 credits are required for the direct impact on 2.84ha of Southern Myotis habitat, consistent with the Biodiversity Assessment Method. At this stage it is intended that a monetary payment will be made for the required credits.

Figure 29 Impacts requiring offsets

Source: EcoLogical Australia

6.8.3 Mitigation Measures

A range of mitigation measures are proposed to reduce the impact on flora and fauna during the proposed works.

Table 28 Summary of mitigation measures relating to biodiversity

Impact	Environmental Safeguard	Responsibility	Timing
Displacement of resident fauna and microbats	• Pre-clearance surveys for microbats in existing hollow trees should be undertaken several weeks prior to construction commencing. If microbats are present within the trees, a Microbat Management Plan should be prepared to minimise impacts to bats during construction. • Additional pre-clearance survey should be undertaken immediately before construction. • Clearing protocols are to be implemented that identify: – vegetation to be retained, – prevent inadvertent damage and reduce soil disturbance – ideally specify the removal of native vegetation by chain-saw, rather than heavy machinery, as this is preferable in situations where partial clearing is proposed	Contractor Project ecologist	Construction
Sedimentation and contaminated and/or nutrient rich run-off	• Install sediment barriers and erosion control during and post construction to prevent runoff into adjacent creeklines. • Maintain controls throughout earthworks and undertake weekly inspections as detailed in the Erosion and Sediment Control Plan	Contractor	Construction
Noise, dust or light spill	• Pre-clearance survey for microbats in loose barked trees and any bird/other nests present. • Monitor response of bats to works/noise. • Implement noise barriers or daily/seasonal timing of construction and operational activities to reduce impacts of noise • Daily timing of construction activities is recommended in accordance with Table 1 of Interim Noise Guidelines (2009): – Monday to Friday 7.00am to 6.00pm – Saturday 8.00am to 1.00pm – No work on Sunday or public holidays • Night-time works should be avoided within proximity to the riparian corridor to prevent indirect impacts to microbats.	Contractor Project ecologist	Construction/Operation
Inadvertent impacts on adjacent habitat or vegetation	• Pre-clearance survey for microbats in loose barked trees and any bird/other nests present. • Monitor response of bats to works/noise. • Implement clearing protocols including: – pre-clearing surveys – daily surveys and staged clearing – the presence of a trained ecological or licensed wildlife handler during clearing events	Contractor Project Ecologist	Construction
Transport of weeds and pathogens from the site to adjacent vegetation	• All staff working on the development will undertake an environmental induction as part of their site familiarisation. Site briefings should be updated based on phase of the work. This induction will include items such as:	Contractor	Construction

Impact	Environmental Safeguard	Responsibility	Timing
	– 1. Site environmental procedures (vegetation management, sediment and erosion control, exclusion fencing and noxious weeds) – 2. What to do in case of environmental emergency (chemical spills, fire, injured fauna) – 3. Key contacts in case of environmental emergency • Trucks are to be cleared off at the entry and exit point of the site.		
Other construction activities: • Vehicle strike • Rubbish dumping • Wood collection	All staff to undertake an environmental induction per above.	Contractor	Construction
Disturbance to specialist breeding and foraging habitat	Preparation and implementation of a Vegetation Management Plan (VMP) is recommended to protect and enhance retained vegetation adjacent to the development site (namely the riparian lands associated with South Creek)	Contractor Project ecologist	Construction/Operation

6.9 Contamination

A Preliminary Environmental Site Investigation (Phase 1) has been prepared by JBS&G and is included at **Appendix L**. The purpose of the assessment is to assess potential contamination from historical activities across the site. The investigation was informed by desktop analysis and field studies.

An Unexpected Finds Protocol has been prepared (**Appendix L**) in the case of unexpected contaminants on-site.

6.9.1 Initial Investigations

A site visit conducted across the site extent indicates the area comprises largely open paddocks covered by grasses. A large storage shed, shipping containers, scrap metal, plastics and other wastes including truck and car batteries were stored in areas surrounding the shed. Fragments of asbestos containing materials were identified within areas of existing fill material and stockpiles.

The site has previously been used for light agricultural purposes, specifically along its northern boundary and the central and southern portions of the site.

The investigation finds that onsite contaminants are likely from surficial sources that are associated with the site's former use as a farm. These include pesticides/herbicides as used in former market garden areas, biological contamination from livestock, discarded hazardous building materials (asbestos) and potential hydrocarbon, PAH, OCP contamination from the storage of materials, plant and consumables. Potential contaminants are identified in **Table 29**.

Table 29 Potential contaminants on site

Potential Area of Environmental Concern (AEC)	Contaminants of Potential Concern (COPC)
Onsite	
Historical and existing site structures	Heavy metals, lead and asbestos
Storage and maintenance of equipment and consumables	Heavy metals, PAHs, TRH/BTEX and VOCs
Fill materials	Heavy metals, PAHs, TRH/BTEX, OCPs/PCBs and asbestos
Horse/livestock stables	Biological hazards
Historical market garden areas	Pesticides (OCPs/OPPs)

Potential Area of Environmental Concern (AEC)	Contaminants of Potential Concern (COPC)
Aesthetic impacts	Rubbish and fly tipped wastes
Offsite	
Migration of ground gases from adjacent landfill	Methan, carbon dioxide, hydrogen sulphide
Migration of contaminated groundwater	Heavy metals, PAH, TRH/BTEX, OCPs/PCBs

Source: JBS&G

The SUEZ Recycling and Recovery Centre to the west of the site is subject to a licence issued under the POEO Act, for waste storage and disposal. The investigation notes potential contaminants that may have migrated from the neighbouring resources recovery centre, including potentially impacted groundwater and landfill gas. Further, the site's proximity to an airstrip (located north-east of the site) may be a potential source of PFAS contamination, associated with the uses of fire-fighting chemicals at the airfield however this is located approximately 750m to the north-east of the site and located downstream of South Creek.

Soil Sampling

As part of the assessment 21 test pits were investigated on the site (as illustrated in **Figure 30**), with one borehole located along its western boundary. Testing of boreholes throughout the site discovered anthropogenic materials within seven of the test pits. Further, fragments of fragments of ACM were identified within stockpiled materials at TP09 and TP10, and in underlying fill material at TP09 (only). The investigative finds that given the distribution of test pits across the site and the consistency of fill materials between test pit locations, it appears fill materials are constrained to the north-western portion of the site. Analytical data for soil indicates there does not appear to be widespread contamination to soils from historical market garden use and/or filling. However, the investigation notes that the assessment of soils was limited.

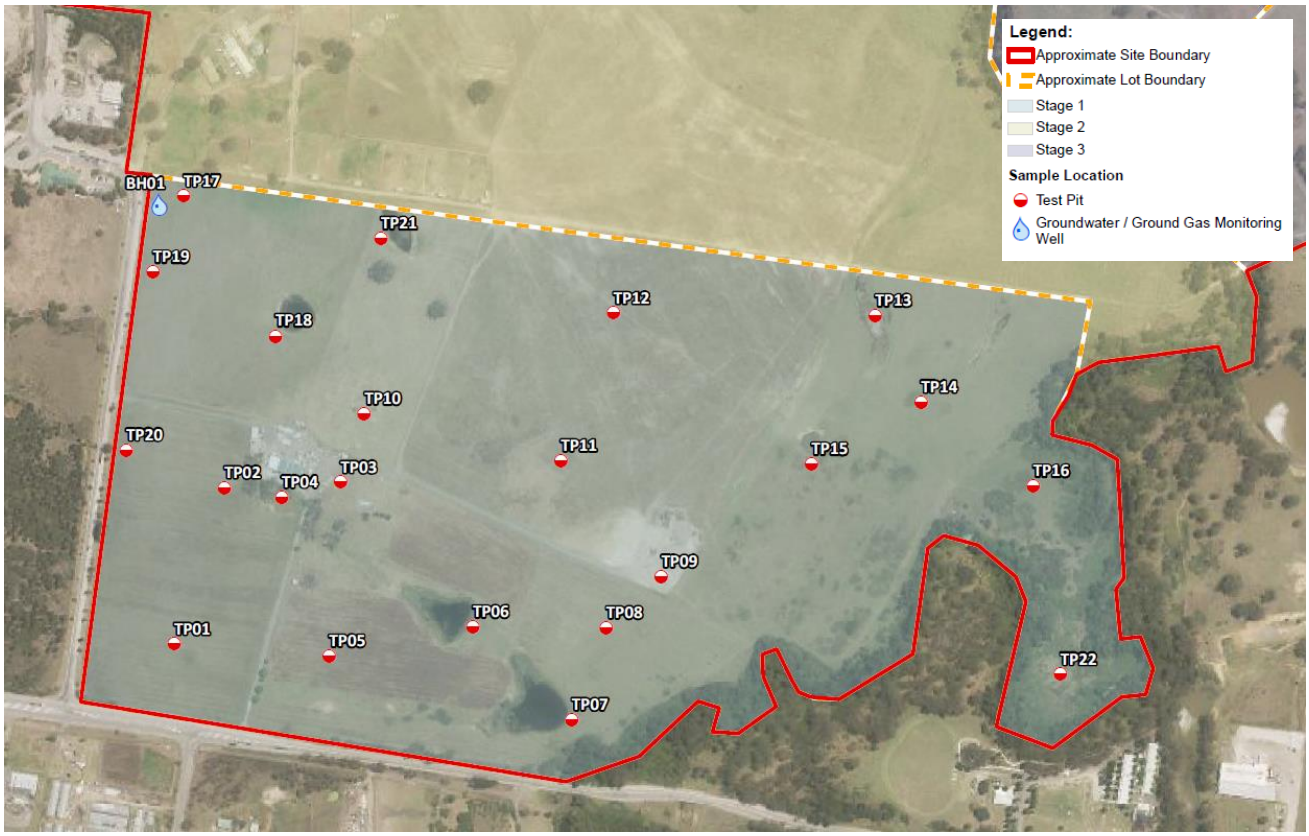


Figure 30 Location to test pits and borehole within the site.

Source: JBS&G

Informed by the collection of ground water and gases within the site, the investigation states that there does not appear to be significant migration of contaminants from the SUEZ site to the site. However, it is noted that the scope

of investigation was limited and that additional investigations for the broader area (adjoining land parcels identified as Stage 2) would confirm the extent of potential cross-site contamination.

6.9.2 Potential Impacts

Whilst the investigation identified the potential for soil and groundwater impacts within the site, the investigation did not identify the potential for contamination which would limit the proposed use of the site for a waste disposal facility.

Further, the potential soil and groundwater impacts identified are common contaminants. Any remediation works to be carried out would be Category 2 works under SEPP 55 and not do require consent. An Unexpected Finds Protocol has been prepared (**Appendix L**) and will be implemented during the course of the works.

While this proposal is not expected to adversely impact soil or groundwater, for more certainty around this, Council may include an appropriate condition of consent that that requires that a Detailed Site Investigation Report, and a subsequent RAP be prepared in the event of identifying any unexpected finds or contaminants.

6.10 Visual Impact

A Visual Impact Analysis has been undertaken to assess potential impacts on views to and from sensitive receivers outside of the site, noting the topography of the land and sensitivities of the South Creek corridor. The significances of potential visual impacts are determined by an analysis of existing conditions, identifying sensitive receptors and the scale of changes proposed. The assessment has been informed by photomontages prepared by Clouston (refer to **Appendix R**).

The site is identified in the PLEP 2010 as an area of scenic character and landscape values, and within the Landscape Character Strategy 2006 as a 'rural backdrop' and 'pastoral setting', with the sites Elizabeth Drive frontage also identified as being a 'primary visual backdrop'. It is also noted that Elizabeth Drive will form a primary arterial road for future access to the WSA. Accordingly, the proposed development's frontage to Elizabeth Drive will form the part of the visual gateway that welcomes visitors to Western Sydney.

6.10.1 Existing Environment

The site is situated on land that is generally flat with low rolling topography, sloping down towards the site's alignment with South Creek. The site consists of two landscape character areas, with a further four character areas identified within the surrounds (as illustrated in **Figure 31**). Within the site, the majority of the land is identified as a 'rural landscape' with areas aligning with South Creek identified as a 'creek corridor'.

Informed by the existing topography of the site, a visual catchment has been identified as illustrated in **Figure 31**. The visual catchment of the site extends to the east of the site and covers a significant area. The visual catchment includes pastoral areas, industrial developments, low density residential developments and riparian lands associated with Kemps Creek. This context informs an assessment of visual impact, including the identification of selection criteria in which visualisations have been produced.

Methodology

A number of sources for selection of key views was informed by:

- Visual assessment policy guidance, in particular the NSW Land and Environment Court Planning Principles;
- Desktop analysis and mapping;
- Viewshed analysis;
- Field evaluation; and
- The applicable SEARS (as addressed in **Section 1.3**)

This process has resulted in the identification of eight key views and vistas, as illustrated in **Figure 33**.
Based on the above sources of view selection, a number of selection criteria for identification of key views was established, and includes, in order of priority:

1. Views from the public domain (principally streets, parks and roads)
2. Views of pedestrians and cyclists (generally limited in number, given the absence of paths and cycleways on Elizabeth Drive)
3. Close and direct views from adjacent residential properties (the closest are to the southern side of Elizabeth Drive)
4. Views from transport (private and public)

As shown in **Figure 32** highlighting the viewshed of the site, the principal visual catchment area is to the east of the site.

Key views were then analysed using the following factors to form an overall impact rating:

- receptor sensitivity;
  - being the sensitivity of the receptor to change in the visual scene;
- quantum of view;
  - the openness of the view and the angle of view to the scene;
- distance of view;
  - the distance between the receptor and the site;
- period of view; and
  - the length of time the receptor is exposed to the view;
- scale of change.
  - A quantitative assessment of the change in compositional elements of the view.

Each of these factors resulted in the analysed view being given a rating of negligible (zero), low impact (one point), moderate impact (two points) or high impact (three points). Cross sections of the proposed works and the view impacts from several of the eight selected views were reviewed in addition to the above.

A ratings matrix (**Table 30**) is then used to identify the view rating in terms of each of the key factors, resulting in an assessment criteria average which provides the overall visual impact rating.

Table 30 Visual impact ratings

Score	Rating	Description
0 - 1	Negligble	Only an insignificant part of the Project is discernible.
1 – 1.3	Low	The Project constitutes only a minor component, which might be missed by the casual observer or receptor. Awareness of the proposal would not have a marked effect on visual amenity.
1.4 – 1.7	Moderate/low	Whilst discernible, the Project does not dominate the visual scene and has only slight impacts on visual character.
1.8 – 2.3	Moderate	The Project may form a visible and recognisable new element within the overall scene that affects and changes its overall character.
2.4 – 2.6	Moderate/high	The Project is a discernible feature of the scene leading to moderately high impacts on visual character.
2.7 - 3	High	The Project becomes the dominant feature of the scene to which other elements become subordinate, and significantly affects and changes the visual character.

Source: Cloustons

Findings for each of the analysed views are detailed below.

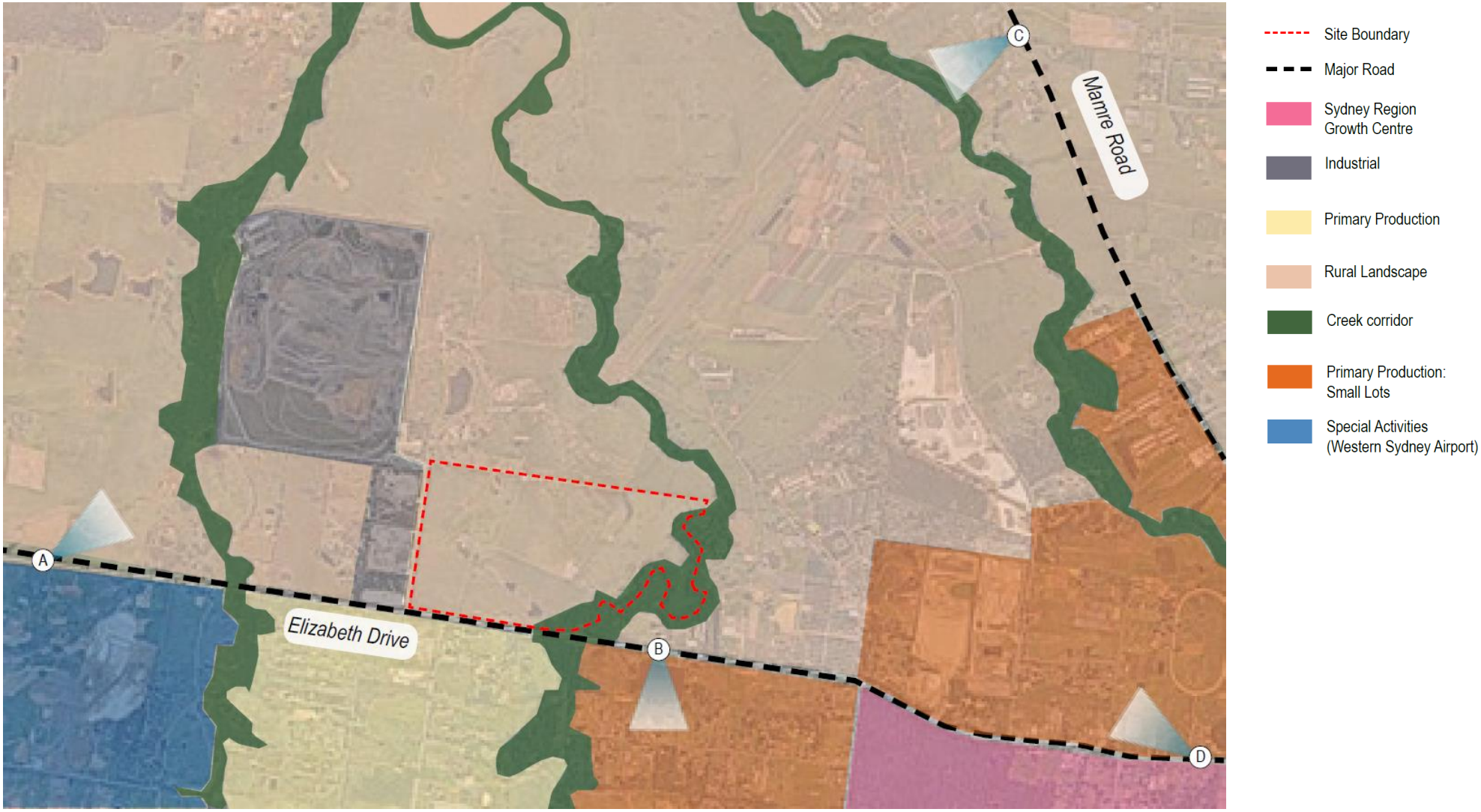


Figure 31 Existing landscape character

Source: Cloustons

Figure 32 Estimated viewshed of the site based on topography

Source: Cloustons

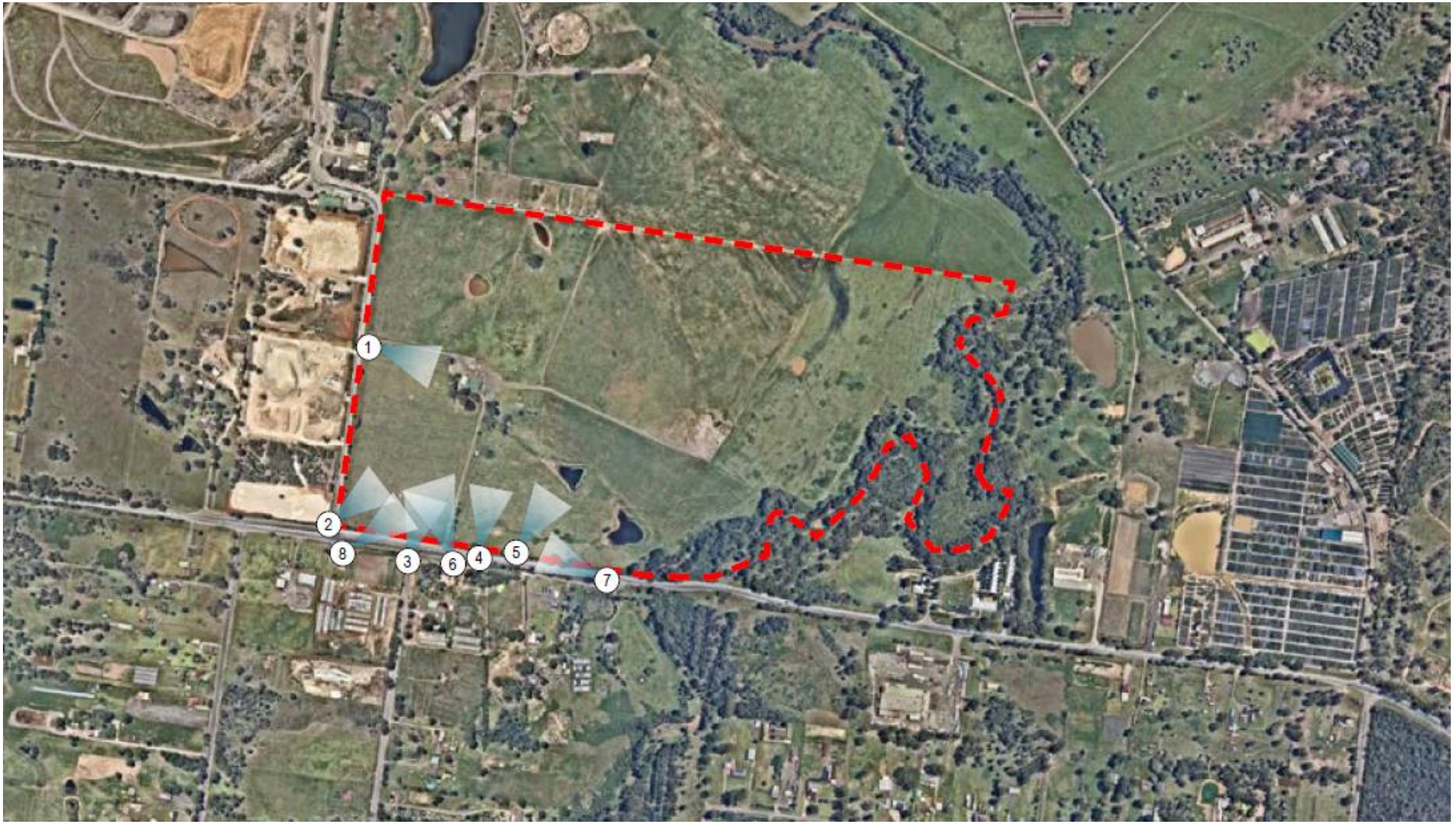


Figure 33 Key views and vistas of the site

Source: Cloustons

6.10.2 Potential Impacts

While the resulting landform is permanent, future development of the EEP (subject to separate applications) consistent with the WSAP and WSA SEPP will ultimately affect the visual impact associated with this application. Therefore, visual impacts associated with the proposed works as sought under this application are temporary in nature. The proposed landform will be temporarily undeveloped, consisting of exposed earth to be immediately seeded and covered.

The visual impacts of the proposed facility are detailed in **Table 31**. As described above, the assessment assigned the following ratings to a numeric score:

- 0 points – negligible impact;
- 1 point – low impact;
- 2 points – moderate impact; and
- 3 points – high impact.

Table 31 Summary of potential visual impacts

Viewpoint	Receptor Type	Receptor Sensitivity	Distance	Quantum of View	Period of View	Scale of Change	Summary	Visual Impact Rating
Viewpoint 1	Public	1	3	2	1	2	1.8	Moderate
Viewpoint 2	Public	2	3	1	1	1.5	1.7	Moderate/Low
Viewpoint 3	Public	2	3	2	1	1.5	1.9	Moderate
Viewpoint 4	Public	2	3	2	1	2	2	Moderate
Viewpoint 5	Public	2	3	2	1	2	2	Moderate
Viewpoint 6	Public	2	3	2	2	2	2.2	Moderate
Viewpoint 7	Public	2	3	1.5	1	1	1.7	Moderate
Viewpoint 8	Public	3	3	2	3	2	2.6	Moderate-High

In addition to the above, the following brief summary of future views is provided for each view point.

Table 32 Assessment of visual impacts

Viewpoint	Assessment
Viewpoint 1	This view of the existing semi-rural land on site will be replaced with views of the bulk earthworks, with distant views to the east slightly increased allowing for a small increase in the green band of vegetation along the horizon.
Viewpoint 2	The visibility of the earthworks and associated elements in the foreground will be partially obscured due to the proposed batter being approximately 1.5m above the level of the existing road. The retention of existing vegetation on the corner of Elizabeth Drive will partially obscure the long distance views to the north-east.
Viewpoint 3	The earthworks platform will not be visible from this viewpoint due to the grassed bund, which will result in a consistent grassed edge running parallel to Elizabeth Drive.
Viewpoint 4	The proposed bund will obscure the earthworks so the proposed level changes will not be visible.
Viewpoint 5	The proposed grassed bund will replace the current views to the north, and as a result the earthworks will not be visible from this location.
Viewpoint 6	As a result of the grassed bund, which will be the major discernible element of the proposal, views of grass land and the like to the north will be replaced by the consistent bund edge.
Viewpoint 7	The proposed bund will be noticeable, rising above the existing landform on the northern side of Elizabeth Drive. As a result of both the existing landform and the proposed bund, views of earthworks within the site will not be possible from this location.

Viewpoint	Assessment
Viewpoint 8	Looking west along Elizabeth Drive the proposed grass bund will be the most noticeable element of the proposal and will largely obscure other earthworks proposed within the site. The bund will create a more consistent grassed edge running parallel to Elizabeth Drive and will replace distant views to the north over the site.

Source: Clouston Associates

It must however be noted that the WSAP and WSA SEPP will facilitate major change in land uses and the character of the Aerotropolis, and that while the proposed bulk earthworks result in a moderate to moderate visual impact, this is in the context of the existing rural landscape. The proposed bulk earthworks are therefore temporary in their visual impact on the landscape character of the area.

6.10.3 Mitigation Measures

In respect of the potential visual impact described above, the assessment provides various applicable mitigation approaches. These include:

- Design Brief – the identification of significant views in planning documents and the integration of these into the Design Brief;
- Avoidance – this approach implies relocating the proposal elsewhere on the site with lesser visual impacts or not proceeding with the proposal on the site at all;
- Reduction – mitigate impacts through the reduction of some part of the proposed structure or development;
- Alleviation – incorporating design refinements to the proposal to mitigate visual impacts;
- Off-site compensation – provide adequate visual impact mitigation for off-site visual receptors; and
- Management – an operational or management action such as construction management to minimise impacts.

Given the nature of visual impacts associated with the proposed works, ground cover on the grass bund will be used to mitigate visual impacts. This mitigation method has informed the assessment of potential visual impacts. Generally, the proposed development will result in visual impacts that are considered appropriate for the location and the future vision of the broader area. Mitigation measures relating to visual impact are included in **Table 33**.

Table 33 Summary of mitigation measures relating to visual impact

Impact	Environmental Safeguard	Responsibility	Timing
Visual impacts on the surrounds (general)	Retaining and protecting existing roadside vegetation wherever practical and effective, especially on Elizabeth Drive.	Construction contractor	Pre-construction / construction
	Planting the proposed landscape buffer zone on the western and southern boundaries of the site with mixed plantings of tree groups and shrubs, creating filtered views to the site and buildings (not screening them).	Construction contractor / project manager	Pre-construction / construction
	Installation of the proposed grassed bund to reduce views across the site from Elizabeth Drive	Construction contractor / project manager	Pre-construction / construction
	Selecting tree species to match the existing landscape character of this locality.	Construction contractor / project manager	Pre-construction / construction
Visual impact on surrounding residential dwelling	Tree planting may be provided on the surrounding residential land upon request and subject to negotiation.	Project manager	Pre-construction / construction
Temporary visual impacts associated with construction	Undertake construction activity in line with the Construction Management Plan. Impacts associated with construction are considered negligible.	Project manager/ construction contractor	Pre-construction / construction

6.11 Heritage

The proposed development is supported by a Statement of Heritage Impact and Archaeological Survey Report, prepared by Artefact and included in **Appendix I** and **Appendix J**. The assessment considered heritage items and archaeological remains within the site in the context of potential impacts as caused by the proposed development. The statement is informed by historical records, desktop studies and fieldwork observations with a site inspection undertaken on 20 March 2018.

6.11.1 Existing Environment

The land containing the study area was the location of James Badgery's landholdings, who used the land for farming purposes. It was on this land that Badgery established 'Exeter Farm', raising cattle to be sold at market. In 1810 (it is estimated), construction of a brick farmhouse commenced, and was finished in 1812. A range of other structures were also constructed around this time period including convict dwellings, sheds and barns. The farm was eventually sold in 1869, before being broken into various smaller farms for sale. Elizabeth Drive itself, forming the southern boundary of the subject site, was originally constructed in the early 1800s to provide access to local land grants.

The study area is situated on a slight slope and low-relief ridgeline, with the eastern portion of the site descending towards South Creek. A high point on the site is approximately 200m to the east of the western boundary of the site. Various drainage lines running in an east-west direction are also located on the site.

Non-Aboriginal Heritage

The study area for the heritage assessment considered the entirety of the Stage 1 footprint. A search of relevant state and federal statutory and non-statutory heritage registers were undertaken, including preliminary archaeological assessment. These searches resulted in no identification of listed sites on the Commonwealth Heritage List, National Heritage list, the State Heritage Register or the s170 Register of Government Agency heritage items.

There are two items of locally listed heritage values under the Penrith LEP 2010 identified within 650m-1km of the site, however none identified on the site. These two nearest items are:

- McGarvie-Smith Farm (LEP #857) – at its closest is approximately 650 metres west of the study area
- The Fleurs Radio Telescope Site (LEP #832) – at its closest is approximately 1000 metres north of the study area

The Fleurs Aerodrome, located approximately 450m north of the study area, has previously been identified by Artefact as having some heritage values and is likely to meet the threshold for local significance, however is not currently a listed heritage item.

No items of heritage significant under the Liverpool LEP 2008 were identified within 1km of the study area.

A preliminary archaeological assessment was completed for the study area due to the location of the Exeter Farm farmhouse, brick cottage and various sheds associated with the historical use. The findings of this archaeological survey identify that there is a moderate to high potential for remains of the former Exeter Farm buildings to be found towards the western boundary of the site, near to the current dwelling structure.

The assumed location of these items is shown in **Figure 34**.

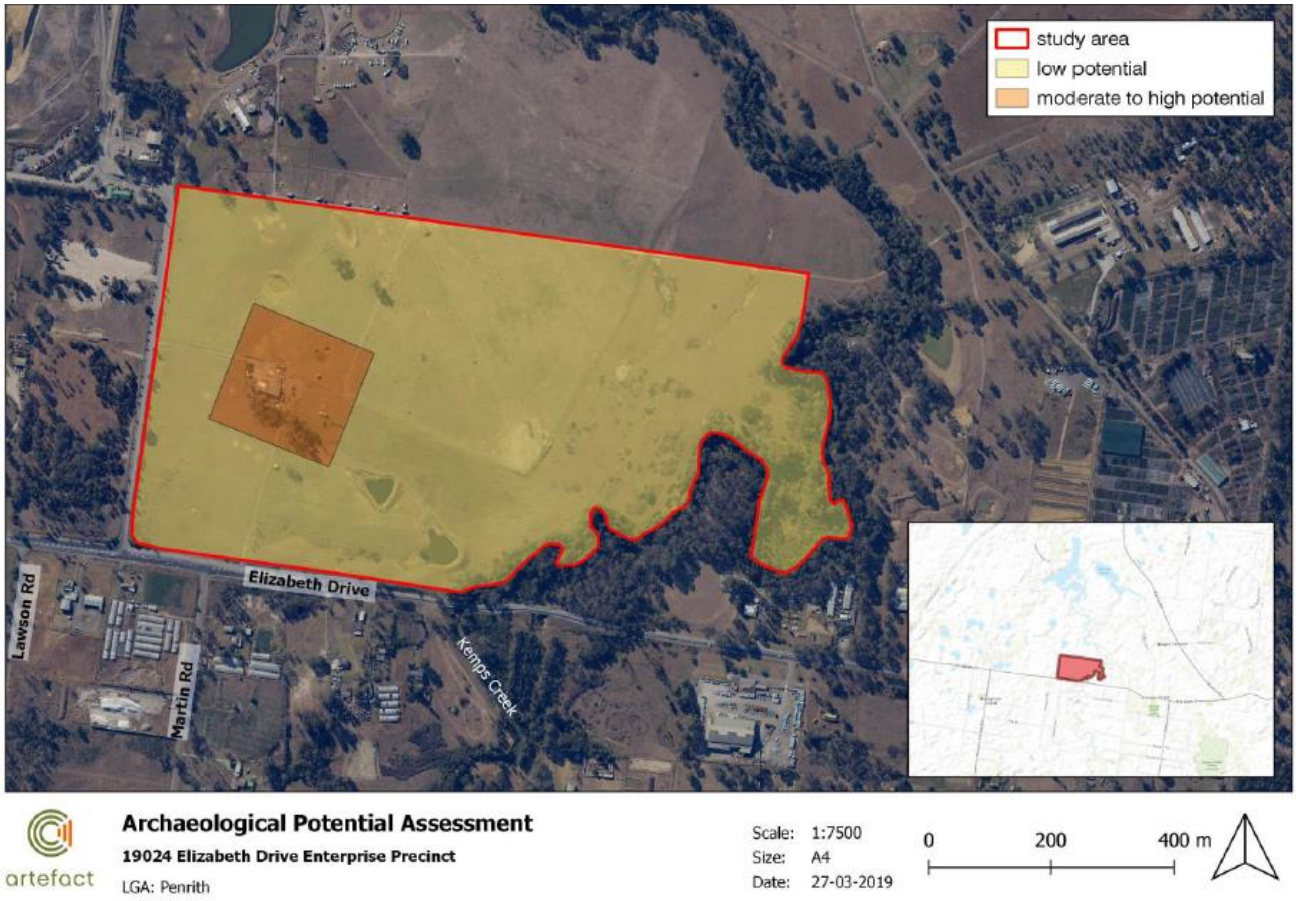


Figure 34 Potential location of archaeological remains of the Exeter Farm and buildings

Source: Artefact

Aboriginal Heritage

An Aboriginal archaeological survey was conducted on 20 March 2019 in conjunction with a representative from the Deerubbin LALC to locate and identify Aboriginal sites and objects or areas of Potential Archaeological Deposits (PADs). Four Aboriginal sites were identified during the survey, with three PADs identified. Further, the assessment of Aboriginal sites was informed by multiple prior studies, including those undertaken for the WSA site and nearby developments.

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) using a broad 5km buffer around the site identified a total of 54 recorded Aboriginal sites:

- Artefacts: 50 (92.6%);
- Grinding groove: 1 (1.85%);
- Modified tree (carved or scarred): 1 (1.85%); and
- Potential Archaeological Deposit: 2 (3.7%).

The recorded grinding groove site is located near to the study area; however the exact location is undetermined. It is expected that this site is located near to the banks of South Creek, to the north of the site.

The survey undertaken split the site into four survey units (**Figure 35**). Within these survey units the following items were identified:

- Survey Unit 1: three Aboriginal sites and one PAD;
- Survey Unit 2: one PAD;

- Survey Unit 3: one Aboriginal site and one PAD; and
- Survey Unit 4: no sites or PADs.

All sites were in disturbed contexts related to either dam construction or the import of fill (within survey unit 1). It is considered possible that artefacts located within the fill area were redeposited within the fill itself and subsequently these objects are considered to contain low scientific value. While further Aboriginal objects may have been imported within the fill context further investigation of this area of fill is considered to offer limited research potential.

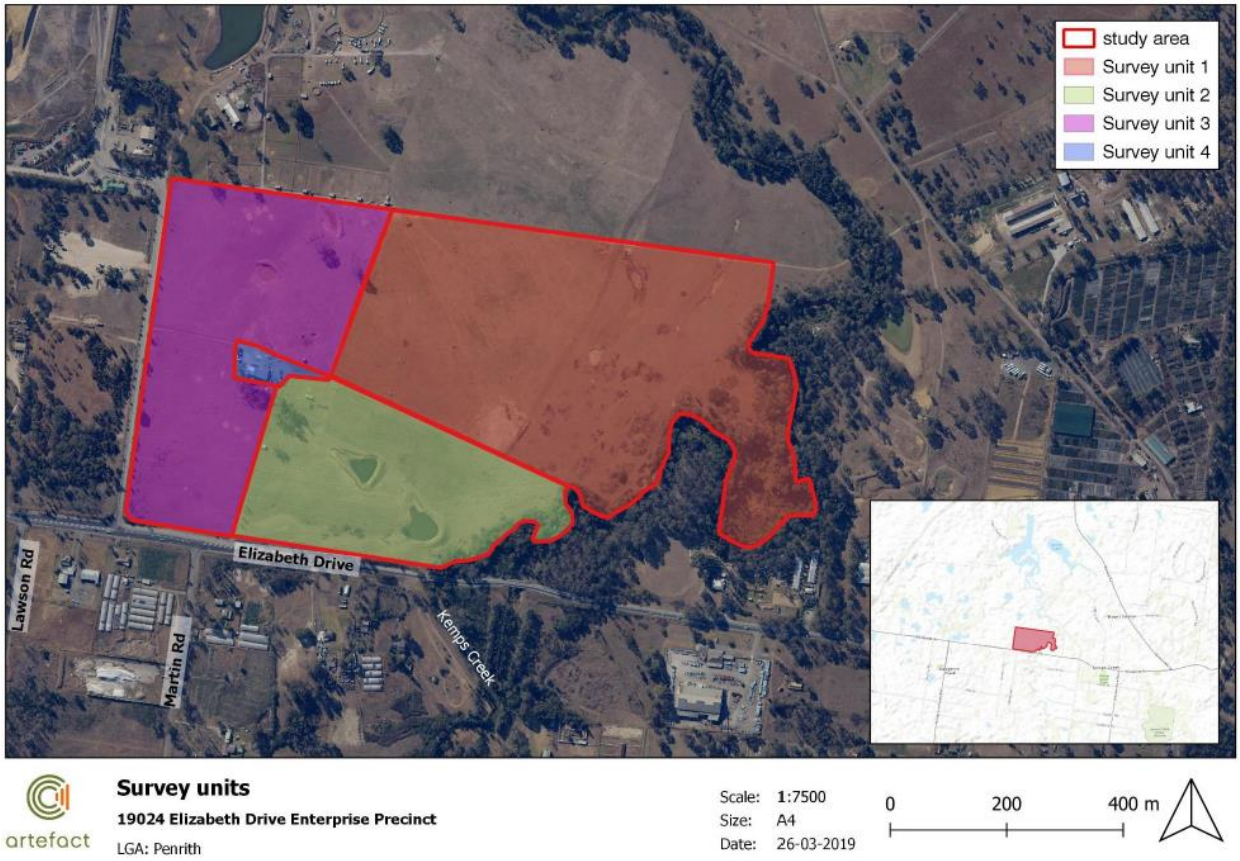


Figure 35 Location of Survey Sites

Source: Artefact

These newly identified Aboriginal sites and PADs are outlined in detail in **Table 34**.

Table 34 Newly identified sites and PADs

Site Name	Findings
Elizabeth Precinct Artefact Scatter 01 (EPAS 01) (AHIMS ID Pending)	This site is on a raised artificial terrace within an area of surface erosion resulting from animal grazing, containing two artefacts including a single platform core fragment and a complete flake. Both artefacts are comprised of grey/ pink silcrete. The site is deemed to be in a disturbed context associated with imported fill. While it is considered likely that further archaeological material is present, it is unlikely to relate to an intact archaeological deposit.
Elizabeth Precinct Isolated Find 01 (EPIS 01) (AHIMS ID Pending)	This site is located on a raised artificial terrace within a surface erosion resulting from animal grazing and contained one retouched utilised piece. The site is deemed to be in a disturbed context associated with the import of fill. While it is considered likely that further archaeological material is present, it is unlikely to relate to an intact archaeological deposit.

Site Name	Findings
Elizabeth Precinct Isolated Find 02 (EPIS 02) (AHIMS ID Pending)	This site is located on a raised artificial terrace within a surface erosion resulting from animal grazing. The site contains one proximal flake fragment identified as a scraper. The artefact has been retouched along its right, left and proximal margins. The site is deemed to be in a disturbed context associated with the import of clean disposal soil. While it is considered likely that further archaeological material is present, it is unlikely to relate to an intact archaeological deposit.
Elizabeth Precinct Isolated Find 03 (EPIS 03) (AHIMS ID Pending)	This site is located within a sloped landform within an exposure associated with a dam wall. The site contains one single platform core. The artefact is comprised of red silcrete and the core contains one flake scar. The artefact is considered to be ex-situ given then location of the site within a dam wall.
Elizabeth Precinct PAD 01	This site is located within the south eastern portion of SU3, associated with a slightly raised crest landform associated with the wider ridgeline which runs along the western portion of SU3. The PAD provides a good vantage point over the surrounding landscape with spur lines directly connecting the ridgeline and the resources associated with South Creek. Surface visibility across the site was generally low, due to dense grass cover. Observations during the site survey did not identify any significant areas of surface disturbance however historical aerials have identified that the site area was formally subject to agricultural cropping. The cropping is considered likely to have resulted in some level of vertical and horizontal displacement of potential archaeological remains however it is unlikely to have completely removed the archaeological remains.
Elizabeth Precinct PAD 02	This site is located within the central portion of SU 2, associated with a spur landform located above the confluence of two drainage lines. Spur lines adjacent to first order water courses were identified as containing above average artefact densities during excavation of the adjacent conducted for the Western Sydney airport (Navin Officer Heritage Consultants 2016) in addition the landform is consistent with the landform identified by Brayshaw (1995) as containing archaeological potential.urface visibility across this site was generally low, due to dense grass cover. Observations during the site survey did not identify any significant areas of surface disturbance however historical aerials have identified that the site was formally subject to agricultural cropping. The cropping is considered likely to have resulted in some level of vertical and horizontal displacement of potential archaeological remains however it is unlikely to have completely removed archaeological remains.
Elizabeth Precinct PAD 03	This site is located within SU1 associated with the alluvial flats/ flood plain directly adjacent to South Creek. The area of the site was identified based on its proximity to South Creek with steep slopes associated with the creek bank discounted from the site extent. While the area is deemed to be flood prone, the area appears to be comprised of a relatively intact landform within 200m of South Creek.

Source: Artefact

These identified Aboriginal sites and PADs have been further assessed to identify their archaeological significance, which informs the outcomes of potential impacts on these items.

Table 35 Newly identified sites and PADs

Site Name	Research Potential	Representative View	Rarity	Education Potential	Overall Archaeological Significance
Elizabeth Precinct Artefact Scatter 01 (EPAS 01) (AHIMS ID Pending)	Low	Low	Low	Low	Low
Elizabeth Precinct Isolated Find 01 (EPIS 01) (AHIMS ID Pending)	Low	Moderate	Moderate	Moderate	Moderate
Elizabeth Precinct Isolated Find 02 (EPIS 02) (AHIMS ID Pending)	Low	Moderate	Moderate	Moderate	Moderate
Elizabeth Precinct Isolated Find 03 (EPIS 03) (AHIMS ID Pending)	Low	Low	Low	Low	Low

Site Name	Research Potential	Representative View	Rarity	Education Potential	Overall Archaeological Significance
Elizabeth Precinct PAD 01	Moderate	Unknown	Unknown	Unknown	Unknown
Elizabeth Precinct PAD 02	Moderate	Unknown	Unknown	Unknown	Unknown
Elizabeth Precinct PAD 03	Moderate	Unknown	Unknown	Unknown	Unknown

Source: Artefact

6.11.2 Potential Impacts

Non-Aboriginal Heritage

As there are no listed items of local or State heritage significance on the site potential impacts to the unlisted items outlined previously are considered negligible in terms of potential indirect (visual) impacts.

Table 36 Summary of impact of surrounding items of heritage significance

Item	Findings
The Fleurs Radio Telescope Site SHI # 2260832	The Fleurs Radio Telescope Site do not include aesthetic values or views to and from the site, with the significance values of the site are primarily related to the site's historical significance. Therefore, the proposed works will result in negligible visual (indirect) impacts to the significance values of The Fleurs Radio Telescope Site.
McGarvie-Smith Farm SHI # 2260857	The significance values of McGarvie-Smith Farm are related to the aesthetic inter-war design of the rural research buildings (aesthetic significance), as well as historical and rarity significance values. The study area is separated from the McGarvie-Smith Farm by a local high point (between 60-69 metres above sea level), a series of four rural properties off Elizabeth Drive and Badgerys Creek. The SUEZ resource recovery precinct is located adjacent to both the study area and McGarvie-Smith Farm. The proposed earthworks within the study area will not be directly visible from McGarvie-Smith Farm, and the proposed works will result in negligible visual (indirect) impacts to the significance values of McGarvie-Smith Farm.
Fleurs Aerodrome Potential heritage item – unlisted	The former location of the Fleurs Aerodrome is located on the eastern side of South Creek and approximately 450 metres north of the study area. The aerodrome is located across a flat landform context, and visually separated from the study area by dense vegetation bordering both margins of South Creek. The potential local significance values of the airstrip would relate to its historical significance values, which would not be impacted by partial views of works within the study area. Therefore, the proposed works will result in negligible visual (indirect) impacts to the significance values of former location of Fleurs Aerodrome.

Source: Artefact

The proposed earthworks would have a direct impact on non-Aboriginal archaeological items of heritage significance which may be located within the site. These items may include archaeological remains associated with:

- Badgery's farmhouse (Exeter Farm);
- Convict quarters;
- At least two huts for farm assistants, including the overseer and the blacksmith;
- At least one barn; and
- Other structures and features associated with a farm complex dating to the early 19th century, including cesspits, privy, rubbish deposits, and other as yet unidentified structures such as for butchering and blacksmith's workshop.

As such, more detailed archival research is required to prepare an archaeological research design to be submitted with an application for a s139 exception or a s140 permit for test excavation. This process will be undertaken outside of this development application.

A summary of holistic impacts relating to heritage, as assessed by Artefact is detailed in **Table 37**.

Table 37 Statement of heritage impact

Impact	Discussion
What aspects of the proposal respect or enhance the heritage significance of the study area?	The proposed methodology for earthworks within the study area will be reviewed subject to the location and significance of archaeological remains identified through proposed archaeological test excavation and/ or potential refinement of the area of archaeological potential during continued archival research for the ARD. The proposal will have no physical (direct) impact on nearby heritage items. The proposal will have negligible visual (indirect) impact on nearby heritage items.
What aspects of the proposal could have a detrimental impact on the heritage significance of the study area?	The proposed earthworks within the study area have the potential to impact local and state significant archaeological remains relating to James and Elizabeth Badgery's occupation of Exeter Farm. This includes their early 19th century farmhouse and associated structures such as the convict quarters, farm assistants' quarters, cesspits, privies, and rubbish deposits. There is also the potential for underfloor deposits associated with some of the structures, such as the farmhouse and assistant's quarters. An Archaeological Research Design (ARD) would be prepared to provide a methodology for archaeological test excavation and refinement of archival research. As the proposed methodology for earthworks will be reviewed throughout preparation of the ARD and following the results of archaeological test excavation, the final level of impact to archaeological remains is not yet known.
Have more sympathetic options been considered and discounted?	The proposed cut and fill methodology for creating individual flat lots will support the market need for large flexible allotments to accommodate a broad range of requirements to ensure economic efficient use of the land for flexible employment generating purposes.

Source: Artefact

Aboriginal Heritage

Based on the extent of the proposed bulk earthworks there will be a direct impact to any identified site, PAD site or portion of PAD site within the footprint of the works. Both cut and fill works as proposed will have an impact on Aboriginal sites. A summary of identified impacts is included in **Table 38**. The works are not proposed for the portion of the study area that encompasses PAD 03, however intended future uses of this area would ultimately result in a partial loss of value.

Table 38 Impact on archaeological sites

Site name/ AHIMS ID	Type of harm	Degree of harm	Consequence of ham
Elizabeth Precinct Artefact Scatter 01	Direct	Total	Total loss of value
Elizabeth Precinct Isolated Find 01	Direct	Total	Total loss of value
Elizabeth Precinct Isolated Find 02	Direct	Total	Total loss of value
Elizabeth Precinct Isolated Find 03	Direct	Total	Total loss of value
Elizabeth Precinct PAD 01	Direct	Total	Total loss of value
Elizabeth Precinct PAD 02	Direct	Total	Total loss of value
Elizabeth Precinct PAD 03	Direct	Partial	Partial loss of value

Source: Artefact

It is recommended that archaeological text excavation be conducted in accordance with the Code of Practice, and that during detailed design attempts should be made to minimise the impact on known Aboriginal sites and areas of PAD. As part of this process, an Aboriginal Heritage Impact Permit (AHIP) will be applied for, which will incorporate

an Aboriginal Cultural Heritage Assessment Report for consideration by OEH (now the Department of Planning and Industry).

6.11.3 Mitigation Measures

Mitigation measures in respect of heritage on the site is detailed in **Table 39**.

Table 39 Summary of mitigation measures relating to heritage

Impact	Environmental Safeguard	Responsibility	Timing
Heritage value of the site and the surrounds	A Heritage Management Plan (HMP) that includes an unexpected finds procedure must be prepared prior to commencement of works. OHE will be notified of relevant discoveries.	Project Manager/ Contractor/ Heritage Consultant	Pre-Construction/ Construction
	A heritage 'induction' must be undertaken by workers before commencing works. The induction will outline heritage values of the site and the surrounds.	Project Manager/ Contractor/ Heritage Consultant	Pre-Construction/ Construction
Potential Aboriginal archaeology within the site.	Archaeological test excavation will be conducted within the three areas of archaeological potential, subject to proposed impacts in accordance with the OEH Code of Practice. Test excavation will be undertaken in order to confirm the presence and geographic extent of subsurface Aboriginal objects and assess their significance to inform further recommendations.	Contractor and local Aboriginal Community	Pre-Construction
	Detailed design of the proposed works will aim minimise impact on known Aboriginal sites and areas of PAD. An updated impact assessment will be part of the Aboriginal Cultural Heritage Assessment Report (ACHAR) following refinement of the proposed cut and fill methodology and clarification of potential impacts to Aboriginal objects.	Contractor and local Aboriginal Community	Pre-Construction
	Comprehensive Aboriginal stakeholder consultation carried out in accordance with the OEH 'Aboriginal cultural heritage consultation requirements for proponents' (DECCW 2010) will be undertaken.	Contractor and local Aboriginal Community	Pre-Construction
	An application for an area based Aboriginal Heritage Impact Permit (AHIP) that covers the study area will be submitted to OEH following completion of test excavation and preparation of an ACHAR.	Project Manager/ Contractor/ Heritage Consultant	Pre-Construction
	The ACHAR will outline recommended mitigation measures for inclusion as conditions in the AHIP. Mitigation measures would be conducted following issuance of the AHIP and prior to commencement of construction	Project Manager/ Contractor/ Heritage Consultant	Pre-Construction
Potential impacts on non-Aboriginal archaeology within the site.	A detailed archaeological assessment will be undertaken for the study area. This will include further archival research to refine the area of potential for local and state archaeological remains. Studies will involve test excavation under either a s139 exception or s140 permit.	Project Manager/ Contractor/ Heritage Consultant	Pre-Construction

6.12 Hazards and Risks

This section provides consideration and assessment of other hazards and risks associated with the proposed works, including bushfire, geotechnical considerations and flood risk.

6.12.1 Bushfire

A Bushfire Assessment has been prepared by Australian Bushfire Protection Planners (**Appendix Q**). The assessment addresses the requirements of *Planning for Bush Fire Protection 2006*, noting that Planning for Bush Fire Protection 2018 is not yet legislated.

The site is identified as being within a mapped 'Vegetation Category 2' bushfire prone land area, with the South Creek area mapped as 'Vegetation Category 1'. Category 1 is considered to be the highest risk for bushfire with a 100m buffer to be provided, with Category 2 considered a lower risk with a 30m buffer to be provided.

Noting that there is no subdivision works proposed as part of this application, which is exclusively for land filling, the risk of bushfire impacts on the development is considered low, as the site will be largely cleared of vegetation and consequently bushfire fuel. Further, the proposed development will not result in the addition of residential dwellings or high risk uses (i.e. hospitals or childcare centres) within the site.

The assessment provides an Asset Protection Zone (APZ) and describes provisions of defensible space within the Stage 1 site. The assessment describes a 24m APZ to be applied to the western boundary of the site (the site's alignment with South Creek). However, the APZ is intended to mitigate the risk of bushfire to human life and built assets. As the proposed development does not involve the construction of built form or an increase in occupancy of the site, enforcing the APZ will be incorporated within future development, subject to a separate application. The assessment provides no additional measures to reduce or mitigate risks associated with bushfire.

6.12.2 Geotechnical

Refer to **Section 6.2**. The proposed works are not anticipated to be impacted by geotechnical limitations.

6.12.3 Flood risk

Refer to **Section 6.1** and **Appendix G**.

6.13 Social and Economic Impacts

The proposal will provide social and economic benefits through effectively using the site. The proposed waste disposal facility will enable the use of the site for a permissible use. The development will not preclude the use of the site in the future for alternate uses consistent with its envisaged future rezoning. In this regard, the proposal will promote the orderly and economic use of the site by using the site for the most appropriate use under the current planning context.

The collection and placement of clean waste disposal spoil on the site will not impede future development but instead facilitate its development. The site can be readily adapted without the need for extensive site preparatory works (i.e. cut, fill and levelling) required if the proposed development is provided on site.

There is also the benefit for ensuring that the clean spoil material from large State Significant and Sydney based infrastructure and building projects (ENM and VENM and other suitable materials) will be deposited on a suitable site and not in other land fill sites and will enhance efficient disposal in a sustainable manner to optimise the construction of key infrastructure serving Greater Sydney.

This will ensure that spoil waste can be used effectively and not impact on the capacity of other landfills. As proposed development utilises fill generated offsite from large State Significant and Sydney based infrastructure and building projects, the proposed spoil reuse to support the development of a circular economy is at core in alignment with the objectives and planning priorities within the GSRP.

The impacts that are identified in the preceding sections, principally relate to increased construction impacts, which will generate temporary impacts to adjacent residents. However, in implementing the proposed mitigation measures the impacts of construction will be reduced for the following reasons:

- the main positive social impacts associated with the proposed works include the additional jobs generated during the construction works;
- the increased economic activity within the local area; and
- the ultimate provision of employment uses consistent with the WSAP to complement the adjacent WSA and Northern Gateway, ensuring consistency with the Badgerys Creek and Wianamatta-South Creek Precincts, while supporting the overarching goals of the GSRP and WCDP.

7.0 Justification of the Proposal

In general, investment in major projects can only be justified if the benefits of doing so exceed the costs. Such an assessment must consider all costs and benefits, and not simply those that can be easily quantified. As a result, the EP&A Act specifies that such a justification must be made having regard to biophysical, economic and social considerations and the principles of ecologically sustainable development.

This means that the decision on whether a project can proceed or not needs to be made in the full knowledge of its effects, both positive and negative, whether those impacts can be quantified or not.

The proposed development relates to the use of the land for the purposes of a waste disposal facility that will import, place and compact clean disposal soil generated offsite. The assessment must therefore focus on the identification and appraisal of the effects of the proposed change over the site's existing condition.

Various components of the biophysical, social and economic environments have been examined in this EIS and are summarised below.

7.1 Social and Economic

The proposed use is permissible under the current planning context and with the ongoing and planned infrastructure growth in the WESA and WSA area, the proposed development will offer numerous economic benefits by providing a critical and complementary service within the growth area, Overall, the proposal will offer several direct and indirect social economic benefits by providing an economically viable option for State infrastructure projects generating waste clean spoil in proximity to the site and reduce pressure off existing waste disposal facilities that are reaching their capacity or facilities that are located further away.

7.2 Biophysical

This assessment has found that while there may be minor to moderate impacts as a result of the proposal, the impacts are not considered to be of sufficient significance, either in nature or extent to be regarded as unacceptable. Mitigation and management measures outlined in **Section 8.0** and appended technical reports will further ameliorate and minimise any potential impacts.

The proposal does require offsets for impacts on 3.17ha of PCTs, and also on 2.48ha of threatened species habitat of the Southern Myotis however these have been considered and assessed as part of the BDAR completed, consistent with the BC Act. Outside of these impacts, the proposal will not affect Commonwealth land, or have a significant impact on any matters of national environmental significance and therefore a referral to the Australian Minister for Environment is not required.

7.3 Ecologically Sustainable Development

The EP&A Regulation lists 4 principles of ecologically sustainable development to be considered in assessing a project. They are:

- The precautionary principle;
- Intergenerational equity;
- Conservation of biological diversity and ecological integrity; and
- Improved valuation and pricing of environmental resources.

An analysis of these principles follows.

Precautionary Principle

The precautionary principle is utilised when uncertainty exists about potential environmental impacts. It provides that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. The precautionary principle

requires careful evaluation of potential environmental impacts in order to avoid, wherever practicable, serious or irreversible damage to the environment.

The precautionary principle has been applied to the proposal however the EIS has not identified any serious threat of irreversible damage to the environment

Intergenerational Equity

Inter-generational equity is concerned with ensuring that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. The proposal has been designed to benefit both the existing and future generations by:

- Implementing safeguards and management measures to protect environmental values; and
- Minimising impacts on the South Creek corridor through ensuring the works are located outside of the 1 in 100-year flood extent.

The proposal has integrated short and long-term social, financial and environmental considerations so that any foreseeable impacts are not left to be addressed by future generations. Issues with potential long term implications such as waste disposal would be avoided and/or minimised through construction planning and the application of safeguards and management measures described in this EIS and the appended technical reports.

Conservation of biological diversity and ecological integrity

The principle of biological diversity upholds that the conservation of biological diversity and ecological integrity should be a fundamental consideration.

The proposal would not have any significant effect on the biological diversity and ecological integrity of the study area.

Improved valuation, pricing and incentive mechanisms

The principles of improved valuation and pricing of environmental resources requires consideration of all environmental resources which may be affected by a proposal, including air, water, land and living things. Mitigation measures for avoiding, reusing, recycling and managing waste during construction and operation would be implemented to ensure resources are used responsibly in the first instance.

Additional measures will be implemented to ensure no environmental resources in the locality are adversely impacted during the construction or operational phases.

7.4 Site Suitability and Public Interest

The site is suitable for the proposed development as it is a permissible use on the site by way of clause 121 (1) of the ISEPP and is consistent in nature to the uses of neighbouring sites. The proposal will not preclude or limit the future development of the land for other uses at such time as when the land is rezoned in accordance with the proposed land uses under the WSAP and WSA SEPP. The proposal responds to an increased need for a disposal facility that collects clean spoil generated from large Sydney infrastructure projects and other development projects within the Western Sydney Employment Area and surrounds. On this basis, for the above reasons, the site is considered suitable for the proposed use.

The proposal is in public interest as it represents an appropriate use of land consistent with the need to provide for disposal of clean spoil from large Sydney infrastructure projects. The waste disposal facility will offer an essential service within the area that will complement the existing and future development projects anticipated within the urban renewal area. In this regard, the proposal will facilitate the redevelopment and renewal of the broader area and is therefore considered to be in public interest.

8.0 Mitigation Measures

The collective measures required to mitigate the impacts associated with the proposed works are detailed in **Section 6.1**. These measures have been derived from the previous assessment in **Section 7.0** and those detailed in appended consultants' reports.

Table 40 Consolidated Mitigation Measures

Impact	Environmental Safeguard	Responsibility	Timing
Stormwater and Flooding			
Mitigation measures will form part of any application for built form and associated uses.			
Soil and Water			
Design of civil earthworks	Minimise cut and fill activities and depths where practical to do so;	Consultant Civil Engineer	Design Phase
Drainage	Ensure the cut surface can readily drain and will not pond water and that retaining walls do not impede subsurface flow;	Contractor	Construction
Disposal of cut subsoil	Consider where cut subsoil will be disposed to, cut saline soil should not be placed on less saline portions of the site;	Contractor	Construction
Future built form	Consider soil management and exposure of subsoils when designing footings, roads and service trenches; and	Contractor	Construction
Future materiality	Consider the suitability of construction materials for the environment and design specifications to meet the expected level of exposure.	Contractor	Construction
Verification of works	The Geotechnical Inspection and Testing Authority (GITA) shall be contracted to document and certify works undertaken by the contractor has been completed in accordance with the relevant design and specification	GITA, Consultant Civil Engineer and Contractor	Design and construction
Waste Management			
Waste generation during construction	Classify, handle and store all removed waste in the construction compounds/laydown areas in accordance with the NSW Waste Classification Guidelines 2009: Part 1 Classifying Waste (DECCW) and Storing and Handling liquids, Environmental Protection (DECC, 2007).	Construction contractor	Construction
Waste and resource management during construction across the proposal	Prepare a waste and resource management plan (WRMP) as a sub-plan of the CEMP. As a minimum describe the measures for handling, storing and classifying waste when „onsite" and its subsequent disposal offsite to the relevant licenced facility.	Construction contractor	Construction
Waste disposal during construction across the proposal	Send all disposed materials to a suitably licenced waste management/landfill facility.	Construction contractor	Construction
Waste handling and storage during construction across the proposal	Store and segregate all waste at source (e.g. the construction compounds/laydown areas) in accordance with its classification. This includes recycled and reusable materials.	Construction contractor	Construction
Littering and site tidiness during construction and operation	Monitor for waste accumulation, littering and general tidiness to ensure operating standards of the zoo are maintained.	Construction contractor	Construction
Resource recovery during construction across the proposal	Apply resource recovery principles: • Reuse proposal-generated waste materials onsite (e.g. topsoil, recycled aggregate) providing it meets with exemption and classification requirements	Construction contractor	Construction

Impact	Environmental Safeguard	Responsibility	Timing
	• Failing that, transfer the materials for use elsewhere on another site under a resource recovery exemption • Employ waste segregation to allow paper, plastic, glass, metal and other material recycling. These materials could be either reused onsite or transferred to a recycling facility Consider composting general putrescible waste to allow recovery. Transfer these materials offsite to a composting facility.		
Reducing primary resource demand during construction across the proposal	Use recycled and low embodied energy products to reduce primary resource demand in instances where the materials are cost and performance competitive (e.g. where quality control specifications allow).	Construction contractor	Construction
General waste management	Implement the Waste Management Plan measures as part of the CEMP	Construction contractor	Construction
Traffic and Transport			
Traffic Impacts associated with construction phases	Consistent with RMS Guide 'Traffic Control at Worksites', a Vehicle Movement Plan (VMP) will be established. The VMP will detail: • Illustration of preferred travel paths for entry to and exit from the site; • Illustration of vehicle movement within the site, showing general manoeuvrability, accesses and sideroads; • Applicable speed limits within the site; • Safety relating to site entry (visibility and speed from the Elizabeth Drive intersection) • Traffic signals and signage; • Designation of an on-site traffic controller; • Designation of a loading supervisor; and • Pedestrian safety strategy	Construction Contractor	Pre-construction / Construction
Traffic Impacts associated with site management (communication)	A Development of a program to monitor the effectiveness of the Construction Traffic Management Plan is to be established. This process involves communication between the Project Manager and Construction Contractor. Considerations of the program include: • Tracking heavy vehicle movements against the estimated heavy vehicle flows during the 1 works. • The identification of any shortfalls in the CTMP, and the development of revised strategies / action plans to address such issues. • Ensuring that all TCPs are updated (if necessary) by "Prepare a Work Zone Traffic Management Plan" card holders to ensure they remain consistent with the set-up on-site. • Regular checks to ensure all loads are departing the Site covered as outlined within this CTMP.	Project Manager/ Construction Contractor	Pre-construction / Construction
Traffic Impacts associated with site management (communication)	A Communication Strategy will be established by the Project Manager to ensure appropriate to the community and to assist the Construction Contractor in achieving minimal impacts on the surrounding road network. This will involve:	Project Manager	Pre-construction / Construction

Impact	Environmental Safeguard	Responsibility	Timing
	• The erection of appropriate signage providing advanced notice of works and any traffic control measures to be implemented. • Written notices to surrounding landowners (and tenants) likely to be directly affected by the works, prior to commencement.		
Impacts on stakeholder potentially effected by traffic impacts.	The Project Manager will ensure the appropriate stakeholders are considered in respect of traffic management: • Government Agencies – Roads and Maritime Services (RMS) – Transport Management Centre (TMC) – Department of Planning and Environment (DPE) – Transport for NSW (TfNSW) – Sydney Coordination Office (SCO) • Local Government – Penrith City Council • Emergency Service – Police – Fire and Rescue – Ambulance • Local Schools – Christadelphian Heritage College – Kemps Creek Public School – Irfan College • Surrounding Landowners – SUEZ Kemps Creek – Animal Welfare League NSW – 1970 Badgerys Creek Read – 10B Martin Road	Project Manager	Pre-construction / Construction
Air Quality and Odour			
Communications	• Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. • Display the head or regional office contact information. • Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.	Construction contractor	Construction

Impact	Environmental Safeguard	Responsibility	Timing
Site management	• Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. • Make the complaints log available to the local authority when asked. • Record any exceptional incidents that cause dust and/or air emissions, either onsite or offsite, and the action taken to resolve the situation in the log book.	Construction contractor	Construction
Monitoring	• Perform daily on-site and off-site inspections at locations (including roads) where receptors are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary. • Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked. • Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	Construction contractor	Construction
Site preparation and maintenance	• Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. • Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period. • Keep site fencing, barriers and scaffolding clean using wet methods. • Cover, seed or fence stockpiles to prevent wind erosion	Construction contractor	Construction
Air quality emissions through vehicle movements	• Ensure all on-road vehicles comply with relevant vehicle emission standards, where applicable • Ensure all vehicles switch off engines when stationary for periods of more than two minutes - no idling vehicles • Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable	Construction contractor	Construction
Dust emission management	• Ensure an adequate water supply on the site for effective dust/particulate matter suppression/ mitigation, using non-potable water where possible and appropriate • Use enclosed chutes and conveyors and covered skips • Minimise drop heights from loading shovels and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate	Construction contractor	Construction
Waste management	Avoid bonfires and burning of waste materials.	Construction contractor	Construction
Track out	• Use water-assisted dust sweeper(s) on the access and local roads to remove, as necessary, any material tracked out of the site. • Avoid dry sweeping of large areas.	Construction contractor	Construction

Impact	Environmental Safeguard	Responsibility	Timing
	• Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Record all inspections of haul routes and any subsequent action in a site log book. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).		
Demolition	• Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust) • Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. • Avoid explosive blasting, using appropriate manual or mechanical alternatives	Construction contractor	Construction
Noise and Vibration			
Impacts at Receivers R3 through R7	• Operator attended monitoring at the sensitive receiver for (at a minimum) one 15-minute period at the commencement of the construction period and at the commencement of any significant operational event. • Letterbox drops to advise of upcoming noisy works	Construction contractor	Construction
Construction noise management	Implement the Construction Noise and Vibration Management Plan	Construction contractor	Construction
Construction noise impacts	Working hours are to be restricted in accordance with the EPA Interim Construction Noise Guideline. Working hours are to be in accordance with: • Between 7.00am and 6.00pm, Monday to Friday. • Between 8.00am and 1.00pm Saturdays. • No work or deliveries on Sunday and/or public holidays. If work is required to be undertaken outside normal work hours, the Contractor will need approval from the Principal. The Contractor is to provide enough information for the Principal to evaluate any potential noise impact from the proposed works.	Construction contractor	Construction
Construction noise impact scheduling	• Scheduling for the higher project specific noise criteria exceedance activities to be undertaken predominantly during less noise-sensitive time periods, where possible. The adjacent noise sensitive receivers should be consulted to assist in identifying their less noise sensitive time periods Any required night time work predicted to exceed the noise management level should aim to not affect residences for more than two consecutive nights or where possible, more than six nights over a one month period.	Construction contractor	Construction
Construction noise impacts	Briefing of the work team (i.e. tool box talks) in order to create awareness of the locality of sensitive receivers and the importance of minimising noise emissions.	Construction contractor	Construction

Impact	Environmental Safeguard	Responsibility	Timing
Construction noise impacts	Ensuring spoil is placed and not dropped into awaiting trucks.	Construction contractor	Construction
Construction noise impacts	Use of less noise-intensive equipment, where reasonable and feasible.	Construction contractor	Construction
The potential for exceedance of the NMLs across the proposal footprint	Strategically position plant on site to reduce noise levels at the nearest receivers.	Construction contractor	Construction
Biodiversity			
Displacement of resident fauna and microbats	• Pre-clearance surveys for microbats in existing hollow trees should be undertaken several weeks prior to construction commencing. If microbats are present within the trees, a Microbat Management Plan should be prepared to minimise impacts to bats during construction. • Additional pre-clearance survey should be undertaken immediately before construction. • Clearing protocols are to be implemented that identify: – vegetation to be retained, – prevent inadvertent damage and reduce soil disturbance – ideally specify the removal of native vegetation by chain-saw, rather than heavy machinery, as this is preferable in situations where partial clearing is proposed	Contractor Project ecologist	Construction
Sedimentation and contaminated and/or nutrient rich run-off	• Install sediment barriers and erosion control during and post construction to prevent runoff into adjacent creeklines. • Maintain controls throughout earthworks and undertake weekly inspections as detailed in the Erosion and Sediment Control Plan	Contractor	Construction
Noise, dust or light spill	• Pre-clearance survey for microbats in loose barked trees and any bird/other nests present. • Monitor response of bats to works/noise. • Implement noise barriers or daily/seasonal timing of construction and operational activities to reduce impacts of noise • Daily timing of construction activities is recommended in accordance with Table 1 of Interim Noise Guidelines (2009): – Monday to Friday 7.00am to 6.00pm – Saturday 8.00am to 1.00pm – No work on Sunday or public holidays • Night-time works should be avoided within proximity to the riparian corridor to prevent indirect impacts to microbats.	Contractor Project ecologist	Construction/Operation
Inadvertent impacts on adjacent habitat or vegetation	• Pre-clearance survey for microbats in loose barked trees and any bird/other nests present. • Monitor response of bats to works/noise. • Implement clearing protocols including: – pre-clearing surveys	Contractor Project Ecologist	Construction

Impact	Environmental Safeguard	Responsibility	Timing
	– daily surveys and staged clearing – the presence of a trained ecological or licensed wildlife handler during clearing events		
Transport of weeds and pathogens from the site to adjacent vegetation	• All staff working on the development will undertake an environmental induction as part of their site familiarisation. Site briefings should be updated based on phase of the work. This induction will include items such as: – 1. Site environmental procedures (vegetation management, sediment and erosion control, exclusion fencing and noxious weeds) – 2. What to do in case of environmental emergency (chemical spills, fire, injured fauna) – 3. Key contacts in case of environmental emergency • Trucks are to be cleared off at the entry and exit point of the site.	Contractor	Construction
Other construction activities: • Vehicle strike • Rubbish dumping • Wood collection	All staff to undertake an environmental induction per above.	Contractor	Construction
Disturbance to specialist breeding and foraging habitat	Preparation and implementation of a Vegetation Management Plan (VMP) is recommended to protect and enhance retained vegetation adjacent to the development site (namely the riparian lands associated with South Creek)	Contractor Project ecologist	Construction/Operation
Contamination			
No mitigation measures proposed.			
Visual Impact			
Visual impacts on the surrounds (general)	Retaining and protecting existing roadside vegetation wherever practical and effective, especially on Elizabeth Drive.	Construction contractor	Pre-construction / construction
Visual impacts on the surrounds (general)	Planting the proposed landscape buffer zone on the western and southern boundaries of the site with mixed plantings of tree groups and shrubs, creating filtered views to the site and buildings (not screening them)	Construction contractor / project manager	Pre-construction / construction
Visual impacts on the surrounds (general)	Selecting tree species to match the existing landscape character of this locality.	Construction contractor / project manager	Pre-construction / construction
Visual impacts on the surrounds (general)	Installation of the proposed grassed bund to reduce views across the site from Elizabeth Drive	Construction contractor / project manager	Pre-construction / construction
Visual impact on surrounding residential dwelling	Tree planting may be provided on the surrounding residential land upon request and subject to negotiation.	Project manager	Pre-construction / construction
Temporary visual impacts associated with construction	Undertake construction activity in line with the Construction Management Plan. Impacts associated with construction are considered negligible.	Project manager/ construction contractor	Pre-construction / construction

Impact	Environmental Safeguard	Responsibility	Timing
Heritage			
Heritage value of the site and the surrounds	A Heritage Management Plan (HMP) that includes an unexpected finds procedure must be prepared prior to commencement of works. OHE will be notified of relevant discoveries.	Project Manager/ Contractor/ Heritage Consultant	Pre-Construction/ Construction
Heritage value of the site and the surrounds	A heritage 'induction' must be undertaken by workers before commencing works. The induction will outline heritage values of the site and the surrounds.	Project Manager/ Contractor/ Heritage Consultant	Pre-Construction/ Construction
Potential Aboriginal archaeology within the site.	Archaeological test excavation will be conducted within the three areas of archaeological potential, subject to proposed impacts in accordance with the OEH Code of Practice. Test excavation will be undertaken in order to confirm the presence and geographic extent of subsurface Aboriginal objects and assess their significance to inform further recommendations.	Contractor and local Aboriginal Community	Pre-Construction
Potential Aboriginal archaeology within the site.	Detailed design of the proposed works will aim minimise impact on known Aboriginal sites and areas of PAD. An updated impact assessment will be part of the Aboriginal Cultural Heritage Assessment Report (ACHAR) following refinement of the proposed cut and fill methodology and clarification of potential impacts to Aboriginal objects.	Contractor and local Aboriginal Community	Pre-Construction
Potential Aboriginal archaeology within the site.	Comprehensive Aboriginal stakeholder consultation carried out in accordance with the OEH 'Aboriginal cultural heritage consultation requirements for proponents' (DECCW 2010) will be undertaken.	Contractor and local Aboriginal Community	Pre-Construction
Potential Aboriginal archaeology within the site.	An application for an area based Aboriginal Heritage Impact Permit (AHIP) that covers the study area will be submitted to OEH following completion of test excavation and preparation of an ACHAR.	Project Manager/ Contractor/ Heritage Consultant	Pre-Construction
Potential Aboriginal archaeology within the site.	The ACHAR will outline recommended mitigation measures for inclusion as conditions in the AHIP. Mitigation measures would be conducted following issuance of the AHIP and prior to commencement of construction	Project Manager/ Contractor/ Heritage Consultant	Pre-Construction
Potential impacts on non-Aboriginal archaeology within the site.	A detailed archaeological assessment will be undertaken for the study area. This will include further archival research to refine the area of potential for local and state archaeological remains. Studies will involve test excavation under either a s139 exception or s140 permit.	Project Manager/ Contractor/ Heritage Consultant	Pre-Construction
Hazards and Risks			
No mitigation measures proposed.			
Social and Economic Impacts			
No mitigation measures proposed.			

9.0 Conclusion

The Environmental Impact Statement (EIS) has been prepared to consider the environmental, social and economic impacts of the proposed bulk earthworks associated with the waste disposal and filling on the site. The EIS has addressed the issues outlined in the SEARs (**Appendix A**) and accords with Schedule 2 of the EP&A Regulation with regards to consideration of environmental impacts.

Having regard to biophysical, economic and social considerations, including the principles of ecologically sustainable development, the carrying out of the project is justified for the following reasons:

- The proposed disposal of clean spoil waste provides a needed and a sustainable waste management solution for surplus material extracted from various State Significant and infrastructure projects;
- The proposed works are located outside of the 100-year flood extent;
- The proposal will not preclude the future development of the site for an alternate use, upon its future rezoning; and
- The proposal will provide a complementary service that will support the ongoing and planned growth of the WSEA.
- The proposal is permissible and promotes the orderly and economic use of the land and supports the development of a circular economy by utilising the site for an appropriate under the current planning context while not inhibiting or limiting a higher order use, upon its rezoning.

Given the merits described above it is requested that the application be approved.