Erskine Park Landfill - Proposed MSE Wall

Section 4.55(2) Modification
Statement of Environmental Effects

Prepared for:

Enviroguard Pty Ltd

Prepared by:

EME advisory

April 2020

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Erskine Park Landfill – Proposed MSE Wall

Section 4.55(2) Modification – Statement of Environmental Effects

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APPLICANT

Company:	Enviroguard Pty Ltd
Address:	4 Quarry Road, Erskine Park NSW 2759 (accessed via 85-87 Quarry Road)

DEVELOPMENT

Title:	Erskine Park Landfill – Proposed MSE Wall
Description:	Installation of a mechanically stabilised earth (MSE) wall to provide additional landfill airspace
Development Site:	Lot 4 DP 1094504 4 Quarry Road, Erskine Park NSW 2759 (accessed via 85-87 Quarry Road)
Local Government Area:	Penrith

STATEMENT

This Statement of Environmental Effects has been prepared by EME Advisory in accordance with the brief provided by Enviroguard Pty Ltd and is for the sole use of Enviroguard Pty Ltd. EME Advisory confirms that this Statement of Environment Effects:

- Contains all available information that is relevant to the environmental assessment of the proposal; and
- Is true in all material particulars and does not materially mislead by its presentation or omission of information.

EME Advisory

Brian Cullinane
4th April 2020

Eryn Bath
4th April 2020

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1 INTRODUCTION

1.1 Overview

Enviroguard owns and operates the Erskine Park Landfill (non-putrescible landfill) at Erskine Park in the Penrith Local Government Area (LGA) in western Sydney, New South Wales (NSW).

The landfill was originally granted development consent (DA 163/92) by Penrith City Council (Council) in 1992 under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This consent permitted the rehabilitation of a former quarry via the disposal of non-putrescible waste materials, along with site rehabilitation and cessation of landfilling. Council subsequently issued development consent DA 05/1740 in 2006 under Part 4 of the EP&A Act for on-going landfilling with non-putrescible waste and site rehabilitation to a revised landform, with no changes to the previously approved landfilling rates.

This Statement of Environmental Effects (SEE) has been prepared by EME Advisory (EME) to accompany an application from Enviroguard seeking to modify development consent DA 05/1740 under section 4.55(2) of the EP&A Act to:

The proposal seeks approval for:

- construction of a mechanically stabilised earth (wall) to achieve an increase in landfill airspace of around 420,000 m^3

- changes to the compliance regime for leachate monitoring and management.

The wall will vary in height from existing ground levels from 0 to 20 metres (m), a maximum elevation of 81 mAHD, tapering to zero at both ends, with a total length of around 920 m. Additional airspace will be provided of approximately 420,000 m^3 (above the airspace gained from the approved single ridge landform as modified in 2019 DA05/1740.01), which is expected to increase the lifespan of the landfill by around three years. This will provide ongoing access to limited landfill capacity in the Sydney region for commercial and industrial (C&I) and construction and demolition (C&D) waste streams, at a time when these waste streams, particularly C&D waste, are expected to grow. Importantly, the proposed MSE wall will not change the approved peak landform or the approved landfilling rates.

This SEE presents a focussed evaluation of the modification, including relevant environmental, social and economic considerations, and has been prepared in consideration of input received from consulted stakeholders and specialist consultants.

1.2 The Applicant

Enviroguard Pty Ltd is a subsidiary of Cleanaway Waste Management Pty Ltd (Cleanaway), Australia's leading total waste management solutions company employing over 5,500 people across Australia. The company services customers ranging from councils, residences and small businesses to large multi-national commercial and industrial organisations across a range of different industries.

Cleanaway operates over 200 facilities across Australia, including more than 50 technical treatment and processing plants and more than 45 resource recovery, recycling, and baling plants. The company works with over 80 municipal councils to facilitate best practice recycling and waste management outcomes.

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1.3 Structure of the SEE

EME Advisory was engaged by Enviroguard to prepare this SEE for the proposed modification. Additionally, Golder Associates (Golder) along with other experts were engaged by Enviroguard to provide Technical Papers (TPs) to support the SEE.

The SEE is structured as:

- Volume 1, being the main SEE (this report) with appendices
- Volume 2, being a series of Technical Papers (TPs)

The appendices accompanying the Volume 1 SEE are:

- Appendix A: Pre-DA Meeting Notes (Ref PL 19/0096)
- Appendix B: Development consent DA 05/1740
- Appendix C: Environmental Protection Licence 4865
- Appendix D: Preliminary Design Report
- Appendix E: Preliminary Design Drawings

The Technical Papers (TPs) provided as Volume 2 are:

- TP1: Air Quality and Odour Impact Assessment
- TP2: Preliminary Site Investigation (Contamination Assessment)
- TP3: Construction Environmental Management Plan
- TP4: Hazard and Risk Assessment
- TP5: Landfill Environmental Management Plan
- TP6: Landscape Management Plan (part of LEMP)
- TP7: Leachate and Groundwater Assessment
- TP8: Greenhouse Gas Emissions Assessment
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- TP15: Waste Management Plan
- TP16: Soil and Water Management Plan (part of LEMP)

1.4 Approval Pathway

Enviroguard is seeking to modify development consent DA 05/1740 under section 4.55(2) of the EP&A Act in order to install the MSE wall. This SEE demonstrates that the landfill, as proposed to be modified, will be substantially the same development for which consent was originally granted.

Enviroguard has engaged with Council to introduce the proposal and discuss the preferred approval pathway, with Council advising in its pre-lodgement advices dated 15 January 2020:

> *Based on the plans and description of the proposal presented at the pre-lodgement, Council can be satisfied that the development proposed is substantially the same as that originally approved under DA05/1740, and therefore the proposal may be submitted as a modification under Section 4.55(2) of the Environmental Planning and Assessment Act 1979.*

The section 4.55(2) pathway is considered further in **Section 6**.

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2 STRATEGIC CONTEXT

2.1 2018 Senate Inquiry into Waste and Recycling in Australia

The 2018 Senate Inquiry into Waste and Recycling in Australia found that waste generation is closely linked to population size, household income and economic activity. Sustained population growth occurring over the past decade has seen a significant increase in the amount of waste generated per capita, averaging 2.7 tonnes in 2014-15.

The inquiry also reported that due to an expansion of recycling systems, the generation rates of municipal solid waste (MSW) are in decline, however increased rates of commercial and industrial waste (C&I) and construction and demolition waste (C&D) are being generated due to economic growth and increasing levels of commercial and residential development (the Erskine Park Landfill accepts C&I and C&D waste only). The inquiry found that within these growth conditions, landfill operations remain significant in addressing waste management in Australia.

2.2 The NSW Waste Avoidance and Resource Recovery Strategy 2014 - 2021

The NSW Waste Avoidance and Resource Recovery Strategy 2014 – 2021 (WARR Strategy) sets objectives and targets for the avoidance and recovery of waste in NSW. The Strategy recognises the role of landfill as part of an integrated waste management strategy and following the priorities indicated in the waste management hierarchy, being:

- avoidance including action to reduce the amount of waste generated by households, industry and all levels of government
- resource recovery including re-use, recycling, reprocessing and energy recovery, consistent with the most efficient use of the recovered resources
- disposal including management of all disposal options in the most environmentally responsible manner.

The Waste Avoidance and Resource Recovery Strategy Progress Report 2017-18 assesses progress in achieving the WARR Strategy objectives and targets.

Total waste generated in NSW (MSW, C&I and C&D waste) rose from 2.42 tonnes to 2.69 tonnes per capita over the three years to 2017-18. The waste generation per capita rate for MSW declined, while the rates for C&I and C&D waste increased, with most of the overall per capita increase related to increased C&D waste generation due to a growth in construction activity over this period.

The recycling rate for C&D waste fluctuated over the progress report period from 78% to 81% with large variations between waste streams. For example, increased recycling rates were achieved for masonry while there was a significant increase in the quantity of contaminated soil disposed to landfill during the report period.

Table 1 provides waste generation, recycling and disposal to landfill data for the C&I and C&D waste streams (ie the waste streams accepted by the Erskine Park Landfill) in the Metropolitan Levy Area (MLA). C&D waste generated was 11,524,000 tonnes in 2017-2018, of which 9,299,000 was recycled and 2,225,00 sent to landfill.

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Table 1: C&I and C&D Waste Generation, Recycling and Disposal to Landfill in the Sydney Metropolitan Levy Area (MLA) 2017-18 (tonnes)

	C&I	C&D	TOTAL
Generated	3,007,000	11,524,000	17,490,000
Recycled (rate %)	1,469,000 (49%)	9,299,000 (81%)	11,986,000
Landfill	1,538,000	2,225,000	5,504,000

Key events and trends identified in the progress report which will influence future waste generation include:

- At the start of January 2018, China began restrictions on the importation of recycled materials under its National Sword policy, which includes strict contamination limits for recyclable materials. The effect of the policy was to close off markets for export of waste from Australia – Australia exported 1.25 million tonnes of waste to China in 2016-17 - requiring this waste to be managed domestically.

- Commencement of the Queensland Waste Levy in 2019, leading to a reduction in the transport of interstate waste and the need to manage waste within the State of origin. Recent reports from the QLD Dept of Environment suggest that waste to QLD has been reduced by over 70% with approximately 300,000 t/yr still being sent north. This implies that an additional 500,000 t/yr must be disposed in Sydney inert landfills.

In addition, NSW and Sydney have seen a continuation of a buoyant construction sector underpinned by Government investment in major infrastructure, generating additional volumes of C&D waste. Much of this infrastructure investment is in Western Sydney to service the needs of the new Western Sydney Airport and Aerotropolis and industrial and housing development in the region.

In summary, the C&D waste sector is already achieving high rates of recycling compared to C&I and MSW sectors, but will continue to see an increase in waste generated and a need for landfill disposal as a result of ongoing construction activity, the closure of key export markets and the introduction of the QLD levy. This means there is an ongoing need for dry landfill capacity in the immediate future.

2.3 Greater Sydney Region Plan

The proposed modification is aligned with the Greater Sydney Commission's 2018 *Greater Sydney Region Plan: A Metropolis of Three Cities* that aims to:

- set a 40-year vision (to 2056) and establishes a 20-year plan to manage growth and change for Greater Sydney in the context of social, economic and environmental matters

- inform district and local plans and the assessment of planning proposals

- assist infrastructure agencies to plan and deliver for growth and change and to align their infrastructure plans to place-based outcomes

- inform the private sector and the wider community of the growth management and infrastructure investment intentions of government.

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In relation to waste, the Greater Sydney Region Plan's Planning Priority W19 seeks to optimise self-sufficiency through developing greater localised precinct-wide waste processing capacity that promotes efficiency. The location of the site including its proximity to identified major projects that will generate additional volumes of C&D waste (such as the new Western Sydney Airport and industrial and housing development in the region) makes it a strategic waste asset that plays a key role in achieving efficiency and Planning Priority W19.

In addition, Objective 35 identifies that while "…the provision of waste management is an essential service to communities. Existing waste management facilities do not have the capacity to accommodate projected growth…Furthermore, existing waste management facilities need to be protected from residential and other land use encroachment..." (Greater Sydney Commission, 2018).

The Western City District Plan (a subplan of the *Greater Sydney Region Plan: A Metropolis of Three Cities*) also states:

There is diminishing capacity in existing landfill sites in Greater Sydney, with more waste being sent to landfill outside the region. This increases costs to the community. Additional sites for resource recovery within Greater Sydney would reduce waste going to landfill and the associated transport costs. Therefore, retaining land locally for waste management and recycling is critical.

Increasing the landfill airspace at the site by installing a MSE wall will extend the life of the landfill at the site and directly address relevant planning priorities and objectives of the Greater Sydney Regional Plan identified above.

2.4 Increased Landfill Airspace at Erskine Park

Access to landfill is necessary to support planned growth and infrastructure delivery in the Western Sydney region, noting landfills operate alongside the broader expansion of waste minimisation, resource recovery and recycling infrastructure such as Cleanaway's Erskine Park Resource Recovery Facility.

The proposal would particularly support the expanding construction and infrastructure development sectors through the acceptance of building and demolition waste and virgin excavated materials.

Operations at the Erskine Park Landfill are undertaken in accordance with development consent DA 05/1740. Up to 1 million tonnes of non-putrescible waste per annum has been accepted for landfilling during peak times, although this has declined in recent years due to increased offsite recycling activities since being licenced in 1992.

The landfill is approaching end of life and given the high demand for non-putrescible waste disposal within the Sydney market, Enviroguard investigated options to extend the lifespan of the landfill. The preferred option, as detailed in this SEE, is the installation of an MSE wall along the south-western, southern and eastern perimeters to provide an additional airspace of approximately 420,000 m^3 extending the life of the landfill by around 3 years. Providing additional landfill capacity at an existing landfill site makes good use of the existing land use and associated infrastructure, avoiding the need for a new landfill site which would be difficult to find in the Sydney Region, while continue to provide an option for the management of waste.

Ongoing landfill capacity at Erskine Park will help to maintain competition in the dry landfill market in Sydney, benefitting businesses and government who need to access landfill capacity at competitive rates.

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Importantly, the proposal has been assessed as having negligible additional impacts associated with noise, dust, traffic or groundwater during the operational life of the landfill and there will not be any change to the approved peak top of waste landform. Without the wall, the landfill is expected to reach capacity (ie reach the approved final top of waste landform) by December 2021.

3 SITE DESCRIPTION

3.1 Regional Context

The development site is located within the broader Western Sydney Employment Area (WSEA) (Precinct 7 Erskine Park Lands) approximately 50 kilometres (km) from the Sydney central business district. The WSEA was established by the NSW government to provide businesses in the region with new land for industry and employment, including transport and logistics, warehousing and office space (Department of Planning and Environment [DPE] 2014). The WSEA is now the largest employment area in NSW covering approximately 2,450 hectares (ha) across four LGAs, these being Penrith, Blacktown, Fairfield and Holroyd.

3.2 Site Overview

The development site is identified as Lot 4 in Deposited Plan (DP) 1094504 and is addressed as 4 Quarry Road, Erskine Park NSW in the Penrith LGA (see **Figure 1** and **Figure 2 and Figure 3** which show the site in its regional and local context as well as the site extent). It comprises approximately 21.94 ha and is occupied by the existing Erskine Park Landfill.

While the site does not have frontage to a public road, it gains vehicular access from Quarry Road via an easement through the adjoining Lot 1 DP 1140063 (85-87 Quarry Road, Erskine Park), which encompasses Cleanaway's Erskine Park Waste and Resource Management Facility. Quarry Road provides connection to Mamre Road and on to the Erskine Park Link Road, which provide connections to the M4 Western Motorway to the north, Elizabeth Drive at Kemps Creek in the south and the M7 Motorway to the east.

Several road improvements have been carried out in recent years to provide better access from the Business Park to the main road network including an upgrade of the Erskine Park Link Road and junction with the M7. Additional improvements are planned along Erskine Park Road to improve road safety and traffic flow efficiency at key intersections.

The site forms an elevated position compared to the surrounding topography due to the landfilling operation. While there are no natural surface water features within the bounds of the site, a tributary of South Creek flows to the south and west of the site at approximately 250 m away at its nearest point.

As evident on **Figure 2**, the visual amenity of the development site has been significantly modified and there is little (if any) native vegetation. Disturbance of the natural environment within the site has occurred as a result of historic clearing and agricultural production activities, development and operation of a quarry and the subsequent development and operation of the existing landfill.

The development site sits within the Erskine Business Park, which is characterised by a range of industrial land uses, including warehousing, logistics and manufacturing operations. As evident on **Figure 2** and **Figure 3**, the site is largely surrounded and screened by established large-scale industrial buildings. There are some vegetated areas along the surrounding public road corridors and the drainage reserve to the south and west of the site, which are part of a biodiversity conservation corridor.

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The nearest residential dwellings are located within the suburbs of St Clair and Erskine Park approximately 650 m to the north of the development site, with other developed industrial land parcels and a transmission line corridor between these residences and the landfill. There are also some residences and a children's day care facility over 820 m to the west of the development site on the western side of Mamre Road. Residential development is prohibited within the WSEA.

3.3 Land Use Zonings

Zoning in the WSEA is administered under the *State Environmental Planning Policy (Western Sydney Employment Area) 2008* (WSEA SEPP). As evident on **Figure 4**, the majority of the development site is zoned E2 Environmental Conservation, with a small section on the north-west corner zoned IN1 General Industrial.

3.4 Land Ownership

The registered owner of the development site is Enviroguard Pty Ltd.

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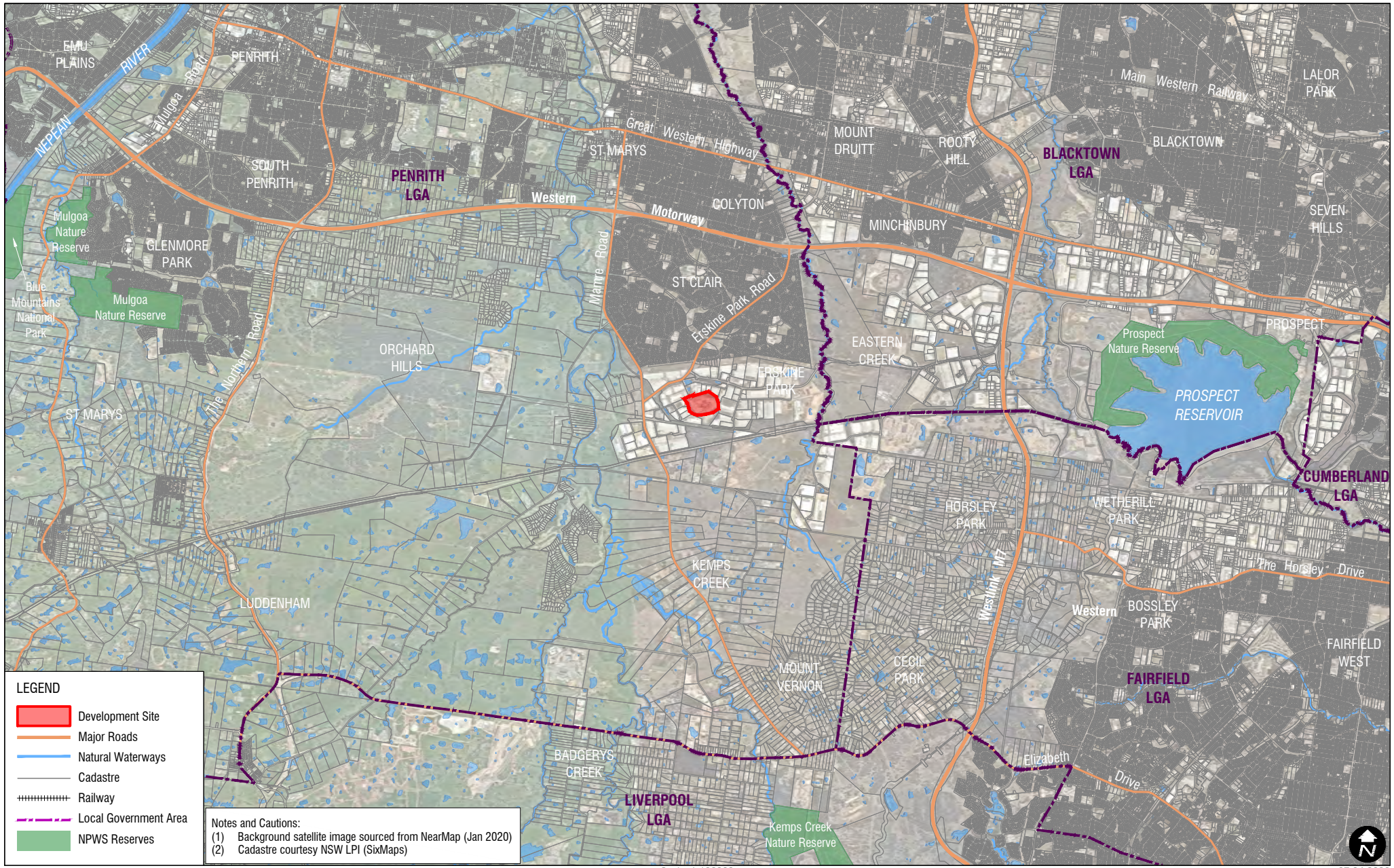

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REGIONAL LOCALITY

FIGURE 1

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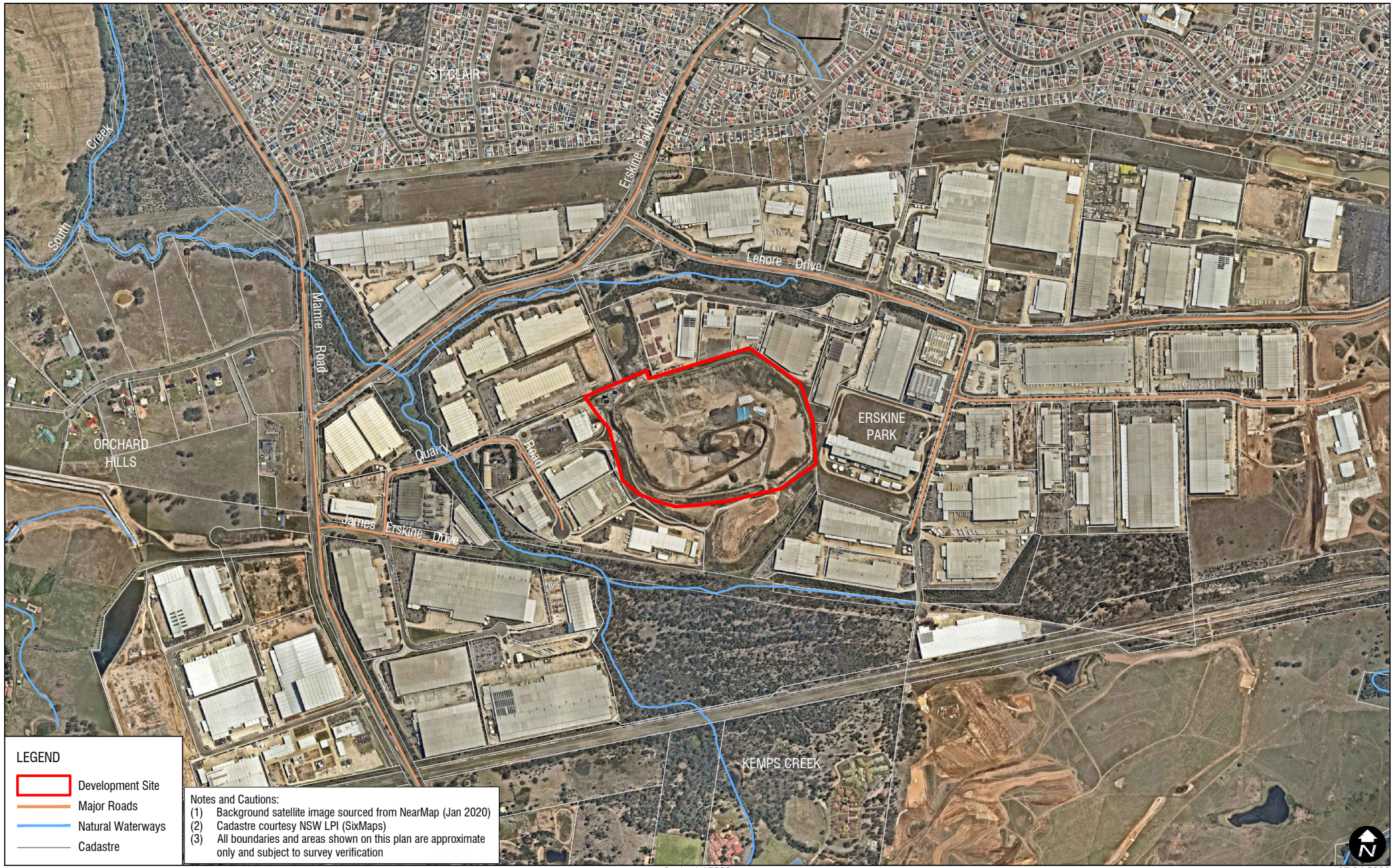

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SITE LOCATION AND SURROUNDS

FIGURE 2

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DEVELOPMENT SITE

FIGURE 3

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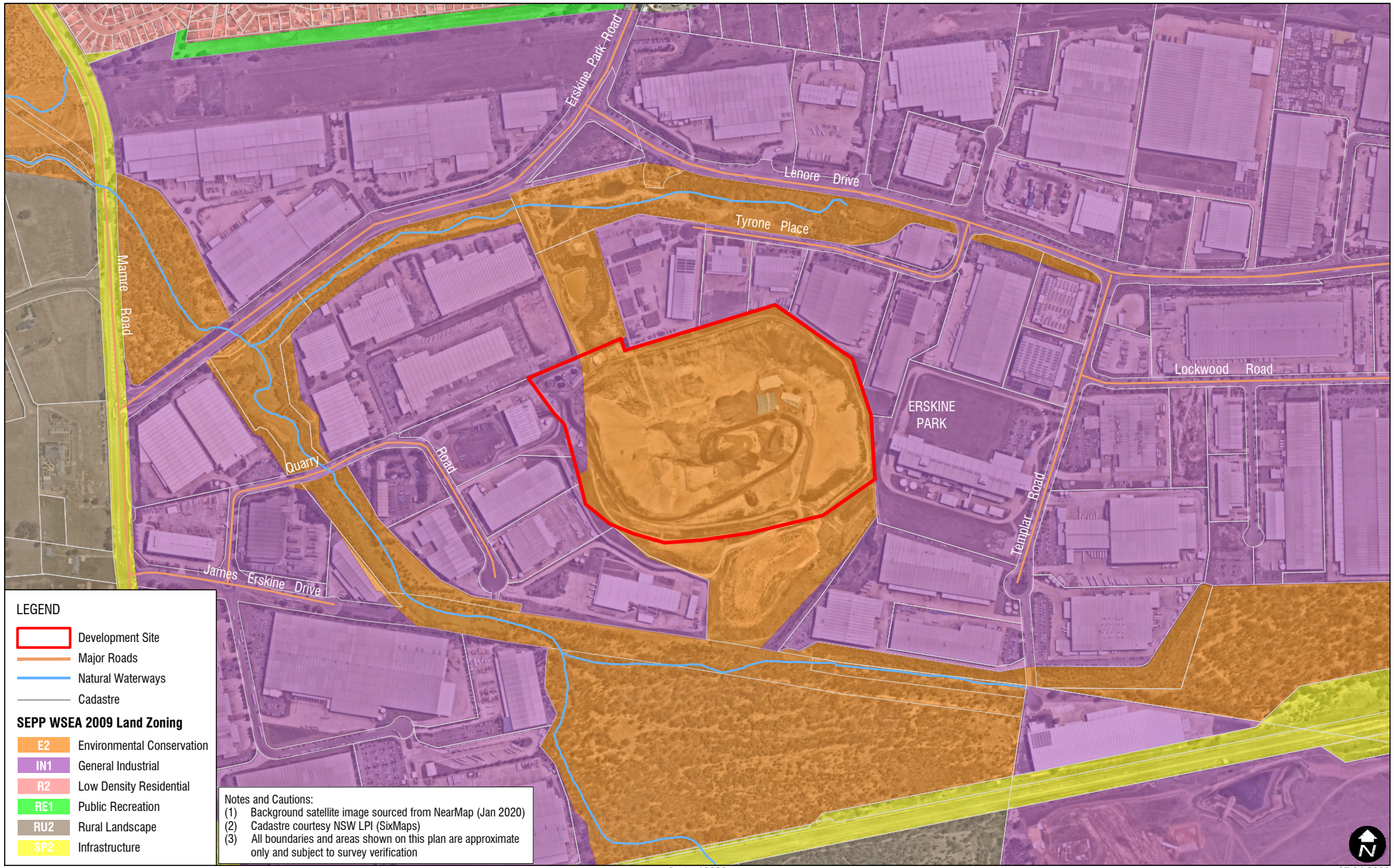

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LAND USE ZONINGS

FIGURE 4

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3.5 Physical Characteristics

3.5.1 Topography

The site surrounds has an overall topographic gradient of approximately 67 m AHD to the west to approximately 35 m AHD at Mamre Road. The landforms are gently undulating slopes rising in an easterly direction.

The original hill in the Erskine Park Landfill site was approximately 500 m long and between 200 to 300 m in width rising to about 50 m above the nearby creek line with steep southern and western slopes and gentle northern and eastern slopes. This landform was subsequently quarried, to a depth of about 100 m below the quarry rim in 1983 (the base of the quarry had recorded elevations of -40 m AHD). This topography has changed over subsequent years as the quarry filled up with landfill materials.

The gradient of the surrounding area is generally level, with some gentle slopes. The landfill currently has placed waste up to elevation in the order of 91 m AHD, with a planned, final elevation of waste of 92 m AHD (ie the same as the original landform).

3.5.2 Regional Geology

Regional geology surrounding the former Erskine Park diatreme comprise the Wianamatta Group, consisting of (from youngest to oldest) the Bringelly Shale, the Minchinbury Sandstone and the Ashfield Shale members, which were deposited in a broad, low lying coastal plain consisting of swamplands cut by meandering estuarine and alluvial channels, and grades upwards from a lagoonal coastal marsh sequence at the base to increasingly terrestrial, alluvial plain sediments towards the top of the formation. The rim of the landfill is located at an elevation of approximately 55 m AHD.

Soils of the Blacktown soil landscape underlie the disturbed terrain at the site. The Blacktown soil landscape group usually occurs on gently undulating rises over Wianamatta Group shales. The soils range from shallow to moderately deep (less than 1m thick) and are hard setting, mottled textured clay soils. The soils are typically moderately reactive with a highly plastic subsoil, have a low soil fertility, moderate erodibility, poor soil drainage and localised salinity or sodicity. The site is not affected by acid sulfate soils (SLR 2015).

3.5.3 Regional Groundwater Quality

Groundwater associated with the Wianamatta Shale is characterised by high salinity and high (up to 10 mg/L) ammonia concentrations (Old, 1942). Douglas Partners (2005) reported on groundwater testing before and during the landfill operation, which indicated groundwater is highly saline, typical of groundwater within the Wianamatta Group. The analyses indicate a large variability in the total dissolved solids (TDS) values, ranging from 3,000 mg/L to 17,000 mg/L TDS, with background ammonia levels of 2 mg/L to 11 mg/L.

Douglas Partners (2005) also reported that numerous investigations in the western parts of Sydney underlain by Bringelly Shale and Ashfield Shale have found degraded groundwater quality due to naturally occurring factors relating to the marine environment which prevailed during much of the Triassic period. Salt deposited in the interstitial pore spaces of the shale beds during formation has not been fully leached owing to the low permeability of these materials and the fact that the major cations are bonded to the clay mineral structure by electrostatic forces. The saline depositional conditions have caused the high salinity measured in groundwater over the entire western area of Sydney.

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The presence of naturally occurring ammonia may be explained by the nature of the Bringelly and Ashfield Shales, which are both dark in appearance, with impure coal bands and lenses and iron oxide concretions being recorded in both shales. Petrological analysis of both shales indicated a relatively high organic content, observed occasionally as immature coal beds, resulting from deposition in swampy, low energy environments (Lovering, 1954). During installation of site monitoring wells, AGC (1997) reported the presence of "shale oil" (crushed carbonaceous shale) in the drilling water circulation tanks, which supports the dominance of carbonaceous shale bedrock around the landfill.

Subsurface conditions characterised by abundant organic matter in a highly reduced state would potentially lead to formation and persistence of naturally occurring ammonia in groundwater.

3.5.4 Surface Water

The site forms an elevated position compared to the surrounding topography with runoff draining down the slopes of the landfill area and collected in a drainage system at the perimeter of the site. It is then collected and conveyed to two on-site sediment basins located in the southeast and north-west of the site respectively.

A tributary of South Creek is located to the south and west of the site, flowing in a northerly direction and discharging into South Creek approximately 1km to the north-west of the site. South Creek drains into the Hawkesbury River at Windsor, which in turn drains into the Pacific Ocean at Broken Bay.

The north-western sediment basin during an overflow event discharges to the South Creek tributary via an open channel located adjacent to Erskine Park Road. The south-eastern sediment basin during an overflow event discharges to the tributary via an open channel joining the tributary to the south of the site.

3.5.5 Flora and Fauna

The site is a highly modified area generally devoid of vegetation due to the current operations as a landfill. Within the broader site area small areas of vegetation are predominantly maintained lawns of exotic grasses and weeds with scattered planted trees. There are no known threatened species, populations or communities or their habitats present on the subject site and none are likely to occur.

It is noted that surrounding areas are part of the Erskine Business Park Biodiversity Corridor of which the landfill would form a part once closed and revegetated.

3.5.6 Bushfire

The site is not identified as bushfire prone.

3.5.7 Heritage

The site is not identified as an item of environmental heritage under any legislation or environmental planning instrument relating to the land. Moreover, the land is not located adjacent to any items of environmental heritage or within a conservation area. Heritage matters including archaeology and Aboriginal heritage conservation were considered in detail as part of the EIS supporting the 2006 consent and not considered a constraint to the proposed modification.

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4 APPROVED DEVELOPMENT

4.1 Development Consent History

The below provides a summary of the development consents issued for the Erskine Park Landfill since the cessation of quarrying.

Development Consent DA 163/92

Development Consent DA 163/92 was issued by Council on 11 November 1992 under Part 4 of the EP&A Act permitting rehabilitation of a former quarry via the disposal of non-putrescible waste materials, along with site rehabilitation and cessation of landfilling.

Development Consent DA 05/1740

Council subsequently issued Development Consent DA 05/1740 on 25 May 2006 under Part 4 of the EP&A Act for on-going landfilling with non-putrescible waste (no change to landfilling rates), with the landfill filled in stages to RL92 on the western peak and site rehabilitation to a specific top of waste landform. The final landform was designed as a twin peak arrangement to 87 m Australian Height Datum (AHD) and 92 m AHD to reflect the original pre-quarrying landform. Following completion of landfilling the site is to be vegetated to form part of a biodiversity conservation corridor providing connectivity between ecological corridors to the north and south.

A copy of Development Consent DA 05/1740, being the subject of the proposed modification detailed in this SEE, is contained in **Appendix B**.

Development Consent DA 05/1740.01 – Modification 1

Council issued an approval under section 4.55(2) of the EP&A Act in August 2019 to modify Development Consent DA 05/1740 allowing the approved final landform to be altered from the two-peak arrangement to a single ridgeline at 92 m AHD. This enabled improved stormwater management and waste placement ability resulting in an additional landfill airspace of approximately 140,000 m^3, which increased the lifespan of the landfill by around 9 months.

Development Consent DA 10/0429

Council issued Development Consent DA 10/0429 on 23 December 2010 under Part 4 of the EP&A Act permitting the capture of landfill gas for either flaring or off-site transfer, which provided significant safety and environmental benefits.

Development Consent DA 11/063

Council issued Development Consent DA 11/063 on 2 June 2011 under Part 4 of the EP&A Act for the construction and operation of a leachate treatment plant, which provided a treatment solution for landfill leachate during both the operational and post-closure periods.

Development Consent DA 13/0655

On 15 July 2014 development consent was granted by both Council (DA 13/0655) and Fairfield City Council (DA 301.1/2013) for the installation of a gas pipeline from the landfill to the Austral Bricks at Horsley Park. The pipeline transfers the landfill gas to fire kilns at the brick manufacturing works.

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4.2 Environment Protection Licence

The Erskine Park Landfill operates under the provisions of Environment Protection Licence EPL 4865 administered by the Environment Protection Authority (EPA) under Chapter 3 of the *Protection of the Environment Operations Act 1997* (POEO Act). This licence, a copy of which is contained in **Appendix C**, covers the fee-based activity of "waste disposal by application to land" (any capacity).

4.3 Overview of Approved Development

Erskine Park Landfill is a non-putrescible landfill servicing the waste disposal needs of the growing western Sydney region. Landfill operations commenced in 1993 as a means of rehabilitating the Erskine Park Quarry previously occupying the site, with approved landfilling rates of up to 1 million tonnes per annum.

Landfilling is currently undertaken pursuant to Development Consent DA 05/1740.01 (as modified). Up to 1 million tonnes of non-putrescible waste per annum has been accepted for landfilling during peak times, although this has declined in recent years as offsite recycling activity increased. Approximately 14 million tonnes of non-putrescible waste have been placed within the landfill to date.

The landfill currently accepts commercial and industrial waste, general solid waste, low level contaminated soils, construction and demolition waste and clean fill. Incoming waste is screened to ensure only waste materials compliant with Development Consent DA 05/1740 and EPL 4865 are accepted for landfilling. Waste volumes are tracked and recorded via weighbridge data and regular surveys of the landfill confirm waste emplacement and remaining landfill airspace. The waste is compacted in accordance with EPA landfilling guidelines to maximise the airspace and minimise void spaces to reduce landfill fire risk. The exposed tip face is covered daily and wind-blown litter is controlled using a combination of permanent litter nets, mobile litter nets and manual litter picking.

Rainfall-runoff is diverted and captured in sediment basins under the EPA licence. Recovered landfill leachate is treated within the on-site leachate treatment plant and treated leachate is discharged into Sydney Water sewer in compliance with a trade waste discharge agreement.

Landfill gas is extracted and piped to Austral Bricks in nearby Horsley Park. This provides both a safety benefit to the landfill and a dual environmental benefit by managing migration and enabling a beneficial re-use through use of landfill gas generated from the waste material as a fuel source, which would otherwise be vented to atmosphere. The supplied landfill gas is utilised by Austral Brick to supplement conventional gas supply used in the kilns. A gas flare is also in use on-site as needed to offset any disruption to Austral Brick's gas intake.

Erskine Park Landfill is recognised within the industry as a best practice landfill. It operates under an approved Landfill Environmental Management Plan (LEMP) that sets out operational management and monitoring procedures for waste control, surface water and groundwater management, leachate management, landfill gas management, fire management and control of odour, dust, litter, noise and vermin. Monitoring and reporting of a range of environmental parameters is undertaken in accordance with EPL 4865.

The approved final landform comprises a single ridgeline at 92 m AHD in general harmony with the original pre-quarry landform. Following completion of landfilling the site is to be vegetated to form part of a biodiversity conservation corridor providing connectivity between ecological corridors to the north and south. The landform is expected to settle by approximately 5m during the post closure period.

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According to the 2005 EIS, "the landfill was designed as a 'saturating entombment landfill', where groundwater flows into the landfill from the surrounding rocks until the level of water in the landfill reaches the level of the surrounding groundwater and... "as a general principle the level of the leachate in the landfill is maintained below the water levels in the surrounding rock so that there is a positive flow direction into the landfill", and that "engineered landfills have been developed and approved in Australia without lining the walls due to sufficient thickness and low permeability of surrounding soil/rock material, and an inward hydraulic gradient (where the leachate level within the landfill is maintained below the surrounding groundwater level)" (National Environmental Consulting Service, *Environmental Impact Statement for Erskine Park Landfill Revised Final Profile*, 2005).

The landfill design is therefore effectively based on a 'bathtub', or sub-water table landfill, but where the natural ground acts as the landfill barrier between waste and surrounding groundwater.

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5 PROPOSED MODIFICATION

5.1 Overview of Proposal

The proposal seeks to modify the existing development consent to provide a Mechanically Stabilised Earth (MSE) wall, around 920 m in length, around the south-western, southern and eastern perimeter of the landfill as described in detail in the Preliminary Design Report (**Appendix D**) and Preliminary Design Drawings (**Appendix E**).

The key features of the wall are summarised in **Table 2**. The proposed site layout and indicative cross section are shown in **Figure 5** and **Figure 6**.

Table 2: Key Features of the Proposal

Feature	Description
MSE wall	
Retaining wall type	A Mechanically Stablished Earth (MSE) retaining wall to create additional landfill airspace
Retaining wall location	South-western, southern and eastern perimeter of the existing landfill within property boundary
Retaining wall length	Around 920 m
Retaining wall height	Maximum height at 81 m AHD
RL height comparison to approved final landform	No change to the approved final landform of 92m AHD, settling to 87m AHD
Set back to site boundary	5 m minimum between wall façade and property boundary
Top of wall	10 to 15 m wide to accommodate a two-lane roadway, fencing, barrier, shoulder and surface drainage.
Footprint	Refer to Table 3: Landfill footprint comparison
Landfill operations	
Airspace	Increase in airspace of 420,000m^3 compared to total approved airspace, based on project as modified, of 8,560,000 m^3 (approximately 5% increase in airspace)
Landfilling rate and operational life	No change to approved landfill rates. The additional airspace equates to approximately 3 years additional filling time.
Access / haul routes	No change to access in and out of the site

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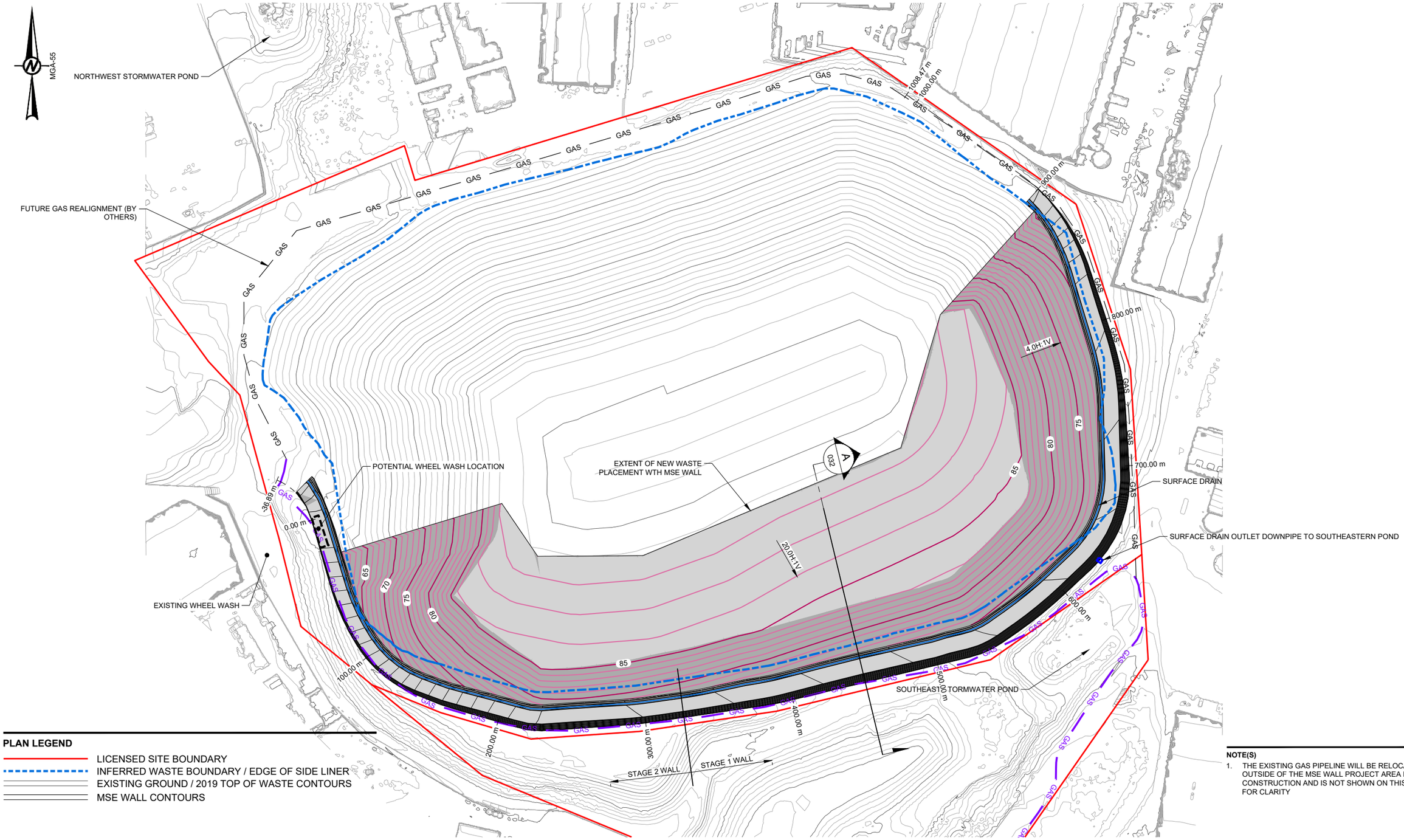

PLAN LEGEND

- LICENSED SITE BOUNDARY
- INFERRED WASTE BOUNDARY / EDGE OF SIDE LINER
- EXISTING GROUND / 2019 TOP OF WASTE CONTOURS
- MSE WALL CONTOURS

NOTE(S)

1. THE EXISTING GAS PIPELINE WILL BE RELOCATED OUTSIDE OF THE MSE WALL PROJECT AREA PRIOR TO CONSTRUCTION AND IS NOT SHOWN ON THIS DRAWING FOR CLARITY

0 50 100
1:2,500 METRES

NOT FOR CONSTRUCTION

PRELIMINARY

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
A	2020-04-08	FOR APPROVAL	PR/JR	BK/JF	GRS	GRS

CLIENT
ENVIROGUARD PTY LTD

CONSULTANT
GOLDER
BRISBANE OFFICE
147 CORONATION DRIVE
MILTON, QLD 4064
AUSTRALIA
[+61] (7) 3721 5400
www.golder.com

PROJECT
ERSKINE PARK LANDFILL
MSE WALL DESIGN

TITLE
GENERAL ARRANGEMENT PLAN

FIGURE 5

PROJECT NO.	CONTROL	REV.	DRAWING
19135652	005	A	004

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3
25 mm
0

Path: \\golder.gds\gal\Brisbane\Geomatics\cleanaway\erskine_park\09_projects\19135652_erskinepark_mwsa_wall\005_data\tec\design\02_PRODUCTION\DWG\ | Last Edited By: bkanther Date: 2020-04-08 Time:4:14:54 PM. | Printed By: BKanther Date: 2020-04-08 Time:8:26:34 PM
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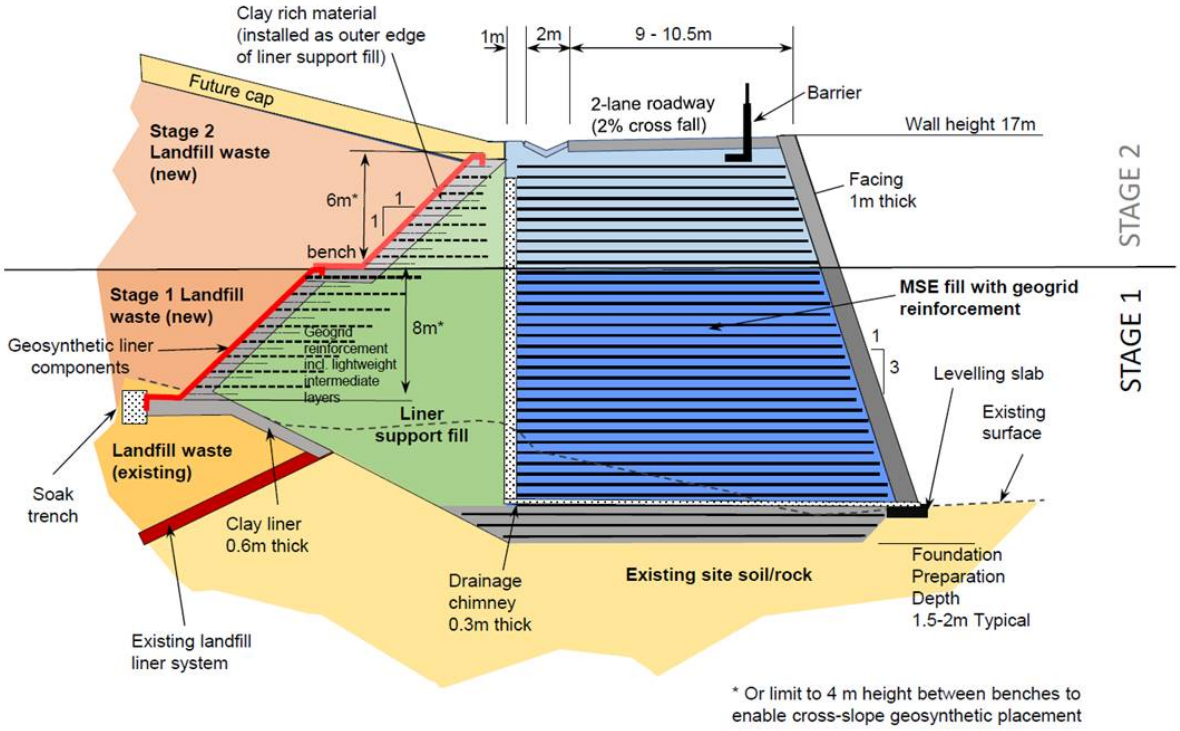
Figure 6 Indicative Cross Section



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5.2 Airspace and Expected Life

The proposal will provide for a total air space of approximately 8,560,000 m^3, this modification results in an increase of approximately 420,000 m^3 from the previously approved volume in the 2019 EIS or approximately 3 years additional filling time, representing approximately a 5 % increase in overall waste capacity at the landfill. **Table 3** provides a comparison of the 3D landfill footprint from the 2005 consent, the 2019 modification and the current proposal.

Table 3: Landfill Footprint Comparison

	2005 EIS Top of Waste Contour	2019 EIS Top of Waste Contour	2020 EIS Top of Waste Contour
	Two Peaks (m2)	Single Ridge (m2)	MSE wall Proposal (m2)
Total 3D Area	167,859.00	167,211	173,500
Impacted 3D Area		48,017	67,100
Difference in Total 3D Area Compared to 2005 EIS		-647	5,641

5.3 Operations

A new all-weather perimeter track would be constructed at the toe of the proposed MSE wall. This road will provide access around the perimeter of the site and allow for inspection and maintenance of the wall. On top of the wall itself will be an all-weather access road to act as a landfill operational haul road after the wall is constructed.

Internal haul routes providing access to the landfill operations will be modified during construction from the existing routes to separate landfill operations traffic and construction area. A temporary wheel wash will be located adjacent to the exit of the WTS.

Operations at the site are proposed to continue per the existing approvals.

There will be no change to the type of waste accepted at the landfill, tonnage per annum accepted to the landfill, operational hours, operational equipment and operational staffing.

An updated **Landfill Environmental Management Plan** is provided at **TP 5**.

5.4 Ancillary Infrastructure

5.4.1 Surface Water

Surface water would be collected in an open drain adjacent to the road on top of the wall and directed to the existing surface water ponds.

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5.4.2 Landfill Gas

The existing landfill gas collection system would be extended into the new waste towards after one year of waste placement. This aligns with the time lapse for methane generation from fresh waste and reaching sufficient waste depth. It is noted that the existing landfill gas delivery pipeline to Austral Plant at Horsley Park will be relocated as part of a separate project and modification application.

5.4.3 Leachate

According to the 2005 EIS, "the landfill was designed as a 'saturating entombment landfill', where groundwater flows into the landfill from the surrounding rocks until the level of water in the Landfill reaches the level of the surrounding groundwater and... "as a general principle the level of the leachate in the landfill is maintained below the water levels in the surrounding rock so that there is a positive flow direction into the landfill", and that "engineered landfills have been developed and approved in Australia without lining the walls due to sufficient thickness and low permeability of surrounding soil/rock material, and an inward hydraulic gradient (where the leachate level within the landfill is maintained below the surrounding groundwater level)".

The landfill design is therefore effectively based on a 'bathtub', or sub-water table landfill, but where the natural ground acts as the landfill barrier between waste and surrounding groundwater. The leachate recovered from the landfill is treated at the on-site leachate treatment plant located in the northwest corner of the landfill site.

The approach to leachate management is reflected in EPA's General Terms of Approval attached to the conditions of consent and condition 05.6 of the EPL 4865 which require leachate levels to not exceed 30m AHD as measured at point no. 2 (identified in the EPL).

The proposed MSE wall does not change the overall approach to leachate management. However, point no. 2 refers to the former leachate extraction point LP001 which is now buried. Leachate extraction now occurs at point no. 3, identified in the EPL as LP003 and referred to the as the auxiliary riser.

The proposed changes to EPL 4865 are described in Section 6.

Leachate soak pits will be incorporated into the design at the base of the liner to facilitate leachate migration back into the waste pit.

5.4.4 Temporary Weighbridge During Construction Phase Only

A temporary inbound weighbridge may be installed if separate tracking of materials for the construction is required and to eliminate wait times for the operational traffic during the construction of the proposal.

5.4.5 Temporary Wheel Wash During Construction Phase Only

A temporary wheel wash bath will be located at the exit of the WTS while the existing wheel wash is being relocated. The existing wheel wash will be relocated near the western end of the MSE wall.

5.5 Construction

5.5.1 Construction Activities

MSE Wall

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Construction of the MSE wall will in general consist of excavation for foundation, haulage of fill material to onsite stockpile, placement of engineered fill and reinforcement and liner support material and placement of liner. The wall would also be faced with wire meshes similar to gabion baskets or alternative facing system. The general arrangement for the wall is shown in **Figure 6** and **Figure 7.**

Excavation of waste will be avoided in the design if possible, however, minor waste excavation may be required for clay liner tie-in to maintain a continuous impermeable layer and for retaining wall stability purposes, in particular in the south-east of the site. Excavated waste will be relocated to the active landfill working face for disposal.

Surface water drains

Open surface water drains would be formed adjacent to the road on top of the MSE wall.

Construction Method

The construction method for the MSE wall will likely consist of two construction fronts with one construction front working progressively to the east and the other construction front working to the west along the alignment.

The simplified construction sequence likely to be adopted will consist of the following:

- foundations will be excavated, with potential foundation treatment carried out if poor is material encountered
- placement of engineered fill and geosynthetic reinforcement to form the MSE wall and placement of liner support backfill, construction of liner and construction of the facing system on the external face of the wall
- placement of suitable road base for all weather traffic to form the road on top of the MSE wall and formation of surface water drainage channels
- construction of road pavement at the toe of the MSE wall.

Construction Materials

The primary construction materials include:

- engineered fill imported for the construction of the MSE wall
- clay liner material sourced from the existing stockpile to the south of the site and some imported
- geosynthetic reinforcement for the reinforced zone of the retaining wall and a geosynthetic liner system to be placed above the clay liner
- gravel, drainage and wall facing material
- liner support backfill sourced from the excavation of the foundation (stockpiled onsite) and the CSR stockpile.

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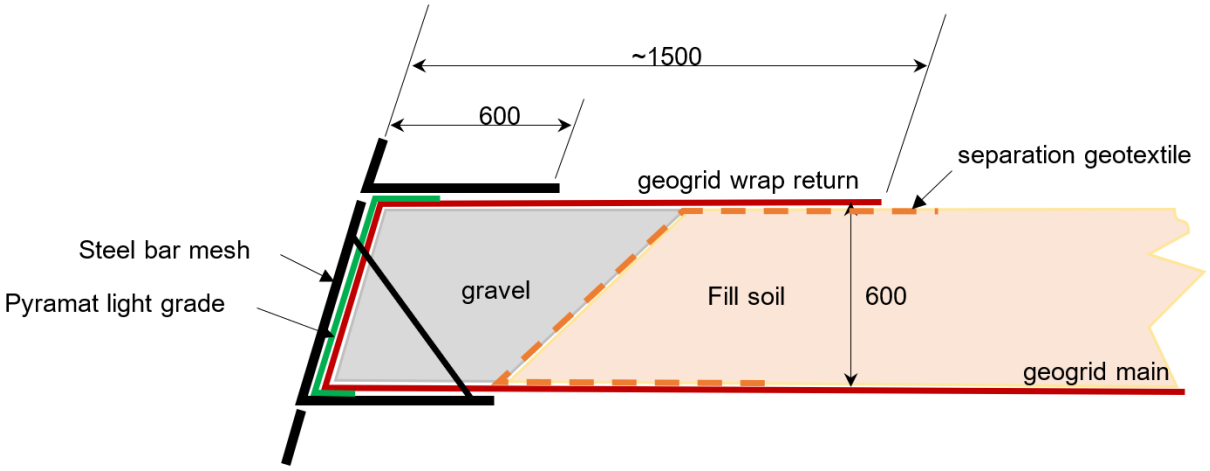
Figure 7 Indicative Wall Facing Section



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5.5.2 Staging and Material Quantities

The overall construction period for the project is estimated to be 6 to 12 months.

The overall purpose of staging the wall construction is to have Stage 1 ready to accept waste earlier, to facilitate the continued landfilling at the site.

Construction of the wall will be undertaken into two stages:

- Stage 1 Approximately 12 m high wall in the South East with an approximate 530 m wall length
- Stage 2 Full 920 m wall length up to final RL of 81 m AHD wall height including increasing the wall height across Stage 1 footprint.

The indicative staging is shown in **Table 4**.

Table 4: Indicative Staging Plan

Stage	Approx. air space gain (m^3)	Approx. excavation volume (m^3)	Approx. volume of import fill material (m^3)	Approx. volume of waste to be excavated (m^3)	Approx. volume from onsite or CSR stockpile (m^3)	Approx. duration of construction
Stage 1	130,000	30,000	80,000	3,000	20,000	3 to 6 months
Stage 2	290,000	20,000	100,000	2,000	20,000	3 to 6 months
Total	420,000	50,000	180,000	5,000	40,000	6 to 12 months

5.5.3 Construction Equipment

Construction equipment for the proposal is expected to include:

- 3 x Excavators
- 2 x medium Dozer, 2 x small Dozer
- 4 x Dump Trucks
- 2 x Drum Roller
- 1 X Water truck

5.5.4 Construction Hours

Standard construction hours will be adopted for the proposal as follows:

- Monday to Friday 7 am to 6 pm

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- Saturday 8 am to 1 pm
- No work on Sundays or public holidays

If COVID 19 guidelines allows flexible hours during Saturdays, Sundays and public holidays, then the construction hours would reflect the same to allow safe work place.

5.5.5 Construction Workforce

It is anticipated the average construction work force would be 10-15 workers for the construction duration. During peak periods there may be 40 construction workers subject to compliance with COVID 19 measures.

5.5.6 Construction Environmental Management

A Construction Environmental Management Plan is provided as **TP 3**.

5.6 Design Guidelines and Standards

The design of the MSE wall has taken account of the following design guidelines and standards:

- NSW EPA Environmental Guidelines Solid Waste Landfill 2016
- Penrith City Council's Engineering Requirements for Subdivisions and Developments
- Erskine Business Park Development Control Plan.

The **Preliminary Design Report,** provided as **Appendix D** to the SEE, provides an analysis of how the design has addressed these requirements.

5.7 Safety in Design

The design of the proposal has considered a range of project risk issues, including safety, throughout the design process. An initial Safety-in-Design register has been prepared to identify a range of issues to be addressed through the design and construction process which identifies issues focusing on the following elements:

- hazard identification
- construction materials
- possible methods of construction, operation and maintenance and their potential safety risks
- potential safety risks to persons in the project vicinity

The SiD register includes a qualitative assessment of the risk of a certain event occurring through the assessment of the consequence of an event occurring as well as the likelihood of it occurring. This will form the basis of future workshops / discussions with site operations and construction contractor personnel to communicate identified risks, mitigation measures and residual risks.

The SiD register and risk assessment is provided in the **Preliminary Design Report as Appendix D** to this SEE.

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5.8 MSE Wall Case Studies

This section provides an overview of a selection of landfills in Australia and overseas where the MSE wall technique has been used.

5.8.1 Hong Kong Landfill Expansion (China)

Situated in a bowl-shaped valley, the Hong Kong landfill was designed in 1993 for a 40 million tonne waste capacity. By the mid-2000s, the landfill had reached half of its design capacity. By utilising geogrid soil reinforcement, the landfill managers have constructed two components to extend the capacity and life of the landfill.

Through a combination of a new 100 m long, 8 m high, geogrid reinforced soil wall blocking the entrance to the valley, and a new 300 m long, up to 30 m high, reinforced soil embankment along the upper ridges, the landfill managers have successfully increased the landfill by allowing for an additional 8 m across the 40 hectare landfill, and up to 30 m additional depth of waste in some areas. With this innovation, they increased the landfill to a maximum depth of 140 m, and added an additional 5 million tonnes of waste capacity

5.8.2 La Spezia Landfill Expansion (Italy)

Opened in 1998, La Spezia landfill is situated in a tight valley, with a small embankment at the bottom designed to contain 383,000 cubic metres of solid urban waste. In 2002, the embankment was raised with several tiers of reinforced soil embankment placed on top (up to 45 m). By using soil reinforcement technology including geogrid, concrete bulkhead/piles the landfill managers increased the total volume of the landfill to 455,000 cubic metres. Works were completed, ready for waste placement in 2004.

5.8.3 Jubail landfill Vertical Expansion (Saudi Arabia) (Golder design)

The Jubail Project involved a vertical expansion of existing landfill cells to facilitate increasing waste stream over the next 30 years. The Golder design entailed 3.3 km of 15 m high reinforced soil perimeter bund around the existing construction waste cells. Complexities of the project included hot arid climate, highly corrosive environment, surface erosion conditions, complex foundation ground conditions and high groundwater table.

Golders design included geogrid reinforcement, geocell facia facing units and geocomposite drainage.

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5.8.4 Eagle Point MSW and C&D Landfill Expansion (America) (Golder Soil Parameters)

The Eagle Point MSW and C&D Landfill is located adjacent to Old Federal Road between the towns of Hightower and Ball Ground in Forsyth County, Georgia. The site is bounded by sensitive environments of the Etowah River to the east and north, and by the Old Federal Road and timberland owned by others to the west and south. Golder has assessed the design soil parameters for this horizontal expansion. The subsurface conditions encountered by Golder during the site investigation phase were typical of the area, i.e. with clayey sand and silty sand residual soils in the upper geologic profile, transitioning to partially weathered rock and rock. Golder coordinated with an MSE wall supplier and designer Tensar to provide permit level design for the mechanically stabilized earth walls proposed around the perimeter of the landfill. There were 5 proposed MSE Walls at the site ranging in height from 9 m to 21 m that extended across large portions of the site perimeter. Golder was able utilise its soil expertise in the design and considered both imported select granular fill and typical site materials for potential use as reinforcing fill within the MSE wall systems.

5.8.5 Hyland Highway Landfill Lined Retaining Wall (Victoria, Australia) (Golder Design)

Latrobe City Council engaged Golder to prepare a design for a lined retaining wall 'Cell 3' to be constructed along the southern edge of existing Cells 1 and 2 (constructed 2009) at Highland Highway Landfill. Golder's involvement was to address issues identified in the Environmental Audit Report. Golder assisted in the design of location and geometry of the wall, construction sequence, soil properties for the retaining wall, reinforcement material, geosynthetic liners, requirements for welding liner materials, drainage.

5.8.6 Anglesea Landfill Cell 3 Sideliner Extension (Victoria, Australia)

The project was to horizontally and vertically expand an existing landfill. Several cells were already active, and this was a sideways expansion, adding a new cell to the landfill. In 2016, Mackenszie Environmental designed a soil reinforced retaining wall built upon, and socketed into, an existing engineered fill bund to allow for additional placement of landfill adjacent to, and overlapping with, previously placed waste. This project required an extension of lining systems already in place. The soil reinforcement used was geogrid in wraparound configuration. The reinforced wall itself was a 70 degree outer slope, 45 degree inner slope angle.

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6 ASSESSMENT PATHWAY AND PLANNING CONSIDERATIONS

6.1 Assessment Pathway

The proposal can be assessed and determined as a modification to the existing development consent DA 05/1740 under Section 4.55(2) of the *Environmental Planning and Assessment Act 1979.* The requirements of Section 4.55(2) are identified in **Table 5** with an assessment of how these are addressed by the proposal.

Table 5: Section 4.55(2) Modification Requirements

Section 4.55(2)	Proposal
A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if—	The consent authority is Penrith City Council, being the consent authority for the original development consent. The applicant for the original consent and for this modification application is Enviroguard Pty Ltd.
(a) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all), and	The term substantially the same development has been interpreted by the NSW Land and Environment Court: • the meaning of 'modify' is to alter without radical transformation (Transport Action Group Against Motorway Inc v Roads and Traffic Authority 1999) • the term "substantially" means "essentially or materially having the same essence" (Moto Projects (No 2) Pty Ltd v North Sydney Council 1999). The reference point for substantially the same development is the project as approved in the original consent 05/1740. The approved project is described in **Section 4** and includes landfilling of commercial and industrial waste, general solid waste, low level contaminated soils, construction and demolition waste and clean fill. The landfilling supports site rehabilitation with non-putrescible waste to a final landform height equivalent to the pre-quarry landform peak of 92m AHD. The proposal is substantially the same development as the underlying use remains a landfill with no change to the overall approved landfill rates, type of waste or final landform.

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Section 4.55(2)	Proposal
	The changes relate to construction of a MSE wall along the southern perimeter of the landfill to create additional landfill airspace. The modification application should be referred to the EPA as an approval authority whose general terms of approval are required, and should therefore be assessed under Section 4.55 (2) which provides the appropriate mechanism for such referral.
(b) it has consulted with the relevant Minister, public authority or approval body (within the meaning of Division 4.8) in respect of a condition imposed as a requirement of a concurrence to the consent or in accordance with the general terms of an approval proposed to be granted by the approval body and that Minister, authority or body has not, within 21 days after being consulted, objected to the modification of that consent, and	The original application identified the proposal was integrated development as it may require approvals under other legislation, being: • **The Protection of the Environment Operations Act 1997** • **The Water Act 1912** The proposed modification should be referred to: • The EPA, because of their responsibility for regulating waste and landfills and the need to vary the EPL under the **Protection of the Environment Operations Act 1997.** Section 4.55(2)(b) provides the mechanism for such a referral to be made.
(c) it has notified the application in accordance with— (i) the regulations, if the regulations so require, or (ii) a development control plan, if the consent authority is a council that has made a development control plan that requires the notification or advertising of applications for modification of a development consent, and	The modification application will be notified for a period of 28 days.
(d) it has considered any submissions made concerning the proposed modification within the period prescribed by the regulations or provided by the development control plan, as the case may be.	Submissions may be provided in response to the notification of the application.

The proposed planning approval pathway for the proposal is an application to Council under section 4.55(2) of the EP&A Act seeking to modify Development Consent 05/1740.

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Section 4.55(2) states:

> *A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if:*
>
> *(a) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all), and….*

As such, Council could not lawfully approve the proposed modification unless it was satisfied that the development, as modified, would be substantially the same development as originally approved. The NSW Land and Environment Court has established principles to interpret 'modify' and 'substantially the same development' including:

- the meaning of 'modify' is to alter without radical transformation (Transport Action Group Against Motorway Inc v Roads and Traffic Authority 1999)
- the term "substantially" means "essentially or materially having the same essence" (Moto Projects (No 2) Pty Ltd v North Sydney Council 1999).

The reference point for substantially the same development is the project as approved in the original consent 05/1740, but not including the 2019 modification to the consent.

The original consent provided approval for the following project description:

- ongoing landfilling of the quarry with non-putrescible waste
- no change to previously approved landfilling rates of up to 1 million tonnes per annum
- site rehabilitation to a post-closure, post-rehabilitation height equivalent to the pre-quarry landform of 87m AHD and an interim landfill height of 92m AHD to allow for settlement
- final landform based on two peak design
- site layout including weighbridges, transfer station and filling area
- retention of existing and addition of new stormwater detention basins
- vehicle movements
- environmental controls to manage dust, noise, surface water, litter and visual amenity
- a landfill liner and capping system
- landfill leachate management
- landfill gas management.

The proposal is substantially the same development within the meaning of Section 4.55 (2) as:

- the underlying use of the landfill, being a 'waste disposal facility' as defined in the Standard Instrument Local Environment Plan, will not change as a result of the proposal
- the site the subject of the proposal is the same as the site for which approval was originally granted consent
- the MSE wall is consistent with the final peak landform approved in the original development consent and the consent as recently modified
- the environmental impacts can be managed within existing approved environmental management plans for the site.

Other principles established by the Land and Environment Court in relation to modification applications include:

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- a comparison between the development as originally granted consent and the development as proposed to be modified should include a quantitative and qualitative comparison in their proper context, including the circumstances in which the original development consent was granted (Vacik Pty Ltd v Penrith City Council 1992).

- the section 4.55 modification provision is described as "beneficial and facultative" (North Sydney Council v Michael Standley & Associates Pty Limited 1998), meaning it is designed to assist the modification process rather than to act as an impediment to it. "It is to be construed and applied in a way that is favourable to those who seek to benefit from the provision" (*North Sydney Council v Michael Standley & Associates Pty Limited 1998*).

Section 4.55(2) requires the consent authority to consult with the relevant Minister, public authority or approval body (within the meaning of Division 4.8). Approval bodies are those bodies who may grant an approval for a 'consent, licence, permit, permission or any form of authorisation' in relation to the Acts identified in Division 4.8.

For the purposes of the proposed modification, the proposal should be referred to the NSW EPA for General Terms of Approval. See **Section 6.8.1** for the specific variations to the EPL proposed.

In conclusion, a modification under section 4.55(2) of the EP&A Act appears to be a suitable and lawful consent pathway for the proposal to permit the expansion of airspace by the construction of a MSE wall. The consent authority for the modification would be Council, who would refer the application to relevant State government agencies and place it on public exhibition for a period of 28 days.

6.2 Designated Development

Part 2 of Schedule 3 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) addresses whether alterations or additions to an approved development can be "designated development". Clause 35 states:

> *Development involving alterations or additions to development (whether existing or approved) is not designated development if, in the opinion of the consent authority, the alterations or additions do not significantly increase the environmental impacts of the total development (that is the development together with the additions or alterations) compared with the existing or approved development.*

In forming its opinion as to whether a development is designated development, a consent authority is to consider the factors in Clause 36 of the Schedule 3. These are reproduced in **Table 6** below including an assessment of how the proposed modification would address these factors.

Table 6: Clause 36 Factors

Clause 36 Factors	Proposed modification
(a) the impact of the existing development having regard to factors including—	
(i) previous environmental management performance, including compliance with the conditions of any consents, licences, leases or authorisations by a public authority and compliance with any relevant codes of practice, and	The existing landfill has been operating since the mid-1990's and is regarded as a best practice landfill with respect to environmental management. The landfill operates pursuant to EPL 4865 and has operated in general compliance with the EPL since it was issued in 2001.

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Clause 36 Factors	Proposed modification
	The landfill operates in accordance with the EPA's Solid Waste Landfill Environmental Guidelines which specify minimum standards for environmental performance.
(ii) rehabilitation or restoration of any disturbed land, and	The existing development consent provides conditions for the rehabilitation of the landfill following closure. Closure and rehabilitation of the site will involve the planting of native vegetation and grasses which will ameliorate any visual impacts of the past use as a landfill and consolidate the site with the surrounding biodiversity corridor. The Rehabilitation works are not expected to commence until June 2024 subject to obtaining approval for the proposal. A Site Rehabilitation Plan is provided as **TP 11**.
(iii) the number and nature of all past changes and their cumulative effects, and	The existing consent has been modified once. This modification altered the final landform from two peaks (87m AHD and 92m AHD) to a single ridgeline at 92m AHD. The modification was developed to enhance environmental management outcomes on the site and reduce operational and maintenance risks post closure. The modification provides for improved conditions to surface water and soil management, improved waste placement and reduced risks of infiltration, leachate generation and erosion potential. The modification also provided for an additional airspace capacity of 140,000 m^3 over an approximately nine-month extension to the operational life of the landfill.
(b) the likely impact of the proposed alterations or additions having regard to factors including—	

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Clause 36 Factors	Proposed modification
(i) the scale, character or nature of the proposal in relation to the development, and	The proposed alterations would have a negligible impact. The alterations are consistent with the approved final landform, including the peak height of the landform recently approved through the first modification. The additional airspace created represents around 5% of the approved airspace based on the approved landform.
(ii) the existing vegetation, air, noise and water quality, scenic character and special features of the land on which the development is or is to be carried out and the surrounding locality, and	The landfill operates in accordance with approved environmental management plans pursuant to the conditions of consent and EPL and the Solid Waste Landfill Environment Guidelines. The landfill is a disturbed site but will be rehabilitated in accordance with the conditions of consent including which requires revegetation and integration with the Biodiversity Corridor. The proposed modification would not alter rehabilitation plans. Air quality on site is managed through a series of measures to suppress dust associated with landfilling operations. The main noise sources relate to the operation of landfill machinery. However, given the significant distance to residential areas – approximately 650m – noise impacts are negligible. Recent noise monitoring results indicate ongoing compliance with the approved levels. Water is managed on site in accordance with an approved water management plan to avoid any impact on water quality. Leachate is captured and diverted to a leachate treatment plant, where it is treated prior to discharge to sewer in accordance with Trade Waste Agreement 35835 administered by Sydney Water. A recent hydrogeological assessment study (Senversa, 2020, provided as part of TP 7) confirms no offsite impact on groundwater due to ongoing landfill operations and during post closure period.

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Clause 36 Factors	Proposed modification
	The landfill is in an industrial area which has been extensively developed since the commencement of landfill operations in the 1990's. Despite this, the rehabilitation plans for the landfill involve revegetation and integration with the Biodiversity Corridor. The proposed modification would not impact on the rehabilitation plans. The landfill operates in accordance with an approved Landfill Environmental Management Plan (LEMP). An updated LEMP is provided as **TP 5**.
(iii) the degree to which the potential environmental impacts can be predicted with adequate certainty, and	The landfill implements a detailed environmental monitoring program as per the existing EPL. This data has been used as an input to the environmental assessments to support the modification application, bringing a greater level of scientific rigour and certainty to the assessments.
(iv) the capacity of the receiving environment to accommodate changes in environmental impacts, and	The receiving environment consists primarily of the existing landfill, set in an industrial context. The landfill is designed to contain environmental impacts within the site as much as possible through a series of environmental management measures. Where environmental impacts have the potential to extend off-site, the distance between the landfill and residential areas and neighbouring industrial sites minimises the impacts.
(c) any proposals—	
(i) to mitigate the environmental impacts and manage any residual risk, and	The existing environmental management measures in place for the landfill have been updated and will apply to the proposed modification. The updated Landfill Environmental Management Plan is provided in **TP 5**. In addition, a Construction Environmental Management Plan has been provided at **TP 3.** These measures will provide a robust framework to manage and mitigate environmental risk.
(ii) to facilitate compliance with relevant standards, codes of practice or guidelines published by the Department or other public authorities.	The Preliminary Design Report provided as **Appendix D** to this SEE describes how the proposal has been designed to address relevant guidelines and standards.

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Clause 36 Factors	Proposed modification
	The construction of the MSE wall and operation of the landfill will continue to comply with the conditions of the existing consent and EPL. The landfill will also continue to comply with the Solid Waste Landfill Environmental Guidelines. The modification application would be referred to the EPA. If the EPA support the application, they would be required to issue General Terms of Approval.

Based on the above assessment, the proposed modification should not be considered designated development as it is not anticipated to significantly increase the environmental impacts of the development.

6.3 Regionally Significant Development

Regionally significant development is development declared to be regionally significant under Part 4 and Schedule 7 of the State and Regional Development SEPP 2011. Clause 20(2) of the SRD SEPP notes that the following development is not regionally significant:

> *However, the following development is not declared to be regionally significant development—*
>
> *(b) development for which development consent is not required,*

The proposal does not require a development consent, rather it can be assessed as a modification to an existing development consent. Therefore, it is not a regionally significant development.

6.4 Integrated Development

Integrated development is development (not being State significant development or complying development) that, in order for it to be carried out, requires development consent and one or more of additional approvals identified in Section 4.46(1) of the Act.

The proposal is not integrated development for the purposes of Section 4.46(1) as it does not require development consent, rather it will be assessed and determined as a modification to the existing development consent.

In the case of a modification, the Act provides an alternative mechanism for the consent authority to consult with and obtain the approval of other relevant approval authorities. Section 4.55(2) of the Act provides that:

> *A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if*
>
> *(b) it has consulted with the relevant Minister, public authority or approval body (within the meaning of Division 4.8) in respect of a condition imposed as a requirement of a concurrence to the consent or in accordance with the general terms of an approval proposed to be granted by the approval body and that Minister, authority or body has not, within 21 days after being consulted, objected to the modification of that consent, and*

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For the purposes of Section 4.55(2)(b), the other approvals required are:

- A variation to the EPL under the Protection of the Environment Operations Act, 1997

6.5 Permissibility

6.5.1 Existing Consent

The landfill area is predominately zoned E2 Environmental Conservation with a small portion in the north western corner zoned IN1 General Industrial under the provisions of *State Environmental Planning Policy (Western Sydney Employment Area) 2009 (WSEA SEPP)* as shown in **Figure 4**.

The E2 zoning does not support a waste disposal facility land use. However, the permissibility of the proposal is derived from the original development consent which was lawfully approved in 2005.

It also noted that the intention of E2 Environmental Protection zoning was based on the intended closure and rehabilitation of the site following landfill activities. The proposed modification does not change the plans for the site following closure and rehabilitation.

6.5.2 Existing Use Rights

Notwithstanding the permissibility of the proposal based on a modification of an existing development consent, the site also benefits from existing use rights.

An 'existing use' generally refers to a use that was lawfully carried out before it became prohibited under a new local environmental plan or other environmental planning instrument.

The existing landfill has been operating lawfully since 1993 pursuant to DA 163/92 followed by DA 05/1740. The WSEA SEPP came into effect in 2009 which had the effect of changing the land zoning and permissible uses that applied to the site.

The land use zoning changed from Employment zoning under the Penrith Local Environmental 1994 to E2 Environmental Protection under the WSEA SEPP 2009. The application of the E2 Environmental Protection zoning was based on the intended closure and rehabilitation of the site following landfill activities.

WSEA SEPP had the effect of making the existing use of the site – a waste disposal facility – not permissible thereby creating an existing use right. The EP&A Act makes provision for the continuance of existing uses and their enlargement, expansion or intensification or alteration or extension.

While the site benefits from these existing use rights, the appropriate approval pathway is a modification to the existing consent.

6.6 Environmental Planning Instruments (EPIs)

Table 7 identifies the relevant provisions of Environmental Planning Instruments that apply to the proposal and how these are addressed by the proposal.

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Table 7: Environmental Planning Instruments

SEPP	Proposal
State Environmental Planning Policy (Western Sydney Employment Area) 2009 (WSEA SEPP) is the principal statutory environmental planning instrument applying to the site. It aims to promote economic development and the creation of employment in the Western Sydney Employment Area by providing for development including major warehousing, distribution, freight transport, industrial, high technology and research facilities.	**Site zoning and permissibility** The site is zoned E2 Environmental Conservation and IN1 General Industrial under SEPP WSEA. A waste disposal facility is prohibited on IN1 and E2 under the WSEA SEPP. **Consistency with zone objectives** <u>E2 Environment Conservation</u> • To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values. • To prevent development that could destroy, damage or otherwise have an adverse effect on those values The proposal is not considered inconsistent with the objectives of the E2 Environmental Conservation zone. The proposal would provide for an extension of the landfill airspace and operational life of the landfill to service the waste disposal needs of the Western Sydney region. Once the operation of the site as a landfill ceases, the landfill will be rehabilitated and consolidated with surrounding biodiversity corridors. The altered landform will provide for consistent environmental outcomes during post closure including surface water management, leachate generation and reduced erosion potential. <u>IN1 General Industrial</u> • To facilitate a wide range of employment-generating development including industrial, manufacturing, warehousing, storage and research uses and ancillary office space. • To encourage employment opportunities along motorway corridors, including the M7 and M4. • To minimise any adverse effect of industry on other land uses. • To facilitate road network links to the M7 and M4 Motorways. • To encourage a high standard of development that does not prejudice the sustainability of other enterprises or the environment. • To provide for small-scale local services such as commercial, retail and community facilities (including child care facilities) that service or support the needs of employment-generating uses in the zone. The proposal is consistent with the IN1 objectives as it supports the continuation of an employment generating activity and is in an existing industrial area which minimises any adverse effects on other land uses.

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SEPP	Proposal
State Environmental Planning Policy Infrastructure (ISEPP) 2007 aims to improve regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services.	**Permissibility** Clause 121 of ISEPP provides that waste disposal facilities (landfills) are permissible with consent on land zoned as IN1 General Industrial. **Determination of applications** Clause 123 of ISEPP identifies matters to be considered by a consent authority when determining a development application for a landfill. These matters are not applicable to the proposal as they relate to a development application, whereas the proposal will be assessed and determined as a modification application.
State and Regional Development SEPP 2011	The State and Regional Development SEPP identifies development that is State significant development, State significant infrastructure and regionally significant development. As the proposal is an application to modify a development consent, rather than an application for consent, it is not regionally significant development. This is explained further in **Section 6.3.**
State Environmental Planning Policy No 33 – Hazardous and Offensive Development	SEPP 33 presents a systematic approach to planning and assessing proposals for potentially hazardous and offensive development for the purpose of industry or storage. The proposal is not classified as potentially hazardous or potentially offensive. There are no changes to the quantities of hazardous materials stored on site approved in the original consent, therefore the proposed as modified is not potentially hazardous. The proposal, as modified, would be capable of being licenced through an EPL administered by the EPA, and is therefore not potentially offensive development. A **Hazards and Risk Assessment** is provided as **TP 4**.
State Environmental Planning Policy. No 55 – Remediation of Land	Under the current EPL conditions, the site undergoes ongoing monitoring of media including groundwater, surface water, gas, dust and noise to assess potential impacts on and off site. Exceedances of the trigger levels specified in the EPL (for landfill gas and groundwater) have been reported at on-site locations and are being managed appropriately by Enviroguard in consultation with EPA. The risk of off-site impact from the site is remains low. Based on the investigations performed the site is suitable for ongoing use as a waste disposal facility and presents a low risk to off-site receptors. A **Preliminary Site Investigation Report** is provided at **TP 2**.
Sydney Regional Environmental Plan No 20 – Hawkesbury Nepean River (No. 2 – 1997)	Part 3 of the SREP contains specific controls for development related to primary production, residential land use, industry, water related uses, land filling, stormwater, waste management and works impacting on the river or areas of significance to the region including vegetation and scenic areas.

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SEPP	Proposal
The aim of this plan is to protect the environment of the Hawkesbury-Nepean River system by ensuring that the impacts of future land uses are considered in a regional context.	The proposal is within the South Creek catchment of the Hawkesbury - Nepean River. The proposed development is classified as waste management facilities or works under Clause 11(18) of Part 3 of the SREP. The proposal will not change or impact water management measures as set out in the Stormwater Management Report provided as **TP 12,** and accordingly will not adversely impact on the hydrology or water quality of the South Creek catchment. Given the above, the proposed modification is consistent with the requirements of SREP 20.
Penrith Local Environmental Plan 2020	The planning controls in LEP do not apply to the site due to the operation of SEPP WSEA.

6.7 Development Standards

Table 8 identifies the relevant development standards that apply to the proposal and how these are addressed by the proposal.

Table 8: Development Standards

Development Standards	Proposal
SEPP WSEA, Part 5, Principal Development Standards	
20 Ecologically Sustainable Development	The consent authority must not grant consent to development on land to which this Policy applies unless it is satisfied that the development contains measures designed to minimise: (a) the consumption of potable water, and (b) greenhouse gas emissions. The proposal will not change the consumption of potable water on site. Additional landfill gas generated as a result of additional waste placement will be captured for export to the Austral Bricks facility where it is used as a fuel in the kiln process. This represents an efficient use of the landfill gas which would otherwise have been vented to the atmosphere. A **Greenhouse Gas Assessment** is provided as **TP 8**.
21 Height of Buildings	The consent authority must not grant consent to development on land to which this Policy applies unless it is satisfied that: (a) building heights will not adversely impact on the amenity of adjacent residential areas, and (b) site topography has been taken into consideration The landfill is not a building. However, the final height of the landfill is consistent with the approved height of 92m AHD and the hill that was previously on the land prior to the commencement of quarrying operations.

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Development Standards	Proposal
	The site is well separated from residential areas and the modified height along the southern batter of the landform will not result in any adverse impacts such as overshadowing of residences as confirmed by the **Visual Impact Assessment** provided at **TP 14**.
22 Rainwater Harvesting	The consent authority must not grant consent to development on land to which this Policy applies unless it is satisfied that adequate arrangements will be made to connect the roof areas of buildings to such rainwater harvesting scheme (if any) as may be approved by the Director-General. Not relevant to the proposal.
23 Development Adjoining Residential Land	(1) This clause applies to any land to which this Policy applies that is within 250 metres of land zoned primarily for residential purposes. (2) The consent authority must not grant consent to development on land to which this clause applies unless it is satisfied that: (a) wherever appropriate, proposed buildings are compatible with the height, scale, siting and character of existing residential buildings in the vicinity, and (b) goods, plant, equipment and other material resulting from the development are to be stored within a building or will be suitably screened from view from residential buildings and associated land, and (c) the elevation of any building facing, or significantly exposed to view from, land on which a dwelling house is situated has been designed to present an attractive appearance, and (d) noise generation from fixed sources or motor vehicles associated with the development will be effectively insulated or otherwise minimised, and (e) the development will not otherwise cause nuisance to residents, by way of hours of operation, traffic movement, parking, headlight glare, security lighting or the like, and (f) the development will provide adequate off-street parking, relative to the demand for parking likely to be generated, and (g) the site of the proposed development will be suitably landscaped, particularly between any building and the street alignment. The clause does not apply as the site is more than 250m from land zoned primarily for residential purposes. Notwithstanding the proposal is compatible with the character of surrounding land and will not increase the overall final height of the landfill over that already approved on the site.

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Development Standards	Proposal
	The proposal will have negligible adverse impacts on surrounding visual amenity and will not cause adverse nuisance or noise to any residential dwellings. Detailed consideration of these matters is provided in **TP 14 Visual Impact Assessment** and summarised in **Section 8** of this report.
24 Development Involving Sub-division	Not applicable.
25 Public Utility Infrastructure	(1) The consent authority must not grant consent to development on land to which this Policy applies unless it is satisfied that any public utility infrastructure that is essential for the proposed development is available or that adequate arrangements have been made to make that infrastructure available when required. (2) In this clause, public utility infrastructure includes infrastructure for any of the following: (a) the supply of water, (b) the supply of electricity, (c) the supply of natural gas, (d) the disposal and management of sewage. (3) This clause does not apply to development for the purpose of providing, extending, augmenting, maintaining or repairing any public utility infrastructure referred to in this clause. The site is serviced by the necessary public infrastructure and services required for operation as a landfill.
26 Development on or in the Vicinity of Proposed Transport Infrastructure Routes	(1) This clause applies to any land to which this Policy applies that is situated on or in the vicinity of a proposed transport infrastructure route as shown on the Transport and Arterial Road Infrastructure Plan Map. (2) The consent authority must refer to the Director-General of the Department of Planning any application for consent to carry out development on land to which this clause applies. (3) The consent authority must, before determining any such development application, consider any comments made by the Director-General as to the compatibility of the development to which the application relates with the proposed transport infrastructure route concerned. The proposal is not located on land identified to be within proposed transport infrastructure routes.
Penrith Development Control Plan 2014	The Penrith Development Control Plan 2014 was adopted on 23 March 2015. Section 6 of the DCP applies specifically to the Erskine Business Park in which the site is located. Relevant provisions include objectives and requirements for height, lot size, air and pollution, waste management, soil, erosion and sediment control, traffic, stormwater, landscaping and biodiversity conservation area.

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Development Standards	Proposal
	The proposal has been assessed against the relevant provisions of the DCP and it is generally considered to be consistent with the objectives and intent of the DCP. The proposal is for the expansion of the existing landfill on site and the Development Control Plan has limited applicability. On this basis a brief reference to some of the controls has been provided below.
Part E – Key Precincts – E6 Erskine Business Park	
6.3 Site Development and Urban Design	
6.3.1 Height	Indicates a maximum height for buildings and structures of 15 m. While the proposal exceeds this maximum height, it is consistent with the objectives of this development control which are: a) To encourage building forms that respond to the topography of the site and the relative position of the allotment to other allotments and the street; b) To ensure a scale of buildings which minimises the impact of development on adjoining residential areas; and c) To minimise the impact of development on views from adjoining residential areas. The average height above ground of the proposed wall is around 13 m. However, the wall height varies from 1 to 19 m with around 40% of the wall greater than 15 m in height. Notwithstanding, the proposal wall is consistent with the objectives as: • it responds to the topography of site • visual impact is limited by the nature of the site surrounds as shown in the Visual Impact Assessment in **TP 14** The nearest residential areas are approximately 650 m away, with minimal impacts from the proposal. Neighbouring sites are industrial, reflecting the overall character of the Business Park. A visual impact assessment has been undertaken and assesses all views as having a negligible or low impact as a result of the proposal.
6.3.2 Site Coverage	Not applicable as the site is fully occupied by the existing landfill and related infrastructure.

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Development Standards	Proposal
6.3.3 Setbacks	Indicates minimum setback distances based on road type or boundary with neighbouring property. The site does not have road frontage. The applicable setback to rear and side boundaries is 5 m. The proposal would achieve a minimum set back of 5 m. The objectives of the setback control which are: a) To provide an open streetscape with substantial areas for landscaping; b) To enhance the visual quality of development and the urban landscape. The proposal does not have any frontage to streetscape, and is accessed off Quarry Road via the adjacent Waste Transfer Station site. The proposal does not impact on the visual quality of development in the surrounding area, as it is consistent with the topography and final landform of the approved landfill.
6.3.4 Urban Design	The visual appearance of the wall facing will be governed by the galvanised steel mesh and the uV resistant Turf Reinforcement Mat lining on the inside of the steel mesh. A dark green colour is proposed for the uV resistant Turf Reinforcement Mat to enhance the aesthetic appearance of the wall. The visual impact assessment considered a traditional gabion wall for the purposes of the assessment, rather than the Turf Reinforcement Mat internal to the wire mesh, however, this would not change the outcomes of the assessment given the subtle visual difference between the two. The visual impact assessment has concluded that the proposal would have negligible impact when seen from eight of the ten viewpoints with a low impact at the other two, and notes that views to the proposal are largely framed by existing industrial buildings. There are no specific urban design measures proposed for the wall.
6.3.5 Signage and Estate Entrance Walls 6.3.6 Lighting 6.3.7 Fencing 6.3.8 Services 6.3.9 Transmission line easement	Not applicable.
6.4 Environmental Quality	
6.4.1 Noise pollution	The relevant matters in relation to noise pollution are assessed in **TP 9 Noise Impact Assessment** and summarised in **Section 8** of this report.

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Development Standards	Proposal
6.4.2 Air pollution	The relevant matters in relation to air pollution are assessed in **TP 1 Air Quality and Odour Impact Assessment** and summarised in **Section 8** of this report.
6.4.3 Storage, Transportation and / or Processing of Chemical Substances 6.4.4 Energy Conservation 6.4.5 Trading / Operating Hours of Premises	Not applicable
6.5 Drainage	The relevant matters in relation to drainage are addressed in **TP 12 Stormwater Management Report**.
6.6 Transport Network	The road network supporting the site and adjoining land uses is primarily formed by: • Mamre Road • Erskine Park Road • M4 Motorway • Site access from Quarry Road The traffic survey completed as part of the EIS in 2005 concluded that traffic generation from the landfill site is minimal (70 peak hour trips) compared to the forecast traffic volumes from other sites within the western precinct development area. On the adjoining site, Lot 1024 DP 1175670, a Traffic Impact Assessment was completed as part of a State Significant Development application proposing a waste transfer station. The Traffic Impact Assessment concludes that the traffic impact of the proposed facility upon the surrounding road network would be negligible, and no road network upgrades are required to support the proposed development. The report also concludes that no network upgrades are required to support future development within the Business Park, based upon the assumptions outlined in the impact assessment. The proposed modification relates to providing additional landfill space and does not provide for an increase in traffic volumes to and from the site. Traffic volumes will decrease as the site transitions to closure, and from approved waste volumes of one million tonnes per annum to 420,000 tonnes per annum. An updated assessment is provided in **TP 13 Traffic Assessment**.

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Development Standards	Proposal
6.7 Biodiversity	The site is identified as being located within a Biodiversity Conservation Area pursuant to the E2 Environmental Conservation zoning under the Western Sydney Employment Area SEPP. This is replicated within the DCP where the site is shown as forming part of a Biodiversity Conservation area. Following the closure of the landfill, the site will be rehabilitated and consolidated with surrounding biodiversity corridor in accordance with the existing 2006 approval and associated Rehabilitation Plan.
6.8 Landscaping	A Landscape Management Plan has been provided as **TP 6.**

6.8 Other Relevant State Legislation

6.8.1 Protection of the Environment Operations Act

The *Protection of the Environment Operations Act 1997* (POEO Act) provides for the issue of an Environment Protection Licence (EPL) for scheduled activities (being activities listed in Schedule 1 of the POEO Act), and generally the control of water, air and noise pollution and the management of wastes.

Site operations are controlled by an existing Environment Protection Licence number 4865 issued to Enviroguard Pty Ltd on 27 June 2001 permitting the application of waste to the land.

An application to vary the EPL will be made to the EPA to address changes to locations of environmental monitoring points and other issues at the landfill which are specified in the EPL.

The specific conditions requiring variation are summarised in **Table 9**:

Table 9: EPL Conditions to be Varied

Ref	Condition to be varied	Rationale
A2.1	Update the street address to 4 Quarry Road Erskine Park, accessed via 85-87 Quarry Road	Administrative
P1	Update the location of monitoring points that are affected by the MSE wall and clarify that LP002 is to be used for qualitative purpose (leachate level and sampling) and LP003 be used for extraction as per current operations and as documented in monitoring reports.	Monitoring points to be relocated because of MSE wall works.
P1.1	Relocate the following items: D7 (7), GS4 (26), GS3 (25), D2 (3) and D8 (5).	Monitoring points to be relocated because of MSE wall works.
P1.	Update identification point 18 to reflect new location for weather station at grid reference 294987E, 6255872N	A new Weather Station was installed as part of the WTS construction
O5	The leachate collection system must be maintained so as to collect and impound without discharge to waters external to the premises, all leachate generated by rainfall events of less than 1 in 25 year recurrence interval of 24 hours duration.	Browns Design Report based on 1 in 2 year, condition to be varied for consistency.

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O5.6	Removal of the current leachate compliance level of 30 mAHD and replacement of active leachate extraction with a combined capping, landfill gas extraction and leachate monitoring regime	Trying to maintain the leachate level below 30 m AHD increases the risk of uncontrolled offsite landfill gas migration. Even without active leachate extraction and continued leachate mounding, landfill presents a low risk to surrounding and off-site groundwater quality and beneficial uses, including groundwater dependent ecosystems. This is explained further in **TP 7 Leachate and Groundwater Assessment.**
06.1	Amend to reflect Golder's Stormwater Management Plan for MSE wall	Updated Stormwater Management Plan provided as **TP 12 Stormwater Management Report.**

The proposal will also require an application to the EPA for a resource recovery order and exemption for the placement of imported construction and demolition waste material as a fill material to build the MSE wall. Such an application is made under the *Protection of the Environment Operations (Waste) Regulation 2014 (2014 Waste Regulation)*

A resource recovery order would allow the beneficial re-use of the imported material as a fill material and the resource recovery exemption would provide for certain exemptions that would not normally apply such as the landfill levy.

Prior to using the intended fill material, an application must be approved by NSW EPA, which addresses the source (to 'supply' the fill under the Order) and the destination (applicator of the fill material under the Exemption).

This must demonstrate that the fill material is fit for purpose in its proposed use, poses minimal risk of harm to the environment or human health and is not intended to be land applied as a means of disposal (ie a landfilling activity).

The resource recovery order and exemption applications will be prepared in accordance with the NSW EPA's Guidelines on Resource Recovery Orders and Exemptions for the land application as waste materials as fill (NSW EPA, 2017).

6.8.2 Contaminated Land Management Act 1997

The site is not listed under the Contaminated Land Management Act 1997.

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6.8.3 Biodiversity Conservation Act 2016

The Biodiversity Conservation Act 2016 (BC Act) repeals the Threatened Species Conservation Act 1995, the Native Vegetation Act 2003, Nature Conservation Act 2001 and part 6 of the National Park and Wildlife Act 1974. As a result, the matters relating to the listing of threatened species, threatened ecological communities, key threatening processes, biodiversity impact assessment, offsetting and related offences are now contained within the BC Act.

Projects assessed under Part 4 of the EP&A Act are required to address the requirements of the BC Act which includes provisions for offsetting once certain thresholds are met.

The proposal is located predominantly on cleared, previously disturbed land as a result of previous and current land uses. The site is not mapped on the biodiversity values map. The proposal will not impact on any threatened species, populations or threatened ecological communities listed under the Act. In summary, the proposal would not:

- impact on any area of outstanding biodiversity value (as declared by the Minister).
- exceed the Biodiversity Offset Scheme threshold (as less than 1 hectare of native vegetation would be removed).
- have a significant impact on threatened species or endangered ecological communities.

The proposal is therefore not likely to have a significant effect on threatened species or ecological communities listed under the BC Act. As such, the Biodiversity Offset Scheme is not triggered and a Biodiversity Development Assessment Report is not required.

6.9 Evaluation of the Proposal Under Section 4.15 of the Act

Table 10 provides an assessment of how the proposal addresses the relevant matters for consideration in Section 4.15 of the Act.

Table 10: Section 4.15 Evaluation

Matters for consideration	Proposal
(1) Matters for consideration – general. In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application— (a) the provisions of—	
(i) any environmental planning instrument, and	Section 6.6
(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred	Not applicable

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Matters for consideration	Proposal
indefinitely or has not been approved), and	
(iii) any development controls plans, and	Section 6.7
(iiia) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4, and	Not applicable
(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph),	Not applicable
(v) (Repealed)	
that apply to the land to which the development application relates,	
(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,	Section 8
(c) the suitability of the site for the development,	Section 3
(d) any submissions made in accordance with this Act or the regulations,	Submissions can be made in response to the exhibition of this application.
(e) the public interest.	The SEE has demonstrated the need for ongoing landfill airspace in Sydney. This should be provided at an existing landfill rather than a new landfill site. The impacts of the proposal can be managed through existing and new environmental management measures. Therefore, the proposal is in the public interest.

6.10 Consent Authority

The consent authority for the original development application was Penrith City Council. The proposed modification should be assessed by Penrith City Council.

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6.11 Conditions of Consent

Development consent 05/1740, under the heading of 'Other Approval's, requires compliance with the General Terms of Approval provided by other approval authorities including the Department of Environment and Conservation (DECC), now known as the EPA.

Section 6.8.1 of this SEE describes the changes proposed to the existing EPL for landfill site, which should be addressed through the EPA's GTA.

Under the heading 'General', Condition 1 should be modified to include reference to the project as described in this SEE.

7 STAKEHOLDER CONSULTATION

7.1 Pre-DA Meeting with Council

A pre-DA meeting was held with Council on 14th January 2020. The notes of the meeting are attached as Appendix A to this SEE. The issues raised in the meeting and how these are addressed by the proposal are presented in **Table 11**.

Table 11: Pre-DA Meeting: Issues Raised and Proposal Response

Issues raised	Proposal response
Relevant EPIs, Policies and Guidelines	Addressed in Section 6
Planning	
• Regionally significant development	Chapter 6
• Integrated development	Chapter 6
• Confirmation of modification pathway	Chapter 6
• Designated development	Chapter 6
• Review and amendment of documents associated with original development consents DA05/1740 and 163/92	Management plans are provided as follows: • TP5: Landfill Environment Management Plan • TP6: Landscape Management Plan • TP10: Closure Plan • TP11: Site Rehabilitation and Environmental Management Plan • TP12: Stormwater Management Report • TP15: Waste Management Plan
• A visual impact assessment should be submitted	A visual impact assessment is provided as **TP 14**
• Information on construction staging	Section 5

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Issues raised	Proposal response
• Assessment and determination of relocation of gas pipeline to be via a separate modification application	A separate application will be submitted to Council for the modification of DA 13/0655 for the relocation of the gas pipeline as per the pre-DA meeting notes.
Environmental management	
Integrated development	Section 6 The application should be referred to the EPA under Section 4.55(2)(b) of the Act, which provides the mechanism for General Terms of Approval from other approval authorities in the context of a modification to an existing development consent. Following approval, an application will be submitted to the EPA to vary the existing EPL. Consultation was undertaken with the EPA as described in this Chapter.
Environmental management	Refer to impact assessments in Section 8 and supporting Technical Papers including updated environmental management plans
SEPP 55 Remediation of Land	Section 6.6 and Section 8 and **TP 2**
SEPP 33 Hazardous and Offensive	Section 6.6 and Section 8 and **TP4**
Engineering requirements	
• General requirements	Appendix D, Preliminary Design Report
• Design Guidelines for Engineering Works for Subdivisions and Developments and Council's Engineering Construction Specification for Civil Works	Appendix D, Preliminary Design Report
Stormwater Stormwater drainage for the site must be in accordance with the following: • Council's Development Control Plan, Stormwater Drainage Specification for Building Developments policy, and Water Sensitive Urban Design Policy and Technical Guidelines. • A stormwater concept plan, accompanied by a supporting report and calculations, shall be submitted with the application	TP12 Stormwater Management Report
Traffic	TP 13 Traffic Impact Assessment

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Issues raised	Proposal response
The application shall be supported by a traffic assessment undertaken within the Statement of Environmental Effects addressing, but not limited to construction traffic management such as truck movements, truck numbers, expected duration of construction etc.	
Earthworks • The mechanically stabilised earth wall is to be designed by a suitably qualified structural engineer. Concept plans are only required for DA lodgement. • No retaining walls or filling is permitted for this development which will impede, divert or concentrate stormwater runoff passing through the site. • Earthworks and retaining walls must comply with Council's Development Control Plan.	Appendix D, Preliminary Design Report
Documentation to be submitted with the application	
• Survey Drawing	Appendix E, Preliminary Design Drawings, Sheet 003 Existing Site Condition and Services
• Site Plan	Appendix E, Preliminary Design Drawings, Sheet 004 General Arrangement Plan
• Statement of Environmental Effects	This Report
• Contamination Assessment	TP 2 Preliminary Site Investigation
• Elevation and Section Plans	Appendix E, Preliminary Design Drawings
• Structural Engineering Concept Plans	Appendix E, Preliminary Design Drawings
• Construction Traffic Management Plan (in SoEE)	Section 8.12.2 of this SEE and TP3 Construction Environmental Management Plan
• Visual Impact Assessment	TP 14 Visual Impact Assessment
• Operational Plan of Management	TP 5 Landfill Environmental Management Plan
• Stormwater Concept Plan	TP 12 Stormwater Management Report

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7.2 Meeting with EPA

Enviroguard met with the EPA on 3rd December 2019 to introduce the proposal and understand the issues they expect to see addressed in the application.

The key issues raised by the EPA are:

- The need for ongoing landfill capacity in Sydney is recognised and preference is to provide this through the expansion of existing facilities rather than new sites (refer to Section 2 for a discussion on the need for ongoing landfill capacity in Sydney)
- The need to include a risk assessment for the structural design of the MSE wall (see Appendix D Preliminary Design Report including sections on Safety-in-Design risk assessment)
- Consider how the design would address the Landfill Design Guidelines, including the need to maintain buffer distances to properties (see Appendix D Preliminary Design Report).

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8 IMPACT ASSESSMENT

8.1 Introduction

This section assesses the impacts of the proposed modification on the existing environment and identifies measures to manage and mitigate impacts where appropriate.

Where Technical Papers (TP) have been prepared to support the impact assessment, these are provided in full in Volume 2 of the SEE and summarised in this section.

8.2 Air Quality and Odour

8.2.1 Method

An Air Quality and Odour Impact Assessment was prepared by the Odour Unit and is provided in full as **TP 1**.

The two issues identified as most likely to create potential impacts as a result of the proposal are dust and odour.

The impact assessment criteria (IAC) and dispersion modelling methodology used for the AQOIA study are contained within the following New South Wales Environment Protection Authority (NSW EPA) documents, namely:

- Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (EPA, 2016)
- Technical framework: assessment and management of odour from stationary sources in NSW (EPA, 2006a)
- Technical notes: assessment and management of odour from stationary sources in NSW (EPA, 2006b).

8.2.2 Existing Environment

The development site sits within the Erskine Business Park, which is characterised by a range of industrial land uses, including warehousing, logistics and manufacturing operations. The site is largely surrounded and screened by established large-scale industrial buildings.

The nearest residential dwellings are located within the suburbs of St Clair and Erskine Park approximately 650 m to the north of the site, with other developed industrial land parcels and a transmission line corridor between these residences and the landfill. There are also some residences and a children's day care facility over 820 m to the west of the site on the western side of Mamre Road.

8.2.3 Impact Assessment

Construction

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The construction phase of the proposed MSE wall is estimated to last between 6 months and 12 months. The construction consists of a series of activities, with a definable beginning and end. Therefore, dust emissions will vary substantially over different phases of the construction process. The appropriate implementation of management measures, such as a dust management plan (as per the CEMP provided as **TP 3**), will ensure that potential impacts due to construction will be significantly lower than operational impacts.

Operation

The Impact Assessment Criteria (IAC) for dust and odour are provided in **Table 12** and **Table 13** respectively.

Table 12: Impact Assessment Criteria for Dust

Pollutant	Averaging period	Concentration (µg/m^3)
Total Suspended Particulates (TSP)	Annual	90
Particulate Matters as PM_{10}	24-hour	50
	Annual	25
Particulate Matter as $PM_{2.5}$	24-hour	25
	Annual	8
Dust Deposition Rate	Annual	2g/m^2/month*

* Maximum increase in deposited dust level

Table 13: Impact Assessment Criteria for Odour

Population of affected community	Impact assessment criteria for complex mixtures of odour air pollutants (OU)
Urban (≥ 2000) and / or schools and hospitals	2.0
~500	3.0
~125	4.0
~30	5.0
~10	6.0
Single rural residence (≤ 2)	7.0

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The key activities that contribute to dust emissions at the Erskine Park Landfill include wheel-generated dust from travelling on sealed and unsealed roads, earth moving equipment (e.g. dozers), and wind erosion of exposed areas. There will be no significant changes to the landfill operations from the construction of the MSE wall, except for the increased elevation of the dust sources along the western, southern and eastern slopes of the landfill.

The source of potential odour impacts is the extension of landfill operations that would result from the increased landfill airspace provided by the proposal.

The AQOIA study findings are as follows:

- The predicted ground-level concentrations of TSP, PM_{10} and $PM_{2.5}$ and dust deposition rates satisfy the relevant IAC in the surrounding environment
- The predicted ground-level concentrations of odour have met the IAC for dense urban populations in the surrounding environment.

8.2.4 Management and Mitigation Measures

The following measures can be implemented to minimise dust emissions from construction activities (these measures will also assist in managing odour emissions during construction):

- watering of haul roads
- progressive clearing to minimise the area of exposure subject to wind erosion
- erection of physical barriers such as wind breaks during earthmoving
- earth moving activities should be avoided or restricted during particularly unfavourable meteorological conditions
- restricting the speed of on-site traffic to minimise wheel-generated dust
- compaction of construction site and stabilisation of vegetation to minimise dust lift off due to wind erosion.

A Construction Environmental Management Plan has been prepared (refer to **Section 8.12.1**) and includes measures to manage dust during construction. Operational dust and odour during landfill operations will be in accordance with existing environmental management procedures implemented on site as documented in the Landfill Environmental Management Plan (refer to **Section 8.12.3**).

8.3 Contamination

8.3.1 Method

A Preliminary Site Investigation was prepared by Golder and is provided in full as **Technical Paper 2**.

The investigation involved a review of online records held by the EPA, a review of published maps, aerial photographs and databases, and a site walkover inspection.

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8.3.2 Existing Environment

The site is located on the former CSR quarry that mined breccia from the Erskine Park diatreme, which formed a prominent hill at an approximate elevation of 87 m AHD. Quarrying began in 1925 on this hill and continued until 1993 extracting volcanic breccia as well as some clays and shales.

Landfilling commenced in 1993 within the void created by former quarry operations. Additional infrastructure has been added to the landfill site including landfill gas management, leachate gas management and surface water infrastructure.

8.3.3 Impact Assessment

No visual evidence of gross soil contamination was observed during the site inspection performed as part of the assessment. Where vegetation was present on the landfill batters, it appeared to be in good condition with no obvious evidence of distress.

The site is in an area of disturbed terrain and Blacktown soil landscapes, indicating residual soils at the site would be expected to have moderately reactive and highly plastic subsoils and exhibit low soil fertility and poor drainage. In addition, the site area is characterised by an extremely low probability for the occurrence of acid sulfate soil.

Elevated concentrations of ammonia (<10 mg/L) considered to be naturally occurring have been reported in groundwater in the vicinity of the landfill.

Under the current EPL conditions, the site undergoes ongoing monitoring of media including groundwater, surface water, gas, dust and noise to assess potential impacts on and off-site. The risk of off-site impacts from the site and the proposal is considered low.

Based on the investigations performed the site is suitable for ongoing use as a waste disposal facility in accordance with SEPP 55 and presents a low risk to off-site receptors.

8.3.4 Management and Mitigation Measures

The site is subject to an ongoing environmental monitoring programme as part of the EPL.

8.4 Groundwater and Leachate

8.4.1 Method

A Groundwater and Leachate Assessment was prepared by Golder and is provided as **TP 7**. The assessment refers to a Hydrogeological Assessment (Senversa, 2020) which is provided as an Appendix to the Groundwater and Leachate Assessment.

The Hydrogeological Assessment was prepared to:

- review the current leachate compliance level (30 metres (m) Australian Height Datum (AHD)), as derived in the 2005 Environmental Impact Statement (EIS), in the context of current groundwater conditions and site risk profile
- assess the requirement for maintaining leachate below the current 30 m AHD compliance level going forward.

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Therefore, the Hydrogeological Assessment supports the request to modify the condition of consent and EPL related to leachate compliance, as described in **Section 6.11** of this SEE.

The Groundwater and Leachate Assessment refers to the Hydrogeological Assessment in its assessment of the potential impacts of the proposed MSE wall on leachate management in the landfill.

8.4.2 Existing Environment

According to the 2005 EIS, the landfill was designed as a 'saturating entombment landfill', where the groundwater flows into the landfill from the surrounding rocks until the level of the water in the fill reaches the level of the surrounding groundwater. The level of the leachate in the landfill is to be maintained below the water levels in the surrounding rock so that there is a positive flow direction into the landfill.

The leachate collection system design was based on a grading of the base of the landfill so that the leachate runs to a low point, at which location a leachate riser has been installed (LP001). Leachate has historically been extracted from the landfill to maintain the leachate level within the landfill to below RL 30 mAHD. However, LP001 is no longer used and leachate extraction is undertaken from auxiliary leachate riser LP003, which is approximately RL 35 mAHD at base.

A leachate treatment plant (LTP) was constructed in 2011 to treat leachate on-site.

A groundwater monitoring network is in place and monitored quarterly to review the impact of leachate on the surrounding groundwater.

8.4.3 Impact Assessment

Leachate compliance

The following conclusions were made in relation to leachate compliance:

- The leachate compliance level (30 m AHD) is inferred to be based on the principle of creating an inward hydraulic gradient to the landfill, which is only relevant if leachate migration presents a potential risk to surrounding groundwater beneficial uses and sensitive receptors. The modification application seeks to modify the conditions of consent relating to leachate management as described in **Section 6.11**.

- The groundwater beneficial uses surrounding the landfill are very limited, due to low to very low aquifer yield and high salinity and there are no sensitive receptors close to the landfill.

- Groundwater levels to the north of the landfill are below the drainage line inverts and as such, groundwater discharge to surface water is unlikely in this direction.

- Over the course of leachate monitoring since 2016, there have been sporadic exceedances of the EPL 4865 Condition U1.1 (ammonia reporting compliance concentration of 15 mg/L) and occurring only in samples from BH17D. Whether these exceedances are due to leachate seepage is unclear, and there may be other factors involved (such as surface water runoff, seepage from wheel wash bay).

- Various lines of evidence indicate that ammonia reported to be present in groundwater surrounding the landfill is present as background, including:

    - published literature relating to naturally occurring ammonia, dating back to Old (1942).

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- groundwater analysis conducted in the early 1980s and 1990s, indicating the presence of ammonia in groundwater prior to commencement of landfilling activities.
- relatively distinct hydrochemical signatures between groundwater and leachate, with the exception of BH17D, which is similar to leachate - this is either attributed to BH17D being screened in similar (previously quarried) brecciated material, potential bore damage, or landfill surface water runoff ingress into the bore from ground level.
- correlation between depth, groundwater salinity and ammonia, suggesting a connate water source.
- distinct isotopic signatures between groundwater and leachate, particularly for 13C-DIC. One outlier (BH15B) may be impacted by leachate, based on its location immediately down hydraulic gradient of the landfill. This bore may also be showing signs of impact from surface water runoff ingress into the bore from ground level. Further monitoring and isotopic analysis are required to confirm. The isotopic signature of BH17D suggests the ammonia in this well is not related to leachate.

- There are increasing ammonia concentration trends in some groundwater wells, mostly those with groundwater elevations lower than the leachate elevation. These increasing concentration trends appear to be related to increasing groundwater levels. Reported ammonia concentrations remain, for the most part, well below the 15 mg/L EPA licence limit, however, this may simply reflect a gradual equilibration of well water with surrounding formation groundwater.

Based on the above, the Erskine Park Landfill, even without active leachate extraction and continued leachate mounding, presents a low risk to surrounding and off-site groundwater quality and beneficial uses, including groundwater dependent ecosystems.

MSE Wall

A landfill liner would be constructed inside the MSE wall to mitigate against lateral migration of leachate. The potential leachate migration would be controlled by the permeability of the liner system. Appropriate design and installation of the liner system would mitigate against impact to groundwater.

Leachate generated within the new waste placed as part of the proposal is generally expected to migrate vertically downward driven by gravity, with leachate reporting to the current leachate management and collection system. This will be enhanced near the MSE wall with the inclusion of soaking trenches in the design within the waste at the toe of the liner.

Leachate generation at the site is not expected to increase over the long-term as a result of the newly placed waste as part of the proposal. This is because the new waste represents around a 5% increase in the total volume of waste at the landfill and the total surface area over which rainfall can infiltrate has increased by less than 5%.

Leachate generate during construction may slightly increase due the localised disturbance of interim capping in the active MSE wall construction area. Any such increase is within the capacity of the existing leachate collection, extraction and treatment system. Current average leachate pumping rates are 52.7m^3/day compared to an average leachate treatment plant available capacity of 750m^3/day.

8.4.4 Management and Mitigation Measures

Leachate Monitoring and Compliance

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Based on the above conclusions, the following key recommendations are made:

- Conduct an inspection and condition survey of the existing groundwater monitoring well network, dedicated sampling pumps and associated infrastructure. Based on the outcomes, maintain or replace damaged, lost or dry wells, and sampling pumps as required. Assess current sampling pump depth, if it does not sit within the screened interval of the bore, then an assessment should be made as to whether another pump could be identified to sample at the required depth.

- Continue a reliable and regular leachate and groundwater monitoring program.

- Replacement of the current leachate compliance level and active leachate extraction with a combined capping, landfill gas extraction and leachate monitoring regime.

- Leachate and groundwater levels should continue to be monitored post closure in order to assess when the leachate and groundwater levels have reached equilibrium.

- Maintain current leachate extraction rates from LP003 to maintain average leachate level at RL 40.9 m AHD to prevent leachate springs through the surface and ground level until landfill capping is completed.

MSE Wall

Design features have been incorporated into the proposal design to mitigate the potential for leachate to impact upon groundwater, including a liner system to mitigate against the potential for lateral migration of leachate.

A Construction Quality Assurance (CQA) System would be in place for construction of the MSE wall and liner system. These are described in further detail in the Preliminary Design Report provided as **Appendix D** to this SEE.

Mitigation measures to reduce the generation of leachate as a result of the proposal include:

- continue to operate and maintain the leachate management collection, extraction and treatment system

- continue to separate stormwater from leachate to reduce leachate generation

- continue application of daily and intermediate cover during landfill operations

- continue to reduce the area of the active tipping face

- progressive vegetation of inactive batters where possible.

8.5 Geology and Soils

8.5.1 Method

The Preliminary Design Report is provided in **Appendix D** to the SEE.

The Preliminary Design Report included a Safety-in-Design risk assessment to inform the design of the wall.

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8.5.2 Existing Environment

Regional geology surrounding the former Erskine Park diatreme comprise the Wianamatta Group, consisting of (from youngest to oldest) the Bringelly Shale, the Minchinbury Sandstone and the Ashfield Shale members, which were deposited in a broad, low lying coastal plain consisting of swamplands cut by meandering estuarine and alluvial channels, and grades upwards from a lagoonal coastal marsh sequence at the base to increasingly terrestrial, alluvial plain sediments towards the top of the formation. The rim of the landfill is located at an elevation of approximately 55 m AHD.

Table 14 describes the stratigraphy for the site.

Table 14: Site Stratigraphy

Unit	Description	Thickness*m)	Reduced level (mAHD)
Bringelly shale	Massive dark silty shales minor graywacke type sandstone lenses	50 to 60	+55 to -7
Minchinbury sandstone	Massive calcareous graywacke type sandstone	3	-7 to -10
Ashfield shale	Humic black shale with small coal lenses and sideritic mud stone bands containing pyrite etc.	50	-10 to -60

Soils of the Blacktown soil landscape underlie the disturbed terrain at the site. The Blacktown soil landscape group usually occurs on gently undulating rises over Wianamatta Group shales. The soils range from shallow to moderately deep (less than 1m thick) and are hard setting, mottled textured clay soils. The soils are typically moderately reactive with a highly plastic subsoil, have a low soil fertility, moderate erodibility, poor soil drainage and localised salinity or sodicity. The site is not affected by acid sulfate soils (SLR 2015).

8.5.3 Impact Assessment

A risk assessment of options to build the MSE wall was undertaken to inform the design. The risk and opportunity assessment considered the following factors in relation to the design and construction of the wall:

- wall geometry
- settlement
- limit of waste
- slope stability
- facing

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- leachate and gas management features
- material specifications and costs
- reinforcement material
- planning

An initial Safety-in-Design register has been prepared to identify a range of issues to be addressed through the design and construction process which identifies issues focusing on the following elements:

- hazard identification
- construction materials
- possible methods of construction, operation and maintenance and their potential safety risks
- potential safety risks to persons in the project vicinity

The SiD register includes a qualitative assessment of the risk of a certain event occurring through the assessment of the consequence of an event occurring as well as the likelihood of it occurring. This will form the basis of future workshops / discussions with site operations and construction contractor personnel to communicate identified risks, mitigation measures and residual risks.

The SiD register and risk assessment is provided in the **Preliminary Design Report as Appendix D** to this SEE.

8.5.4 Management and Mitigation Measures

The Safety-in-Design risk assessment process and further updates to this assessment during design development.

8.6 Greenhouse Gas

8.6.1 Method

A Greenhouse Gas Assessment was prepared by Golder and is provided in full as **TP 8.** The assessment includes a desktop assessment of potential greenhouse gas emissions produced by the proposed MSE wall as follows:

- estimate Scope 1 and Scope 2 emissions using input data (diesel, electricity usage, etc.)
- establish the proposal's potential contribution to annual Australian / global GHG emissions
- determine greenhouse gas management measures relevant to the project.

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8.6.2 Existing Environment

Activities on-site include the receival of waste, use of cover material and waste compaction. Non-putrescible waste is permitted to be received at a rate not exceeding around 1 million tonnes per annum. The landfill operations include a landfill gas pipeline to export landfill gas to the Austral Bricks facility at Horsley Park where it is used a fuel in the brick kiln.

8.6.3 Assessment

A landfill gas generation estimate has been undertaken for the proposed additional 420,000 m^3 of waste to be accepted at the site by using a first order decay model to provide an order of magnitude estimate of landfill gas production.

The model indicates that landfill gas generation due to additional waste in the first year is around 341m^3/hour and 119m^3/hour after landfill gas recovery. The maximum landfill gas generation rate due to additional waste is around 928m^3/hour and 325m^3/hour after landfill gas recovery in the year 2024. The total landfill gas is estimated to be at maximum 3,778m^3/hour in the year 2024. Annual electricity and fuel emissions are not expected to increase as a result of the proposal. Fuel use as per the Environmental National Pollutant Inventory Report (24 September 2018) shows a fuel usage of 88.2 tonnes per annum at the site (combined use of diesel and petrol).

Table 15 shows the estimated annual emissions from the landfill and from the additional waste arising from the proposal.

Table 15: Estimated Annual Emissions by NGER Model

Year	Total emissions (CO_{2-e}) (t) (after 65% capture)	Emissions from additional waste (CO_{2-e}) (t) (after 65% capture)
2021	0	0
2022	85,580	8,354
2023	89,223	15,904
2024	92,597	22,749

8.6.4 Management and Mitigation measures

Capture and combustion of landfill gas greatly reduces the greenhouse gas emissions as a result of the proposal. Greenhouse gas emissions are effectively reduced by the landfill gas capture and combustion practices. The landfill gas from additional waste associated with the proposal can be effectively managed through existing energy recovery and / or combustion practices.

The landfill gas collection system would be extended into the new waste as a result of the proposal. It is anticipated expansion into the new waste area would commence after one year of waste placement.

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8.7 Hazard and Risk

8.7.1 Method

A Preliminary Risk Screening in accordance with SEPP 33 was undertaken to determine if a Preliminary Hazard Analysis is required for the proposal. The Preliminary Risk Screening Report is provided as **TP 4.**

The aim of SEPP 33 is to allow for the assessment of the environmental and safety performance of hazardous and offensive or potentially hazardous or offensive development.

8.7.2 Existing Environment

Dangerous goods currently stored on site include:

- diesel fuel
- sodium hydroxide solution
- chemical for maintenance and repair
- flammable liquids
- unleaded petrol

8.7.3 Impact Assessment

Based on the types and quantities of chemicals stored on site, the requirement for a preliminary hazard assessment is not triggered.

All materials identified in the risk screening analysis are to be stored over 20 metres from the boundary of the site within or adjacent to the existing built form, which is located around 650 metres from the nearest residential receiver.

The proposal will not introduce potentially new hazardous materials to the site and will not change the existing operating procedures in relation to hazards. The staff at the site are familiar with the potential hazards associated with these materials and operates with existing technical and management safeguards in accordance with existing conditions of consent.

The existing project and the introduction of the proposal are not considered to be hazardous or offensive in accordance with SEPP 33.

8.7.4 Management and Mitigation

Applicable management standards and guidelines will continue to be applied on the site and will be updated to include the proposal requirements in accordance with the LEMP.

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8.8 Noise

8.8.1 Method

A Noise Impact Assessment was prepared by RB Acoustics and is provided in full as **TP 9**. The relevant noise issues are:

- The noise generated by the operations of the landfill at the proposed final landform
- The noise associated with the construction of the MSE wall.

8.8.2 Existing Environment

The development site sits within the Erskine Business Park, which is characterised by a range of industrial land uses, including warehousing, logistics and manufacturing operations. The site is largely surrounded and screened by established large-scale industrial buildings. There are some vegetated areas along the surrounding public road corridors and the drainage reserve to the south and west of the site, which are part of a biodiversity conservation corridor.

When measured from the centre of the landfill which is at the highest elevation, the nearest residential receptors are located approximately 800m to the north, approximately 1200m to the west and approximately 1000m to the south.

8.8.3 Impact Assessment

The Erskine Park Landfill operates under Environmental Protection Licence (EPL) No 4865, issued on 20 March 2019. The limits for acceptable levels of noise emission from the landfill are set at Section L5 of EPL 4865 and reproduced in **Table 16**.

Table 16: Impact Assessment Criteria for Noise

Location	Day
	LAeq (15 minutes)
Mamre Road residence	45
Erskine Park Road residence	54

The noise assessment considered two scenarios for consistency with the noise assessment undertaken for the 2019 modification:

- Scenario 1: A single excavator operating along the single ridgeline to quantify the effect of noise generated by landfill earthmoving equipment operating at the highest elevation of the site.
- Scenario 2: A single excavator travelling around the perimeter of the landfill to quantify the effect of noise generated by landfill earthmoving equipment operating at the closest distances to the nearby sensitive receptors.

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The assessment confirms the proposal would be compliant with EPL criteria for both scenarios:

- the 45dBA LAeq(15min) limit applying to the Mamre Residence
- the 54dBA LAeq(15min) noise level limit applying to the Erskine Park Road residence

In addition, for the Scenario 1 operation, there is no change in the level of noise emission at receivers following construction of the wall.

For scenario 2, there is a very minor change in the level of noise emission for some receivers, less than 1 dBA. A change of this magnitude is of no material significance and is within the normal range of accuracy of noise level predictions and the degree of change would be neither detectable nor audible.

The 45dBA free field LAeq(15min) external noise level limit applicable to educational facilities is maintained at each of the nearby schools and the child care centre under both scenarios.

8.8.4 Management and Mitigation Measures

The most appropriate means of minimising the level of noise emission from construction is to ensure that construction of the wall is undertaken during the recommended Standard Hours.

Based on the assessment outcomes, there is no need for noise control measures during construction or operation.

8.9 Stormwater Management

A Stormwater Management Report is provided as **TP 12**.

The Report reviews the existing stormwater management system and details the proposed stormwater management system which comprises a drain on top of the MSE wall and interface with the existing drainage system.

The existing drainage system consists of earthen drains and detention ponds, whereas the proposed drain will be lined.

Based on the result of hydrological modelling the assessment concluded that the basins in the north-east and south-west have capacity to detain 50% Annual Exceedance Probability (AEP). Hydraulic sizing of the proposed drainage channels has demonstrated there is sufficient capacity to cater for 1% AEP run-off without overtopping.

Water quality monitoring should continue as per current monitoring undertaken to meet EPL requirements to confirm if there are any impacts on water quality as the run-off enters the swales on the MSE wall after travelling through the final landform.

8.10 Traffic

8.10.1 Method

A Traffic Impact Assessment was prepared and is provided as **TP 13**.

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8.10.2 Existing Environment

The existing road network surrounding the site includes:

- Mamre Road: an RMS Main Road (MR 536) that generally runs in a north-south direction between Great Western Highway in the north and Elizabeth Drive in the south. Mamre Road generally accommodates a single lane of traffic in each direction, is subject to an 80km/h speed zoning and parking is not permitted along either kerbside.

- Erskine Park Road: an RMS Main Road (MR 629) that generally runs in a north-east / south-west direction between Roper Road in the north-east and Mamre Road in the south-west. In the vicinity of the site, Erskine Park Road accommodates two (2) lanes of traffic in each direction, is subject to 80km/h speed zoning. Parking is not permitted along either kerbside of Erskine Park Road.

- James Erskine Drive: a local road that generally runs in an east-west direction forming a cul-de-sac in the east and connects to Mamre Road in the west. James Erskine Drive accommodates two (2) lanes of traffic in each direction. It is subject to 50km/h speed zoning and kerbside parking is generally permitted along both sides of James Erskine Drive.

- Quarry Road: a local road that generally runs in an east-west direction between a cul-de-sac in the east and James Erskine Drive in the west. Quarry Road accommodates a single lane of traffic in each direction, is subject to 50km/h speed zoning and parking is generally permitted along both kerbsides.

8.10.3 Impact Assessment

The proposed modification extends the existing operations and will not intensify the use of the development once operational.

The 2005 EIS specified a trip generation of 288 truck arrivals per day on average. Over the last 12 months, the site had 44,478 truck arrivals. This equates to approximately 122 truck arrivals per day, which is significantly less than the existing approval permits.

During construction of the proposed development, there will be an additional 100 truck arrivals per day. This will result in a total of 222 truck arrivals per day during construction when including the existing operational traffic. As the site is approved for up to 288 truck arrivals per day this is considered acceptable based on the previously approved EIS.

As such, the proposed increase in truck arrivals during construction is considered acceptable and supportable based on existing approvals with no amendments required.

Parking for all construction vehicles will be provided within the development with no impact to on-street parking.

The proposed increase in landfill airspace is to allow for an extension in the use of the site. The proposal will not intensify the use of the site during operations and is estimated to be consistent with the existing site generation being 122 trucks arrivals per day.

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8.10.4 Management and Mitigation Measures

A Construction Traffic Management Plan is outlined in **Section 8.12.2.**

8.11 Visual

8.11.1 Method

A Visual Impact Assessment (VIA) was prepared by Green Bean Design and is provided in full as **TP 14**.

The VIA has been prepared taking account of industry standards including:

- Environmental Impact Assessment Practice Note – Guideline for Landscape Character and Visual Impact Assessment EIA–N04 (RMS March 2013)
- Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and Institute of Environmental Management & Assessment 2013).

The level of visual impact that may result from the proposed MSE wall construction has been determined by combining the assessment and determination of surrounding receiver sensitivity and the visual magnitude of the MSE wall when compared to the existing visual environment.

The assessment and determination of visual impact has been determined in accordance with the RMS practice note.

8.11.2 Existing Environment

The proposed MSE wall would be located at the existing Erskine Park landfill facility owned and operated by Enviroguard Pty Ltd. The existing landfill site is located within the Erskine Business Park within the Sydney metropolitan suburb of Erskine Park, around 42 kilometres (km) west of the Sydney central business district.

The landscape that immediately bounds the landfill site, is predominantly defined by industrial development, large scale buildings and factories, associated structures and access roads allowing for traffic movement through and within the Business Park.

General amenity landscape works and mature tree cover within the business park assist in some visual separation and 'softening' of industrial development from various streetscape locations. Broader and more significant stands of tree cover also form a component of biodiversity corridors within the business park.

Beyond the immediate surrounds of the business park, the landscape can be broadly defined by urban and residential development to the north and semi-rural landscape areas to the east, south and west. The landscape to the east and south east of the business park is undergoing development for industrial purposes with works extending to Wallgrove Road. In a broader context, this area forms part of the New South Wales Government Strategic Western Sydney Employment Area.

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8.11.3 Impact Assessment

A key objective of the VIA is to determine the likely visual significance of the MSE wall on people living and working in or travelling through the urban/rural landscape within and surrounding the existing landfill site. The VIA has also been undertaken to:

- assess the existing visual character of the landfill precinct as well as the surrounding urban/rural landscape
- determine the extent and nature of the potential visual significance of the MSE wall on surrounding receivers and
- identify measures to mitigate and minimise any potential visual impacts, if required.

In accordance with the RMS practice note, the VIA has developed a schedule of representative viewpoints which are within a reasonable distance of the proposal and within the view catchment. The representative viewpoints include residential dwellings, commercial properties, road corridors and pedestrian footpaths.

Following selection, the receiver viewpoints have been rated as to their sensitivity to change by the proposal and a judgement made about the visual magnitude of the proposal defined as the measurement of scale, form and character of a development proposal when compared with the existing condition and taking into account distance from receivers.

The visual appearance of the wall facing will be governed by the galvanised steel mesh and the uV resistant Turf Reinforcement Mat lining on the inside of the steel mesh. A dark green colour is proposed for the uV resistant Turf Reinforcement Mat to enhance the aesthetic appearance of the wall.

The visual impact assessment considered a traditional gabion wall for the purposes of the assessment, rather than the Turf Reinforcement Mat internal to the wire mesh, however, this would not change the outcomes of the assessment given the subtle visual difference between the two.

The visual impact assessment has concluded that the proposal would have negligible impact when seen from eight of the ten viewpoints with a low impact at the other two, and notes that views to the proposal are largely framed by existing industrial buildings.

There are no specific urban design measures proposed for the wall.

The VIA also assessed the potential for overshadowing as a result of the proposal and concluded that shadows cast by the proposal would be largely contained within the landfill site.

8.11.4 Management and Mitigation Measures

Based on the outcomes of the assessment, there are no specific additional management and mitigation measures proposed. The negligible to low impact assessment is due to the following features of the proposed wall, the site and surrounding area:

- built forms associated with the proposed MSE wall will respond appropriately to existing site levels and to the relative position of existing industrial developments located along Quarry Road and Templar Road
- the scale of the MSE wall will not impact on views from residential suburban areas to the north of the Erskine Business Park, or semi-rural residential dwellings to the west and south of the business park

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- there will be an overall low to negligible impact on views from residential care and school facilities to the south of the landfill site with existing mature tree cover screening the bulk of the MSE wall
- there will be negligible impact of the development on views from local road corridors within and beyond the Erskine Business Park
- the MSE wall will form a visually cohesive element within the context of existing and established industrial development within the Erskine Business Park.

8.12 Other Issues

The following sections provide a brief description of potential environmental impacts on matters that have not been the subject of a detailed assessment based on the low risk of environmental impact.

8.12.1 Flora and Fauna

The site is a highly modified area generally devoid of vegetation due to the current operations as a landfill. Within the broader site area small areas of vegetation are predominantly maintained lawns of exotic grasses and weeds with scattered planted trees. There are no known threatened species, populations or communities or their habitats present on the subject site and none are likely to occur.

The proposal will involve removal of small areas of this unplanned vegetation regrowth which has no value for the biodiversity of the area.

It is noted that surrounding areas are part of the Erskine Business Park Biodiversity Corridor of which the landfill would form a part once closed and revegetated in accordance with the Landscape Plan (provided as **TP 6**).

8.12.2 Socio-Economic

The landfill, waste transfer station (WTS) and adjacent Cleanaway depot currently employ around 120 people. Following the closure of the landfill it is expected that landfill staff may transfer to the WTS based on shortage of resources and subject to the suitability of their skills and preference.

The proposal would provide for an extension of landfill operations for around three years providing ongoing employment and assisting in the staged transition and retention of staff to the WTS or any future new facilities. Around 10-15 people would be employed during the construction period as well providing opportunities for suppliers in the region.

The approximately $12M capital value of the proposal represents a significant investment in the Erskine Park Business Area, on top of recent investments in the adjacent WTS. This will provide support for continuation of employment while providing construction employment and opportunities for suppliers which would support economic recovery in Penrith and Western Sydney as people transition back to work post the COVID-19 crisis.

Following closure of the landfill and completion of rehabilitation works, the site could be utilised as an open space or conservation area. The final use of the site is undetermined and will be considered following the closure of the landfill and in conjunction key stakeholders.

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8.13 Environmental Management

8.13.1 Construction Environmental Management Plan

A Construction Environmental Management Plan (CEMP) is provided as **TP 3**.

The CEMP provides a management framework for the preparation of the Contractor's CEMP for construction works relating to the MSE wall. It provides a practical guide to identifying, addressing and managing environmental impacts associated with the construction works to ensure the Project Manager, Site Superintendent, Contractors and Subcontractors comply with the environmental conditions of approval of the proposal and that the environmental risks are project addressed and management.

The CEMP includes environmental management for:

- air quality
- water quality
- erosion and sediment control
- noise
- traffic
- waste management
- contamination management
- hazardous materials
- excavation of waste
- archaeology and heritage
- flora and fauna

It also makes provision for management of records and reporting, complaints management and environmental audit.

8.13.2 Construction Traffic Management Plan

The CEMP includes a sub-plan for Construction Traffic Management.

The objective of the CTMP is to undertake the works with regard to the safety and welfare of the general public, and to alleviate the impact of construction traffic and site access and traffic flow in the surrounding area as well as on the environmental amenity of the area.

Key features of the CTMP include:

- all trucks leaving site to clean tyres and undercarriage to remove any loose soils and to avoid tracking of dust and dirt off-site
- ensuring all trucks carrying loads off-site have covered their loads

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- if necessary, stockpile materials on-site temporarily to regulate and control truck movements
- retention of heavy equipment on-site where practicable
- provision for a staging area for vehicles on-site to prevent queuing on public roads outside of the site
- parking for all construction vehicles will be provided within the development with no impact to on-street parking
- internal circulation of construction traffic and landfill operational traffic will be managed as shown in the Traffic Impact Assessment.

All truck drivers carting materials to the site will be given a safety instruction briefing.

8.13.3 Landfill Environmental Management Plan

The updated LEMP is provided in full as **TP 5**.

The site operates in accordance with the requirements of Development Consent (DA 05/1740) as modified on 8 August 2019 and Environment Protection Licence (EPL) No 4865 issued by the NSW Environmental Protection Authority (EPA).

This Landfill Environmental Management Plan (EMP) has been prepared to meet the requirements of Development Consents DA05/1740, DA05/1740.01 and EPL 4865.

The LEMP has been prepared to specifically meet the requirement of Condition of Consent No 6 (refer DA05/1740.01):

- An amended Site Rehabilitation and Environmental Management Plan (the plan) is to be submitted to Penrith City Council and prepared to Council's satisfaction prior to the commencement of the development. The Plan is to be consistent with the EPA/DEC approved Landfill Environmental Management Plan (LEMP), is to address the environmental aspects of the development and is to include details of the environmental management practices and controls to be implemented on site. The Plan must be prepared by a suitably qualified person/s, in consultation with the relevant authorities and agencies (eg Department of Environment and Conservation and the Department of Natural Resources) and is to address but us not limited to the following*:*
    - *Water quality;*
    - *Wastewater management;*
    - *Stormwater management and drainage;*
    - *Noise control;*
    - *Waste management including solid and liquid waste;*
    - *Vehicle movements;*
    - *Chemical storage, transport, spill contingency and response;*

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- *Erosion and sediment control;*
- *Air quality including odour and dust control;*
- *Environmental monitoring; and*
- *Site rehabilitation.*

All activities on the site are to be implemented and managed in accordance with the Plan. The Plan is to incorporate a review process that involves the consultation of Penrith City Council and other relevant authorities to ensure that it reflects current environmental best practice, standards and legislation. Penrith City council must be satisfied with any changes prior to the amendment of the Plan. The Plan shall be submitted every 12 months.

The LEMP has also been prepared to meet the requirements of the General Terms of Approval issued by the DEC and Department of Natural Resources (DNR), which are incorporated into the Development Consent.

The structure of the LEMP has been developed so that it meets the above requirements and identifies the operating and management procedures for the Erskine Park Landfill. It is a tool for efficient site management through documenting procedures that ensure site operations run effectively and that potential environmental harm is reduced. The LEMP provides access to information concerning the procedures established to control environmental emissions and efficient site operation.

The updated LEMP includes the following updated sub-plans:

- Landscape management plan provided as **TP 6**
- Closure Plan is provided as T**P 10.**
- Site rehabilitation and management plan provided as **TP 11**
- Stormwater management plan provided as **TP 12**
- Soil and Water Management Plan provided as **TP 16**.

A Landscape Plan for the site was prepared by Tonkin, in accordance with the requirements of the Landscape Development Control Plan (Penrith City Council 2014) and the and the Biodiversity Restoration Plan 2005 and Management Plan 2006 for the Erskine Park Employment Area (Proposed Restoration of the Erskine Park Landfill Detailed Landscape Plan, Tonkin, 2019).

The Tonkin Plan is considered suitable for the proposed MSE wall, with the following additional explanation.

The site has been divided into four distinct areas that require different vegetation management approaches. The areas are:

- Zone 1 – Rim of the Quarry – Planting : Cumberland woodland
- Zone 2 – Cap of the Landfill (approximately 17 ha) – Planting : Dense shrubs and groundcovers only
- Zone 3 – Peak of the Landfill – Two 1 hectare areas – Planting: Passive Recreation Area

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- Zone 4 – Wet areas associated with the sediment basins – Planting: Ephemeral Wetland.

Rehabilitation of the site would be undertaken in accordance with the approved Landscape Plan. It is noted that in Zone 1, along the alignment of the wall, Cumberland Woodland Mix would not be planted on the wall structure or wall facing, however would be retained south of the wall.

It is noted that the Visual Impact Assessment (provide as **TP 14**) does not include the requirement for supplementary screening planting or the like for the Project.

8.13.4 Waste Management Plan

A Waste Management Plan is provided as **TP 15.**

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9 EVALUATION AND CONCLUSION

The proposal seeks approval for:

- construction of a mechanically stabilised earth (wall) to achieve an increase in landfill airspace of around 420,000 m^3
- changes to the compliance regime for leachate monitoring and management.

The proposal can be assessed and determined by Council as a modification to the existing development consent DA 05/1740 as it is substantially the same development as the development that was originally granted consent. It should be assessed and determined under Section 4.55(2) of the Act which provides a mechanism to consult with and obtain General Terms of Approval from other approval authorities. The only other approval required is a variation to the EPL under the *Protection of the Environment Operations Act 1997*, and as such the application should be referred to the EPA in accordance with Section 4.55(2)(b).

The SEE demonstrates the need for expansion of dry landfill airspace in the Sydney Region based on an ongoing increase in commercial and industrial and construction and demolition waste, despite advances in recycling and recovery rates. These trends are expected to continue in response to population growth and continued high levels of construction activity.

Providing this much needed landfill airspace at an existing landfill facility, which benefits from an industrial location and established landfill management infrastructure, is preferable to finding and developing a new site.

The SEE demonstrates how the proposal meets the requirements of relevant Environmental Planning Instruments (EPIs) and the Erskine Park Development Control Plan. It provides an evaluation of the matters in Section 4.15 of the Act and demonstrates that the proposal can address the matters that should be considered by a consent authority in making its decision.

Detailed environmental assessments were undertaken across a range of matters such as air quality, contamination, groundwater and leachate, noise, traffic, visual impacts and hazards and risks. These concluded that the impacts of the proposal can be effectively managed with the implementation of management and mitigation measures identified in the proposal.

The site is recognised within the industry as a best practice landfill. The proposal updates previously prepared management plans including the Landfill Environmental Management Plan (LEMP) and the Closure Plan which will contribute to the ongoing high standards of environmental management at the landfill.

The site is regulated by the EPA with appropriate monitoring and reporting undertaken in accordance with EPL conditions. The SEE identifies specific changes sought to EPL conditions, which will be subject to an application to vary the EPL subject to receiving General Terms of Approval from the EPA.

The site is predominately zoned E2 Environmental Conservation, reflecting the post-closure use of the site, and the proposed development is prohibited under the zone. However, the site has continually operated as a landfill since 1993 and the proposal is permissible pursuant to the existing development consent DA 05/1740, while also benefitting from existing use rights under the provisions of the Section 4.65 of the EP&A Act 1979.

The site is suitable for the proposed development and is within the larger community's interest as it would assist in meeting the ongoing landfill needs of Sydney's growing western region, also serving as a source of direct and indirect employment while effectively managing and mitigating environmental impacts.

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10 REFERENCES

CMPS&F Environmental, *Environmental Impact Statement for the Acceptance of General Solid Waste at Erskine Park Landfill,* 1994

National Environmental Consulting Service, Environmental Impact Statement for Erskine Park Landfill Revised Final Profile, 2005

GHD, *Cleanaway Erskine Park Landfill S4.55(2) Modification Statement of Environmental Effects*, 2019

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11 ABBREVIATIONS

Cleanaway	Cleanaway Waste Management
Council	Penrith City Council
Enviroguard	Enviroguard Pty Ltd
EP& A Act	Environmental Planning and Assessment Act 1979
EME	EME Advisory
EPL	Environment Protection Licence
Golder	Golder Associates
LEMP	Landfill Environmental Management Plan
LGA	local government area
MSE	mechanically stabilised earth
m^3	cubic metres
NSW	New South Wales
SEE	Statement of Environmental Effects
TP	Technical Paper
VIA	Visual Impact Assessment

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