

Genesis Xero Waste

Environmental Assessment | Modification to Project Approval

Prepared for Dial A Dump Industries (EC) Pty Limited | 30 August 2018



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Genesis Xero Waste

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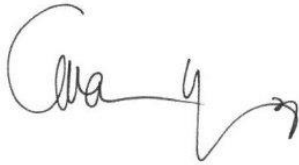
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Date 30 August 2018

Date 30 August 2018

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Executive Summary

ES1 Overview

Dial a Dump (EC) Pty Ltd (the Proponent) proposes to modify the project approval (MP 06_0139) of their Genesis Xero Waste Facility (the facility) at Eastern Creek in Sydney's west. It is proposed to alter the hours of operation and increase the landfill volume limit to allow greater flexibility in relation to the waste and recycling capacity of the facility. The Proponent is not proposing to increase the overall tonnes that may be accepted into the facility.

The proposed modifications will enable the facility to better respond to the long term trends in waste streams for Sydney, accommodate market demand for waste management services and support NSW Government strategies for recycling. Specifically, the modifications will also enable the facility to maximise recycling volumes and accept waste streams that will likely be generated during planned major construction projects in Sydney, some of which will be generated outside standard construction hours.

ES2 The need for the modifications

The facility is located at 1 Kangaroo Avenue and comprises a Resource Recovery Facility (RRF) and a general solid waste (non-putrescible) landfill. The landfill is a former quarry site and the RRF includes a Materials Processing Centre (MPC) and a Waste Transfer Station.

The landfill (former quarry) comprises approximately 75% of the site area. The MPC, timber waste, green waste, sales yard, crushing and screening area and workshop area are situated in the west and north-west sectors of the site. The operational areas of the site are surrounded to the east, west and north by an environmental bund constructed of overburden from the former quarry which shields receptors from views of, and light and noise generated from, the facility.

The facility is approved to accept up to 2 million tonnes per annum (2M tpa) of construction, demolition, commercial and industrial and green waste. There are two main processing streams at the facility depending on the characteristics of the waste being delivered to the site:

- direct-to-landfill; and
- materials recovery and recycling.

Direct-to-landfill is necessary for contaminated waste such as soil containing asbestos fragments. Much of the recent growth in landfill inputs at the facility is asbestos contaminated soils and asbestos containing materials which accounted for more than 60% of landfill inputs in FY2017-18. This stream is expected to continue growing as the NSW construction and redevelopment boom continues and the number of alternative disposal sites reduces.

The materials recovery and recycling represents the processing stream for the majority of the waste received. This waste is directed to the RRF for sorting, processing and resale as products suitable for application to land such as road base. The facility recycles an estimated 65-80% of all incoming waste. Material which is unsuitable or uneconomical for recovery or recycling is subsequently disposed to landfill. This is estimated to be approximately 30% of waste processed through the RRF.

The facility currently landfills at a rate of approximately 629,000 tpa (from both direct-to-landfill sources and residual wastes from the RRF).

The non-putrescible waste market in Sydney is facing growing pressure as waste generation continues to grow in line with construction activity and major infrastructure investment. Interstate waste flows are expected to return to Sydney when cheaper disposal to Queensland comes to an end in March 2019. Further, a number of major non-putrescible landfills have either closed recently or are slated for closure in the coming years and there is a looming shortage of disposal capacity for non-recyclable wastes including asbestos containing materials.

It is noted, however, that market demand is forecast to increase in the future, putting pressure on the ability of the facility to continue to receive direct-to-landfill waste and also receive and process co-mingled waste for recycling.

Project Approval MP 06_0139 limits the volume of waste to be disposed via landfill at the facility at 700,000 tpa. This current cap does not distinguish between waste arriving as direct-to-landfill and waste generated by recycling effort on site. This means that the cap equally constrains the future ability of the facility to receive direct-to-landfill waste and to process co-mingled recyclable waste, since both contribute to landfill volumes. As demand for both services increases in future years, and with the volumes approaching the current 700,000 tpa cap, the unintended consequence is therefore that the facility may be forced to refuse to receive co-mingled recyclable material because there will be a landfill component associated with that recyclable waste which cannot be accommodated.

The facility is licensed to receive up to 2Mtpa of waste per annum and there is no proposal to vary that limit. What constrains the waste volumes is the landfilling cap of 700,000 tpa. It is conceivable that operational limits on landfilling and hours of operation can obstruct the efficient transport and disposal of waste from major projects. If local landfills are unable to accommodate demand, then impacts are displaced. For example, the unavailability of local disposal points can force transporters to either stockpile on site or to force trucks to travel greater distances, bringing congestion and traffic impacts to a broader road network. It can also incentivise illegal dumping or overnight queuing outside facilities when the facilities are closed. The best arrangement is to anticipate and accommodate demand rather than introduce additional impacts by impeding efficient waste management at appropriate facilities.

In response to these anticipated challenges, it is proposed to:

- increase the landfill cap to 1M tpa (excluding waste generated by recycling processes within the MPC and the Pre-Sort Building (PSB) which are the two stages of sorting materials in the co-mingled waste recycling stream);
- provide greater scope for increased recycling effort by setting a higher limit for volumes of waste disposed to landfill; and
- extend the hours of operation for the facility to help the facility respond to the rapidly growing demand for recovery capacity, including access to 24-hour tipping for major infrastructure projects, and will support the key NSW Government targets in the waste sector.

It is also proposed to re-set the noise impact assessment criteria which were stipulated in Table 4 of the project approval. The existing criteria require adjustment because even if the current criteria are exceeded, the contemporary ambient noise levels from the waste facility are inaudible due to the presence of other noise sources such as the motorway traffic. A more meaningful set of noise assessment criteria is needed for proper impact assessment and compliance monitoring.

Operations at the facility are managed in accordance with a suite of existing environmental management plans, with the principal documents being the Environmental Waste Management Plan (EWMP) and the Landfill Environmental Management Plan (LEMP) to manage the MPC and landfill, respectively.

ES3 Proposed modification and justification

It is proposed to modify the terms of approval for the facility by:

- increasing the landfill limit from 700,000 tpa to 1,000,000 tpa (excluding waste generated by recycling processes within the Materials Processing Centre (MPC) and the Pre-Sort Building (PSB) which are the two stages of sorting materials in the co-mingled waste recycling stream);
- revising the noise impact assessment criteria; and
- extending the operating hours for the facility.

ES3.1 Landfill limit

A review of landfill inputs over the past two years shows net waste inputs to the Genesis Eastern Creek landfill have been steadily growing. For the 12 months to end June 2018, the landfill received 690,000 tonnes incoming waste and approximately 61,000 tonnes was exported from the landfill, mostly to Queensland. Hence the net waste landfilled was around 629,000 tonnes. Once the Queensland landfill levy comes into force in March 2019 and waste exports to Queensland cease, net landfill inputs will be near the current cap of 700,000 tonnes without accounting for any additional streams or further growth.

The proposed increase in the limit on the quantity of waste allowed to be landfilled will enable the facility to be more responsive to the waste disposal market and developments in government policy. The existing limit of 700,000 tpa on the annual landfilling rate has the effect (perhaps unintentional) of limiting the amount of recycling that can occur at the facility. This is because landfill waste is generated as a by-product of the processing and sorting of co-mingled waste via the MPC. The 700,000 tpa limit does not distinguish between landfill using direct-to-landfill waste (eg soil contaminated by asbestos) and landfill using MPC by-product. Declining landfill capacity across the Sydney region and the current low capacity limit on landfill volume at Genesis Eastern Creek is therefore a limit on both direct-to-landfill waste and the amount of co-mingled waste that can be received at the facility for recycling. Not only would this mean the commercial potential of the facility is not realised, but it also restricts the ability of the facility to meaningfully contribute to the NSW Government's waste goals in accordance with the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* (EPA 2014).

The Proponent does not intend to decrease the amount of material being recycled at the facility.

The landfill limitation is principally a condition of consent which is used as a disincentive to landfill (and conversely an incentive for higher order waste management actions such as avoidance, recovery and recycling). The actual physical limit of waste processing for the facility is 2M tpa, as prescribed in the conditions of consent. This might best be considered the 'gate limit'. It does not distinguish between waste which is recyclable and waste which is not recyclable.

If there is a nominal tonnage applied for the purpose of limiting landfill which does not distinguish between landfill from 'direct-to-landfill' waste and landfill from the recycling processes - as it currently the case - then the limit constrains both recycling effort and the unavoidable 'direct-to-landfill' disposal.

The 'direct-to-landfill' waste has no other available waste management solution (eg asbestos contaminated soil) and indeed is recommended by policy and regulation. The limit on landfill at this facility simply pushes the landfill demand elsewhere. This can create unwanted externalities such as illegal dumping and increased waste transport impacts if the 'direct-to-landfill' material is forced to seek disposal further afield.

The landfill volumes from the recycling process should ideally be subject to separate accounting. Limiting the disposal to landfill for the inevitable by-products of recycling has the effect of constraining the amount of co-mingled waste which can be processed for recycling.

It is proposed to increase the permitted annual landfill limit to 1M tpa. This principally addresses the increase in demand expected from major projects in Western Sydney.

It is also proposed to exclude the waste which is produced as a by-product of recycling co-mingled recyclable materials from the tonnage limit on landfilling. This particular waste stream is the waste from the sorting and recycling effort that occurs in the Materials Processing Centre and the Pre-Sort Building.

ES3.2 Operating hours

The proposed modification to the project approval would allow the facility to better respond to demands of the waste disposal market and assist in the delivery of the NSW Government's waste goals in accordance with the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* (EPA 2014).

The proposed extension of hours would allow maintenance and cleaning of machinery outside of the facility's operating period so that production losses are reduced and to assist the Proponent in providing a safe and efficient workplace. This would allow plant to be more available during operating hours, which would have the benefit of enabling more processing and disposal of material, and reduce vehicle congestion.

The ability to accept loads of waste from infrastructure construction projects would benefit these projects as waste could be managed as it is generated rather than having to be stockpiled on-site until facilities open the following morning. This would have the benefit of reducing the need to store such material on worksites overnight or stored in trucks while the facility is closed. It would also reduce dust and noise from material double-handling, and may result in reduced illegal dumping of the waste. The facility receives regular requests from customers to extend the landfill operating hours during the disposal of asbestos contaminated materials. These requests are prompted by the customers desire to minimise the handling time on the operational site and reduce potential exposure risks.

A significant and increasing amount of waste is currently being transported from NSW for processing and disposal in Queensland. This practice is foreshadowed to come to an end following the introduction of Queensland waste levy in March 2019 and increased availability of local waste disposal facilities will be required to accommodate in the order of 1M tonnes of C&D waste that will return to NSW.

In addition, NSW EPA has recently foreshadowed the introduction of new regulations to manage waste within NSW and the Proponent seeks the flexibility to be able to respond to these changes.

ES3.3 Revised noise criteria

The ambient noise levels at sensitive receptor locations in Minchinbury and Erskine Park are respectively recorded as being (in $L_{Aeq, period}$ noise level³, dB) 55 and 53 for daytime; 54 and 57 for evenings; and 51 and 46 at night time.

Ambient noise levels at the nearest receivers are more than 10 dB higher than the noise limits set in the project approval and relevant Environment Protection Licences (EPL), which are:

- Day – 36 dB(A) ($LA_{eq(15 minutes)}$);
- Evening – 35 dB(A) ($LA_{eq(15 minutes)}$); and

- Morning shoulder – 35 dB(A) ($LA_{eq(15\text{ minutes})}$).

The proposed new noise impact thresholds are:

Table E.1.1.1 Proposed new noise impact thresholds

Location	Day	Evening	Night	Morning shoulder
	$LA_{eq(15\text{ minute})}$ dB(A)	$LA_{eq(15\text{ minute})}$ dB(A)	$LA_{eq(15\text{ minute})}$ dB(A)	$LA_{eq(15\text{ minute})}$ dB(A)
Minchinbury residential receivers	48	47	44	47
Erskine Park residential receivers	39	40	37	40

ES4 Predicted impacts, management and mitigation

Technical assessments were carried out to investigate the potential impacts of the proposed modification in accordance with the Secretary's environmental assessment requirements (SEARs) issued by the NSW Department of Planning and Environment (DPE). The Proponent carried out consultation with key stakeholders and the outcomes of these assessments are presented in the table below.

Table E.1.2 Summary of predicted impacts of the modification

Aspect
Noise and vibration
• Potential noise impacts at the nearest residential and commercial/industrial receivers to the facility were assessed based on two operational scenarios, where 2Mtpa of waste is processed in the MPC or 2Mtpa of waste is landfilled. • Operational noise levels were assessed for the <i>NSW Industrial Noise Policy</i> periods of daytime, evening, night-time and morning shoulder during calm and prevailing weather conditions. The assessment found that operating noise from the site during both existing and proposed modified operations satisfies the relevant noise impact assessment criteria during all periods at all assessment locations. • Noise at the facility was found to be mostly generated by trucks, with landfilling operations an insignificant contributor to noise generation at the facility. • An assessment of cumulative industrial noise from the facility together with other industrial noise sources in the vicinity was also conducted. The facility is not predicted to increase industrial noise levels above the relevant amenity criteria. • The potential for sleep disturbance from the proposed modification during the night-time period was also assessed. The highest predicted external maximum noise level from the facility is below the noise levels likely to cause sleep disturbance affects. • The existing noise management mitigation measures implemented at the facility will be updated to incorporate the proposed modification.

Table E.1.2 Summary of predicted impacts of the modification

Aspect
Air quality and odour
• Modification 6 seeks to increase the landfill limit from 700,000 tpa to 1,000,000 tpa. A worst-case emissions assessment is considered based on a 50/50 split between the recycling and landfill. Modelling a scenario with 1,000,000 tpa hauled to landfill provides a conservative worst-case assessment of impacts, as hauling along the unsealed access road to the pit is the largest potential emission source. • The predicted cumulative annual average PM₁₀ concentrations comply with the impact assessment criterion at all receptor locations. With the addition of existing background, there are no additional exceedances of the 24-hour average PM₁₀ impact assessment criterion at any receptor location. • The cumulative annual average PM_{2.5} concentrations exceed the impact assessment criterion at all locations, however this is because the annual average background concentrations of PM_{2.5} already exceed. • The cumulative 24-hour average PM_{2.5} concentrations result in additional exceedances of the impact assessment criterion at residential and commercial receptors. This is caused by a combination of elevated background with the additional dust emissions from the modification. It is noted that the background PM_{2.5} concentration is already close to the impact assessment criterion (24.4 µg/m³). Additional statistical analysis shows that the probability or risk of any additional exceedances of the 24-hour PM_{2.5} impact assessment criterion does not increase significantly, above what is already caused by background. • Cumulative annual average TSP concentrations comply with the impact assessment criterion at all receptor locations. Similarly, predicted dust deposition levels comply with both the incremental and cumulative impact assessment criteria at all receptor locations. • The worst case potential odour impact from landfilling at 1M tpa combined with green waste processing and composting, would not result in exceedances of the odour goal of 2 OU at any residential receptor. • To better monitor the effectiveness of existing controls and ongoing performance of the site, the proponent will consider relocating the PM₁₀ monitoring site in Minchinbury to a boundary location at the northern and/or eastern site boundary.
Water management
• The leachate generated by the landfill is collected in a sump then pumped to sequential batch reactors for treatment and release into a Sydney Water sewer via an existing Trade Waste Agreement. • The existing leachate management system is capable of managing the maximum predicted leachate generation under the proposed modification of 505 m³ per day and 185,000 m³ per year. • Leachate generation could exceed the predicted rates during prolonged or heavy rainfall. However, there will be sufficient spare capacity in the leachate collection system/sump and sequential batch reactors to temporarily store and treat more leachate if required. • Existing leachate and groundwater monitoring program is reported in the facility's annual report to the EPA. It is not proposed to amend this program as it is designed for leachate generation rates greater than those predicted for the proposed modification.

Table E.1.2 Summary of predicted impacts of the modification

Aspect	
Traffic and transport	
	• The approved maximum waste volume receivable at the facility is 2Mtpa and, by inference, the approval provides for approximately 900 daily truck movements at the access point and local road network. The site is currently operating at approximately two-thirds of the approved production capacity, with approximately 600 daily truck movements. The landfill volume cap of 700,000 tpa is not currently a constraining factor on waste volumes received (and therefore truck movements) but projected future waste streams indicate that it will at some time act as a constraint on waste throughput. This means that the removal of the 700,000 tpa limit on landfill volume will not result in a sudden spike in truck movements. Truck movements in the future may either reduce or increase depending on the volumes of waste generated in Sydney (market demand) and also depending on proportions of the received waste which are direct-to-landfill vs co-mingled waste processed via the MPC. This is because material exported from the site (eg recycled material produced via the MPC and the Segregated Materials Area (SMA)) will require exporting truck transport additional to the importing truck transport. • Any immediate effect will be due to the modification to extend hours of operation. This will spread the current pattern of truck movements across a wider time period. • The modifications will not impact the existing very good performance of the access intersection and the Honeycomb Drive and Kangaroo Avenue intersection as vehicle movements will occur outside the morning and afternoon peak traffic periods at these intersections. • As and when truck movements increase due to increased waste generation and market demand for waste disposal facilities, Kangaroo Avenue is predicted to safely accommodate those volumes. It is recommended that parking be prohibited for 50 m along the approaches to the intersection to increase site distances. • Other local roads can safely accommodate the traffic.

Assessments were also undertaken on other environmental matters such as biodiversity, Aboriginal cultural heritage and visual amenity, finding that the proposed modification would not adversely affect these other environmental matters.

ES5 Conclusion

The Proponent proposes to modify the project approval to alter the hours of operation and to allow greater flexibility in relation to the waste volume permitted to landfill. This will enable the facility to have flexibility to respond to the long term trends in waste generation, the short term trends in market demand for waste management services and accept waste streams that will likely be generated during planned major construction projects in Sydney, some of which will be generated outside standard construction hours.

Technical assessments have been prepared in accordance with relevant guidelines and assessment criteria and to address NSW Department of Environment and Planning specific assessment requirements.

Increasing the annual landfill capacity limit at the facility is a strategic measure that will support government policy goals, help ease the growing short and medium-term market pressures that may lead to perverse policy and community outcomes. It will also ensure there are no artificial constraints on capacity at the Genesis Recycling Facility, given its ongoing operation is reliant on having a disposal outlet for processing residuals.

The site is well located to serve the growth markets of western Sydney, both as a tipping point for growing waste volumes and a source of recovered materials to circulate back into the region's growing economy and infrastructure needs. Increasing its capacity by extending the operating hours will serve the specific and broader needs of the region.

In conclusion, the proposed modification will:

- enable the continuation of the safe and efficient operation of the facility that supports the disposal of waste, including existing and planned large infrastructure projects in Western Sydney;
- have minor environmental impacts which will be mitigated through the implementation of all reasonable and feasible measures;
- accord with the relevant legislation and state environmental planning policies; and
- accord with the objects of the *Environmental Planning and Assessment Act 1979* including compliance with the principles of ESD.

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1 Introduction

1.1 Background

The Proponent, Dial A Dump (EC) Pty Ltd operates a major recycling facility and general solid waste (non-putrescible) landfill facility known as the 'Genesis Xero Recycling and Landfill Facility' (the facility) at Honeycomb Drive, Eastern Creek (refer to Figure 1.1).

Dial A Dump (EC) Pty Ltd owns Lot 1 DP 1145808 and Lot 8 DP 1200048 (Eastern Creek in the Blacktown local government area), being the subject land of the facility and this assessment, as shown on Figure 1.2.

Dial A Dump (EC) Pty Ltd is also the licence holder of EPLs 20121 and 13426.

This existing facility includes the operation of a major Resource Recovery Facility (RRF) and a general solid (non-putrescible) landfill. The RRF includes a Materials Processing Centre (MPC) and a Waste Transfer Station (WTS). The site including the surface area of the quarry is 52.4 hectares (Ha).

The original project approval for the site was granted by the Minister for Planning in 2009 (MP 06_0139) under Section 75J of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The operations commenced in 2012 and the project approval has been modified five times, most recently in March 2016. A summary of the planning approval history including an overview of each of the previous modifications is provided in Table 1.1.

Table 1.1 Planning approval history – MP 06_0139

Approval	Date of approval	Summary
Original project approval	22 November 2009	A waste recovery facility including a Class 2 (non-putrescible) landfill
		Total throughput of 2 million tonnes per annum
		Landfilling of up to 700,000 tonnes per annum of non-putrescible waste including asbestos
		Stockpiling of up to 50 tonnes of tyres at any one time
		Stockpiling of up to 20,000 tonnes of green waste at any one time
Modification 1	30 September 2010	Electrically powered conveyor and chute
		Postponed commencement of construction
		Two way traffic on Fourth Avenue
		Concrete bay walls in the green waste processing area
		Relocation of the wheel wash
Modification 2	9 November 2010	Correction of the land description in the project approval
Modification 3	5 December 2011	Revised final landform level of the fill pad at Area D
		Operational landform levels and site stormwater design
		Addition of internal office and external amenities at the weighbridge
		New administration and amenities buildings on site
		Relocation of vehicle turning bay
Modification 4	14 December 2013	Voluntary planning agreement
		Extend Materials Processing Centre operational hours to 6:00am to 10:00pm Monday to Friday and 6:00am to 4:00pm weekends and public holidays

Table 1.1 **Planning approval history – MP 06_0139**

Approval	Date of approval	Summary
Modification 5	17 March 2016	Construct a pre-sort shed adjacent to the existing Materials Processing Centre
		Prepare an interim stormwater management plan for the pre-sort enclosure
		Carry-out bulk earthworks in accordance with a spoil management plan
		Install a temporary noise barrier
		Construct 12 additional car parking spaces

1.1.1 Environmental Protection Licences

The Genesis Facility operates under two Environment Protection Licences (EPL) issued by the NSW Environment Protection Authority (EPA). These include:

- EPL No. 20121, which relates to the recycling and resource recovery arm of the operation; and
- EPL No. 13426, which relates to the management and regulation of the general solid waste (non-putrescible) landfill operation.

The relevant controls of each licence are set out below.

i EPL: 20121: Recycling and Resource Recovery

EPL 20121 applies to the resource recovery processes carried out on the site and allows for the storage of up 667,000 tonnes of waste at any one time.

Of this the following fractions of waste may be stored:

- A maximum of 20,000 tonnes of garden waste;
- 50 tonnes of tyres; and
- Individual wood waste stockpiles (both processed and unprocessed) must not exceed 2,000 tonnes each (notably there is no overall limit or a limit of the number of stockpiles).

ii EPL: 13426: Landfill and Waste Storage

Under the provisions of EPL 13426, a total of 700,000 tonnes of waste may be directed to landfill in a calendar year.

The facility is approved to accept up to 2 million (M) tonnes per annum (tpa) of construction, demolition, commercial and industrial waste and green waste clean-ups. The majority of the waste is directed to the RRF for sorting, processing and resale as products suitable for application to land such as road base. The facility recycles an estimated 65-80% of all incoming waste. Material which is unsuitable or uneconomical for recovery or recycling is disposed to landfill.

1.1.2 Need for the modification

The facility currently landfills at a rate of approximately 629,000 tonnes per annum, however market demand is forecast to increase in the future, putting pressure on the ability of the facility to continue to receive direct-to-landfill waste and also receive and process co-mingled waste for recycling.

The cap on landfill volumes at 700,000 tpa equally constrains the future ability of the facility to receive direct-to-landfill waste and co-mingled recyclable waste. This is because the processing and sorting of co-mingled waste creates a by-product (approximately 30% of co-mingled waste volume) which also requires disposal to landfill.

The Proponent proposes to modify the project approval to alter the hours of operation and to allow greater flexibility in relation to the waste volume permitted to landfill (Modification 6, from herein referred to as proposed modification).

This will enable the facility to have better response to the market demand for waste management services whilst enabling the facility to maximise recycling volumes and accept waste streams that will likely be generated during planned major construction projects in Sydney, some of which will be generated outside standard construction hours.

For the most part, operations at the facility will continue in accordance with project approval, as amended. There will be no modification to the maximum volume of waste that may be accepted in a single year, being 2 million tonnes per calendar year.

1.2 Purpose of the document

The purpose of this environmental assessment (EA) is to accompany an application to modify the project approval under Section 75W of the EP&A Act. This document provides a description of the existing environment, an assessment of the potential impacts that may result from the proposed modification and measures that would be implemented to avoid and/or minimise potential impacts.

The EA provides information to allow the NSW Department of Planning and Environment (DPE), in consultation with other relevant NSW Government authorities, to assess the merits of the proposed modification and make a recommendation to the Minister for Planning (or delegate) as to whether or not to grant approval.

This EA was prepared by EMM Consulting Pty Limited (EMM), with input from a number of technical specialists.

1.3 Secretary's environmental assessment requirements

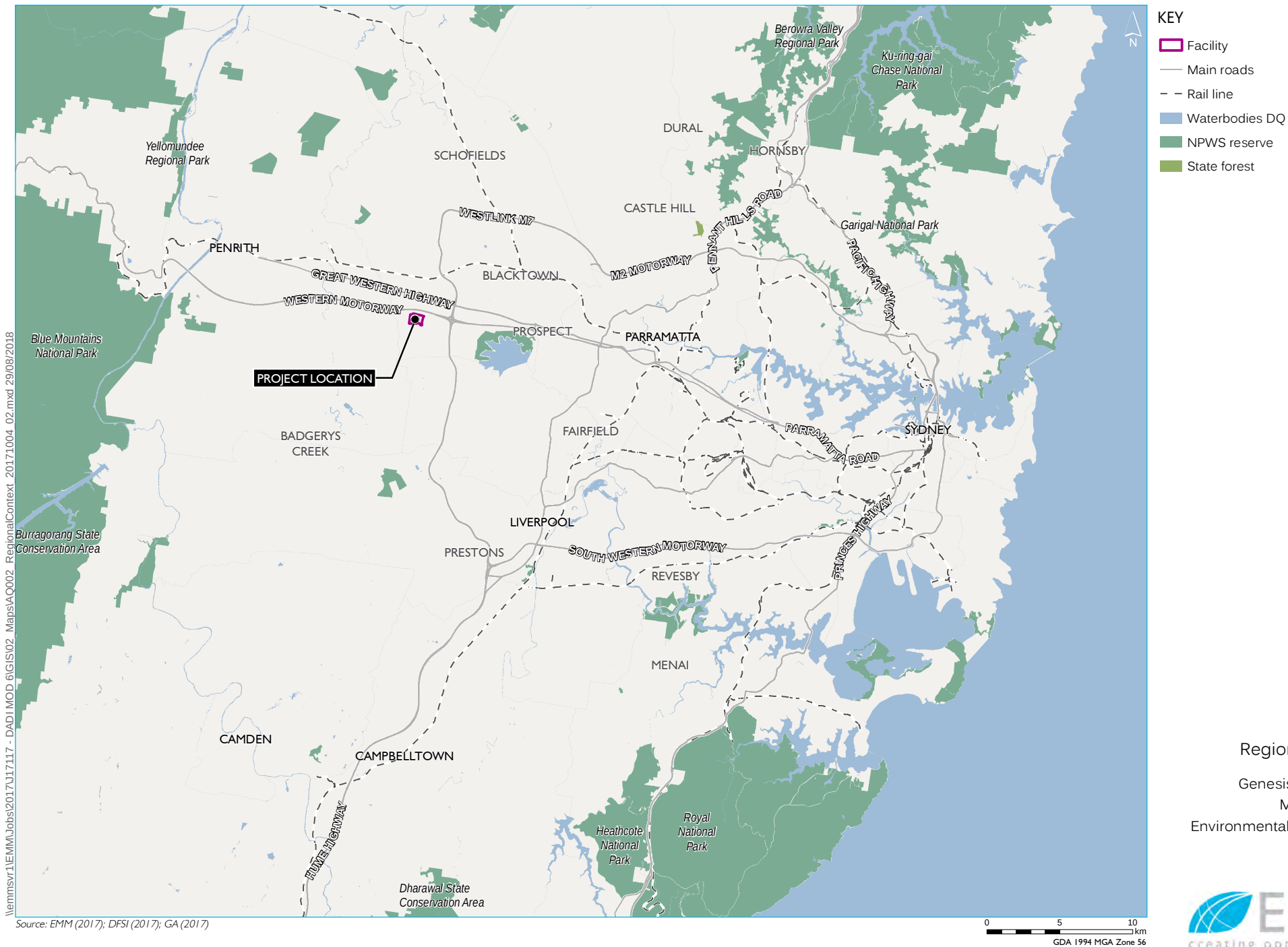
The Proponent applied for Secretary's environmental assessment requirements (SEARs) for the proposed modification on 1 March 2017. SEARs, including requirements from other government agencies, were received from the DPE on 3 April 2017. Table 1.2 provides an overview of SEARs and where they are addressed in this EA. The SEARs in full are provided in Appendix A.

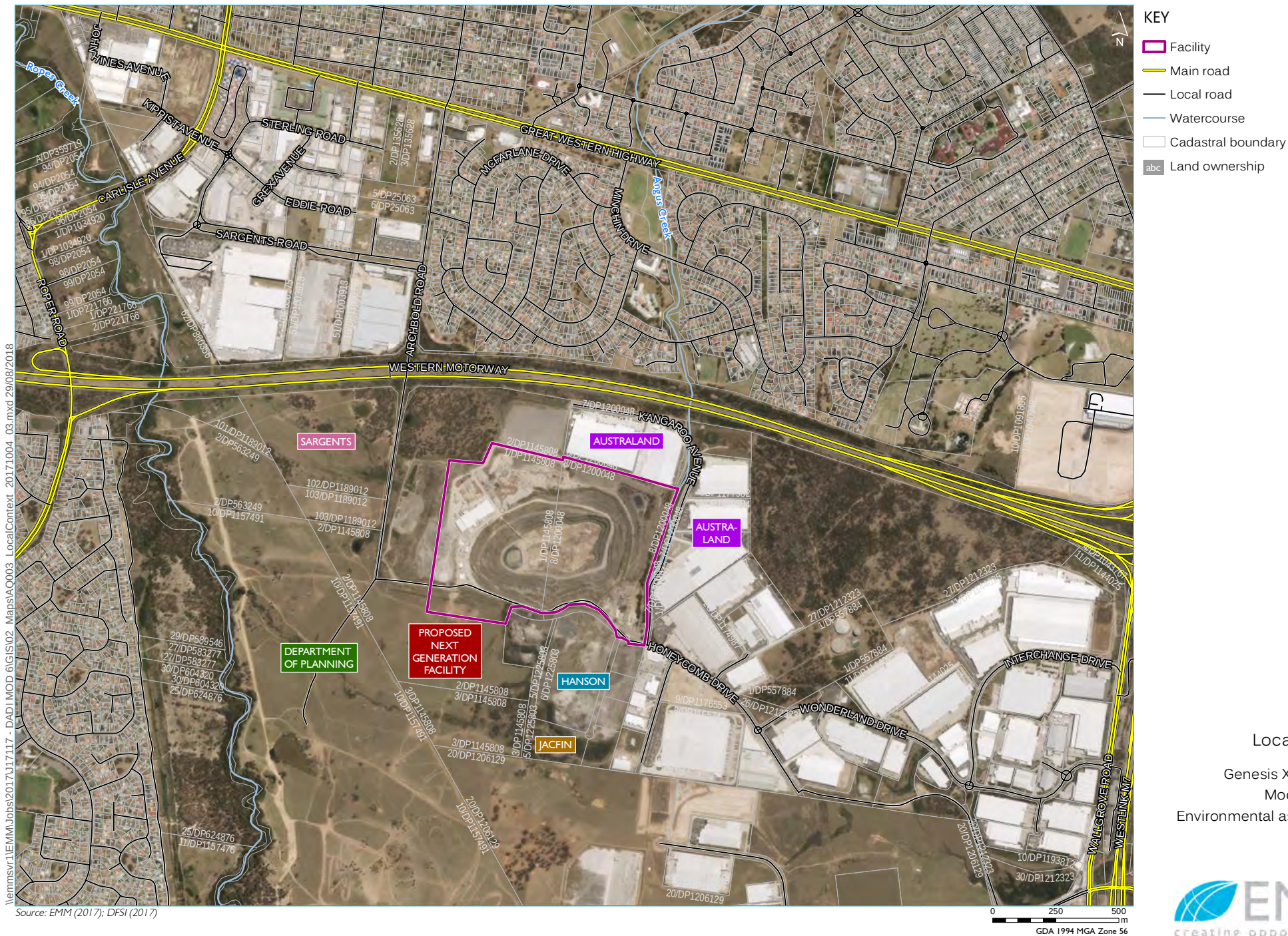
Table 1.2 SEARs and where they are addressed within this EA

Assessment requirements	Reference in the EA
Description of the modification - including details of the proposed new landfill cap, and an assessment of impacts at that level, and changes to operating hours for all activities within the facility	Section 1.1 and Chapter 4
Need and justification for the modification of the landfill cap and operating hours	Section 4.2 and Chapter 9

Table 1.2 SEARs and where they are addressed within this EA

Assessment requirements	Reference in the EA
Other approvals - identification of any proposed variations to Dial a Dump's current Environment Protection Licences applicable to the site including, but not limited to: - EPL 20121 - EPL 13246	Section 5.2.2
Identification of environmental impacts of the modification - including a more detailed assessment of the following:	-
Noise – including an assessment of any potential impacts as a result of noise and vibration on all surrounding receivers, and including an assessment based on the EPA's NSW Road Noise Policy	Section 7.2
Air quality – including an assessment of the impacts of air emissions on all surrounding receivers, including dust, odour and other potential pollutants	Section 7.3
Water – including a detailed description of how water and leachate will be managed during the extended hours of operation and for the increased landfilling amounts	Section 7.4
Waste management – including a detailed description of how the additional waste will be managed during the extended hours of operation	Chapter 3
Traffic and transport – including details of any potential changes to the daily peak, and spread of traffic movements generated by the development, and any potential impacts upon the safety and functionality of the surrounding road network; and	Section 7.5
Amenity – including lighting impacts	Table 7.16
Identification of conditions to be modified	Chapter 8
The Department recommends consultation with other relevant government agencies including EPA, RMS and Council in preparing the EA	Chapter 6





2 Site and local context

2.1 Location

The facility is on a site that comprises 52.4 Ha at the following lots (Figure 1.2):

- Lot 1 DP 1145808; and
- Lot 8 DP 1200048.

The site address is 1 Kangaroo Avenue, Eastern Creek.

2.2 History

The site was formerly owned by Ray Fitzpatrick Pty Limited and Hanson Construction Materials. It was cleared in the 1800s for agricultural use and subsequently blue metal was quarried in the area, after about 1829. Pioneer commenced major quarrying at the site in the 1930s, with Ray Fitzpatrick Quarriers occupying the site around 1950. Pioneer then operated the quarry until September 2006.

The volume of the final quarry void was estimated to be 11 million cubic metres (m³).

2.3 Surrounding land use

The site is in an area being developed for commercial and industrial use under State Environmental Planning Policy (Western Sydney Employment Area) 2009 (the SEPP 2009). Adjacent landowners are:

- Australand, which owns and leases warehousing to the north-east;
- Hanson, which owns an asphalt batching plant to the south-east;
- NSW Government, which owns vacant land to the south-west; and
- Sargents, which owns vacant land to the west.

The site is surrounded by Kangaroo Avenue to the east and north-east, the M4 Western Motorway to the north, Archbold Road to the west and open grassland to the south.

Further afield there is residential development in Minchinbury beyond the M4 Western Motorway to the north and in Erskine Park beyond Archbold Road to the west, and predominantly undeveloped land containing high voltage powerlines to the west and south-west.

2.4 Sensitive receivers

The residential areas of Minchinbury and Erskine Park are approximately 430 m north and 1,200 m west of the nearest site boundaries, respectively. The nearest commercial premises are adjacent to the northern boundary of the site.

The assessment locations (M1a/b and M2) shown on Figure 2.1 represent these potential receivers of Minchinbury and Erskine Park, respectively.

2.5 Topography, water and biodiversity

The area has generally low relief with no major hills or ridgelines, other than bunds adjacent to the landfill that were created from quarry overburden. The RRF is on relatively flat land to the west and north-west of the landfill.

There are ephemeral drainage lines west of the site which drain towards Ropes Creek, which is approximately 580 m west of the site boundary.

The majority of the site is cleared. There is approximately 11 ha of Shale Plains Woodland to the north-west of the site, which is a sub-community of Cumberland Plain Woodland. Cumberland Plain Woodland is an endangered ecological community (EEC) under the NSW *Biodiversity Conservation Act 2016* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. No impacts are proposed to this vegetation community.



- KEY**
- Facility
 - Monitoring location
 - Main road
 - Local road
 - Watercourse / drainage line
 - Cadastral boundary
 - Waterbody
 - NPWS reserve
 - State forest
- Native vegetation of the Cumberland Plain (OEH, 2016)
- Alluvial Woodland
 - Shale Gravel Transition Forest
 - Shale Hills Woodland
 - Shale Plains Woodland

Assessment location and vegetation

Genesis Xero Waste
Modification 6
Environmental assessment

Figure 2.1



3 Existing operations

3.1 Overview

The construction and operation of an RRF and General Solid Waste landfill at an existing quarry and surrounding land at the site were approved under the original project approval (MP 06-0139) in 2009. The RRF comprises the MPC and Waste Transfer Station. The following activities have been approved under Part 3A of the EP&A Act:

- Capacity to receive up to 2Mtpa of the following general solid waste (non-putrescible) types:
 - construction and demolition waste;
 - commercial and industrial waste;
 - waste streams complying with acceptable waste for general solid waste (non-putrescible) facilities; and
 - green waste.
- Use of fixed and mobile plant to process (sort, screen, sieve, crush, grind, shred, chip and compost) waste to produce products for application to land (road base, aggregate, landscaping soil, bedding sand, mulch, wood chip, compost and asphalt derived products).
- Testing and on-site storage of products for resale from the site to the construction and landscaping sectors.
- Landfilling of up to 0.7 Mtpa of waste, which caps the intake to the landfill of waste which is unsuitable or uneconomic for resource recovery (contaminated soil, asbestos waste and loads which cannot be physically sorted). Landfilling also includes residual non-recyclable material after the processing of co-mingled waste for recycling in the MPC.
- Quarantine and transfer of unsuitable wastes to off-site licensed waste facilities for disposal.
- Construction and operation of associated infrastructure, plant and equipment; including upgrading of internal roads and reshaping of earthen amenity berms.

3.2 Layout

The facility is currently accessed via Kangaroo Avenue, which is described further in Section 7.5.2.i. The driveway is sealed and passes along the southern side of the landfill to the weighbridge. The employee/visitor carpark and administration building are adjacent to the weighbridge on the western side.

Upon entering the site, delivery vehicles are directed from the weighbridge to the MPC; crushing and screening area; or the landfill. All vehicles travel along internal roads around the west and north of the MPC then divert to the south to enter the MPC; to the north to enter the crushing and screening area; or to the north-east to enter the landfill. All departing vehicles travel back to the weighbridge via a wheel wash to the east of the MPC.

The landfill (former quarry) pit comprises approximately 75% of the site area. The MPC, timber waste, green waste, sales yard, crushing and screening and workshop area are situated to the west and north-west of the landfill pit.

The operational areas of the site are surrounded to the east, west and north by an environmental bund constructed of overburden from the former quarry which shields receptors from views of, and noise generated from, the facility.

3.3 Process

Waste received on site is directed to one of two destinations for processing (recycling/reuse) or disposal (landfill). Initially, the load is received by truck at the weighbridge upon entering the site where it is weighed, inspected and assigned an internal destination. Waste suitable for recycling is directed to either the MPC (if comingled) or segregated materials area (SMA) for crushing and screening; and waste suitable for disposal is directed to the landfill.

The following processes occur at the internal waste destinations.

3.3.1 Material Processing Centre

The MPC opened 8 June 2012 and operates pursuant to EPL 20121.

Mixed or comingled building and demolition waste is transported by truck to the facility where it is unloaded within the MPC. The existing MPC is a large building of cast concrete slab, steel and Colorbond construction typical of the surrounding industrial buildings within the Precinct.

Waste which is received within the MPC is subject to processing by the fixed plant contained inside the building.

Accepted material is moved to the pre-sort area where bulky material such as metals, fibro sheeting and treated timbers are removed and stockpiled. Timber is directed to the timber yard, bricks and concrete are directed to the crushing and screening area and metals are on-sold to metal recyclers.

The remaining material is moved to the construction and demolition waste sorting plant feed stockpile, and then fed into a shredder which re-sizes it to 450 mm or less. The material passes through the plant, which sorts material using magnets, screens, blowers and picking stations. Sorted material which cannot be recycled is disposed to the landfill via a chute.

Recyclable sorted material comprises timber, crushing and screening feed and metals. Timber is shredded and timber that complies with the resource recovery exemption is sold as mulch and the timber that does not comply with the exemption and is not treated is sold as particle board feed or boiler fuel.

Bricks, concrete, ceramics and aggregates are used as stock in the SMA and metals are on-sold to metal recyclers. Materials such as plasterboard, plastics and cardboard are transferred to alternative recycling facilities.

3.3.2 Segregated Materials Area

The SMA is principally used for the receipt, processing dispatch and stockpiling of inert construction and demolition materials, such as sand dirt concrete, brick tiles and asphalt.

Materials received within the SMA come from both pre-sorted loads, transferred from the MPC and also from direct loads of material deposited within the area. Once delivered to the SMA materials are sorted into relevant categories (ie brick, concrete, sand, soil, stone and bitumen) for reprocessing into a variety of products for sale.

From these primary materials delivered direct to the SMA or sorted at the MPC, all different kinds of aggregates and road base can be produced. A list of typical products produced and subsequently stored on site is provided in Table 3.1 and shown in Photographs 3.1 and 3.2.



Photograph 3.1 **Stockpiles of finished products within the SMA**



Photograph 3.2 **Stockpiles of finished products within the SMA**

Table 3.1 **Materials produced on site and stored in the SMA**

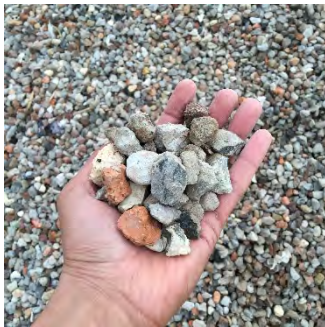
Product

Product Description



10mm Aggregate

A versatile, double screened recycled brick aggregate with multiple applications. Ideal for use around pipes, wet areas and decorative pathways.



20mm Aggregate

Double screened recycled aggregate sourced from concrete, asphalt and construction rubble. Perfect for drainage material, retaining wall backfill and decorative pathways.



40/70 Aggregate

Crushed recycled concrete between 40mm - 70mm. This larger-sized product is ideal for temporary site access roads (to minimise clay carryout by vehicles) and retaining wall backfill.



Bedding Sand

Suitable for pipe bedding, trench filling, slab levelling and sub-course for paving. A low-plasticity, economical and environmentally friendly alternative to virgin sands.

All products produced on site are routinely tested by independent third parties to ensure compliance with any relevant resource recovery exemptions and to ensure consistent quality products are produced.

All stockpiles heights are limited to within the height of the amenity berms as required by the project approval and are maintained in accordance with all current legislative and regulatory requirements.

The product is produced by a variety of machinery that is currently used as required within the area and generally consists of two mobile crushers plus auxiliary equipment (such as screens, stockpilers and re-claimers). Mobile equipment (such as loaders and excavators) used to relocate materials and products are also used within the area on an 'as required' basis.

3.3.3 Landfill

Waste directed to the landfill is categorised as:

- General solid waste, which is sub-categorised into construction and demolition waste containing small quantities of recyclables and soil containing recoverable brick, concrete and timber.
- Asbestos waste, which could be wrapped asbestos (sheeting), asbestos soil and construction and demolition waste containing asbestos.

Any waste that cannot be recycled or reprocessed through the MPC, or SMA, is also sent to landfill.

The landfill receives residual, non-recyclable waste from the MPC via a conveyor and chute.

Alternatively, loads of construction and demolition general solid waste may be accepted directly into the landfill via approved third parties.

The material is deposited at the base of the landfill and pushed into place, spread and compacted by a steel wheeled landfill compactor. Cover is placed by a bulldozer. Each 'lift' of waste is placed along a 50 m tipping face with a daily lift thickness not exceeding 2 m. Filling progresses in panels across the floor of the main tipping area.

The waste is covered progressively as the 2 m thickness is achieved. Therefore, only minimal areas of waste are exposed at any time, which reduces the potential for leachate generation during rain.

i Asbestos waste

If identified, asbestos waste is inspected as follows:

- wrapped asbestos is inspected for correct wrapping and sealing; and
- asbestos soil and other asbestos waste is inspected for sufficient moisture content to prevent the generation of dust during handling.

All asbestos waste is then disposed of in dedicated and restricted areas of the landfill.

ii Leachate management

Leachate is managed in accordance with EPL 13426, the *Leachate Collection, Conveyance and Management Plan* (DADI 2017a) and the *Soil, water and leachate management plan* (WMP) (DADI 2017b).

Infiltration of water through the cover is minimal as evapo-transpiration exceeds rainfall for 80% of the year in the area. Additionally, the steep slope batters of the covered waste results in high water runoff, which is directed to the water management system. Therefore, most leachate generation results from water entrained in the deposited waste or from heavy rainfall which inundates the waste prior to covering.

The active tipping area is covered daily with a minimum of 150 mm of virgin excavated natural material or an alternative daily cover, as required by Condition O5.4 of EPL 13426.

A HDPE leachate liner was installed at the base of the landfill, which was encapsulated by two geotextiles. Perforated polyethylene pipes were placed in an aggregate drainage layer above the liner, which is further covered with geotextile. The pipes collect any leachate and drain via gravity to a concrete lined sump at the lowest elevation of the landfill, from which it is pumped to leachate storage tanks.

The leachate is pumped to sequential batch reactors, which are processing tanks used for the treatment of waste water. There are four 110 kilolitre (kL) tanks at the facility which have a decanting capacity of 50 kL/7-9 hours. The system can treat 600 kL every 24 hours.

The treated leachate is discharged into a Sydney Water sewer on Lot 8 DP 1200048 as permitted by Trade Waste Agreement 35580, which allows the discharge of up to 650 kL a day of pre-treated waste water into Sydney Water infrastructure and is tested every eight days.

Leachate volumes and quality are monitored as follows and reported in the annual return to the EPA:

- the leachate level in the sump is monitored weekly;
- the quality of untreated leachate is monitored quarterly; and
- leachate generation rates are monitored to calibrate the leachate model.

Groundwater is sampled quarterly or yearly (depending on pollutant) and analysed in accordance with Condition M2.2 of the EPL 13426 to determine if landfill operations are impacting water quality. If analysis of the samples indicates that environmental trigger levels for groundwater are exceeded, an action plan or remediation plan is implemented to inform the EPA of the exceedance, re-sample to establish a trend, determine and remediate the source if there is a trend, and remediate the impacted area.

iii Landfill gas

The landfill does not accept putrescible waste and, therefore, there is reduced potential for the generation of landfill gas compared to facilities which do accept such waste. Landfill gas management will be considered before the final capping of the landfill at the end of its life, and may take the form of HDPE pipes and a blower to extract and diffuse the gas.

Landfill gas generation and movement is monitored quarterly via shallow boreholes in accordance with the site's *Landfill Gas Monitoring Program* (DADI 2017c) to determine if gas is moving laterally to adjacent lots. Gas is also monitored at the surface every month to identify if there are faults in the gas management system or capping layers.

iv Water management

Surface water at the facility is managed in accordance with the site's *Landfill Environmental Management Plan* (LEMP) and *Waste Management Plan* (WMP).

Water that falls on the landfill is managed as leachate, with such water falling on the site managed as described above in Section 3.3.3(ii).

Water that falls on the walls and road is directed to the sediment basin. A lined sediment basin is provided in a covered area of the landfill, with a new basin installed when a major high lift has occurred prior to the runoff from the landfill surface entering the sediment basin. The sediment basin can accommodate a 1 in 50 year average recurrence interval 24-hour storm. Sediment is allowed to settle and the resulting clean water collected by a water tanker for use in dust suppression and cleaning of machinery. There is also a transfer pump in the basin which can transfer water to other basins and tanks in the facility.

Runoff volumes will marginally decrease over time as the floor of the landfill raises towards to the top of the void, as the raising of the floor decreases the surface area of the void walls.

3.4 Current hours of operation

The current hours of operation are summarised in Table 3.2.

Table 3.2 Current hours of operation

Activity	Days	Existing Times
Construction	Monday – Friday	7:00am to 6:00pm
	Saturday	8:00am to 4:00pm
	Sunday and Public Holidays	Nil
MPC Operations waste deliveries and chute use)	Monday – Friday	7:00am to 6:00pm
	Saturday, Sunday and Public Holidays	8:00am to 4:00pm
Crushing and screening	Monday – Friday	7:00am to 6:00pm
MPC [including maintenance]	Monday – Friday	6:00am to 10:00pm
	Saturday, Sunday and Public Holidays	6:00am to 4:00pm
Landfill Deliveries(by truck only)	Monday -to Sunday	7:00am to 6:00pm

3.5 Employment

The facility directly employs approximately 120 people, which includes up to 20 truck drivers transporting material to and from the site. The facility also contributes to indirect employment such as maintenance personnel and short term contractors. This could change marginally under the proposed modification in line with new shifts being added for evening and night time operations.

3.6 Environmental management and monitoring

Operations at the MPC are managed in accordance with the site Environmental Waste Management Plan, and as described above the landfill is managed in accordance with the LEMP.

The following issue-specific sub-plans relevant to the proposed modification are implemented at the facility under the above over-arching plans:

- Air quality, odour and greenhouse gas management plan;
- Conveyor and chute waste handling procedures;
- Leachate collection, conveyance and management plan;
- Soil, water and leachate management plan;
- Noise monitoring program; and
- Traffic and transport code of conduct.

4 Proposed modification

4.1 Modifications

The purpose of the proposed modification is to modify the hours relating to the operation of the facility, and to improve flexibility in relation to the waste volume permitted to be landfilled by increasing the current 700,000 tpa limit on landfill volumes prescribed in the existing project approval to 1,000,000 tpa (excluding waste generated by recycling processes within the MPC and the PSB, which are the two stages of sorting materials in the co-mingled waste recycling stream). It also seeks to revise the noise impact assessment criteria to make them more meaningful in terms of impact and compliance monitoring.

4.1.1 Hours related to construction and operation

The following conditions of consent are relevant to the proposed modification:

- Conditions 39, Table 5 - general hours of operation (including construction hours);
- Condition 39a, sets out the hours of operation applying to the chute that feeds waste from the MPC to the landfill;
- Condition 39b, sets out that deliveries are limited to the “operational hours” set out in Table 5 of condition 39; and
- Condition 39c, provides extended hours of operation for the MPC permitting operations from 6am to 10pm Monday to Friday and 6am to 4pm Weekends and Public Holidays.

The approved construction and operating hours from the project approval (Table 5 of Condition 39) are replicated in Table 4.1.

Table 4.1 **Approved hours**

Activity	Days	Hours
Construction	Monday-Friday	7am-6pm
	Saturday	8am-4pm
	Sunday and public holidays	Nil
Operations (waste deliveries and use of chute)	Monday-Friday	7am-6pm
	Saturday, Sunday and public holidays	8am-4pm
Operations (MPC)	Monday-Friday	6am-10pm
	Saturday, Sunday and public holidays	6am-4pm

The proposed revised operating hours are in Table 4.2, which is proposed to replace Table 5 of Condition 39.

Table 4.2 **Proposed hours**

Activity	Days	Existing times	Proposed times
Construction	Monday – Friday	7:00 am to 6:00 pm	No change
	Saturday	8:00 am to 4:00 pm	No change
	Public holidays	Nil	No change
MPC Operations (waste delivers and chute use)	Monday – Friday	7:00 am to 6:00 pm	24 hours
	Saturday, Sunday and Public holidays	8:00 am to 4:00 pm	24 hours
Crushing and screening	Monday – Friday	7:00 am to 6:00 pm	6:00 am to 6:00 pm
Receipt of segregated materials at the SMA site (excluding crushing and screening)	Monday – Friday	7:00 am to 6:00 pm	24 hours
MPC (including maintenance)	Monday – Friday	6:00 am to 10:00pm	24 hours
	Saturday, Sunday and Public holidays	6:00 am to 4:00 pm	24 hours
Landfill deliveries (by truck only)	Monday – Sunday	7:00 am to 6:00 pm	5:00 am to 9:00 pm

4.1.2 Landfill limit

It is proposed to replace Condition 1(a) of Schedule 3 of the project approval, which currently states that the facility must not “landfill more than 700,000 tonnes of non-putrescible waste per calendar year” with a new Condition 1(a) which provides that the facility must not “landfill more than 1,000,000 tonnes of non-putrescible waste per calendar year (excluding waste generated by recycling processes within the Materials Processing Centre and the Pre-Sort Building)”.

From a landfill perspective, this proposed modification would achieve two things:

- it distinguishes between the waste which is disposed 'direct-to-landfill' from the waste that needs to be sent to landfill as a by-product of the processes of sorting and recycling co-mingled recyclable material, and thereby removing the constraint on volumes of waste which can be recycled at the facility; and
- it also seeks to anticipate the increase in demand for direct-to-landfill wastes (eg asbestos contaminated soil) arising from the program of government infrastructure and major projects in Western Sydney.

Increasing the 700,000 tpa limit on landfilling volumes will enable the Proponent to provide waste disposal services for Sydney’s proposed major construction activity and major infrastructure investment described above. These projects are likely to contain large volumes of material which cannot be recycled such as asbestos containing material. Furthermore, interstate waste flows are expected to return to the Sydney basin when cheaper disposal to Queensland comes to an end in March 2019. Furthermore, a number of major non-putrescible landfills have either closed recently or are slated for closure in the coming years and there is a looming shortage of disposal capacity for non-recyclable wastes including asbestos containing materials.

The Proponent is not proposing to increase the overall tonnes that may be accepted into the facility, it is simply proposing more flexibility within the aggregate total amount permitted by the EPLs with regard to the volume of waste material that may be accepted into landfill.

The purpose of a landfill limit as a condition of consent is to support an increase in recycling rates for NSW. The condition is a mechanism to motivate waste facility users and the facility operator to only use landfilling as a last resort.

However, there are other forces at play which drive the same outcome without the need for command and control measures. The recycling of segregated materials or co-mingled waste at this facility provides a superior profit margin compared to landfilling. The economics of the industry will generally bias waste management practices towards recycling where possible, regardless of the limits imposed by development consent.

It is equally important to note that the proposed 1,000,000 tpa landfill limit (excluding waste generated by recycling processes within the MPC and the PSB, which are the two stages of sorting materials in the co-mingled waste recycling stream) is solely a mechanism to drive recycling rates and it is not a condition which is seeking to address operational impacts such as traffic or noise.

Non-landfilled waste has an economic and environmental benefit, and this is recognised by the Proponent and customers who procure recycled materials from the facility. Materials stockpiled within the segregated materials area, and then sold for re-use, come from both pre-sorted loads, sorted materials transferred from the MPC and also from loads of material deposited directly within the area. Once delivered to the SMA materials are sorted into relevant categories (ie brick concrete, sand, soil, stone and bitumen) for reprocessing into a variety of products for sale, such as aggregate and bedding sand. All products produced on site are routinely tested by independent third parties to ensure compliance with any relevant resource recovery exemptions and to ensure consistent quality products are produced.

The diversion of materials away from landfill serves a clear market demand and the effect of the 700,000 tpa landfilling limit in that diversion rate is debatable. The facility already provides a high rate of recycling relative to volumes disposed to landfill for all materials which are potentially recyclable, and this occurs in the absence of any historical volumes reaching the current 700,000 tpa limit. The economics of the waste sector suggest that high recycling rates will continue under a scenario where the landfill limit is 1,000,000 tpa (excluding waste generated by recycling processes within the MPC and the PSB, which are the two stages of sorting materials in the co-mingled waste recycling stream). The landfilling limit can be increased with little risk of incentivising direct-to-landfill as a waste management solution given increasing waste volumes and pending closures of major non-putrescible landfills. On the other hand, a landfilling limit set to low relative to overall (and increasing) demand for waste processing creates a perhaps unforeseen risk of constraining the processing of co-mingled recyclable materials at the facility.

The filling plan for the void remains unchanged. The filling plan responds to the relative levels of the fill within the void, not to the date at which the level is achieved.

Condition 5 (Limits on Approval) of MP 06_0139 would remain as follows:

The Proponent shall not receive more than 2 million tonnes of materials at the site per calendar year.

4.1.3 Revised noise criteria

The ambient noise levels at sensitive receptor locations in Minchinbury and Erskine Park were respectively recorded as being (in $L_{Aeq, period}$ noise level³, dB) 55 and 53 for daytime; 54 and 57 for evenings; and 51 and 46 at night time. Road traffic noise from major arterial roads (M4, M7, Great Western Highway and Walgrove Road) surrounding the site contribute significantly to the elevated noise environment at residential areas, with noise from these sources dominant at most of the measurement locations.

Ambient noise levels at the nearest receivers are more than 10 dB higher than the noise limits set in the project approval and EPLs, which are:

- Day – 36 dB(A) ($LA_{eq(15 \text{ minutes})}$);
- Evening – 35 dB(A) ($LA_{eq(15 \text{ minutes})}$); and
- Morning shoulder – 35 dB(A) ($LA_{eq(15 \text{ minutes})}$).

The proposed new noise impact thresholds are presented in Table 4.3.

Table 4.3 **Proposed noise criteria**

Location	Day	Evening	Night	Morning shoulder
	$LA_{eq(15 \text{ minute})}$ dB(A)	$LA_{eq(15 \text{ minute})}$ dB(A)	$LA_{eq(15 \text{ minute})}$ dB(A)	$LA_{eq(15 \text{ minute})}$ dB(A)
Minchinbury residential receivers	48	47	44	47
Erskine Park residential receivers	39	40	37	40

Current and future noise levels for the proposed modification are predicted to be significantly less than existing ambient noise levels at the residential assessment locations which are primarily influenced by road traffic noise from the M4 Western Motorway.

The existing noise impact assessment criteria, as prescribed as a condition of consent, are below the ambient noise levels for the sensitive receptors in Minchinbury and Erskine Park. This means that an exceedance and therefore a non-compliance with the noise criteria, can occur even though the noise caused by operations at the facility are inaudible at those sensitive receptors (or more correctly, it cannot be distinguished and quantified at those sensitive receptors due to ambient noise levels).

A more meaningful set of noise criteria is warranted.

Noise levels from the proposed modification are not expected to cause adverse impacts at any assessment location.

Further discussion on the proposed noise criteria, including how they were derived, is provided in Chapter 7.

4.2 Justification

4.2.1 Extension of hours

The Proponent is seeking to extend the hours for the carrying out of a sub-set of overall operations on site.

These operations can be classified as either processing or ancillary works. The processing works comprise generally the operation of the enclosed MPC, PSE and landfilling within the void. Processing works elsewhere, for example, crushing and sorting in non-enclosed areas, are not proposed to be subject to the extended hours. Ancillary works include the maintenance of plant, cleaning the facility and the movement of vehicles on site.

A review of landfill inputs over the past two years shows net waste inputs to the facility landfill have been steadily growing. For the 12 months to end June 2018, the landfill received 690,000 tonnes incoming waste and approximately 61,000 tonnes was exported from the landfill, mostly to Queensland. Hence the net waste landfilled was around 629,000 tonnes. This is compared to total landfill inputs of 520,000 tonnes in the previous financial year (2016-17) showing a 33% increase in incoming waste. Once the Queensland landfill levy comes into force in March 2019 and waste exports to Queensland cease, net landfill inputs will be near the current cap of 700,000 tonnes without accounting for any additional streams or further growth.

Much of the recent growth in landfill inputs is asbestos contaminated soils and asbestos containing materials which accounted for more than 60% of landfill inputs in FY2017-18. This stream is expected to continue growing as the NSW construction and redevelopment boom continues and the number of alternative disposal sites reduces. As discussed further below, inputs are also expected to grow significantly as a result of other waste returning from Queensland (from external customers), ongoing growth in construction activity and closure of other non-putrescible landfills in the Sydney region.

The current infrastructure programs across Sydney generate spoil from excavations and waste resulting from demolition works. This is precisely the category of waste received by the facility. The waste must be removed from the worksites efficiently recognizing that some of these activities take place outside normal daytime business hours. Night-time roadworks are often undertaken to minimize disruptions to traffic and commerce.

The Sydney basin is undergoing unprecedented population growth, with attendant expansion in residential and commercial construction and development of large-scale public infrastructure to manage increased transport demand.

The Department of Planning and Environment (DP&E) in November 2016 forecast record levels of housing construction in Sydney over the five years to 2021. The forecast construction of over 180,000 new homes in the five years to 2021 is a 59 per cent increase on the previous five years.

Many of these infrastructure projects are on a very large scale and require quick receipt, release and turnaround. An extension of hours as proposed will facilitate acceptance of loads of waste received from night projects (ie roadworks) and large-scale infrastructure projects.

Key public infrastructure projects are summarised in Table 4.3, including WestConnex, the package of works under the Western Sydney Infrastructure Plan, a number of rail projects and the Western Sydney Airport. A substantial number of property developments are also proposed and/or undergoing construction, including the AMP Circular Quay Precinct, Green Square Urban Renewal Project and Barangaroo North.

Table 4.4 Pipeline of major Sydney infrastructure projects

Project	Estimated project size	Estimated Completion
Sydney Trains	\$1.3bn	2020
Westmead Hospital Redevelopment	\$900m	2020
Opera House	\$400m	2020
Randwick Hospital Campus redevelopment	\$720m	2022
WestConnex	\$16.8bn	2023
Parramatta Light Rail	\$1.0bn	2023
Western Sydney Infrastructure Park	\$3.6bn	2025

Table 4.5 Pipeline of major Sydney infrastructure projects

Project	Estimated project size	Estimated Completion
Campbelltown Hospital upgrade (Stage 2)	\$632m	Not stated
Rebuilding the Major Stadia Network package	\$1.6b	Not stated
Western Harbour Tunnel and Beaches Link	\$14b	Not stated
Central Station redevelopment (potential)	\$3b	2037

The ability to accept loads of waste from infrastructure construction projects across extended hours would benefit these projects as waste could be transported as it is generated rather than having to be stockpiled on-site or stored in trucks until facilities open the following morning. For example, surface components of WestConnex and NorthConnex are being constructed during standard construction hours, however, loads of waste dispatched at the end of the shift will arrive at waste management facilities much later than 6pm. Further, the proposed construction hours of the Western Sydney Airport will be 24-hours for some activities (GHD RPS Manidis Roberts 2016). The modified hours of operation provide a more viable option than holding waste or waste-laden trucks off-site until the facility opens in the morning.

The NSW Government's strategy for waste management has set targets and priorities around recycling and resource recovery, supported by the highest landfill levy in the country and the largest ever program of grant funding for new waste infrastructure under the Waste Less Recycle More initiative.

The 'NSW Waste and Resource Recovery Strategy 2014-21' (WARR strategy) sets goals that include recycling rates by 2021-22 of 80 per cent for C&D waste and 70% for commercial and industrial (C&I) waste. According to the latest published data, 72% of C&D waste was recovered in 2014/15 and 64% of C&I waste, indicating an ongoing shortfall in recovery performance.

This recovery gap is likely to come under pressure on several fronts:

- Existing C&D waste processing capacity will not be able to cope with the overall growth in C&D waste generation and all the waste returned from Queensland
- The proposed draft minimum recycling standards for C&D recycling facilities (NSW EPA, 2016), if introduced as proposed, may have the consequence of forcing the closure of smaller operators without the capacity or capital to adjust to the revised requirements
- The demand for local recovery solutions producing high quality materials for local markets, in response to the effective closure of key export markets for dry recyclables.

Extending the delivery and operating hours at the Genesis Recycling Facility will serve multiple objectives. Primarily, it will increase the capacity of the facility by allowing the process to run for longer each day whilst still allowing adequate time for essential daily maintenance and cleaning. This supports the state resource recovery targets for both C&D and C&I waste, as well as the proposed C&D minimum standards.

It will also service the critical infrastructure projects that are being delivered on a 24-hour basis and, due to their high profile, often have ambitious demands for resource recovery that can only be met by advanced mixed waste processing plants such as the Genesis Facility. Access to 24-hour tipping for those projects will reduce stockpiling at project sites overnight, reduce dust and noise from material double-handling, spread freight movements across the 24-hour cycle. Generally, increasing access to this critical facility may also support reduced illegal dumping of the waste after hours.

Increasing the capacity for resource recovery is consistent with NSW and regional strategic planning policies, including:

- The NSW WARR Strategy 2014-2021 – Objectives include increasing recycling and divert more waste from landfill to alternative uses, such as recycling
- Western Sydney Regional Waste Avoidance and Resource Recovery Strategy – Objectives include increase recycling, reduced illegal dumping and improving management of problem wastes such as asbestos
- West District Plan – The Greater Sydney Commission strategy provides a clear vision for the growth and development for the next 40 years, including creating a sustainable city (Goal 3) and an efficient West District (Direction 5.7) and support opportunities for District waste management (Priority S9).

The availability of extended hours would streamline and facilitate the proper removal and disposal of asbestos and contaminated soils, by providing a facility which can receive such materials with longer operating hours. Most existing facilities that are licensed to accept such wastes will only accept asbestos loads before 4 pm (usually due to opening hours constraints and daily cover requirements). The extended operating hours may also have a positive effect in the community by decreasing illegal dumping of such substances, given the facility provides a suitable venue for receipt and proper disposal of such substances for a longer period of time each day.

The site is well located to serve the growth markets of western Sydney, both as a tipping point for growing waste volumes and a source of recovered materials to circulate back into the region's growing economy and infrastructure needs. Increasing its capacity by extending the operating hours will serve the specific and broader needs of the region.

4.2.2 Landfill limit

In 2012 when the Resource Recovery EPL 20121 was granted in respect of the site there had been no prior experience of the transportation to Queensland of waste generated in Sydney.

The Proponent had invested over \$100 million in developing a facility having an unprecedented technical capacity to process and recover materials for re-use from Building and Demolition waste.

The investment by the Proponent had been made on the back of the NSW EPA policy of seeking to conserve landfill space and to encourage the recovery and re-use of resources.

The initiation of the interstate transportation of otherwise recyclable waste for landfilling undermined that policy intent and despite the proximity principle the diversion of waste continued.

A significant and increasing amount of waste was transported year by year interstate for processing and disposal by landfilling. The economic drivers for this included the high level of landfill levy imposed in NSW under the NSW *Protection of the Environment Operations Act 1997* (POEO Act) and the fact that there is no corresponding levy in Queensland.

The arbitrage between the respective regimes meant that there was a rapidly changing ebb and flow of materials for landfill versus materials for reprocessing and recycling available to the Proponent.

NSW EPA foreshadowed the introduction of new regulations to manage waste within NSW waste facilities and the Proponent sought the flexibility to be able to respond to the expected commercial effects of these changes.

In seeking amended SEARs the applicant noted that the modifications were sought in apprehension of changed market conditions and the need to have commercial flexibility to respond to those changes.

The market changes which the applicant foreshadowed have now come to pass. The first of these involved the “waste to Queensland.”

In 2017 the NSW Upper House Parliamentary Inquiry into the Waste Industry recommended that steps be taken prevent the transportation of waste and in 2018 the Queensland State Government has announced the reintroduction of landfill levy in that state with effect from 1st January 2019.

It was estimated in 2017 that approximately 1million tonnes of waste per annum was being diverted from processing in NSW. The reintroduction of the Queensland levy at the level announced will induce the retention of that waste in Sydney and the applicant must have the commercial flexibility to deal with it.

A second great imperative for flexibility lies in the unprecedented large number and large-scale state road, light rail and infrastructure projects which have been commissioned in the Greater Sydney Area. These have involved the compulsory acquisition of privately owned buildings amongst which is old infrastructure and the uncovering of old asbestos in the form of pipes and sheeting. In its application for amended SEARs the applicant assessed that this development would likely involve an increased demand for landfill space for wastes such as asbestos soils, which the Genesis site is specifically licensed to accept. This can be evidenced in the increase in asbestos soils received by the Proponent in the last three years (refer to Table 4.4 below).

Table 4.4 Asbestos soils received to landfill

Asbestos Soils received to landfill - Genesis	Tonnes
CY 2015	224,889
CY 2016	265,437
CY 2017	284,320
CY18 to 30 June 2018	221,823

The non-putrescible waste market in Sydney is facing growing pressure as waste generation continues to grow in line with construction activity and major infrastructure investment. Interstate waste flows are expected to return to the Sydney basin when cheaper disposal to Queensland comes to an end in March 2019. Further, a number of major non-putrescible landfills have either closed recently or are slated for closure in the coming years and there is a looming shortage of disposal capacity for non-recyclable wastes including asbestos containing materials.

Increasing the annual landfill capacity limit at Genesis Eastern Creek is a strategic measure that will support government policy goals, help ease the growing short and medium-term market pressures that may lead to perverse policy and community outcomes. It will also ensure there are no artificial constraints on capacity at the Genesis Recycling Facility, given its ongoing operation is reliant on having a disposal outlet for processing residuals.

i Recycling

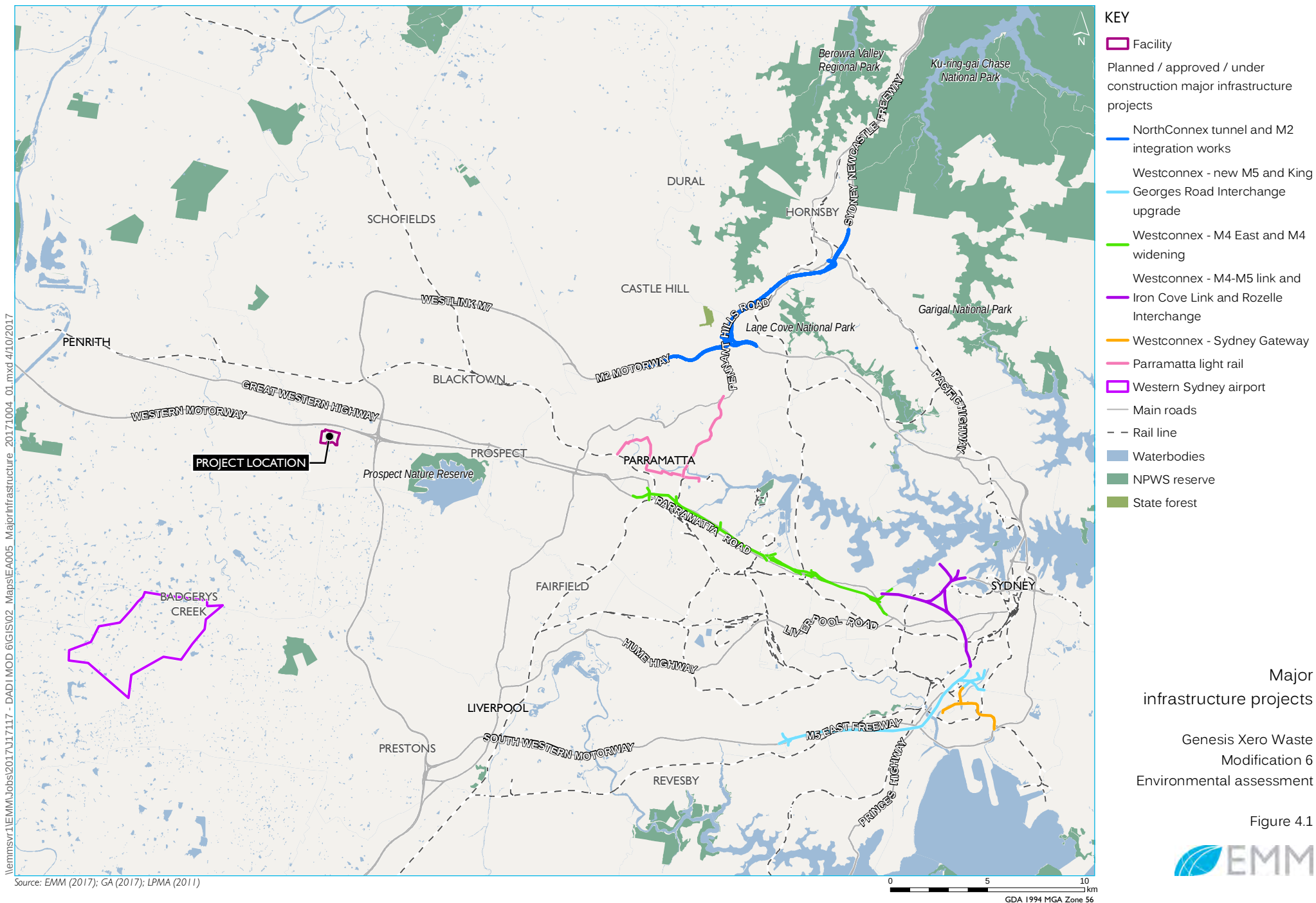
As described, the existing limit on the annual landfilling volume has the ability to limit the amount of recycling that can occur at the facility. Not only would this mean the commercial potential of the facility is not realised, but the facility may not be able to contribute as much to the NSW Government's waste goals in accordance with the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* (EPA 2014). The strategy aims are to:

- increase the amount of waste diverted from landfill from 63% to 75%; and
- increase recycling rates by:
 - commercial and industrial waste from 57% to 70%; and
 - construction and demolition waste from 75% to 80%.

The facility receives waste in three main streams - (a) direct-to-landfill (b) pre-segregated recyclable material and (c) mixed waste for recycling and sorting via the MPC. Approximately 30% of waste received at the MPC is unsuitable for recycling and is subsequently directed to the landfill. As described in Section 1.1, the landfill is currently only permitted to receive a maximum of 700,000 tpa of waste. The current landfilling rate is approximately 629,000 tpa. If that is maintained (or increased), and 700,000 tpa limit remains, then less than 70,000 tonnes of by-product from the recycling processes of the MPC and PSB can be landfilled in that same calendar year. This in turn means that the MPC and PSB cannot receive more than approximately 233,000 tonnes of mixed waste stream each year (assuming that 70% of material is recycled from that mixed waste stream). The 700,000 tpa limit is therefore effectively a cap on the amount of recycling that can be achieved via the MPC and PSB.

The above scenario would limit the amount of material able to be received at the site to 1.2Mtpa, which is well below the permitted 2M tpa and not conducive to achieving increased recycling targets set by the NSW Government. Therefore, as described in Section 4.1.2, the Proponent proposes to amend the project approval to increase the limit so that the facility can realise its full recycling potential and also respond to the demand for asbestos-contaminated material disposal services.

This would be achieved by specifically excluding waste generated by recycling processes within the MPC and the associated PSB from volumes monitored for the purposes of quantifying 'landfill'.



5 Regulatory framework

This chapter outlines the statutory framework that applies to the proposed modification. It provides an overview of the applicable environmental planning approval process under NSW and Commonwealth legislation and details of other NSW legislation relevant to the proposed modification.

5.1 Planning approval history

The existing project approval (MP 06_0139), granted in 2009 by the NSW Minister for Planning, has been modified five times. A summary of the project approval and subsequent modifications was provided in Table 1.1.

5.2 State legislation

5.2.1 NSW Environmental Planning and Assessment Act 1979

The project approval was granted under Part 3A of the EP&A Act. It was deemed a 'major project' by DPE under Section 75(b) of the EP&A Act. The consent authority for 'major projects' was then the Minister for Planning. At the time, an approved Part 3A major project could be modified under section 75W of the EP&A Act.

Part 3A was repealed by the NSW *Environmental Planning and Assessment Amendment (Part 3A Repeal) Act 2011* (Part 3A Repeal Act). However, transitional provisions were introduced (Schedule 6A of the EP&A Act) enabling a 'transitional Part 3A project' to continue to be subject to Part 3A of the EP&A Act (as in force immediately before the repeal and as modified by the Part 3A Repeal Act). Transitional Part 3A projects include projects that were the subject of an existing approval under Part 3A. Therefore, the facility is a transitional Part 3A project and the proposed modification may be made under section 75W of the EP&A Act. Section 75W enables a proponent to request the Minister (or delegate) to modify a project approval granted under Part 3A.

Section 75W states:

(1) In this section:

Minister's approval means an approval to carry out a project under this Part, and includes an approval of a concept plan.

modification of approval means changing the terms of a Minister's approval, including:

- (a) revoking or varying a condition of the approval or imposing an additional condition of the approval, and
 - (b) changing the terms of any determination made by the Minister under Division 3 in connection with the approval.
- (2) The proponent may request the Minister to modify the Minister's approval for a project. The Minister's approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part.
- (3) The request for the Minister's approval is to be lodged with the Director-General. The Director-General may notify the proponent of environmental assessment

requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.

- (4) The Minister may modify the approval (with or without conditions) or disapprove of the modification.

The proposed modification is considered to be consistent with the objects of the EP&A Act as demonstrated in Section 9.4 of this EA.

5.2.2 NSW Protection of the Environment Operations Act 1997

The POEO Act is the principal NSW environmental protection legislation and is administered by the EPA. The site has the following EPLs issued under the POEO Act:

- EPL 13426, which applies to waste disposal (application to land) and waste storage, and which states that the licensee must:
 - not landfill more than 700,000 tonnes of non-putrescible waste per year; and
 - operate between the hours of 7:00am and 6:00pm Monday to Friday, and 8:00am to 4:00pm Saturday, Sunday and public holidays.
- EPL 20121, which applies to composting, resource recovery and waste storage and which states that the licensee must operate between:
 - 7:00am to 6:00pm Monday to Friday, and 8:00am to 4:00pm Saturday, Sunday and public holidays for all activities at the site; and
 - 6:00am to 10:00pm Monday to Friday and 6:00am to 4:00pm Saturday, Sunday and public holidays at the MPC.

The Proponent is seeking to increase the limit on yearly landfilling volumes and amend the operating hours as described in this EA and will apply to the EPA to amend the following sections of the EPLs should approval be granted:

- EPL 13426:
 - L3.2 – replace the condition including text “The Licensee must not landfill more than 700,000 tonnes of non-putrescible waste per calendar year” with a revised condition being “The Licensee must not landfill more than 1,000,000 tonnes of non-putrescible waste per calendar year (excluding waste generated by recycling processes within the Materials Processing Centre and the Pre-Sort Building) ”
 - L4.1 – amend the table as follows.

Table 5.1 L4.1 – amended table

Residence location	Day (L _{Aeq} , 15 minute)	Evening (L _{Aeq} , 15 minute)	Night (L _{Aeq} , 15 minute)	Morning shoulder (L _{Aeq} , 15 minute)
Nearest affected receiver (Minchinbury)	48	47	44	47

Table 5.1 L4.1 – amended table

Residence location	Day (L _{Aeq} , 15 minute)	Evening (L _{Aeq} , 15 minute)	Night (L _{Aeq} , 15 minute)	Morning shoulder (L _{Aeq} , 15 minute)
Nearest affected receiver (Erskine Park)	39	40	37	37

L4.3 – amend the table as follows.

Table 5.2 L4.3 – amended table

Location	Day (L _{Aeq} , 15 minute)	Evening (L _{Aeq} , 15 minute)	Night (L _{Aeq} , 15 minute)	Morning shoulder (L _{Aeq} , 15 minute)
Point 1	48	47	44	47

- L5.1 – Revise condition text to “Operating hours for receipt of landfill waste and landfill operations at the Premises must be limited to 5 am to 9 pm Monday to Sunday. Landfilling via the MPC chute may occur at any time. Machinery may be repaired 24-hours a day Monday to Sunday”.
- EPL 20121:
 - L4.1 – amend the table as follows.

Table 5.3 L4.1 – amended table

Residence location	Day (L _{Aeq} , 15 minute)	Evening (L _{Aeq} , 15 minute)	Night (L _{Aeq} , 15 minute)	Morning shoulder (L _{Aeq} , 15 minute)
Nearest affected receiver (Minchinbury)	48	47	44	47
Nearest affected receiver (Erskine Park)	39	40	37	37

Amend the note to “Day: 7 am - 6 pm Monday - Saturday; 8 am - 6 pm Sundays and public holidays; Evening: 6 pm - 10 pm; Night: all remaining periods; Morning shoulder: 6 am – 7 am Monday to Saturday and 6 am – 8 am Sunday and public holidays.”

- L5 – remove text and add following table.

Table 5.4 L5 – added table

Activity	Days	Existing times	Proposed times
Construction	Monday – Friday	7:00 am to 6:00 pm	No change
	Saturday	8:00 am to 4:00 pm	No change
	Sunday and Public holidays	Nil	No Change

Table 5.4 L5 – added table

Activity	Days	Existing times	Proposed times
MPC Operations (waste deliveries and chute use)	Monday – Friday	7:00 am to 6:00 pm	24 hours
	Saturday, Sunday and Public holidays	8:00 am to 4:00 pm	24 hours
Crushing and screening	Monday – Friday	7:00 am to 6:00 pm	6:00 am to 6:00 pm
MPC (including maintenance)	Monday – Friday	6:00 am to 10:00 pm	24 hours
	Saturday, Sunday and Public holidays	6:00 am to 4:00 pm	24 hours
Landfill deliveries (by truck only)	Monday – Sunday	7:00 am to 6:00 pm	5:00 am to 9:00 pm

5.2.3 NSW Waste Avoidance and Recovery Act 2001

The NSW *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) sets the strategic direction for waste management and resource recovery in NSW. Among the main objectives of the WARR Act are:

- (b) to ensure that resource management options are considered in accordance with the following hierarchical order:
 - (i) avoidance of unnecessary resource consumption,
 - (ii) resource recovery (including reuse, reprocessing, recycling and energy recovery), or
 - (iii) disposal.

The proposed modification would be consistent with the objectives of the WARR Act by increasing opportunities for resource recovery from building and demolition, and commercial and industrial wastes. It will accomplish this by accepting and processing more waste during the proposed extended operating hours and removal of the landfill limit, which will enable greater quantities of waste to be processed, including maximising the recycling potential of the facility.

The facility also provides a site for disposal of waste, which is the final waste management option in the waste hierarchy and which is preferably only used for material that cannot be recycled such as asbestos waste.

5.3 Environmental planning instruments

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

The SEPP 2009 provides land use zones for areas of Eastern Creek, Erskine Park and Horsley Park. According to Schedule 1 (additional permitted uses of the SEPP), the consent authority may consent to development for the purposes of a waste facility for general solid waste (non-putrescible) at the lots subject to this EA.

Consistent with the SEPP, project approval was granted for a waste facility at the site, and this EA accompanies an application to modify the approval to improve the ability of the facility to respond to waste disposal demands and fulfil NSW Government waste management objectives.

ii State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP 33) ensures that the consent authority has sufficient information to assess if a development is hazardous or offensive and to impose conditions to reduce the impact.

a. Offensive development

SEPP 33 regards an offensive development as one that could emit a polluting discharge without the implementation of management measures. The key consideration for the consent authority is whether there are adequate controls proposed to control emissions so that significant residual emissions are not discharged. In most cases, compliance with an EPL issued by the EPA demonstrates that a development is not offensive.

The original EA stated that the facility will not be offensive as the potential impacts identified in the technical assessments could be managed in accordance with an EPL.

As described in Section 5.2.2, two EPLs apply to the site, and, should the proposed modification be approved, the Proponent will apply to have these amended based on the outcomes of the technical assessments appended to this EA.

Therefore, should the amendments be accepted by the EPA, the proposed modification will not qualify the facility as offensive development.

b. Hazardous development

SEPP 33 regards a hazardous development as one which would pose a significant risk to human health, property or the environment in a locality without the implementation of management measures. The facility is approved to store diesel, which is classified as a C1 – class 3 hazardous good but is not classified in the Dangerous Goods Code.

The original EA determined that the storage of diesel at the facility would not qualify it as a hazardous development. No additional diesel is proposed to be stored onsite under the proposed modification and, therefore, the proposed modification will not qualify the facility as a hazardous development. The commencement of State Environment Planning Policy (Western Sydney Employment Area) 2009 (the SEPP) repealed SEPP 59. However, clause 19 of the SEPP allows for the Eastern Creek Precinct Plan to apply to land previously identified.

iii Blacktown Local Environmental Plan 2015

Blacktown Local Environmental Plan 2015 provides land use zones for the Blacktown local government area (LGA), which includes the lots subject to this EA. However, the land use zones for the site are contained in the SEPP, with waste facilities permissible at the subject lots.

iv Eastern Creek Precinct Plan – Stage 3

The Eastern Creek Precinct Plan has been prepared in accordance with the provisions of the now repealed State Environmental Planning Policy No 59 – Central Western Sydney Economic and Employment Area (SEPP 59) and aims to reinforce the provisions of SEPP 59, by providing guidelines for the detailed planning and development of the Eastern Creek Precinct.

Land identified within the Eastern Creek Precinct is zoned Employment under the provisions of SEPP 59 and covers an area of approximately 600 ha, and is bound by the M4 Western Motorway and the Lot 11 Precinct to the north, Wallgrove Road to the east, the Sydney Water Pipeline to the south, and the TransGrid transmission easements to the west.

The facility is on land identified as Release Area 3 in the Eastern Creek Precinct Plan. The proposed modification is consistent with the Eastern Creek Precinct Plan.

5.4 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) aims to protect matters deemed to be of national environmental significance (NES) that is:

- world heritage properties;
- places listed on the National Heritage Register;
- Ramsar wetlands of international significance;
- threatened flora and fauna species and ecological communities;
- migratory species;
- Commonwealth marine areas;
- nuclear actions (including uranium mining); and
- actions of development for coal seam gas or large coal mining on water resources.

If an action (or proposed modification) would, or is likely to, have a significant impact on any matters of NES, it is deemed to be a controlled action and requires approval from the Commonwealth Environment Minister or the Minister's delegate. To determine whether a proposed action would or is likely to be a controlled action, an action may be referred to the Commonwealth Department of the Environment and Energy (DoEE).

The proposed modification will not involve any ground disturbance and will not involve any nuclear, coal seam gas or coal mining actions. Accordingly, a referral to the Commonwealth DoEE is not required.

6 Stakeholder engagement

6.1 Introduction

The Environmental Assessment Requirements are outlined in a letter from DPE dated 3 April 2017. In addition to the Environmental Assessment Requirements, the letter recommends that the Proponent "directly consult with other relevant government agencies including but not limited to the EPA, RMS and Council in preparing the EA".

Consultation commenced in early 2017 and has comprised email, letter, phone contact and face-to-face meetings with Blacktown City Council and Environment Protection Authority.

6.2 Consultation with government

Consultation undertaken with relevant government agencies in relation to the proposed modification is summarised in Table 6.1.

Table 6.1 Consultation record and outcomes

Stakeholder	Method of engagement	Date	Purpose	Outcome/comment
Blacktown City Council	Meeting	31/07/17	Clarify requirements for MOD 6	Council confirmed requirements and provided further background following their response to DPE of 7 September 2016.
	Meeting	13/09/17	Clarify issues raised in previous meeting	
EPA	Meeting	20/09/2017	General discussion surrounding operating hours	EPA advised that they understood the need for an increase in operating hours.
	Meeting	27/08/18	To discuss EPA comments received relating to air quality	Amended modelling required prior to submission

7 Environmental assessment

7.1 Overview

The potential environmental impacts of the proposed modification were assessed at a level of detail commensurate with the associated levels of risk. Specialist reports have been prepared to assess key matters including noise and vibration, air quality and odour, leachate and traffic and transport. The EA and specialist reports have been prepared to address the SEARs issued for the proposed modification. This section summarises the technical specialist reports and provides an assessment of the potential environmental impacts associated with the proposed modification.

The scenario on which the various assessments have been modelled is a facility operating at the maximum volumes which are authorised under the current consent, being 2M tpa. The facility is currently operating at a level significantly below that level and, in reality, the facility will likely be subject to increasing but incremental demand over time. There is not a pent-up demand which will create a sudden lift to 2M tpa.

The assessment methodologies therefore produce models which reflect a potential maximum waste through-put which may or may not ever be manifested at the facility.

7.1.1 A note regarding the technical assessments

The technical assessments (attached at the Appendices) were prepared for the key potential areas of impact as prescribed in the SEARs.

There are two matters which need to be considered in the context of the assessment of the proposed change to the landfill limit.

Firstly, it is noted that the landfill limitation is principally a condition of consent which is used as a disincentive to landfill (and conversely an incentive for higher order waste management actions such as avoidance and recycling). The actual physical limit of waste processing for the facility is 2M tpa, as prescribed in the conditions of consent. This might best be considered the 'gate limit'. It does not distinguish between waste which is recyclable and waste which is non-recyclable.

As described in Chapter 4, if there is a nominal tonnage applied for the purpose of limiting landfill which does not distinguish between landfill from 'direct-to-landfill' waste and landfill from the recycling processes - as is currently the case - then the limit constrains both recycling effort and the unavoidable 'direct-to-landfill' disposal.

The 'direct-to-landfill' waste has no other available waste management solution (eg asbestos contaminated soil) and indeed is recommended by policy and regulation. The limit on landfill at this facility simply pushes the landfill demand elsewhere. This can create unwanted externalities such as illegal dumping and increased waste transport impacts if the 'direct-to-landfill' material is forced to seek disposal further afield.

The landfill volumes from the recycling process should ideally be subject to separate accounting. Limiting the disposal to landfill for the inevitable by-products of recycling has the effect of constraining the amount of co-mingled waste which can be processed for recycling.

Neither of these outcomes are desirable.

Secondly, there is an inherent difficulty in providing a precise estimate of the volumes of landfill which would actually occur under nominal limits for landfilling. This is because the volume of co-mingled waste arriving at the facility for processing is driven by the level of activity and the type of projects that comprise the construction sector at any given time. Similarly, the proportion of 'direct-to-landfill' waste in the future is not known, although there is evidence to suggest that demand will increase.

The assessment of various impacts has therefore been based on an assumption that the landfill limit of 700,000 tpa is removed. This means that the assessment assumed the worst-case scenario within the 2M tpa overall 'gate limit'. The only exception to this approach is air quality where the 1M tpa landfill limit was modelled due to exceedances of ambient air quality criteria for PM10 at industrial receiver locations.

The actual landfill volumes are likely to be more than is currently the case but less than the 2M tpa limit on overall waste received.

An increase to the limit of material allowed to be disposed in the landfill from 700,000 tpa to 1 M tpa is sought as part of the proposed modification. However, by assessing the worst-case scenario under a 'no limit' annual volume on landfill, there is a guarantee that the impacts of the actual landfilling volumes, which will be something less than 2 M tpa, are considered, addressed and mitigated, as necessary.

7.2 Noise and vibration

7.2.1 Introduction

The potential for noise to be generated by the proposed modification was assessed in detail. The noise study is in Appendix B and is summarised in this chapter.

Noise was assessed having regard to the SEARs and the following NSW guidelines and policies:

- *Industrial Noise Policy* (EPA 2000) (INP);
- *Industrial Noise Policy Application Notes* (EPA 2013); and
- *Road Noise Policy* (EPA 2011) (RNP).

7.2.2 Existing environment

i Sensitive receivers

The site is in an industrial and commercial precinct. The closest residential properties are approximately 430 m to the north in Minchinbury on the opposite side of the M4 Western Motorway. Other surrounding land uses are industrial and commercial, with the site directly bounded by industrial properties on the north, east and south. The assessment locations are shown on Figure 7.1, which represent potentially affected receivers.

ii Existing noise

As noted in Chapter 4, the noise generated by the facility is not considered an impact on sensitive receptors because it is masked by the greater noise contribution of nearby traffic.

Noise measurements were recently taken (2016) in the residential areas to the north (Minchinbury) and west (Erskine Park) for a proposed development adjacent to the facility (Figure 7.1).

These measurements were used for this assessment as they are relatively recent and represent receivers potentially affected by noise from the proposed modification. The overall noise level representing each INP assessment period (day/evening/night) are in Table 7.1.

There are commercial/industrial facilities which contribute to existing noise levels in the area such as the retail depot and logistics distribution centres to the north-west of the site. Road traffic noise from major arterial roads (M4, M7, Great Western Highway and Walgrove Road) surrounding the site also contribute significantly to the noise environment at residential areas, with noise from these sources dominant at most of the measurement locations.

Table 7.1 Summary of existing and ambient background noise levels

Monitoring Location	Period ¹	RBL ² , dB	Ambient L _{Aeq, period} noise level ³ , dB
BG1 (24 Cobbler Crescent, Minchinbury)	Day	43	55
	Evening	48	54
	Night	41	51
BG2 (4 Blackbird Glen, Erskine Park)	Day	37	53
	Evening	44	57
	Night	35	46

Notes

1. Day: 7 am – 6 pm Monday – Saturday; 8 am – 6 pm Sundays and public holidays; Evening: 6 pm – 10 pm; Night: all remaining periods.
2. Rating background level (RBL) is the overall single figure background level representing each assessment period (day/evening/night) over the whole monitoring period.
3. Represents the energy average noise level over the relevant period.

iii Meteorology

Noise propagation over distance can be significantly affected by the prevailing weather conditions. Of most interest are source to receiver winds, the presence of temperature inversions and drainage flow effects, as these conditions can enhance received noise levels. Weather conditions considered in the noise modelling are in Table 7.2, which were derived from data available for the Horsley Park automatic weather station (located approximately 6 km south-south-east of the facility).

Table 7.2 Weather conditions considered in noise modelling

Assessment period	Meteorological condition	Air temperature	Relative humidity	Wind speed ¹	Direction	Stability category (temperature gradient)
Day	Calm	20 °C	70%	0 m/s	n/a	D class
Day	Winds	20 °C	70%	1.9 m/s	292.5° to 315°	D class
Evening	Calm	10 °C	90%	0 m/s	n/a	D class
Evening	Winds	10 °C	90%	2.4 m/s	67.5° to 292.5°	D class
Night/morning shoulder	Calm	10 °C	90%	0 m/s	n/a	D class
Night/morning shoulder	Winds	10 °C	90%	2.5 m/s	157.5° to 315°	D class

Table 7.2 **Weather conditions considered in noise modelling**

Assessment period	Meteorological condition	Air temperature	Relative humidity	Wind speed ¹	Direction	Stability category (temperature gradient)
Night/morning shoulder	Temp. inversion	10 °C	90%	0 m/s	n/a	F class



KEY

- Facility
- Assessment locations
- Monitoring location
- Main road
- Local road
- Watercourse

Noise monitoring and
assessment locations

Genesis Xero Waste
Modification 6
Environmental assessment

Figure 7.1

7.2.3 Assessment criteria

i Industrial noise

Noise emissions from industrial sites in NSW are regulated by licences and/or approval conditions, which are derived from operational noise criteria applied at assessment locations. They are based on the INP or noise levels that can be achieved at a specific site following the application of all feasible and reasonable noise mitigation.

The INP guidelines for assessing industrial facilities have been used for this assessment. The objectives of these criteria are to protect the community from excessive 'intrusive' noise and to preserve 'amenity' for specific land uses. The fundamental difference between these criteria is intrusiveness criteria apply over 15 minutes in any period (day, evening or night) and the amenity criteria apply to the entire assessment period (day, evening or night). The project specific noise level (PSNL) is the most stringent of either the calculated intrusive or amenity criteria.

The intrusiveness criteria require that $L_{Aeq,15 \text{ minute}}$ noise levels from the subject site during the relevant operational periods (ie day, evening and night) do not exceed the RBL by more than 5 dB. The intrusiveness criteria for the proposed modification in Table 7.3 are based on the adopted RBLs.

Table 7.3 Intrusive noise criteria

Location	Period ¹	Measured RBL, dB(A)	Adopted RBL, dB(A)	Intrusive criteria dB, $L_{Aeq,15 \text{ minute}}$
Residential assessment locations (Minchinbury) (1-8)	Day	43	43	48
	Evening	48	43 ²	48
	Night	41	41	46
	Morning Shoulder ³	N/A	42	47
Residential assessment locations (Erskine Park) (9-11)	Day	37	37	42
	Evening	44	37 ²	42
	Night	35	35	40
	Morning Shoulder ³	N/A	36	41

Notes: 1. Day: 7 am - 6 pm Monday - Saturday; 8 am - 6 pm Sundays and public holidays; Evening: 6 pm - 10 pm; Night: all remaining periods.

2. The RBL measured for day has been adopted for the evening period in accordance with the INP Application Notes procedures.

3. The RBL adopted for the morning shoulder period has been taken as the midpoint of the RBLs determined for day and night-time periods in accordance with the INP Application Notes.

The assessment of amenity is based on noise criteria specific to the land use. The land uses and corresponding criteria for the assessment locations are in Table 7.4.

Table 7.4 **Amenity criteria**

Assessment location	Indicative area ¹	Time period ²	Recommended noise level dB, L _{Aeq,period}	
			Acceptable	Maximum
All residential areas	Urban (Minchinbury)	Day	60	65
		Evening	50	55
		Night	45	50
	Suburban (Erskine Park)	Day	55	60
		Evening	45	50
		Night	40	45
Commercial Premises	All	When in use	65	70
Industrial Premises	All	When in use	70	75

Notes: 1. According to INP urban amenity criteria.

2. Day: 7 am - 6 pm Monday - Saturday; 8 am - 6 pm Sundays and public holidays; Evening: 6 pm - 10 pm; Night: all remaining periods.

The PSNL for the daytime, evening and night periods are indicated in Table 7.5.

Table 7.5 **Project specific noise levels**

Assessment location	Period	Intrusive criteria, dB, L _{Aeq,15 minute}	Amenity criteria, dB, L _{Aeq,period}	PSNL, dB
Assessment locations 1-8 (Minchinbury)	Day	48	60	48 L _{Aeq,15 minute}
	Evening	48	50	48 L _{Aeq,15 minute}
	Night	46	43 ¹	46 L _{Aeq,15 minute} ⁴²
	Morning Shoulder	47	N/A	47 L _{Aeq,15 minute}
Assessment locations 9-11 (Erskine Park)	Day	42	55	42 L _{Aeq,15 minute}
	Evening	42	45	42 L _{Aeq,15 minute}
	Night	40	40	40 L _{Aeq,15 minute}
	Morning Shoulder	41	N/A	41 L _{Aeq,15 minute}
Commercial premises	When in use	-	65	65 L _{Aeq,period}
Industrial premises	When in use	-	70	70 L _{Aeq,period}

Notes: 1. The amenity criteria have been adjusted using INP modification factor methods to account for existing industrial noise and the measured existing industrial noise contribution.

2. It has been conservatively assumed that L_{Aeq,period} noise levels from site are 3 dB less than the L_{Aeq,15 minute} noise level. On this basis, the intrusive criteria of L_{Aeq,15 minute} 46 dB is equal to the adjusted amenity criteria of L_{Aeq,period} 43 dB. For the purposes of the noise assessment, the intrusive criteria of L_{Aeq,15 minute} 46 dB has been applied here forth.

Important to this assessment, the noise limits in the project approval and EPLs are below measured ambient noise levels at the nearest receivers. Table 7.1 shows that ambient noise levels at the nearest receivers are more than 10 dB higher than these noise limits. The project approval noise impact assessment criteria at any receiver are:

- Day – 36 dB(A) (L_{Aeq(15 minutes)});
- Evening – 35 dB(A) (L_{Aeq(15 minutes)}); and
- Morning shoulder – 35 dB(A) (L_{Aeq(15 minutes)}).

Further, the noise contribution from the facility is unable to be quantified during the bi-annual noise monitoring due to the elevated ambient noise levels.

ii Sleep disturbance

Operational criteria are not appropriate for use in assessing noise impacts on sleep as transient noise from sources such as truck movements is intermittent (rather than continuous) and needs to be assessed using the L_1 or L_{max} noise metrics. The INP application notes suggests that $L_{A1,1 \text{ minute}}$ level of 15 dB above the RBL is a suitable screening criteria for the night-time period, which is reflected in the adopted criteria in Table 7.6.

Table 7.6 Sleep disturbance screening criteria, residential assessment locations

Assessment location	Adopted RBL, dB	Sleep disturbance criteria dB, L_{Amax}
Assessment locations 1-8 (Minchinbury)	41	56
Assessment locations 9-11 (Erskine Park)	35	50

Notes: 1. The sleep disturbance assessment applies to residential assessment locations only.

iii Road traffic noise

Road traffic generated by the proposed modification travels directly between the site and the arterial road network (M4 and M7 motorways) via Kangaroo Avenue, Honeycomb Drive and Wonderland Drive. There are no residential or other noise sensitive assessment locations along Kangaroo Avenue, Honeycomb or Wonderland Drives. The proportion of site traffic on the M4 and M7 are inconsequential to average noise levels. Therefore, road traffic noise has not been considered further.

7.2.4 Impact assessment

Noise prediction software was used to predict noise impacts at the assessment locations, which calculates total noise levels at receptors from the concurrent operation of multiple noise sources using sound power levels for plant and equipment supplied by the Proponent.

i Operational noise

Two scenarios were modelled to compare the noise levels from approved, and worst-case proposed operations from a noise perspective for daytime, evening, night-time and morning shoulder periods under calm and prevailing meteorological conditions. The scenarios were used to determine the impact of removing the annual landfill limit, with Scenario 1 The first scenario represents existing operations and the second Scenario 2 represents worst case operations operating under the proposed modification. Operational modelling scenarios represent a worst-case 15 minute period, with peak truck volumes assumed and all approved/proposed plant and equipment operating concurrently. Section 5.1.2 of the Noise Assessment report describes the assumptions for each scenario in detail.

The predicted approved and proposed noise levels at each assessment location for each assessment period are in Table 7.7.

Table 7.7 Predicted site noise emissions – approved and proposed modified operations

Assessment location	Period	Approved operations, dB		Proposed modified operations, dB		PSNL, dB
		Calm	Adverse ¹	Calm	Adverse ¹	
1	Day	46	46	47	47	48 L _{Aeq,15 minute}
	Evening	<35	<35	43	46	48 L _{Aeq,15 minute}
	Night	N/A	N/A	40	43	46 L _{Aeq,15 minute}
	Morning shoulder	<35	<35	43	46	47 L _{Aeq,15 minute}
2	Day	46	46	47	47	48 L _{Aeq,15 minute}
	Evening	<35	<35	44	47	48 L _{Aeq,15 minute}
	Night	N/A	N/A	41	43	46 L _{Aeq,15 minute}
	Morning shoulder	<35	<35	44	47	47 L _{Aeq,15 minute}
3	Day	47	46	48	48	48 L _{Aeq,15 minute}
	Evening	<35	<35	44	47	48 L _{Aeq,15 minute}
	Night	N/A	N/A	41	44	46 L _{Aeq,15 minute}
	Morning shoulder	<35	<35	44	47	47 L _{Aeq,15 minute}
4	Day	44	46	45	47	48 L _{Aeq,15 minute}
	Evening	<35	<35	42	45	48 L _{Aeq,15 minute}
	Night	N/A	N/A	39	42	46 L _{Aeq,15 minute}
	Morning shoulder	<35	<35	42	45	47 L _{Aeq,15 minute}
5	Day	45	46	45	47	48 L _{Aeq,15 minute}
	Evening	<35	<35	43	45	48 L _{Aeq,15 minute}
	Night	N/A	N/A	39	42	46 L _{Aeq,15 minute}
	Morning shoulder	<35	<35	43	45	47 L _{Aeq,15 minute}
6	Day	43	45	43	46	48 L _{Aeq,15 minute}
	Evening	<35	<35	40	43	48 L _{Aeq,15 minute}
	Night	N/A	N/A	37	39	46 L _{Aeq,15 minute}
	Morning shoulder	<35	<35	40	43	47 L _{Aeq,15 minute}
7	Day	45	47	45	47	48 L _{Aeq,15 minute}
	Evening	<35	<35	42	45	48 L _{Aeq,15 minute}
	Night	N/A	N/A	38	41	46 L _{Aeq,15 minute}
	Morning shoulder	<35	<35	42	45	47 L _{Aeq,15 minute}
8	Day	44	47	45	47	48 L _{Aeq,15 minute}
	Evening	<35	<35	42	45	48 L _{Aeq,15 minute}
	Night	N/A	N/A	38	41	46 L _{Aeq,15 minute}
	Morning shoulder	<35	<35	42	45	47 L _{Aeq,15 minute}
9	Day	39	39	39	39	42 L _{Aeq,15 minute}
	Evening	<35	<35	37	40	42 L _{Aeq,15 minute}
	Night	N/A	N/A	35	37	40 L _{Aeq,15 minute}
	Morning shoulder	<35	<35	37	40	41 L _{Aeq,15 minute}
10	Day	38	38	39	39	42 L _{Aeq,15 minute}
	Evening	<35	<35	37	40	42 L _{Aeq,15 minute}
	Night	N/A	N/A	<35	37	40 L _{Aeq,15 minute}
	Morning shoulder	<35	<35	37	40	41 L _{Aeq,15 minute}

Table 7.7 Predicted site noise emissions – approved and proposed modified operations

Assessment location	Period	Approved operations, dB		Proposed modified operations, dB		PSNL, dB
		Calm	Adverse ¹	Calm	Adverse ¹	
11	Day	38	38	39	39	42 L _{Aeq,15 minute}
	Evening	<35	<35	37	40	42 L _{Aeq,15 minute}
	Night	N/A	N/A	<35	37	40 L _{Aeq,15 minute}
	Morning shoulder	<35	<35	37	40	41 L _{Aeq,15 minute}
12	Day	52	52	52	52	70 L _{Aeq,period}
	Evening	<35	<35	49	50	70 L _{Aeq,period}
	Night	N/A	N/A	46	47	70 L _{Aeq,period}
	Morning shoulder	<35	<35	49	50	70 L _{Aeq,period}
13	Day	41	43	41	44	70 L _{Aeq,period}
	Evening	<35	<35	38	40	70 L _{Aeq,period}
	Night	N/A	N/A	35	38	70 L _{Aeq,period}
	Morning shoulder	<35	<35	38	40	70 L _{Aeq,period}
14	Day	39	42	40	42	70 L _{Aeq,period}
	Evening	<35	<35	37	40	70 L _{Aeq,period}
	Night	N/A	N/A	<35	37	70 L _{Aeq,period}
	Morning shoulder	<35	<35	37	40	70 L _{Aeq,period}
15	Day	39	41	39	42	70 L _{Aeq,period}
	Evening	<35	<35	37	39	70 L _{Aeq,period}
	Night	N/A	N/A	<35	36	70 L _{Aeq,period}
	Morning shoulder	<35	<35	37	39	70 L _{Aeq,period}
16	Day	45	47	46	48	70 L _{Aeq,period}
	Evening	<35	<35	43	45	70 L _{Aeq,period}
	Night	N/A	N/A	38	41	70 L _{Aeq,period}
	Morning shoulder	<35	<35	43	45	70 L _{Aeq,period}
17	Day	46	48	47	49	70 L _{Aeq,period}
	Evening	<35	<35	44	46	70 L _{Aeq,period}
	Night	N/A	N/A	39	42	70 L _{Aeq,period}
	Morning shoulder	<35	<35	44	46	70 L _{Aeq,period}
18	Day	48	50	49	51	70 L _{Aeq,period}
	Evening	<35	<35	46	48	70 L _{Aeq,period}
	Night	N/A	N/A	41	43	70 L _{Aeq,period}
	Morning shoulder	<35	<35	46	48	70 L _{Aeq,period}
19	Day	50	52	51	53	70 L _{Aeq,period}
	Evening	<35	<35	48	50	70 L _{Aeq,period}
	Night	N/A	N/A	43	45	70 L _{Aeq,period}
	Morning shoulder	<35	<35	48	50	70 L _{Aeq,period}
20	Day	57	58	58	59	70 L _{Aeq,period}
	Evening	<35	<35	55	56	70 L _{Aeq,period}
	Night	N/A	N/A	50	50	70 L _{Aeq,period}
	Morning shoulder	<35	<35	55	56	70 L _{Aeq,period}

Table 7.7 Predicted site noise emissions – approved and proposed modified operations

Assessment location	Period	Approved operations, dB		Proposed modified operations, dB		PSNL, dB
		Calm	Adverse ¹	Calm	Adverse ¹	
21	Day	57	57	58	58	70L _{Aeq,period}
	Evening	<35	<35	55	56	70L _{Aeq,period}
	Night	N/A	N/A	50	51	70L _{Aeq,period}
	Morning shoulder	<35	<35	55	56	70L _{Aeq,period}

Notes: 1. Adverse is the worst case result from prevailing winds or temperature inversion conditions at each assessment location.

Noise emissions during proposed modified operations are predicted to comply with the relevant PSNLs at all assessment locations. The results showed that the main noise source was trucking movements. Further, the noise contribution of the plant and equipment located in the landfill tipping area was negligible at the nearest assessment locations.

In addition, current and future noise levels are predicted for the proposed modification to be significantly less than existing ambient noise levels at the residential assessment locations which are primarily influenced by road traffic noise from the M4 Western Motorway. Hence, noise levels from the proposed modification are not expected to cause adverse impacts at any assessment location.

ii Sleep disturbance

The predicted L_{Amax} noise levels from the site at the nearest residential assessment locations during night time are in Table 7.8, which shows that noise levels will satisfy the sleep disturbance screening criteria.

Table 7.8 Predicted L_{Amax} noise levels during night period

Assessment location ¹	Predicted L _{Amax} noise levels, dB	L _{Amax} screening criteria, dB
	Worst-case meteorological conditions (temperature inversions)	
1	51	56
2	51	56
3	53	56
4	48	56
5	49	56
6	44	56
7	47	56
8	47	56
9	44	50
10	42	50
11	41	50

Notes: 1. The sleep disturbance assessment applies to residential assessment locations only.

iii Cumulative noise

The noise assessment inherently considered cumulative noise impacts as the impact of the facility with existing industrial noise sources has been assessed in the determination of the acceptable amenity levels at the assessment locations.

The combined impact of the proposed modification with the approved Hanson concrete and asphalt facility on a site to the south east is predicted to have a negligible impact on the existing ambient amenity of the area as Hanson's facility is located further away from residences.

The proposed modification is predicted to have a negligible impact on the existing ambient acoustic amenity and is not predicted to increase industrial noise levels above the relevant amenity criteria. Note that noise associated with maintenance activities and tonal reversing alarms on vehicles were included in the range of noise sources considered.

7.2.5 Conclusion

Operational noise levels were assessed for the daytime, evening, night-time and morning shoulder periods during calm and prevailing weather conditions. The assessment found that operating noise from the site during both existing and proposed operations satisfies relevant INP PSNLs for all periods at all assessment locations.

Notwithstanding the above, the ambient noise levels, and subsequently the PSNLs, are above the noise criteria for all assessment location in the project approval. Therefore, it is recommended that the noise limits be increased in line with the PSNLs adopted for this assessment. INP procedures ensure that appropriate noise criteria (ie PSNLs) are established with a view to maintaining acceptable noise amenity levels at assessment locations and with consideration of potential cumulative noise impacts from existing and/or successive developments.

The potential for sleep disturbance from the proposed modification during the night-time period has been assessed. The highest predicted external maximum noise level from site is L_{Amax} 53 dB in Minchinbury and L_{Amax} 44 dB in Erskine Park which is below the noise levels likely to cause sleep disturbance affects.

Noise at the facility is mostly generated by trucks, with landfilling operations an insignificant contributor to noise generation at the facility.

7.3 Air quality and odour

7.3.1 Introduction

Air quality and odour impacts potentially generated by the proposed modification were assessed by Ramboll Environ Australia Pty Ltd. There is also an earlier air quality report prepared by Holmes Air Sciences (2008) which is relevant because it was part of the original approval for a waste facility processing up to 2M tpa.

The assessment was prepared in accordance with the SEARs and the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* ('the Approved Methods', EPA 2016).

This chapter provides a summary of the air quality impact assessment which is in Appendix C. The assessment modelled potential impacts at nearby receivers by estimating the emissions associated with the proposed modification and using existing atmospheric conditions to determine how the pollutants will disperse and affect regional air quality.

7.3.2 Existing environment

i Assessment locations

The locations of sensitive receptors used to assess air quality impacts from the proposed modification are consistent with those for the noise assessment (see Figure 7.1). These receptors encompass the residential areas of Minchinbury to the north and Erskine Park to the west, and adjacent commercial and industrial premises.

ii Climate data

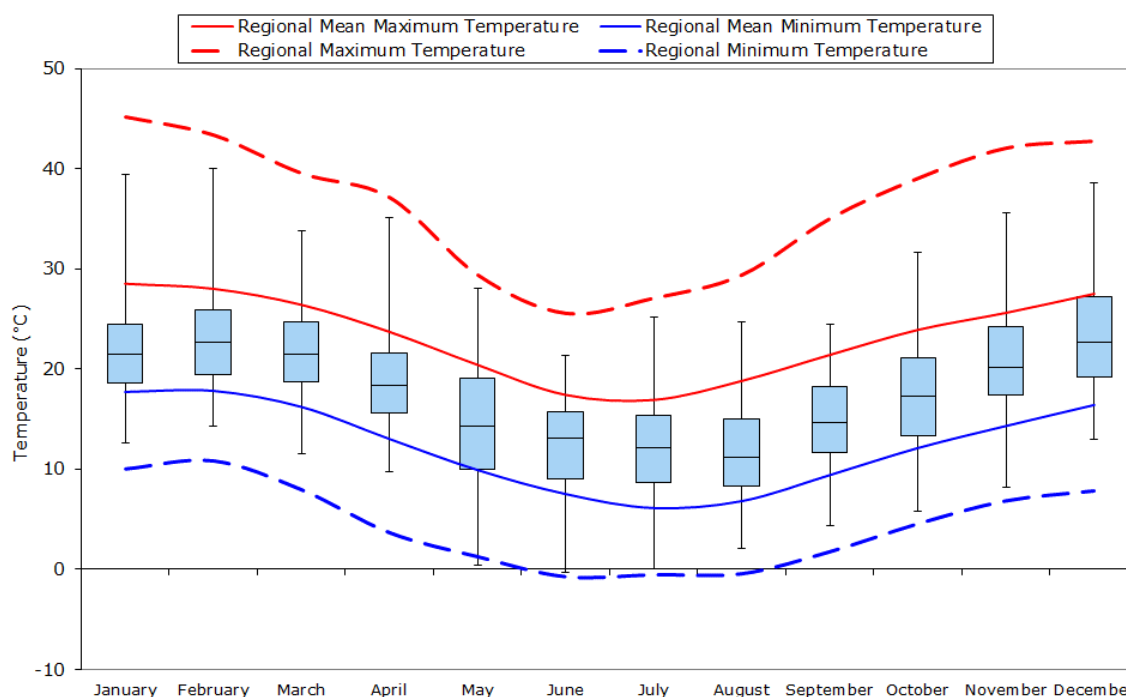
Meteorological mechanisms govern the generation, dispersion, transformation and eventual removal of pollutants from the atmosphere. Prevailing wind regime, ambient temperature, rainfall, relative humidity, mixing depth and atmospheric stability data from a number of local and regional weather stations were used to characterise the dispersion meteorology of the region. The Proponent operates an on-site weather station, however it is used for operational dust control and the siting is unsuitable for use in dispersion modelling.

There is a dominant south-west component to the windroses in Appendix C, with winds blowing from all directions for a smaller proportion of time. Average wind speeds range from 2 to 3 metres per second (m/s) while the percentage occurrence of calm winds (<0.5 m/s) ranges from low at Holsworthy (7%) to high St Marys (33%).

The minimum, maximum, mean and upper and lower quartile temperatures for each month of 2016 are shown on Figure 7.2.

Atmospheric stability is the degree of turbulence or mixing that occurs in the atmosphere and is a controlling factor in the rate of atmospheric dispersion of pollutants. At the facility, atmospheric instability increases during daylight hours while stable conditions prevail during the night-time. The potential for atmospheric dispersion of emissions is therefore greatest during day time and lowest during evening through to early morning.

Greater boundary layer depths are experienced during the day time, peaking in mid to late afternoon. Higher mixing depths increase the potential for atmospheric dispersion of pollutants. Therefore, the potential for atmospheric dispersion of emissions would be greatest during the day.



2016 data are illustrated by the 'box and whisker' plot. Boxes indicate 25th, median and 75th percentile temperature values while upper and lower whiskers indicate maximum and minimum values.

Figure 7.2 Long term and 2016 temperature comparison at Prospect Reservoir long term monitoring station

iii Existing particulate matter

Emissions of particulate matter (PM), including total suspended particulate matter (TSP) and particulate matter with an equivalent aerodynamic diameter of less than 10 microns (PM₁₀) and 2.5 microns (PM_{2.5}) and dust deposition were assessed. In accordance with the Approved Methods local air quality impacts were assessed using a Level 2 assessment approach which involves a refined dispersion modelling technique using site-representative input data.

Summary statistics for PM₁₀ and PM_{2.5} across the facility, St Marys and Prospect weather stations are in Table 7.9. Annual mean PM₁₀ concentrations across the region are 61% to 76% of the impact assessment criteria, while annual mean PM_{2.5} concentrations for the region are 98%-108% of the impact assessment criteria, that is, background concentrations are at or above the impact assessment criteria.

Table 7.9 Summary statistics for PM₁₀ and PM_{2.5}

Metric	Statistics	Site (µg/m ³)		
		The Facility (Genesis)	St Marys	Prospect
PM ₁₀	Annual mean	15.3	16.1	18.9
	Daily maximum	125.0*	100.2	110.1
	95 th percentile	27.0	29.9	33.7
	90 th percentile	23.7	26.4	29.5
	Number of exceedances	2*	3	4
PM _{2.5}	Annual mean	-	7.8	8.7
	Daily maximum	-	93.2	84.9*
	95 th percentile	-	13.7	17.8
	90 th percentile	-	11.4	14.0
	Number of exceedances	-	5	5*

Notes: * Not based on a full year of observations so not a true daily maximum or number of exceedances

Particulate emissions in the PM_{2.5} size range are usually generated through combustion processes or as secondary particles formed from chemical reactions rather than through mechanical processes that dominate emissions at the facility.

TSP concentrations are not measured in the vicinity of the site, however, historical measurements of TSP and PM₁₀ in Sydney indicate that PM₁₀/TSP ratios in urban areas typically range from 0.4 to 0.5.

The measured average dust deposition across the four dust deposition gauges at the facility between 2013 and 2016 is 1.7 g/m²/month, which is consistent with background measurements seen across much of NSW.

The baseline air quality parameters adopted for the cumulative impact assessment based on the above particulate concentrations are in Table 7.10.

Table 7.10 Adopted background for cumulative assessment

Pollutant	Averaging period	Adopted background value
PM ₁₀	24-hour average	Daily varying
	Annual average	18.9 µg/m ³
PM _{2.5}	24-hour average	Daily varying
	Annual average	8.6 µg/m ³
TSP	Annual average	47.2 µg/m ³
Dust deposition	Annual average	2g/m ² /month

7.3.3 Impact assessment

i Method

Local air quality impacts were assessed using a Level 2 assessment approach (refined dispersion modelling technique using site-representative input data) in accordance with the approved methods, comprising:

- key pollutant indicators were identified, in this case dust and odour;
- emissions were estimated for all dust generating activities associated with the facility;
- dispersion of pollutants was modelled using a regulatory dispersion model to predict ground level concentrations (GLCs) for key pollutants at nearby sensitive receptors; and
- cumulative impacts were assessed by taking into account the combined effect of the facility with existing baseline air quality and/or other local sources of emissions.

ii Air quality assessment criteria

In NSW, proposed developments must demonstrate compliance with the impact assessment criteria in the *Approved Methods* (EPA 2016). The criteria are designed to ensure maintenance of ambient air quality levels that provide protection of human health and well-being.

Table 7.11 Air quality impact assessment criteria

Pollutant	Averaging period	Concentration ($\mu\text{g}/\text{m}^3$)
TSP	Annual	$90\mu\text{g}/\text{m}^3$
PM ₁₀	24 hours	$50\mu\text{g}/\text{m}^3$
	Annual	$25\mu\text{g}/\text{m}^3$
PM _{2.5}	24 hours	$25\mu\text{g}/\text{m}^3$
	Annual	$8\mu\text{g}/\text{m}^3$
Deposited dust	Annual (incremental)	$2\text{ g}/\text{m}^2/\text{month}$
	Annual (total)	$4\text{ g}/\text{m}^2/\text{month}$

Source: *Approved methods* (EPA 2016), *National Environment Protection (Ambient Air Quality) Measure* (NEPC 2003).

Odour is measured in odour units (OU) and the odour nuisance level can be as low as 2 OU and as high as 10 OU (for less offensive odours). An odour goal of 2 OU is considered to be acceptable for the whole population (EPA 2016) and therefore appropriate for urban areas such as Minchinbury and Erskine Park. An odour assessment criterion of 7 OU is likely to represent the level below which 'offensive' odours should not occur.

iii Emission inventory

a. Dust emissions

Emissions from activities associated with the proposed modification, such as wheel generated dust, waste handling/processing and wind erosion were estimated using the United States Environment Protection Agency's emissions factors for TSP, PM₁₀, PM_{2.5} and dust deposition rates. The emissions estimates were reduced by accounting for existing dust controls.

The existing and proposed dust controls are accounted for in the emissions estimates are:

- enclosure of material handling and processing and storage within the MPC shed;
- misting sprays operated within the shed to dampen material as it is sorted and before being loaded to the hopper;
- the majority of travel routes onsite are sealed (exceptions are the haul route into the pit and within the segregated materials area);
- water sprays on the mobile crusher and shredder;
- fixed water sprays on product storage areas;
- water truck operating on unsealed haul road into the pit, within the landfill and on the paved roads as needed;
- speed limit of 40km/hr for unsealed haul road into the pit;
- water cannon operating within the pit;
- established earth bund along the northern boundary of the pit; and
- a fixed water spray system operates on the access roadway.

Some of the dust controls listed above are incorporated into the emissions inventory for each relevant activity, based on control efficiencies reported in the literature. For example, all activities occurring within the shed are assigned a control efficiency of 40%. This is based on reported control efficiencies for material handling/transfer from enclosure or wind shielding, which range from 40% to 70% depending on roof/side wall wind shielding or full enclosure on all sides (Katestone, 2011). To provide a conservative (upper bound) estimate of emissions, we have adopted the lower of these reported control efficiencies. Also, to account for the mist sprays within the shed a control efficiency of 70% is assumed for waste sorting and loading the hopper (combination of 50% for watering and 40% for wind shielding).

Emissions are estimated based on a 50/50 split between the MPC and the landfill; that is, of the 2M tpa entering site, 1M tpa is processed through the MPC and 1M tpa enters the landfill. A summary of the annual TSP, PM₁₀ and PM_{2.5} emissions are presented in Table 6-1 of the Air Quality Impact Assessment Report (Ramboll, 2018) attached at Appendix C.

b. Odour emissions

The facility operates as a general solid waste (non-putrescible) landfill, and therefore odour emissions can be expected to be less significant when compared with a landfill which accepts putrescible waste (e.g. household waste, food waste, nappies, animal waste etc.). Recent odour audits for the current site found that no significant odour was detected beyond the site boundary (TOU, 2015; SEMA, 2017).

Notwithstanding, a proportion of the incoming waste is organic (wood waste, garden waste, paper and cardboard) and therefore has the potential to generate odour during decomposition. During normal operations the facility would aim to recover as much of this organic waste as possible, and therefore only a small volume of degradable waste would be disposed to landfill.

However, to address EPA's requirements, a worst-case scenario of 1M tpa directed to landfilled needs to be considered. Furthermore, although composting is not currently undertaken onsite, the facility is approved and licenced for this activity and therefore composting is included for a worst-case odour assessment.

The following odour sources are included in the model:

- landfill (including active tip face, daily cover, intermediate cover and final cap);
- green waste storage; and
- composting (including fresh and aged compost windrows).

Site specific odour monitoring was completed onsite in 2013 for sources including the active tip face, the leachate sump/riser and the leachate treatment tanks. While these monitoring results are considered appropriate to derive emission rates for existing operations, no measurements were taken across the covered or capped areas of the landfill, although these areas of the landfill are expected to have low emissions potential. Furthermore, these measurements were taken while the MPC was operational and the organic waste volume may therefore not necessarily be representative of our worst-case scenario.

It is noted that subsequent odour assessments for the site in 2015 (TOU, 2015) and 2017 (SEMA, 2017) completed downwind odour surveys and did not measure odour sources directly. These reports, while useful in providing an indication of existing odour impact, cannot be used to derive odour emission rates for dispersion modelling.

To derive odour emission rates for a worst-case scenario, odour emission data for other putrescible waste landfills was reviewed, selecting sites where relatively recent odour monitoring was available. A summary of the data is provided in Table 6-3 of the Air Quality Impact Assessment Report at Appendix C.

The approach taken is to use the average specific odour emissions rate (SOER, expressed as OU.m³/m²/s) from the four putrescible waste landfills presented in Table 6-3 of the Air Quality Impact Assessment Report at Appendix C. As shown, this provides a higher SOER than measurements taken at the existing facility and is generally higher than the emission rates used in the original EIS. To provide an additional level of conservatism, the source areas, across which these SOERs are applied, are scaled from the existing site layout according to the production increase.

iv Dispersion modelling

a. Overview

The predicted ground level concentrations (GLCs) of PM₁₀ at each receptor location are presented for the Modification 6 increment, as well as the cumulative impact which includes the addition of the existing background. The data is presented in Table 7-1 of the Air Quality Impact Assessment Report (Ramboll, 2018) at Appendix C.

The highest incremental annual average PM₁₀ concentration at a residential receptor is 2.3 µg/m³ (R05 and R08). The highest incremental annual average PM₁₀ concentration at a commercial receptor is 4.9 µg/m³ (effectively on the site boundary). With the addition of existing background, the cumulative annual average GLCs comply with the impact assessment criterion at all receptor locations.

The highest incremental 24-hour average PM₁₀ concentration at a residential receptor is 10.4 µg/m³ (R05) and 21.6 µg/m³ at a commercial receptor (R12). With the addition of existing background, the cumulative 24-hour average GLCs comply with the impact assessment criterion at all receptor locations.

b. PM_{2.5}

The predicted ground level concentrations (GLCs) of PM_{2.5} at each sensitive receptor are presented in Table 7-2 of the Air Quality Impact Assessment Report at Appendix C. Results are modelled for the Modification 6 increment alone, as well as cumulative which includes the addition of existing background.

The highest incremental annual average PM_{2.5} concentration at a residential receptor is 0.6 µg/m³. The highest incremental annual average PM_{2.5} concentration at a commercial receptor is 1.2 µg/m³ (effectively on the site boundary). With the addition of existing background, the cumulative annual average GLCs exceed the impact assessment criterion at all locations, however this is because the annual average background concentrations of PM_{2.5} already exceed the impact assessment criterion.

The highest incremental 24-hour average PM_{2.5} concentration at a residential receptor is 3.0 µg/m³ (R05). With the addition of existing background, the cumulative 24-hour average GLCs result in additional exceedances of the impact assessment criterion at a number of receptor locations (shown in bold). This is caused by a combination of elevated background with the additional dust emissions from the modification. It is noted that the background PM_{2.5} concentration is already close to the impact assessment criterion (24.4 µg/m³).

In addition to the paired-in-time cumulative analysis presented above, to provide an analysis of the statistical likelihood of compliance with the impact assessment criterion, every predicted 24-hour average concentration (366 individual concentrations) has been paired with multiple years of measured 24-hour average concentrations from the NSW OEH Prospect and St Marys sites (a total of 1,007 measurements). Each combination of model prediction and recorded concentration (376,190 potential combinations) is combined, assuming that any background value from the data set could occur on any given day of the proposed operations.

For the receptors with additional exceedance days (residential receptors R3 to R8 and commercial receptors R12 to R17), the number of cumulative 24-hour average PM_{2.5} concentrations greater than 25 µg/m³ is presented in Table 7-2 of the Air Quality Impact Assessment Report at Appendix C.

The analysis shows that for residential and commercial receptors, risk of any additional exceedances of the 24-hour PM_{2.5} impact assessment criterion does not increase significantly, above what is already caused by background (i.e. up to one additional day as a worst case).

c. PM₁₀

The predicted ground level concentrations (GLCs) of PM₁₀ at each receptor location are presented in Table 7-1 of the Air Quality Impact Assessment Report at Appendix C. Results are presented for the Modification 6 increment alone, as well as cumulative which includes the addition of the existing background.

The highest incremental annual average PM₁₀ concentration at a residential receptor is 2.3 µg/m³ (R05 and R08). The highest incremental annual average PM₁₀ concentration at a commercial receptor is 4.9 µg/m³ (effectively on the site boundary). With the addition of existing background, the cumulative annual average GLCs comply with the impact assessment criterion at all receptor locations.

The highest incremental 24-hour average PM₁₀ concentration at a residential receptor is 10.4 µg/m³ (R05) and 21.6 µg/m³ at a commercial receptor (R12). With the addition of existing background, the cumulative 24-hour average GLCs comply with the impact assessment criterion at all receptor locations.

d. [TSP and dust deposition](#)

The incremental increase in annual average TSP was predicted to be minor and the cumulative annual average GLCs were predicted to comply with the impact assessment criteria at all receptors.

The predicted dust deposition complies with both the incremental and cumulative impact assessment criteria at all residential receptors. Exceedances of both the incremental and cumulative impact assessment criteria were predicted to occur at the commercial receptors on the site boundary.

The predicted ground level concentrations (GLCs) of TSP and dust deposition at each receptor are presented in Table 7-3 of the Air Quality Impact Assessment Report at Appendix C. Results are presented for the Modification 6 increment alone, as well as cumulative which includes the addition of existing background.

The incremental increase in annual average TSP is minor and with the addition existing background, the cumulative annual average GLCs comply with the impact assessment criterion at all receptor locations. Similarly, the predicted dust deposition complies with both the incremental and cumulative impact assessment criteria at all receptor locations.

e. [Odour](#)

A theoretical worst-case odour scenario is modelled based on the potential for landfilling to occur up to the 1M tpa, in addition to green waste processing through the MPC (storage, processing and composting). It is noted that green waste processing is currently limited to shredding to produce various mulch products. However, as the facility is approved for composting, this is also included as an odour source in the modelling, nominally placed within the current green waste storage area.

The predicted ground level concentrations (GLCs) of odour for this worst-case scenario are presented in Table 7-7 of the Air Quality Impact Assessment Report at Appendix C. All modelling predictions at residential receptors are below odour goal of 2 OU and therefore comply with the impact assessment criteria. Modelling predictions at commercial receptors are all less than 7 OU, which is considered an appropriate odour goal for this type of receptor.

f. [The findings of a previous report by Holmes Air Sciences \(2008\)](#)

Based on the modelling results presented in this report, the existing controls appear to be effective in preventing dust impacts in surrounding residential areas. This conclusion is supported by the existing monitoring data which demonstrate compliance with impact assessment criteria at the site boundary (dust deposition) and in the suburb of Minchinbury (PM₁₀).

There is a small risk of additional exceedances of the 24-hour average PM_{2.5} concentrations at residential and commercial receptor locations (ie up to one additional day as a worst case). To better monitor the effectiveness of existing controls and ongoing performance of the site, the proponent will consider relocating the PM₁₀ monitoring site in Minchinbury to a boundary location at the northern and/or eastern site boundary.

The four existing boundary dust deposition monitoring sites remain appropriate for the modification.

It is noted that the *Air Quality - Odour and Dust* report, prepared by Holmes Air Services and considered as part of the original development approval, considered the air quality impacts of a 2M tpa maximum waste processing volume at the facility. The modelling and conclusion made by Holmes Air Services included all of the same general waste management processes which are currently under consideration in this proposed modification (Modification 6), but the hours of operation for the modelling were 6:00am to 10:pm for all operations at the facility except for landfilling which was limited to 6:00am to 6:pm.

One of the key findings of the Holmes Air Sciences report (p 27 - underlining added) was that

The dust modelling results showed that the annual average PM₁₀ TSP and deposition levels at nearest sensitive receptors would be below the DECC's assessment criteria, even when considering existing levels. The dust modelling is conservative and impacts are likely to be less than predicted. The dispersion modelling has highlighted a potential for exceedances of the DECC's 24 hour average PM₁₀ criterion at nearest receptors, due to project activities. Best practice dust mitigation measures as well as continuous dust monitoring with real-time strategies should be considered once the facility is operational to minimise the potential for adverse impacts and to ensure that air quality criteria are not exceeded at nearest receptors.

7.3.4 Management and mitigation measures

The existing dust controls are described in Section 7.3.3 (iii)(a) above.:

The existing facility operates under an Operational Environmental Management Plan (OEMP) which outlines the roles, responsibilities and the tasks to be performed to ensure environmental impacts are minimised. The OEMP will be reviewed and updated, where required, for the modification.

The Holmes Air Sciences report, like the air quality assessment associated with this proposed modification, considers a future scenario of the facility receiving 2M tpa. That scenario is unlikely to be manifest at any time in the near future and may not ever be reached. The difficulty is therefore how to best allow growth towards the authorised 2M tpa annual limit while acknowledging that at some point approaching the 2M tpa limit there is the potential for exceedances in dust impacts.

There are not currently any dust impact exceedances and so the pragmatic solution remains, as was recommended in the Holmes Air Sciences report, to conduct real-time monitoring for dust impacts and to implement appropriate mitigation measures as and when that threshold is approached.

7.3.5 Conclusion

Local air quality impacts were assessed using a Level 2 assessment approach in accordance with the approved methods. Emissions are estimated for all activities and dispersion modelling is used to predict ground level concentrations at surrounding sensitive receptors. Cumulative impacts are assessed by combining the contribution from the modification with the existing ambient baseline.

A worst-case emissions assessment is considered based on a 50/50 split between the recycling and landfill operations. Modelling a scenario with 1,000,000 tpa hauled to landfill provides a conservative worst-case assessment of impacts, as hauling along the unsealed access road to the pit is the largest potential source.

The predicted cumulative annual average PM₁₀ concentrations comply with the impact assessment criterion at all receptor locations. With the addition of existing background, there are no additional exceedances of the 24-hour average PM₁₀ impact assessment criterion at any receptor location.

The cumulative annual average PM_{2.5} concentrations exceed the impact assessment criterion at all locations, however this is because the annual average background concentrations of PM_{2.5} already exceed the impact assessment criteria. The cumulative 24-hour average PM_{2.5} concentrations result in additional exceedances of the impact assessment criterion at residential and commercial receptor locations. It is noted that the background PM_{2.5} concentration is already close to the impact assessment criterion (24.4 µg/m³). Furthermore, additional statistical analysis shows that the probability or risk of any additional exceedances of the 24-hour PM_{2.5} impact assessment criterion does not significantly increase, above what is already caused by background (i.e. up to one additional day as a worst case).

Cumulative annual average TSP concentrations comply with the impact assessment criterion at all receptor locations. Similarly, predicted dust deposition levels comply with both the incremental and cumulative impact assessment criteria at all receptor locations.

The worst case potential odour impact from landfilling at 1M tpa combined with green waste processing and composting, would not result in exceedances of the odour goal of 2 OU at any residential receptor.

To better monitor the effectiveness of existing controls and ongoing performance of the site, the proponent will consider relocating the PM₁₀ monitoring site in Minchinbury to a boundary location at the northern and/or eastern site boundary. This reflects the key mitigation measure identified in the Holmes Air Sciences report being "To better monitor the effectiveness of existing controls and ongoing performance of the site, the proponent will consider relocating the PM₁₀ monitoring site in Minchinbury to a boundary location at the northern and/or eastern site boundary".

7.4 Water management

7.4.1 Introduction

The SEARs require an analysis of how water and leachate will be managed during the proposed modification. Additionally, the EPA required the preparation of a water balance and description of potential impacts to receiving waters.

Similar to other technical assessments, the proposed removal of the facility's landfill limit required assessment of a maximum landfilling rate of 2M tpa. Consulting Earth Scientists revised the facility's leachate and water balance models to account for this proposed increase in the rate of landfilling. These reports are in Appendices D and E, respectively. The outcomes of the modelling are summarised below, which demonstrate that water which falls in operational areas is very unlikely to leave the site boundary untreated and, therefore, there is minimal risk that activities will result in a breach of Section 120 of the POEO Act.

7.4.2 Existing water management and leachate generation

The facility is separated into Sector A (processing area) and Sector B (landfill) for water management purposes.

i Stormwater management

In Sector A, rainfall runoff from roofs is captured in tanks and runoff from the ground is captured in a number of on-site detention (OSD) basins. The water captured in tanks and treated in the OSDs is reused on-site for toilets, dust suppression and in the wheel wash. Sector A is a net receiver of water inflow, which results in minimal discharges to receiving waters, with any residual water not used on-site discharged to council's stormwater system.

As described in Section 3.3.3, water falling in Sector B is either directed to sediment control structures then used for dust suppression, or treated as leachate (for water falling on landfilling area).

ii Leachate generation and management

A leachate model was developed for the facility in 2008 based on the infilling system, which as described above, separates runoff from clean and covered areas within the landfill, and water falling on exposed waste. Model inputs were rainfall on waste, irrigation on waste and seepage from groundwater, and takes into account the effect of variation in landfill surface area as result of filling of the landfill void. Evaporation of water from the top 10 m of waste was subtracted from the total of the water inputs.

The model predicted that between 45 m³ and 872 m³ of leachate would be generated a day (average of 241 m³ per day and 87,965 m³ per year) and that pumping rates of between 250 m³ and 500 m³ a day would be required.

Records of actual leachate volumes extracted from October 2015 to September 2016 are presented as Appendix A of the revised water balance report in Appendix E of this Environmental Assessment and indicate that 61,485 m³ for the period, or 168 m³ per day was extracted from the landfill. The extracted leachate was treated onsite by passing through a sequenced batch reactor (SBR) and following treatment discharged to Sydney Water sewer under a Trade Waste Agreement.

As described in Section 3.3.3, leachate is collected at the base of the landfill and gravity-fed to a lined sump with a collection capacity of 890 m³ per day, where it is pumped to sequential batch reactors for treatment and release to a Sydney Water sewer under Trade Waste Agreement 35580.

The sequential batch reactors have capacity to treat up to 219,000 m³ of leachate per year, or approximately 600 m³ a day.

It is also noted that leachate (and therefore trade waste) is governed by the water balance (ingress of water into the waste mass) and not by the amount of incoming waste. This point is made in reference to the proposed increase in waste volumes for the facility.

7.4.3 Impact assessment

i Water balance model results

The existing water balance model was revised for the landfill area to estimate:

- irrigation water requirements resulting from the proposed modification;
- volumes of rainfall in the landfill area; and
- evaporation rates from the landfill area.

The revised volumes were used as inputs to the leachate model, importantly it was estimated that irrigation requirements will increase by 23% over the current operations.

The water balance report also described the water storages at the facility, including their volumes and the uses of stored water (eg dust suppression, wheel wash). The majority of irrigation for dust suppression will occur in the landfill area to suppress dust on unsealed roads and for activities at the landfill floor. Therefore, there will be an increase in use of runoff captured and stored at the facility, which will result in a corresponding decrease in the risk of offsite discharges of water.

ii Leachate model results

The leachate generation model was revised based on the following operational parameters for the proposed modification (Table 7.14):

- a 23% increase in irrigation volumes due to dust suppression requirements for the additional truck traffic and landfilling operations; and
- two landfilling scenarios, where the current rate is increased by 50% and up to 2Mtpa to demonstrate the suitability of existing procedures to manage increased landfilling rates.

The model assumed the other inputs described above remained the same with the exception of irrigation rates as shown below.

Table 7.12 Leachate model scenarios

Scenario	Landfilling rate (m ³ /year)	Landfilling rate (tpa)	Irrigation rate (cm/day/m ²)
Base case	295,000	472,000	0.100
50% increase in landfilling rate	442,500	708,000	0.123
Landfilling 2 Mtpa	1,250,000	2,000,000	0.123

The model predicted that the maximum volume of leachate generation will be 185,000 m³ per year, with 192 m³ generated per day initially increasing to 505m³ per day at the completion of landfilling.

As shown in Figure 7.3, the increase in landfilling rates will reduce the lifespan of the landfill by approximately 15 years if landfilling rates increase 50% (which is the most realistic in terms of actual likely future operations) and by 35 years if rates increase to 2M tpa.

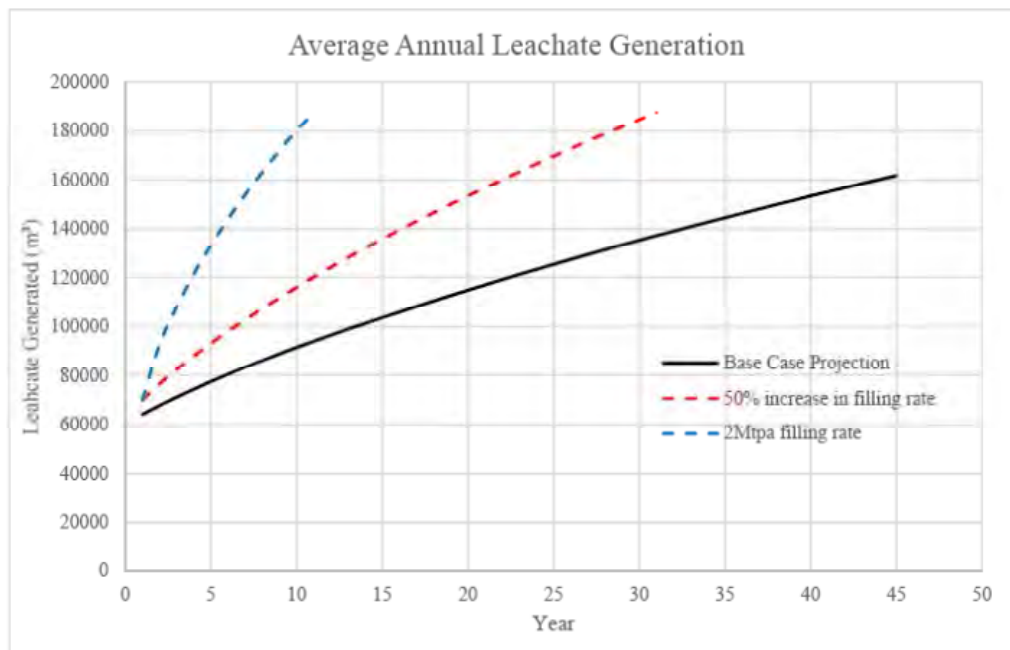


Figure 7.3 Estimated leachate generation

7.4.4 Management and monitoring

As described above, the leachate is collected in a sump then pumped to sequential batch reactors for treatment and release into a Sydney Water sewer. The existing leachate collection, treatment and disposal system has the following capacities:

- collection system and sump – 890 m³ per day/ 324,850 m³ per year;
- sequential batch reactors – 600 m³ per day/ 219,000 m³ per year; and
- disposal of treated leachate to sewer via Trade Waste Agreement 35580 – approval for up to 650 m³ per day/ 237,250 m³ per year.

Based on the above capacities, the existing leachate management system is capable of managing the maximum predicted leachate generation under the proposed modification of 505m³ per day and 185,000 m³ per year.

Leachate generation could exceed the predicted rates during prolonged or heavy rainfall. However, there will be sufficient spare capacity in the leachate collection system/sump and sequential batch reactors to temporarily store and treat more leachate if required.

As described in Section 3.3.3, there is an existing leachate and groundwater monitoring program which is reported in the facility's annual report to the EPA. It is not proposed to amend this program as it is designed for leachate generation rates greater than those predicted for the proposed modification.

7.4.5 Conclusion

The majority of rain water that falls on the facility is collected, treated, stored and used on-site for toilets, dust suppression and in the wheel wash. The only off-site discharges of water from the facility are:

- some runoff into council's stormwater system, after passing through sediment basins designed in accordance with the relevant guidelines; and
- treated leachate, which is discharged into a Sydney Water sewer in accordance with Trade Waste Agreement 35580.

The proposed modification will result in an increase in irrigation rates, associated with increased truck movements on unsealed roads and activity at the landfill floor. This will result in additional demand on water storages, with a corresponding decrease in the risk of off-site discharges of water.

The proposed modification will result in an increase in leachate generation rates, associated with a potential increase in landfilling rates. The predicted leachate generation rates can be easily accommodated in the existing leachate management system and no changes are proposed.

The existing leachate and groundwater monitoring program is not proposed to be changed as it is designed for leachate generation rates greater than those predicted for the proposed modification.

It is not anticipated that the proposed modification will increase the risk that activities will result in a breach of Section 120 of the POEO Act as no discharges to natural waterways are predicted and the volumes of treated leachate discharged to the sewer will be within the parameters of the facility's trade waste agreement.

7.5 Traffic and transport

7.5.1 Introduction

Traffic and transport impacts associated with the proposed modification were assessed in accordance with the SEARs and the *Guide to Traffic Generating Developments* (RMS 2002) and the requirements of the Australian Standards (AS 2890) for access and car parking for cars and heavy vehicles.

This chapter summarises the traffic impact assessment which is in Appendix F. The assessment described the existing road network and usage around the facility, predicted vehicle movements associated with the proposed modification and assessed potential impacts on nearby intersections and roads.

7.5.2 Existing environment

i Location and access

The facility is at the end of Honeycomb Drive and adjacent to Kangaroo Avenue, which is a local industrial road according to Blacktown City Council Road Hierarchy Standards. Honeycomb Drive is 15.5 m wide and Kangaroo Avenue is 13.5 m wide, and both roads have kerbside parking. Honeycomb Drive connects to Wonderland Drive approximately 600 m east of the facility. Wonderland Drive is an industrial collector/sub-arterial road and is the main thoroughfare through the precinct. It connects to the major road network at Walgrove Road (Figure 7.3).

The facility was accessed via a private road (DADI Drive) which connected to the public road network at the intersection of Honeycomb Road and Kangaroo Avenue. This was a four way intersection with Honeycomb Road to the east, Kangaroo Avenue to the north, DADI Drive to the west and a driveway to a commercial/industrial site to the south. DADI Drive was also used by traffic associated with Fulton Hogan's batching plant, which was to the south of DADI Drive.

This access arrangement changed on 9 October 2017 as DADI Drive closed to enable the planned and approved construction of a realignment and extension (Precinct Road) to connect Honeycomb Road to Archbold Road west of the facility. An intersection was constructed approximately 130 m north along Kangaroo Avenue to facilitate continued access to the facility and the Fulton Hogan site, which also utilised DADI Drive.

The future performance of both intersections was assessed as they are the primary intersections near the facility.

ii Hourly traffic volumes

Peak hour traffic volumes on local roads were surveyed at the Walgrove Road/Wonderland Drive and Honeycomb Drive/Kangaroo Avenue intersections on 27 July 2017. The road peak hours and traffic counts are summarised in Table 7.14.

Table 7.13 Peak hourly traffic volumes using Eastern Creek locality roads in July 2017

Road and location	Time period	North or East Bound	South or West Bound	Combined two-way	Proportion of Heavy Vehicles
Wallgrove Road	Morning peak hour (7.30–8.30)	1,034	1,640	2,674	13%

Table 7.13 Peak hourly traffic volumes using Eastern Creek locality roads in July 2017

Road and location	Time period	North or East Bound	South or West Bound	Combined two-way	Proportion of Heavy Vehicles
North of Wonderland Dr	Afternoon peak hour (4.00–5.00)	1,359	1,038	2,397	8%
Wallgrove Road	Morning peak hour (7.30–8.30)	1,178	1,181	2,359	14%
south of Wonderland Dr	Afternoon peak hour (4.00–5.00)	940	1,352	2,292	9%
Wonderland Drive	Morning peak hour (7.30–8.30)	314	890	1,204	18%
west of Wallgrove Road	Afternoon peak hour (4.00–5.00)	910	201	1,111	11%
Honeycomb Drive	Morning peak hour (7.15–8.15)	106	208	314	27%
east of Kangaroo Ave	Afternoon peak hour (4.00–5.00)	236	49	285	17%
Kangaroo Ave	Morning peak hour (7.15–8.15)	158	70	228	18%
north of Honeycomb Dr	Afternoon peak hour (4.00–5.00)	29	154	183	14%
Site Access Traffic	Morning peak hour (7.15–8.15)	44	53	97	56%
west of Honeycomb Dr	Afternoon peak hour (4.00–5.00)	84	24	108	26%

Total daily traffic at the site access, Honeycomb Drive and Kangaroo Avenue was also surveyed and vehicle movements were:

- Site access – 1,400 including 837 (60%) heavy vehicles;
- Honeycomb Drive – 3,550 including 1,196 (34%) heavy vehicles; and
- Kangaroo Avenue – 2,236 including 412 (18%) heavy vehicles.

iii Traffic generated by the facility

The facility operates on approximately 270 days each year, and even though the facility is licensed to operate on weekends and public holidays, it generally only receives material and dispatches product on weekdays and Saturdays.

Weighbridge vehicle records for the month of April and the traffic surveys were used to estimate a typical day of truck movements across a year of operation. This showed that an average of 396 trucks visit the facility a day and the peak period was between 9.00 am and 3.00 pm on weekdays, which does not coincide with peak hours on other roads in the area. Approximately 40% of hourly truck movements during the peak period are associated with the Fulton Hogan site.

Peak inbound car traffic is 50 cars per hour between 5.00 am and 7.00 am, which is before the morning peak hour on local roads, and peak outbound car traffic is 70 cars between 4.00 pm and 5.00 pm, which coincides with the local road afternoon peak period.

iv Intersections and turning traffic

The existing morning and afternoon peak period performance of the Honeycomb Drive and Kangaroo Avenue intersection was assessed using the SIDRA intersection analysis program. The intersection has very low peak hour traffic delays (level of service A) and a high level of spare capacity during the peak periods.



KEY

- Facility
- RMS classified roads
 - Auslink
 - Regional
 - State
 - Watercourse

Regional road network

Genesis Xero Waste
Modification 6
Environmental assessment

Figure 7.4

7.5.3 Impact assessment

i Overview

To increase the yearly landfill limit it is necessary to demonstrate that an increased rate of landfilling will not significantly impact the performance and safety of local roads. The following was undertaken to assess impacts associated with removal of the yearly landfill limit:

- the increase in trucks associated with a maximum rate of landfilling (2M tpa) was estimated compared to existing operations which are below full capacity;
- the corresponding proportional increase in traffic on local roads was estimated and impacts assessed; and
- the corresponding proportional increase in traffic using local intersections was estimated and impacts assessed.

It is important to note that the traffic associated with 2M tpa of waste received at the facility was assessed within the original EA.

ii Future traffic generation

It was assumed that all of the additional (relative to current rates) annual tonnages would be transported during the currently under utilised evening and night-time periods on weekdays (between 6 pm and 7 am). The net additional daily site truck movements would be +246 evening or night time truck loads (+492 truck movements) which is a 62% increase on the current daily average of 396 truck loads (792 truck movements).

This will correspond to 38 hourly truck movements during the extended operating hours and approximately 20 light vehicle movements a day.

iii Assessment of road network impacts

The predicted daily traffic increases for Kangaroo Avenue, Honeycomb Drive, Wonderland Drive and Wallgrove Road, north and south of Wallgrove Road, from the proposed modification, are shown in Table 7.15.

Table 7.14 Worst-case daily traffic movements on locality roads

Road Section	Surveyed July 2017 daily traffic movements			Worst case Facility daily traffic movements			Percentage daily traffic increase from the worst case Facility traffic
	All traffic	Cars	Trucks	All traffic	Cars	Trucks	
Kangaroo Avenue, north of the Honeycomb Drive intersection	2,236	1,824	412	1,912*	603*	1,329*	85.5%
Honeycomb Drive, east of the Honeycomb Drive intersection	3,550	2,354	1,196	512	20	492	14.4%

Table 7.14 Worst-case daily traffic movements on locality roads

Road Section	Surveyed July 2017 daily traffic movements			Worst case Facility daily traffic movements			Percentage daily traffic increase from the worst case Facility traffic
	All traffic	Cars	Trucks	All traffic	Cars	Trucks	
Wonderland Drive, west of the Wallgrove Road intersection	14,000	11,200	2,800	512	20	492	3.7%
Wallgrove Road, north of the Wonderland Drive intersection	30,750	26,450	4,300	256	10	246	0.8%
Wallgrove Road, south of the Wonderland Drive intersection	28,200	23,830	4,370	256	10	246	0.9%

Note: *This includes the former site access road traffic (1,400 daily vehicle movements) also being transferred to Kangaroo Avenue.

According to the Blacktown City Council Road Hierarchy Standards for industrial roads, Kangaroo Avenue is a 'local industrial road' with daily vehicle movements less than 4,000. A road is categorised 'industrial collector road' when these daily movements are exceeded, and requires a road carriageway width of 15.5 m. Daily traffic movements along the 150 m of Kangaroo Avenue to the driveway are predicted to be 4,148 under a worst case scenario of landfilling 2Mtpa, and subsequently the western side of that section of road should be widened by 2 m.

Notwithstanding the above, the swept path analysis in Appendix F demonstrates that the intersection can safely accommodate turning trucks with the current 13.5 m road width. Further, the predicted daily traffic movements are only marginally above the 4,000 threshold. Therefore, this road widening is not recommended.

However, it is recommended that the on street parking on Kangaroo Avenue be prohibited by No Stopping signs for 50 m either side of the intersection centre line to maintain good visibility as well as allowing for the through traffic to easily pass any vehicles on Kangaroo Avenue which are turning either left or right at the intersection.

Honeycomb Drive and Wonderland Drive are industrial collector or sub arterial type roads which have been constructed to carry significant volumes of heavy vehicle traffic and are unlikely to be adversely affected by traffic volumes. The increases in traffic associated with the proposed modification on Walgrove Road are not significant.

iv Assessment of intersection impacts

The increased truck traffic to and from the facility will be in the evening and night periods, which will not impact the morning or afternoon peak hour operation of the access intersection or other local intersections.

Similarly, light vehicle traffic to and from the facility is predicted to only increase marginally by up to 10 movements (20 total daily car traffic movements) at off peak times of the day, consistent with future additional night shift start and finish times at the site.

Peak hour performance of the modified Honeycomb Drive and Kangaroo Avenue (assuming no parking within 50 m along each approach) of the intersections was assessed using the SIDRA which showed that both intersections will have low peak hour delays (level of service A) and high levels of spare capacity during the morning and afternoon peak hours.

v Car parking, safety, public transport and access

Employee numbers will only change marginally under the proposed modification and the additional site workforce will be shift workers who would not require car parking at the current times of peak demand for the existing site car parking.

Safety of the primary access route via Wonderland Drive, Honeycomb Drive and Kangaroo Avenue is very good as it has been constructed to a high design standard and the current speed limit is 50 km/hr. All the existing intersections along these routes have been well designed and have adequate sight distances for the prevailing speed limit.

There will be no change to current internal levels of traffic safety within the facility resulting from the proposed modification.

The internal facility traffic circulation and road widths comply with the AS 2890 Part 2 recommended minimum road widths of 6.5 m for two way traffic movement in industrial sites, with additional widening provided at corners to accommodate the increased vehicle swept path widths for large trucks when cornering.

Access to the facility is available with paved paths for use by pedestrians and cyclists. Public transport is available via bus route 723. However, demand levels for access to the facility by either walking or cycling or public transport are likely to be minimal due to the distances from nearest bus stops or the closest existing residential area (Minchinbury) to the facility.

7.5.4 Conclusion

The facility is being accessed from an intersection on Kangaroo Avenue approximately 130 m north of the previous access at the intersection of Honeycomb Drive and Kangaroo Avenue. The previous access had been closed to enable construction of a Precinct Road which will connect Honeycomb Drive and Archbold Road.

Increasing the landfilling rate to 2Mtpa would result in approximately 492 additional truck movements at the access and local road network per day. This will not impact the existing very good performance of the intersection and Honeycomb Drive and Kangaroo Avenue intersection as these movements will occur outside the morning and afternoon peak traffic periods at these intersections.

The potential additional trucks on Kangaroo Avenue will result in an exceedance of the road hierarchy threshold, which means the road should be widened in accordance with the standards for a collector industrial road. However, this increase will be minor and the swept path analysis demonstrates that the road can safely accommodate trucks turning into and out of the facility. It is recommended that parking be prohibited for 50 m along the approaches to the intersection to increase sight distances. Also, this is an unrealistic scenario and is unlikely to occur.

Other local roads are constructed to collector industrial road and sub-arterial road standards and can safely accommodate the additional traffic.

7.6 Other environmental aspects

This section considers environmental aspects which were assessed in the original EA but are not at significant risk of impact from the proposed modification. The aspects are listed in Table 7.16 and descriptions provided from the original EA and previous modifications. Assessment is provided in relation to the proposed modification.

Table 7.15 **Other environmental factors**

Environmental factor	Original EA and previous modification descriptions	Impacts of proposed modification
Biodiversity	The original EA stated that the majority of the site was clear of native vegetation other than 8.3 ha of a community representative of CPW in the north-west corner and 2.8 . CPW is an EEC. The vegetation contained habitat for many bird species, arboreal mammals and the threatened Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>). Discarded shells of the threatened Cumberland Plain Land Snail (<i>Meridolum corneovirens</i>) were discovered in the CPW and there was suitable habitat for ten threatened species, though none of these were observed onsite. No threatened flora was observed onsite, though there was suitable habitat for five threatened species. The EA reported that the proposed clearing of 2.8 ha of CPW would not have significant impacts. Assessments of significance for the threatened flora and fauna species that could occur onsite determined they would not be significantly impacted by the project. None of the subsequent project modifications involved impacts to biodiversity.	The proposed modification will not involve any ground disturbance additional to existing approved ground disturbance. Therefore, it will not impact biodiversity.
Aboriginal heritage	The original EA stated that two isolated finds and one open scatter comprising three artefacts were previously recorded at the site. The open scatter was recorded in a highly disturbed area with low archaeological potential. The isolated finds were on the boundary between a highly disturbed area with low archaeological potential and a mostly undisturbed area with high archaeological potential. The public significance of these sites was judged to be low given their poor surface manifestations. The EA determined that, as the project was designed to mostly avoid impacts to Aboriginal items and some items in the footprint could be would be relocated under supervision of Aboriginal groups, the project would not significantly impact Aboriginal heritage. None of the subsequent project modifications involved impacts to Aboriginal heritage.	The proposed modification will not involve any ground disturbance additional to existing approved ground disturbance. Therefore, it will not impact Aboriginal heritage.
Historic heritage	The original EA stated that are no items on the National Heritage List, Commonwealth Heritage List or the Register of the National Estate near the site. The Blacktown LEP (1988) (still current at the time of the original EA) and the NSW Heritage Office's State Heritage Inventory showed five heritage items in Minchinbury and Eastern Creek, with the nearest item 400 m to the north-east of the site. no heritage items were identified at or adjacent to the site. None of the subsequent modifications involved extensions of the site area and therefore did not have potential to impact heritage items.	The proposed modification will not involve the extension of the site area. Therefore, it will not impact historic heritage.

Table 7.15 Other environmental factors

Environmental factor	Original EA and previous modification descriptions	Impacts of proposed modification
Visual and lighting	The original EA stated there was a limited number of receivers with views across the site and changes to viewscales resulting from the project was relatively minor, as its visual character would be similar to other industrial facilities in the locality. The original EA stated that retention of much of the site's existing landscape features and the use of berms would minimise potential impacts to visual amenity. The EA concluded that the project would have a low/negligible visual impact on the viewscales from residences in Minchinbury. None of the subsequent modifications were expected to impact visual amenity. Currently, the facility has lighting to ensure a safe workplace. There is lighting around the MPC, administration building and adjoining car park, along DADI Drive (and the current access). There is considerable distance to the nearest residential receptors (some 430m) to the north in Minchinbury, the presence of 10 m high berms separating the facility from its surrounds and the M4 Western Motorway. The DPE assessment report for Modification 4 concluded that lighting at the facility is mostly concealed from far-field views by the berms that surround the site from the former quarry operation.	The proposed modification will not involve physical changes to any built or natural components of the site. Therefore, it will not impact visual amenity. The headlight penetration from vehicle access during night time hours is unlikely to impact sensitive receptors (Erskine Park) due to the presence of higher bund contours between the access road and the sensitive receptors, and the light barrier of mature trees along Ropes Creek. The proposed modification is likely to require additional lighting installations to enable workers to perform tasks safely during night time period. Night time operations will also involve vehicles accessing the site and the light spill from headlights in the direction of the residential area of Erskine Park is a consideration. The headlights from vehicles is unlikely to impact residential dwellings in Erskine Park because there are elevated areas (berms) between the light source and the potential residential receivers in Erskine Park. It is also noted that mature trees along Ropes Creek will further filter any minor light spill from the project site, which is approximately 1.5 km away. The combination of distance, berm height relative to light sources, and the filtering effect of the forested area along Ropes Creek, provide an effective mitigation of any light impacts.
Socio-economic	The original EA stated that the community consultation undertaken identified a general acceptance that the area was developing and changing and there were both positive and negative impacts associated with this. There was concern from the community that the project would not be adequately controlled and would come at the expense of community.	The proposed modification may have a minor positive socio-economic impact if more personnel are employed during the proposed extended operating hours.

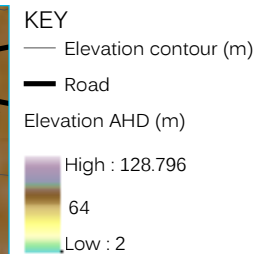
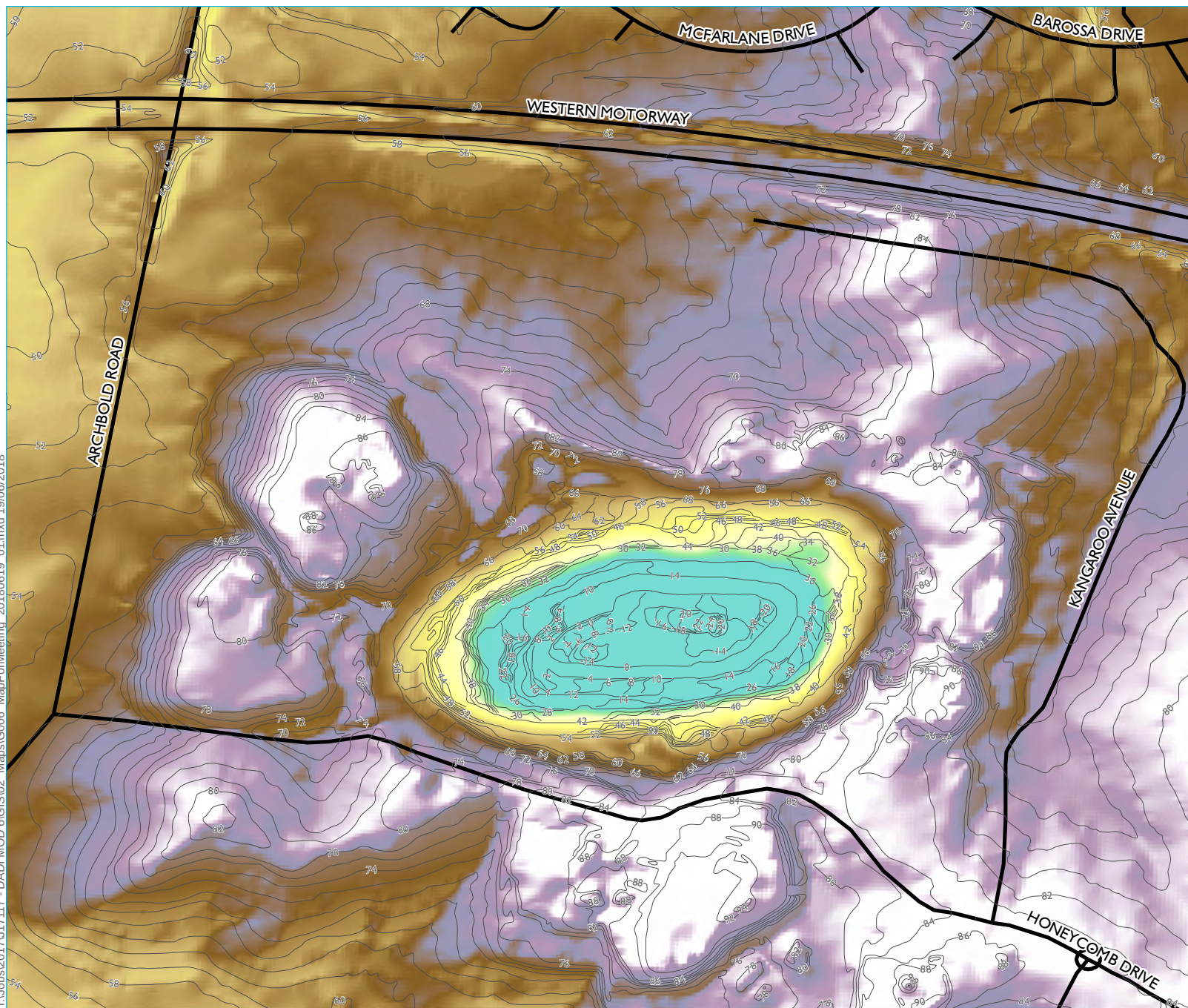
Table 7.15 Other environmental factors

Environmental factor	Original EA and previous modification descriptions	Impacts of proposed modification
	Community concerns identified in the original EA (such as dust, noise, traffic, odour and hours of operation) were to be addressed through ongoing provision of clear transparent information about the project to the community and managed through mitigation measures (to be included in the project design and management plans). None of the subsequent modifications were expected to impact the socio—economic aspect of the project.	
Hazards and bushfire	As described in Section 5.3.ii, the original EA stated that the project was not potentially hazardous or offensive as defined under SEPP 33. The original EA stated that vegetation adjacent to the site posed a low to moderate risk to proposed project structures and recommended that asset protection zones be provided to distance the buildings from the hazardous vegetation. The EA stated that the pit walls could be unstable with a risk of block fall out and rock falls in several areas of the quarry pit. It was determined that this risk could be reduced with use of catch bunds, safety bunds and haul road drainage, slope re-grading and scaling off of loose rocks near roads and the pit base. Modification 1 included construction of the waste conveyor and chute to the landfill. The construction of these items would reduce the quantity of trucks travelling to the base of the landfill and therefore there would be fewer personnel exposed to the risks of potentially unstable pit walls. None of the other modifications involved the use of hazardous substances, generation of offensive emissions which could not be managed under the EPL, bushfire impacts or activities which could further destabilise the quarry face.	The proposed modification will not involve increased use of hazardous substances, increase the generation of offensive emissions beyond EPL criteria, place structures closer to bushfire hazard vegetation or increase risks associated with the steep quarry face. Therefore, it will not increase or further contribute to hazards and bushfire risks.
Waste	The original EA stated that waste generated by the project would be addressed by the management procedures for waste in the site Environmental Waste Management Plan. Waste would either be recycled or landfilled on-site or sent to an appropriate off-site facility for recycling or disposal. It was recommended that the Environmental Waste Management Plan would be implemented to ensure that the identified waste streams were appropriately managed, including reduction at source, reuse and recycling, where possible and practicable, and appropriate disposal. This would also include procedures for safe handling and disposal of asbestos waste. The original EA states that the implementation of the Environmental Waste Management Plan would enable compliance with relevant guidelines and regulatory requirements and minimise the potential for adverse impacts. Additionally, the wastewater management system will be designed to maximise the recycling and beneficial use of site water. Modification 2 replaced the transport of waste from the MPC to the pit via dump trucks, with a conveyor and chute system and resulted in greater efficiencies in the waste management process for the project. Modification 3 improved the management of the green waste for the project by incorporating the recycling of green waste as part of the project's scope.	The facility has adequate existing waste management procedures and structures in place as it was constructed to accept 2 Mtpa of waste in line with the project approval. Additional waste volumes associated with an increase in the landfilling rate will be handled in accordance with existing procedures, that is, construction and demolition waste will be inspected for recyclable material, which will be segregated and directed to the MPC, and residual waste will be landfilled as currently occurs. Asbestos containing material will be immediately landfilled as currently occurs. An increased rate of landfilling may result in increased leachate generation. However, as described in Section 7.4, the existing leachate management system has a capacity to treat 600 m³ per day and can be easily upgraded if it predicted these generation rates will increase.

Table 7.15 **Other environmental factors**

Environmental factor	Original EA and previous modification descriptions	Impacts of proposed modification
Contamination	The original EA stated that no notices or orders to investigate or remediate contamination have been issued for the site under the NSW <i>Contaminated Land Act 1997</i>. It reported that agricultural chemicals, heavy metals, hydrocarbons and asbestos could be present from spills, leaks and dumping associated with previous uses. Soil investigations of overburden and in-situ material at the site were below levels recommended for the land-use and no asbestos was detected. There was an elevated concentration of nickel in one sample, however, nickel levels are naturally high in the source material and did not indicate contamination had occurred. None of the subsequent modifications considered contamination impacts.	No new activities are proposed under the proposed modification; however, there could be an intensification of existing activities depending on market demands which could increase the probability of a spill or leak occurring and subsequent contamination. Genesis maintains two pollution incident response management plans (PIRMP), one for each of the EPLs that apply to the landfill and resource recovery operations. These plans will be revised if amendments to the EPLs are required under the proposed modification.

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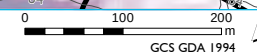


Contours for truck headlight
penetration to residential areas

Genesis Xero Waste Facility
Eastern Creek
Modification 6



Source: EMM (2018); DFSI (2017); GA (2015)



8 Proposed project approval modifications

8.1 Introduction

This chapter describes the proposed modifications to conditions within the project approval. Technical assessments have been undertaken regarding the proposed modification with the outcomes demonstrating that the environmental consequences can be sufficiently managed through the continued implementation of existing management measures.

The conditions proposed for amendment are:

- Schedule 2, Condition 2;
- Schedule 3, Condition 1;
- Schedule 3, Condition 38; and
- Schedule 3, Condition 39.

The proposed amendments to the relevant conditions of the project approval are described below. The proposed modifications are shown in green and redundant text is shown as ~~strike-through~~.

8.2 Schedule 2, Condition 2

8.2.1 Terms of Approval

2. The Proponent shall carry out the project in accordance with the:

- a) EA;
- b) Statement of Commitments;
- c) Site plan and building elevation drawings at Appendix 1;
- d) Modification application 06_0139 Mod 1 with supporting document titled Light Horse Business Centre, Environmental Assessment Report: Project Modification prepared by Light Horse Business Centre, dated August 2010 and Additional Information, dated 6.9.2010 and 13.9.2010;
- e) Modification application 06_0139 Mod 2 dated 9.11.10;
- f) Modification application 06_0139 Mod 3 dated 10 May 2011 with supporting document titled Light Horse Business Centre, Environmental Assessment Report: Modification 3, September 2011 prepared by Light Horse Business Centre (which contains 'LandPartners' operational landform plan, 'Martens' report for stormwater management, and building elevations);
- g) Modification Application 06_0139 Mod 4 with supporting document titled the document titled S75W Modification 4, dated October 2013 and prepared by Urbis Pty Ltd;
- h) Modification Application 06_0139 Mod 5 and supporting documents titled Section 75W Report, Modification 5, dated 18 March 2015, prepared by Urbis Pty Ltd; Response to Submissions, dated 19 May 2015, prepared by Urbis Pty Ltd; and Spoil Management Plan, dated September 2015, prepared by Genesis Xero Waste;

- i) Modification Application 06_0139 Mod 6 and supporting documents titled Genesis Xero Waste Facility Modification 6, dated October 2017, prepared by EMM Consulting Pty Limited; Response to Submissions, dated [TBC], prepared by EMM Consulting Pty Limited; and
- j) Conditions of this approval.

8.3 Schedule 3, Condition 1

8.3.1 Waste

1. The Proponent shall not:

- a) landfill more than ~~700,000~~1,000,000 tonnes of non-putrescible waste per calendar year (excluding waste generated by recycling processes within the Materials Processing Centre and the Pre-Sort Building);
- a) receive or landfill putrescible waste on site;
- b) stockpile more than 50 tonnes of tyres on site at any one time;
- c) stockpile more than 20,000 tonnes of green waste on site at any one time.
- d) receive waste on site that is contaminated by chemicals and/ or pathogens that will not be rendered harmless by the process or that may constitute a health or environmental risk, including clinical and related waste and diseased carcasses; and
- e) receive waste on site containing contaminants classified as hazardous waste, restricted waste (other than asbestos) or liquid waste under the POEO Act.

8.4 Schedule 3, Condition 38

8.4.1 Noise Impact Assessment Criteria

38. The Proponent shall ensure that noise from the project does not exceed the noise limits in Table4.

Table 8.1 Noise Impact Assessment Criteria (consent condition Table 4)

Location	Day	Evening	Night	Morning shoulder
	LA _{eq(15 minute)} dB(A)	LA _{eq(15 minute)} dB(A)	LA _{eq(15 minute)} dB(A)	LA _{eq(15 minute)} dB(A)
Minchinbury residential receivers	48	47	44	47
Erskine Park residential receivers	39	40	37	40

Notes: (a) Noise from the development is to be measured at the most affected point or within the residential boundary, or at the most affected point within 30 metres off a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary, to determine compliance with LA_{eq} (15 minute) noise limits. Where it can be demonstrated that direct measurement of noise from the project is impractical, the EPA may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.

(b) The noise emission limits identified apply under meteorological conditions of:

Wind speed up to 3m/s at 10 metres above ground level; or

Temperature inversion conditions of up to 30C/100m and wind speed up to 2m/s at 0 metres above the ground.

8.4.2 Hours of operation

39. The Proponent shall comply with the restrictions in Table 5.

Table 8.2 Construction and Operation Hours for the Project (consent condition Table 5)

Activity	Sub-activity	Days	Hours
Construction		Monday-Friday	7:00am-6:00pm
		Saturday	8:00am-4:00pm
		Sunday and Public Holidays	Nil
Operations (including waste deliveries and chute use)		Monday-Friday	7:00am-6:00pm
		Saturday, Sunday and Public Holidays	8:00am-4:00pm
MPC		Monday-Friday	6:00am-10:00pm
		Saturday, Sunday and Public Holidays	6:00am-4:00pm

Table 8.3 Proposed hours

Activity	Days	Existing times	Proposed times
Construction	Monday – Friday	7:00 am to 6:00 pm	No change
	Saturday	8:00 am to 4:00 pm	No change
	Sunday and Public holidays	Nil	No change
MPC Operations (waste deliveries and chute use)	Monday – Friday	7:00 am to 6:00 pm	24 hours
	Saturday, Sunday and Public holidays	8:00 am to 4:00 pm	24 hours
Crushing and screening	Monday – Friday	7:00 am – 6:00 pm	6:00 am to 6:00 pm
MPC (including maintenance)	Monday – Friday	6:00 am to 10:00 pm	24 hours
	Saturday, Sunday and Public holidays	6:00 am to 4:00 pm	24 hours
Land fill deliveries (by trucks only)	Monday – Sunday	7:00 am to 6:00 pm	5:00 am to 9:00 pm

9 Conclusion

9.1 Introduction

The SEARs for the proposed modification state that the need and justification for the proposed modification must be described within the EA. Specifically, it states the following is required:

Need and justification for the modification of the landfill cap and operating hours.

As such the proposed modification requires justification on economic, social and environmental grounds, taking into consideration whether it is consistent with the objects of the EP&A Act. Each aspect is addressed below.

9.2 Need and justification for the proposed modification

The proposed modifications to the project approval would allow the facility to better respond to demands of the waste disposal market and assist in the delivery of the NSW Government's waste goals in accordance with the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* (EPA 2014).

The proposed extension of hours would allow maintenance and cleaning of machinery outside of the facility's operating period so that production losses are reduced and to enable the Proponent to provide a safe and efficient workplace. This would allow plant to be more available during operating hours, which would have the benefit of enabling more processing and disposal of material, and avoid vehicle congestions and matters related to currently restricted receiving hours.

The ability to accept loads of waste from infrastructure construction projects would benefit these projects as waste could be managed as it is generated rather than having to be stockpiled on-site until facilities open the following morning. This would have the benefit of reducing the need to store such material on worksites overnight, reduce dust and noise from material double-handling, and may result in reduced illegal dumping of the waste.

The proposed increase of the limit on the quantity of waste allowed to be landfilled will allow the facility to be more responsive to the waste disposal market and developments in government policy. The existing limit on the annual landfilling rate has the ability to unintentionally limit the amount of recycling that can occur at the facility because the recycling of material is coupled to the disposal of waste within the landfill. A limit on the landfill is therefore a limit on recycling. Not only would this mean the commercial potential of the facility is not realised, but also restrict the facility's ability to meaningfully contribute to the NSW Government's waste goals in accordance with the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* (EPA 2014).

The Proponent does not intend to decrease the amount being recycled at the facility however, as a consequence of the increase in infrastructure projects in the Greater Sydney Area, the Proponent has assessed that this will likely involve an increased demand for landfill space for waste such as asbestos, which can be legally accepted at the facility.

A significant and increasing amount of waste is being transported from NSW for processing and disposal in Queensland. The provision of more accessible waste facilities locally may assist in addressing that issue.

In addition, NSW EPA has recently foreshadowed the introduction of new regulations to manage waste within NSW and the Proponent seeks the flexibility to be able to respond to these changes.

The need for the proposed modification is provided in further detail within Chapter 4.

9.3 Suitability of the site

The facility is an existing waste resource recovery facility operating under a variety of approvals including the project approval (PA 06_0139) as modified, and an EMP, including a detailed LEMP and EPLs 13426 and 20121. Due to the history of operations at the facility, the regional and local social, physical and economic environments are well understood and the site has well established environmental management systems.

The proposed modification will enable the implementation of an efficient and flexible operation, providing the facility with the ability to better respond to demands of the waste disposal market and developments in government policy. Approved infrastructure will continue to be used to efficiently receive, process and recycle/dispose of materials. The proposed modification will not change the State-approved footprint of disturbance, method, employee numbers, and water management across the facility nor will it extend the project approval period.

The potential environmental and social impacts arising from the proposed modification will be largely consistent with approved operations. The design of the proposed modification therefore achieves its objective of development of an efficient operation that minimises adverse potential environmental and social impacts. It is, therefore, concluded that the site is suitable for the purposes of the proposed modification.

9.4 Objects of the Environmental Planning and Assessment Act 1979

Section 5 of the EP&A Act sets out its objects. It states:

The objects of this Act are:

- (a) to encourage:
 - (i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,
 - (ii) the promotion and co-ordination of the orderly and economic use and development of land,
 - (iii) the protection, provision and co-ordination of communication and utility services,
 - (iv) the provision of land for public purposes,
 - (v) the provision and co-ordination of community services and facilities, and
 - (vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and
 - (vii) ecologically sustainable development, and
 - (viii) the provision and maintenance of affordable housing, and

- (b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and
- (c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.

The overall conclusion is that the proposed modification is consistent with the objects of the EP&A Act either wholly or in the majority. The proposed modification's consistency with the individual objects of the EP&A Act is considered below.

9.4.1 Proper management, development and conservation of resources

The object is to encourage 'the proper management, development and conservation' of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment'.

The facility is an existing operation that enables resource recovery and disposal of non-putrescible waste. The facility's operations continue to optimise the use of and rehabilitation of a former quarry site, supporting recycling initiatives and diverting waste away from landfill. The proposed modification will allow the facility to respond more effectively to long term trends in waste generation, short term waste disposal demands and support government waste management policies.

Technical assessments indicate no significant impacts are anticipated as a result of the proposed modification. There are a number of existing environmental management measures in place at the facility which will continue to mitigate, manage and monitor operations. These management measures will be revised and updated to account for impacts of the proposed modification.

It is considered that the proposed modification will facilitate proper management, development and conservation of resources.

9.4.2 Orderly development

The object is to encourage 'the promotion and co-ordination of the orderly and economic use and development of land'.

The proposed modification encourages the proper management and development of a natural resource. It will utilise existing plant, equipment and workforce and will allow for the continuation of a safe and efficient workplace. The proposed modification will allow the facility to receive trucks on-site which are transporting waste as a consequence of the forecast increase in infrastructure projects in the Greater Sydney Area, particularly Western Sydney. These projects are likely to result in an increased demand for landfill space for waste such as asbestos, which can be legally accepted at the facility.

Accordingly, it is considered that the proposed modification constitutes orderly and economic development of land.

9.4.3 Communication and utility services

The object is to encourage 'the protection, provision and co-ordination of communication and utility services'.

The proposed modification will have no impact on communication and utility services.

9.4.4 Land for public purposes

The object is to encourage 'the provision of land for public purposes'.

The proposed modification will have no direct or indirect impacts on the provision of land for public purposes.

9.4.5 Community services and facilities

The object is to encourage 'the provision and co-ordination of community services and facilities'.

The proposed modification will allow for the continuation of the safe and efficient operation of the facility to receive trucks transporting waste. As the proposed modification will utilise the existing workforce, there will be no demand for additional community services and facilities.

9.4.6 Protection of the environment

The object is to encourage 'the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities and their habitats.

The proposed modification does not result in additional ground disturbance within the site boundary. No native animals and plants will be impacted due to the proposed modification.

Technical assessments were undertaken to understand the nature of potential environmental interactions due to the proposed modification. With regard to removing the facility's landfill limit, a 'worst case scenario' for tonnage (2M tpa) was investigated and detailed analysis of the extension hours also investigated. The assessment outcomes demonstrated that with the continued implementation of existing management measures, with minor augmentation to account for the proposed modification, the facility would continue to protect the environment during operations.

There are a number of existing environmental management measures in place at the facility to continue to mitigate, manage and monitor operations. These management measures will be revised and updated to account for impacts of the proposed modification. Accordingly, it is considered the proposed modification is consistent with this object of the EP&A Act.

9.4.7 Ecologically sustainable development

The object is to encourage 'ecologically sustainable development' (ESD). The principles of ESD, for the purposes of the EP&A Act, are provided in clause 7(4) of Schedule 2 of the EP&A Regulation. It states:

The principles of ecologically sustainable development are as follows:

- (a) the precautionary principle, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:
 - (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
 - (ii) an assessment of the risk-weighted consequences of various options,
- (b) inter-generational equity, namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,
- (c) conservation of biological diversity and ecological integrity, namely that conservation of biological diversity and ecological integrity should be fundamental consideration,
- (d) improved valuation, pricing and incentive mechanisms, namely, that environmental factors should be included in the valuation of assets and services, such as:
 - (i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance and abatement,
 - (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,
 - (iii) environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

The four principles of ESD and the proposed modification's compatibility with each is considered below.

In addition, the Commonwealth Government's *National Strategy for Ecologically Sustainable Development* defines ESD as 'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'.

The proposed modification does not result in additional disturbance and will not impact on ecological resources.

i Precautionary principle

This means that if there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. This EA, prepared by experts in their respective fields, has identified and assessed the potential environmental impacts and appropriate mitigation, and management and monitoring measures have been developed in response. Taking these measures into account, it is considered that there would be no threat of serious or irreversible damage to the environment as a result of the proposed modification.

ii Inter-generational equity

Inter-generational equity is a part of social equity, as is intra-generational equity.

Inter-generational equity is the concept that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations, while intra-generational equity is applied within the same generation.

The proposed modification would contribute to social equity by providing continued employment at the facility. It would facilitate the continued cost-effective and efficient use of land to recycle or safely dispose of construction and demolition materials as well as allow the facility to better contribute to the NSW Government's waste goals to increase recycling rates in accordance with the *NSW Waste Avoidance and Resource Recovery Strategy 2014-2021* (EPA 2014), thus developing physical and human capital investment. This transformation from natural to human capital would contribute to both inter-generational and intra-generational equity.

Operations at the facility include a range of well-established controls and environmental management and mitigation measures to minimise potential impacts on the environment, and the costs of these measures would be met by DADI.

iii Conservation of biological diversity and maintenance of ecological integrity

The proposed modification does not result in ground disturbance and will not impact on biological diversity and the maintenance of ecological integrity.

iv Improved valuation and pricing of environmental resources

One of the common broad underlying goals of concepts of ESD is economic efficiency, including improved valuation and pricing of environmental resources.

The potential environmental impacts of the proposed modification have been thoroughly addressed in this EA. The value of the proposed modification in terms of the change of operational hours and removal of the existing landfill cap has been considered in the context of these potential impacts. In this respect, it is considered that the modification proposes the continuation of existing mitigation measures that will be funded and implemented by DADI, ensuring all environmental goals and criteria are achieved.

Having considered all aspects of ESD, the conclusion is that the proposed modification is consistent with the object and its specific components.

9.4.8 Affordable housing

The object is to encourage 'the provision and maintenance of affordable housing'.

This object is not directly relevant to the proposed modification. The proposed modification will, however, increase the efficiency of waste management the construction sector, and thereby reduce or avoid costs associated with waste management. The cost of waste disposal is a contributing factor to housing affordability.

9.4.9 Sharing of responsibility

The object is 'to promote the sharing of the responsibility for environmental planning between the different levels of government in the State'.

All State government agencies that have an interest in the proposed modification, and the local Council (BCC) have been engaged prior to, and during the preparation of this EA. Consultation with these agencies is detailed in Section 6 of this EA.

9.4.10 Increased public involvement

The object is 'to provide increased opportunity for public involvement and participation in environmental planning and assessment'.

The preparation of this EA has been undertaken in conjunction with consultation undertaken by DADI through consultation with BCC. DADI will continue to consult with BCC during and after the modification process.

In addition, all stakeholders, both government and community, will have the opportunity to comment on the proposed modification, including this EA, when it is placed on public exhibition by DPE.

9.5 Conclusion

The Proponent proposes to modify the project approval to alter the hours of operation and to allow greater flexibility in relation to the waste volume permitted to landfill. This will enable the facility to have flexibility to respond to the long term trends in waste generation, the short term trends in market demand for waste management services and accept waste streams that will likely be generated during planned major construction projects in Sydney, some of which will be generated outside standard construction hours.

Technical assessments have been prepared in accordance with relevant guidelines and assessment criteria and to address DPE's specific assessment requirements.

In conclusion, the proposed modification will:

- enable the continuation of the safe and efficient operation of the facility that supports the disposal of waste, including existing and planned large infrastructure projects in Western Sydney;
- have minor environmental impacts which will be mitigated through the implementation of all reasonable and feasible measures;
- accord with the relevant legislation and state environmental planning policies; and
- accord with the objects of the EP&A Act including compliance with the principles of ESD.

References

ABC News 5/09/2017 *Organised network shifting waste to 'dumping capital of Australia' to avoid tariffs.*

Holmes Air Sciences (2008) *Air Quality - Odour and Dust: Light Horse Business Centre Development Application*. Report prepared for Environmental Resource Management Australia.

Pacific Environment (PE) 2016 *Energy from waste facility, Eastern Creek (SSD6236) – Noise Impact assessment*. Report prepared for Dial-a-Dump Industries Pty Limited.

NSW Environment Protection Authority (EPA) 2000 *Industrial Noise Policy*. NSW Government.

NSW Environment Protection Authority (EPA) 2013 *Industrial Noise Policy Application Notes*. NSW Government.

NSW Environment Protection Authority (EPA) 2011 *Road Noise Policy*. NSW Government.

