EMGA Mitchell McLennan

Widemere Recycling Facility

Environmental Impact Statement

Prepared for Boral Recycling Pty Ltd | 29 May 2015

Planning + Environment + Acoustics

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Final

Report J13127RP1 | Prepared for Boral Recycling Pty Ltd | 29 May 2015

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Date	29 May 2014	29 May 2015	Date	29 May 2015

Document Control

Version	Date	Prepared by	Reviewed by
Draft	18 December 2014	J.Kramer/K.Cox	B.McLennan
Final	29 May 2015	M. Aynsley	B.McLennan

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Executive Summary

ES1 Overview

Boral Recycling Pty Ltd (Boral) operates the Widemere Recycling facility (the facility) at Wetherill Park, in the Fairfield local government area (LGA). The facility separates, crushes and blends construction and demolition waste with quarry material to produce construction materials. Development consent (DA 21-1-2002-i) was granted under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) for the facility in 2002 by the Minister for Planning. The development consent was for the construction and operation of the facility, including processing of up to 600,000 tonnes per annum (tpa) of construction and demolition material. The development consent was subsequently modified in 2005 (MOD-126-8-2005-i) to increase the processing capacity of the facility to 750,000 tpa, increase hours of operation and modify processing operations to include a blending plant.

Boral is seeking development consent to modify existing operations to accommodate an increase in production capacity, undertake a minor internal road realignment, permit the receival of additional waste material types, and change the hours of operation of the facility on Saturdays and Sundays (the proposal).

The proposal is a State significant development (SSD) under Part 4.1 of the EP&A Act. Accordingly, an environmental impact statement (EIS) has been prepared to support a development application (DA) for the proposal. The EIS provides an assessment of the potential impacts resulting from the proposal and details measures that would be implemented to avoid, minimise and/or offset potential impacts. The EIS provides information to allow NSW government authorities to assess the merits of the proposal and make a determination as to whether or not to grant approval.

ES2 Current operations

Current operations at the facility include the receipt of construction and demolition waste which is sorted, processed and blended on site to produce a range of recycled aggregate and road base products. The facility has approval to process 750,000 tpa of material, comprising 600,000 tonnes of permitted waste with the balance being made up of blending material (that is, material not more than 25 mm in diameter, including quarry fines). The facility occupies an area of approximately 8 ha, and comprises a recievals area, stockpiles, processing areas, water management areas and internal haul roads.

The facility is on a site that was formerly used for quarrying and associated activities from 1924 through to approximately 2002. From 1975 to around 1997, an asphalt plant and stockpiles operated on the site. From 1997 until 2002, the site was used for stockpiling gravel and other construction materials.

ES3 The proposal

Due to changes in market conditions and increased demand for recycled construction materials, Boral is seeking development consent for the continuation of current approved operations, with the following additional elements:

- increase in the processing capacity, to 1,000,000 tpa;
- addition of new waste streams to the list of permitted wastes received at the facility to include:
  - excavated natural material (ENM);

- tiles and masonry (including materials direct from manufacturer, such as seconds material);
- quarry products (greater than 20 mm); and
- wet concrete batching plant stirrer waste.

- realignment of the southern portion of the perimeter haul road, associated changes to the site layout; and
- change the operating hours of the facility.

The stockpile storage capacity of permitted waste and recycled product will not be greater than 20 m above ground level and will not exceed 1,000,000 tonnes at any time.

The proposal would be undertaken within the existing approved project disturbance boundary.

ES4 Environmental impact assessment

ES4.1 Traffic and transport

The traffic and transport impact assessment predicts that the proposal would not have an adverse impact on the local road network. Additional truck traffic movements generated by the proposal would be accommodated with minimal impacts to either the traffic capacity or the road pavement condition on these roads, which are industrial area roads that have been adequately constructed to carry significant volumes of heavy vehicle traffic.

The proposal would not have a significant impact on intersection performance. The future peak hour operating performance of the facility access intersection on Widemere Road would continue to be very good, remaining at level of service A, under both daily average and predicted maximum operations.

Employee and visitor numbers would change only marginally and no additional car parking capacity would be required. Current operational procedures and the existing traffic management plan would be reviewed and updated to reflect the changes to operations at the facility as a result of the proposal.

ES4.2 Air quality and greenhouse gas

The air quality and greenhouse gas assessment found that dust generation criteria exceedances are only likely during periods of elevated ambient air quality due to significant natural events such as bushfires. The air quality assessment predicts that the potential for adverse impacts on the surrounding environment due to the proposal is low.

The significance of GHG emissions at the facility with regards to NSW and Australian annual GHG emissions is 0.0014% and 0.00042% of annual NSW and Australian GHG emissions for current operations, and 0.0019% and 0.00056% of annual NSW and Australian GHG emissions for proposed operations.

A range of air quality management measures are implemented under current operations, which would continue. In addition, the existing Operational Environmental Management Plan (OEMP) would be reviewed and updated to reflect proposed operations. The two dust deposition monitors located at the facility would be retained and would continue to monitor dust deposition in accordance with the site's environment protection licence (EPL).

ES4.3 Noise and vibration

The noise and vibration assessment predicted that there would be no exceedances of relevant noise criteria as a result of the proposal. Noise emissions from the facility would satisfy the project specific noise levels at all assessment locations. Potential sleep disturbance impacts from operational maximum noise level events would satisfy the relevant criteria at all assessment locations.

Road traffic noise is predicted to comply with relevant goals. Construction road traffic noise impacts were considered to be negligible due to the short constriction duration and sourcing of construction materials from the facility. Therefore, no specific noise management or monitoring is proposed.

ES4.4 Surface water

The proposal would result in a small addition (less than 0.4 ha) of impervious surfaces to the site as a result of the realignment of the southern portion of the perimeter haul road. Water balance modelling was undertaken to predict the impacts to the existing site water management regime as a result of the proposal.

The water balance model predicted that the proposal would result in a small increase in the volume and frequency of discharges from the site's licensed discharge point. The discharges are predicted to meet the site's EPL requirement which permits discharge where rainfall exceeds 45 mm over any consecutive five day period. However, the volumetric limit of 100 KL/day is considered to be unachievable for the existing surface water management system as well as the proposal. Therefore, it is proposed that the volumetric limit be removed from the EPL.

Potential flooding impacts would be managed through the inclusion of additional flood storage in the perimeter haul road realignment. The facility would maintain existing peak flow discharge rates from the facility during flood events. The southern boundary of the site footprint is elevated above the PMF level for Prospect Creek. The proposal would therefore not reduce storage, obstruct overland flow or worsen downstream flooding in the Prospect Creek floodplain.

Impacts to local water resources, water quality and ecology within Prospect Creek are considered to be negligible.

ES4.5 Other matters

Potential impacts to ecology, heritage, visual, socio-economics and hazards and risk were assessed in accordance with the Secretary's environmental assessment requirements for the proposal. Impacts to these matters are considered to be negligible.

ES5 Need and justification

According to the *Waste Avoidance and Resource Recovery Strategy Progress Report 2010* (DECCW 2010) (the 2010 Review), waste generation is increasing at a national average of 4.3% with construction and demolition waste comprise the largest proportion of waste nationally (ABS 2010). Waste disposed to landfill results in environmental impacts, including greenhouse gas emissions and potential long term environmental pollution. Additionally, urban intensification in major centres and transport corridors is creating an increase in construction and demolition waste.

To contribute to a reduction in the waste generated in NSW, the NSW government has produced the *Draft NSW Waste Avoidance and Resource Recovery Strategy 2013 to 2021* (EPA 2013b) (Draft Waste Strategy 2013). The draft strategy sets targets to increase the current construction and demolition waste recycling rate from 75% to 80% (by 2021–22).

Since it commenced operation in 2002, the facility has made significant contributions to the NSW waste minimisation target by processing construction and demolition waste materials into recycled products that are used for a variety of construction and development applications. The proposal, which would increase the processing capacity from 750,000 tpa to 1,000,000 tpa of waste, provides for continued contribution to waste minimisation and resource recovery targets in NSW. Specifically it would contribute to two key result areas identify in the Draft Waste Strategy 2013:

- Key Result Area 2: Increase recycling. By 2021–22, increase recycling rates for construction and demolition waste from 75% (in 2010–11) to 80%.

- Key Result Area 3: Divert more waste from landfill. By 2021–22, increase the waste diverted from landfill from 63% (in 2010–11) to 75%.

The proposal would provide a direct contribution towards achieving the targets above. The proposal would have the additional benefits of optimising the use of the site, and consolidating waste from other Boral operations to improve broader resource recovery outcomes for the business and continue to contribute to the NSW waste minimisation and resource recovery targets.

ES6 Conclusion

The proposal involves modifying existing operations to accommodate an increase in production capacity, undertake a minor internal road realignment, permit the receival of additional waste material types, and increasing operating hours.

This facility has contributed to meeting national and state recycling targets since it commenced operation in 2002. The proposal would enable a continued contribution toward the NSW Government's recycling strategies and targets. Specifically it would contribute to two key result areas identified in the Draft Waste Strategy 2013.

The proposal provides enhanced social and economic benefits by increasing the volume of processing construction and demolition waste into recycled materials, thereby reducing the need for landfill and use of virgin resources, and increasing availability of recycled products. Accordingly, using recycled materials contributes to conservation of natural resources and biodiversity, and accords with the principles of ESD.

The proposal would not result in significant impacts to the environment and the commitments proposed within this EIS would ensure that the modifications to the facility under the proposal would meet regulatory standards. Therefore the proposal is sound and justified, and is in the public interest.

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1 Introduction

1.1 Overview

Boral Recycling Pty Ltd (Boral) operates the Widemere Recycling facility (the facility) at Wetherill Park, in the Fairfield local government area (LGA). The facility separates, crushes and blends construction and demolition waste with quarry material to produce construction materials.

Due to changes in market conditions and increased demand for recycled construction materials, Boral is seeking development consent to modify existing operations to accommodate the following (the proposal):

- an increase in production capacity;
- undertake a minor internal road realignment;
- permit the receival of additional waste material types;
- changes to the hours of operation of the facility, including operation on up to one Sunday per month; and
- allow maintenance activities on Sundays.

The proposal is a State significant development (SSD) under Part 4.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). Accordingly, an environmental impact statement (EIS) has been prepared to support a development application (DA) for the proposal.

1.2 Background

The facility is on a site that was formerly used for quarrying and associated activities from 1924 through to approximately 2002. From 1975 to around 1997, an asphalt plant and stockpiles operated on the site. From 1997 until 2002, the site was used for stockpiling gravel and other construction materials.

Development consent (DA 21-1-2002-i) was granted under the EP&A Act for the facility in 2002 by the Minister for Planning. The original development consent was for the construction and operation of the facility, including processing of up to 600,000 tonnes per annum (tpa) of construction and demolition material.

The development consent was subsequently modified in 2005 (MOD-126-8-2005-i) to increase the processing capacity of the facility to 750,000 tpa, increase hours of operation and modify processing operations to include a blending plant.

Current operations at the facility include the receipt of construction and demolition waste which is sorted, processed and blended on site to produce a range of recycled aggregate and road base products. The facility has approval to process 750,000 tpa of material, comprising 600,000 tonnes of permitted waste with the balance being made up of blending material (that is, material not more than 25 mm in diameter, including quarry fines).

1.3 Site description

1.3.1 Location

The facility is located off Widemere Road, Wetherill Park, approximately 28 km west of the Sydney CBD in the Fairfield LGA (see Figure 1.1). The facility, located on Lot 3 DP 218194, covers approximately 9.8 hectares (ha). The facility is owned by Boral Resources (NSW) Pty Ltd.

Access to the facility is via Widemere Road. Immediately north of the facility Widemere Road becomes Reconciliation Road, opened in December 2013, which provides linkages between significant industrial and commercial precincts in the Fairfield, Blacktown and Holroyd LGAs. It is also the main transport route through the Greystanes Estate Southern Employment Lands immediately north of the facility.

The topography on the site varies between 32 m and 50 m AHD within the site boundary, increasing from south to north.

1.3.2 Surrounding land uses

The facility is located in a predominantly industrial area. To the south, the facility is bordered by Prospect Creek and its riparian zone, and beyond is the Liverpool-Parramatta T-way and Wetherill Park industrial precinct; to the north is the Greystanes Estate Southern Employment Lands industrial precinct; to the west and north-west is Prospect Reservoir and surrounding buffer land; immediately east of Reconciliation Road is a large stormwater detention basin, and residential and industrial land uses approximately 1 km further east. The former Sydney Water Supply Canal adjoins the land on the facility's northern boundary.

The Greystanes Estate Southern Employment Lands, immediately north of the facility, largely within the former Prospect Quarry, had been used for quarrying activities since the early to mid 1800s. The area was rezoned by the Minister for Planning in 1999 to facilitate the redevelopment of the land for employment and residential uses. A concept plan for industrial and business park uses was approved by the Minster for Planning on 20 July 2007 with modifications to the concept plan approved in January 2008. Greystanes Estate is listed as a State significant site pursuant to State Environmental Planning Policy (Major Development) 2005 (the Major Development SEPP).

The closest residential areas are approximately 1 km to the east in Greystanes, and 1.5 km north-east of the facility in Pemulwuy. Recreational land uses include parklands within the buffer land surrounding Prospect Reservoir which includes shared pedestrian/cycle paths and Walder Park to the north of the facility. Prospect Creek, a natural waterway that forms a sub-catchment of the Georges River catchment, is immediately to the south of the facility. There are several drains which contribute to Prospect Creek from surrounding area, including a catchment drain located within the facility that flows to Prospect Creek.

1.4 Proponent

Boral Recycling is the proponent for the DA. Boral is a large international company with four operating divisions. The Construction Materials and Cement (CMC) division, which includes Boral Recycling, specialises in quarry, concrete, asphalt, transport and contracting operations throughout Australia, operating with a regional focus to service its local markets. It produces a broad range of quality recycled products which range from road bases and speciality products, to aggregates.

1.5 Purpose of this report

The purpose of this report is to assess the potential environmental, social and economic effects of the proposal and provide details of consultation undertaken with stakeholders. This information will allow the relevant consent authority, the Minister for Planning, to make a determination on the DA. The statutory framework for the proposal is detailed in Chapter 4.

1.6 Secretary's environmental assessment requirements

The EIS has been prepared to address specific requirements given by relevant NSW government agencies and Fairfield City Council. These requirements are provided in the Secretary's Environmental Assessment Requirements (SEARs) issued on 17 June 2014 and summarised in Table 1.1.

Table 1.1 Summary of SEARs

Aspect	Assessment requirements	Reference in EIS
General	The EIS for the development must meet the form and content requirements in Clauses 6 and 7 of Schedule 2 of the NSW *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation).	Section 4.3
	In addition, the EIS must include a:	
	• detailed description of the development, including:	Chapter 3
	– need for the proposed development;	Section 18.1
	– justification for the proposed development;	Chapter 18
	– likely staging of the development;	Section 3.2.9
	– likely interactions between the development and existing, approved and proposed operations in the vicinity of the site; and	Chapters 7-16
	– plans of any proposed building works.	Figure 3.1
	• consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments;	Chapter 4
	• risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment;	Chapter 6
	• detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes:	Chapters 7-16
	– a description of the existing environment, using sufficient baseline data;	Chapters 7-16
	– an assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes;	Chapters 7-16
	– a description of the measures that would be implemented to avoid, minimise and if necessary, offset the potential impacts of the development, including proposals for adaptive management and/or contingency plans to manage any significant risks to the environment; and	Chapters 7-16
	• consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EIS.	Chapter 17
	The EIS must also be accompanied by a report from a qualified quantity surveyor providing:	

Table 1.1 Summary of SEARs

Aspect	Assessment requirements	Reference in EIS
	• a detailed calculation of the capital investment value (CIV) as defined in clause 3 of the EP&A Regulation, including details of all components of the CIV;	Will be provided upon request
	• a close estimate of the jobs that will be created by the development during the construction and operational phases of the development; and	Sections 3.2.7 and 3.2.9
	• certification that the information provided is accurate at the date of preparation.	Signature page of this EIS
Key issues	The EIS must address the following specific issues:	
Strategic context	Including:	
	• detailed justification for the proposal and suitability of the site; and	Chapter 18
	• demonstration that the proposal is generally consistent with all relevant planning strategies including the relevant NSW Waste Avoidance and Resource Recovery Strategy, environmental planning instruments (EPIs), development control plans (DCPs), and justification for any inconsistencies.	Chapter 4
Waste management	Including • identification and classification of waste streams that would be transported to and from, stored, handled, processed and disposed of at the facility; • description of proposed waste transport, storage, handling, processing; and disposal; and • description of potential impacts and impact mitigation associated with transporting, storing, handling, processing and disposing of waste.	Chapter 10
Soil and water	Including: • description of the water demands and a breakdown of water supplies including any water licensing requirements; • a detailed water balance; • description of the measures to minimise water use; • description of the construction erosion and sediment controls; • a description of the surface and stormwater management system, including on site detention, and measures to treat or reuse water; • an assessment of potential surface and groundwater impacts associated with the development, including impacts to flooding, Prospect Creek, groundwater dependent ecosystems, and potentially affected groundwater users; • details of impact mitigation, management and monitoring measures; and • an assessment of any potential existing soil contamination.	Chapter 11
Wastewater	Including: • a detailed description of the wastewater treatment process for the development including details of the volume of wastewater generated, treated, reused/recycled, or stored on site; and • details of the key pollutant concentrations of the wastewater before and after treatment with reference to relevant water quality guidelines.	Chapter 11

Table 1.1 Summary of SEARs

Aspect	Assessment requirements	Reference in EIS
Air quality and odour	Including:	
	• description of all potential air emission and odour sources;	Section 8.2.2
	• a comprehensive air quality assessment of all potential air quality and odour impacts from the development, including details of air quality and odour impacts on private properties, in accordance with relevant Environment Protection Authority (EPA) guidelines; and	Section 8.4
	• details of mitigation, management and monitoring measures for preventing and/or minimising both point and fugitive emissions.	Section 8.6
Noise and vibration	Including:	
	• description of all potential noise and vibration sources such as construction, operational and traffic noise;	Section 9.2
	• a comprehensive noise and vibration impact assessment including cumulative impact assessment in accordance with relevant EPA guidelines; and	Section 9.3
	• details of noise mitigation, management and monitoring measures.	Section 9.4
Traffic and transport	Including:	
	• details of all traffic and transport predictions for the development during construction and operation, including a description of haul routes;	Section 7.3.1
	• details on access to the site from the road network including intersection location, design and sight distance;	Section 7.2
	• an assessment of predicted impacts on road safety and the capacity of the road network to accommodate the project;	Section 7.3
	• plans of any road upgrades, rail and other infrastructure works or new roads required for the development; and	Section 7.3.5
	• detailed plans of the proposed layout of the internal road network and parking on site in accordance with the relevant Australian standards.	Figures 2.2 and 3.1
Hazard and risk	Including:	
	• a risk screening and if necessary a Preliminary Hazard Analysis (PHA) in accordance with Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis and Multi-Level Risk Assessment.	Chapter 16
Hazards	Including:	
	• a PHA of the project, and an assessment of the potential fire risks of the project.	Chapter 16
Flora and fauna	Including:	
	• an assessment of the potential impacts to threatened species, populations and communities, and their habitat(s), and if required describe how the principles of “avoid, mitigate, offset” have been used to minimise the impacts of the proposal on biodiversity.	Chapter 12
Heritage and Aboriginal heritage	No specific matters raised.	Chapter 13
Socio-economic	Including:	
	• an analysis of the economic and social impacts of the development, demonstrating that it would have a new benefit for the community, and paying particular attention to the potential effects on waste minimisation and resource recovery in the region.	Chapter 15

Table 1.1 Summary of SEARs

Aspect	Assessment requirements	Reference in EIS
Visual impacts	Including:	
	• an assessment of impacts (using photomontages) to views from public vantage points; and	Section 14.2
	• description of visual impact mitigation measures such as landscaping.	Section 14.3
Greenhouse gas (GHG)	Including:	
	• a quantitative assessment of the potential Scope 1 and 2 GHG emissions of the development, and a qualitative assessment of the potential impacts of these emissions on the environment; and	Section 8.5
	• a detailed description of the measures that would be implemented on site to ensure that the development is energy efficient.	Section 8.6
Cumulative impacts	Particularly in relation to air, noise and traffic associated with other nearby industrial or commercial operations.	
Plans and document	The EIS must include all plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the EP&A Regulation These documents should be included as part of the EIS rather than as separate documents.	
Consultation	During the preparation of the EIS, you should consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups or affected landowners. In particular you must consult with: • EPA; • Department of Primary Industries (DPI); • Fairfield City Council; and • local community and other stakeholders. The EIS must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.	Chapter 5

1.7 Structure of this environmental impact statement

The EIS provides a main overview volume (Volume 1) supported by the technical specialist studies which are given in Volumes 2 to 4. Volume 1 is structured as follows:

1. *Executive summary;*

2. *Chapter 1 - Introduction* – provides an overview to the proposed modification, including information about the applicant and context of this report;

- *Chapter 2 - Site and context* – provides a description of the site locally and regionally;

- *Chapter 3 - Project description* – provides a description of the proposal;

- *Chapter 4 - Statutory approvals* – describes the relevant planning and environmental approvals required for the proposal;

- *Chapter 5 - Stakeholder engagement* – describes the consultation process with stakeholders, including the local community and government agencies, and the matters raised and references sections of the document where these matters have been addressed;

- *Chapters 6 to 18* - These chapters provide a description of the existing environment, predicted impacts from the proposal, and a description of the management and monitoring measures;

- *Chapter 19 - Statement of commitments* – describes the measures to avoid or mitigate potential environmental impacts of the proposal; and

- *Chapter 20 - Justification and conclusion* – provides justification for the proposal taking into account the positive and negative social, economic and environmental impacts as well as the principles of ecologically sustainable development (ESD).

Regional context
Widemere Recycling Facility
Environmental Impact Statement
Figure 1.1

2 Current operations

2.1 Overview

Current operations at the facility include the receipt of permitted waste which is sorted, processed and blended on site to produce a range of recycled aggregate and road base products. The facility has approval to process 750,000 tpa of material, comprising 600,000 tonnes of permitted waste (see Section 2.4) with the balance being made up of blending material.

2.2 Site layout

The facility occupies an area of approximately 9.8 ha, and comprises the following general areas (see Figure 2.2):

- receivals area which includes a weighbridge, spot checking platform, and administration buildings;
- incoming materials stockpile area, where incoming vehicles unload waste material;
- processing area;
- processed materials stockpiles including imported quarry product;
- water management area (water collection/sediment dams); and
- internal haul roads.

2.2.1 Receivals area

All delivery trucks entering the facility register at the site office and weighbridge to register the weight of their load and identity of the truck. Each load is inspected from the viewing platform above the weighbridge.

All material delivered to the facility is checked upon arrival at the receivals area to:

- ensure the materials are permitted waste materials;
- ensure quality of incoming materials;
- avoid raw material stockpile cross contamination; and
- enable Boral to track the material's progress through the facility.

Photograph 2.1 Receivals area, weighbridge and site office

2.2.2 Incoming materials stockpile area

Once inspected, each truck proceeds to the incoming materials stockpile area where it is allocated to one of the stockpiles according to the type and size of the load. Each load is re-checked again for contamination (ie wastes not permitted at the facility) as it is unloaded.

Material that is larger than 600 mm is broken down into manageable sizes using a 40 tonne (t) excavator in the receivals area.

The size and number of stockpiles in the receivals area varies depending on market supply and demand at any given point. The maximum stockpile height is 20 m.

Photograph 2.2 Incoming material stockpiles

2.2.3 Processing area

The processing area is where wastes are processed using the method below:

1. Crushing – materials are transported from the incoming material stockpiles and fed into the primary and secondary crushers at the processing plant to further reduce the size of the material.

2. Removing impurities – crushed material is magnetically separated to remove the majority of steel and other metals. The steel is stored separately and disposed of via a steel recycler. The non-magnetic material then passes through picking stations where impurities are manually sorted from the raw waste. The crushed material also runs through sets of blowers to further remove any other impurities such as plastics.

3. Screening – material is transported via conveyor to screens to separate the material based on size.

4. Stabilisation plant – processed finished product including engineered and non-engineered construction materials are put through the pugmill to improve permeability resistance and improve strength of construction materials. The volume of materials fed into the stabilisation plant depends on market demands.

Photograph 2.3 Processing area

2.2.4 Processed material stockpiles area

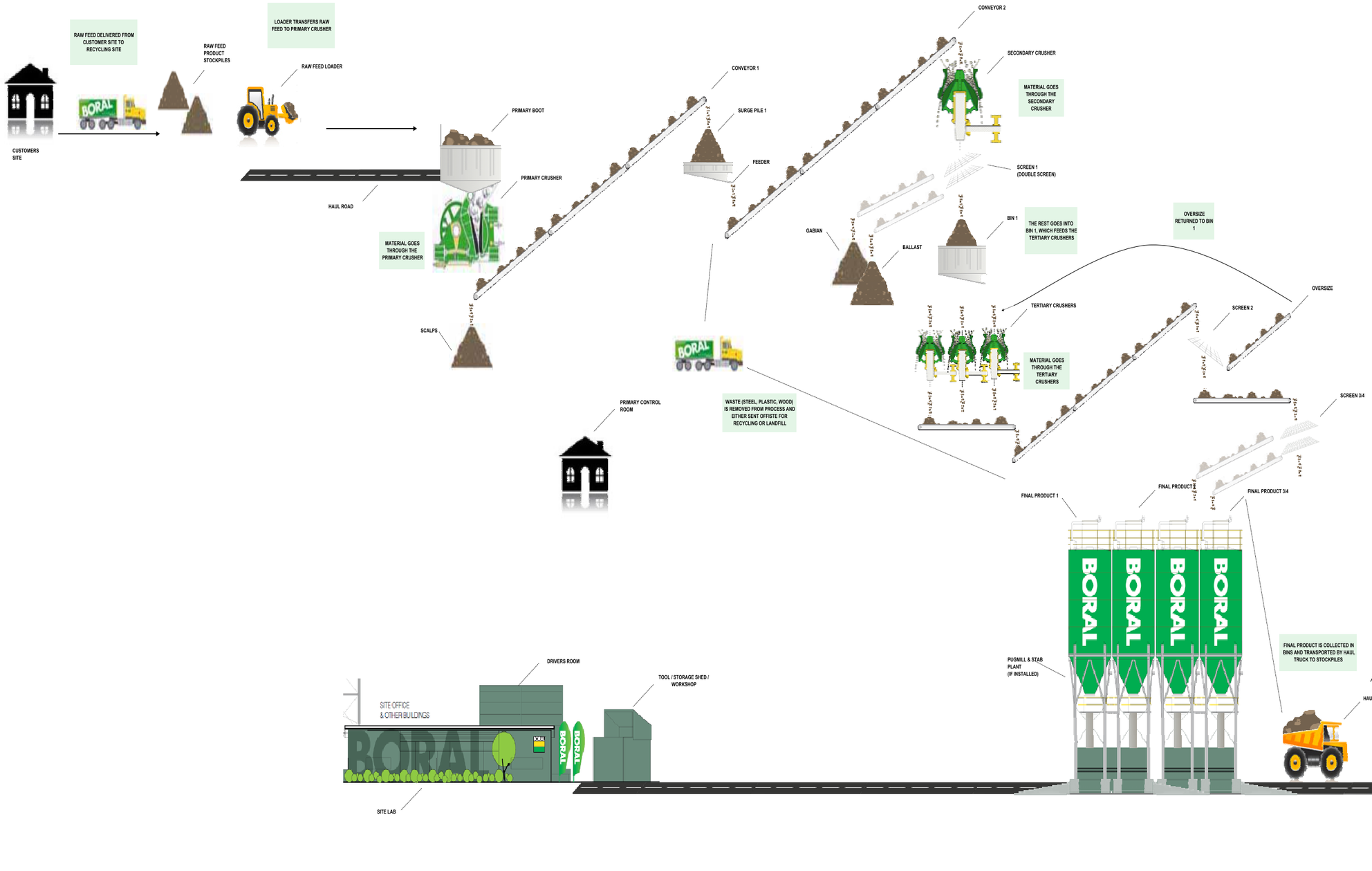
After waste material is processed it is placed in finished product stockpiles. These stockpiles are a blend of various processed products that meet required product specifications. The products produced at the facility are discussed in Section 2.4.

The facility also stockpiles a limited amount of excess quarry blending material that is on-sold when not required for blending.

A flow chart diagram illustrating the current processing operations at the site, from waste receival through to product dispatch, is provided as Figure 2.1.

It should be noted that process water (eg water used to produce product) is dependent on the percentage of water content required for a finished product. Thus, all water used as part of the blending process forms part of the product aggregate or road base, and does not result in water being discharged.

RECYCLING VIRTUAL FLOW CHART -



2.2.5 Water management area

Surface water and process water is managed within the surface water management system. The surface water management system at the site uses two sediment basins with a combined volume of 4,130 m^3 to manage surface and waste water on site. The basins are hydraulically linked that have an outlet pipe of 800 mm that discharges into Prospect Creek. Discharges from the basins are licensed under the facility's environment protection licence (EPL) 11815.

Stormwater generated within the western portion of the facility drains overland towards an open drain that runs on the outer perimeter of the southern haul road. The north-eastern portion of the site drains to a grass swale which runs south-west between the site entrance and the basins. Stormwater is piped from the open drain to an oil/grit separator prior to being discharged to the sediment basins.

Stormwater flowing south from the vegetated land to the north/north-east of the facility is collected in a grass swale before being diverted away from the facility.

An objective of Boral is to reuse and recycle water as much as possible at the facility. To achieve this, water from the second basin is extracted for the following activities:

- dust suppression on internal roads;
- dust suppression on stockpiles and in crushing and screening areas of the plant;
- use in fixed plant and pugmill; and
- wheel wash water.

A water cart is used to manage dust on internal roads. Water cannons are used on crushing and screening areas to manage dust generation by wind from raw feed stockpiles.

Water from the second basin is pumped to the wheel wash as well. Wastewater from the wheel wash is discharged via the oil/grit separator back to the first basin, thereby minimising water losses.

Potable mains water is used to meet any water deficit where insufficient water is available from the sediment basins.

Photograph 2.4 Product stockpiles

2.2.6 Internal haul roads

Within the facility there are internal haul roads which are illustrated in Figure 2.3.

There is a perimeter haul road around the facility for truck movements. The perimeter haul road is the major internal road at the facility. Minor internal roads are located throughout the incoming material stockpile area and processing and product stockpile area (see Figure 2.3).

The internal flow of traffic at the facility is divided into trucks delivering waste material, and trucks collecting product.

Trucks arriving with waste materials arrive at the receivals area (which includes a weighbridge) for spot checking (see Figure 2.1). Once checked, trucks proceed to the incoming materials stockpile area to unload. Trucks exit the site on the north side of the receivals area (refer to Figure 2.2) via the northern wheel wash.

Trucks entering to collect product enter via a different route to those delivering material (shown on Figure 2.3). Once loaded in the product stockpile area, trucks exit via the southern wheel wash facility onto Reconciliation Road.

Photograph 2.5 Perimeter haul road

2.3 Permitted wastes

The facility receives and processes the following waste materials (permitted wastes):

- building and demolition waste, as defined in Schedule 1 of the NSW *Protection of the Environment Operations Act 1997* (POEO Act);
- asphalt waste;
- virgin excavated natural material (VENM);
- plasterboard and ceramics;
- cured concrete waste (washout) in solid form from concrete batching plant;
- processed natural quarry product;
- soil that meets thresholds for General Solid Waste in Table 1 of the waste classification guidelines;
- garden waste, as defined in the POEO Act;
- general or specific exempted waste; and
- any waste that is below licensing thresholds in Schedule 1 of the POEO Act.

2.4 Products

The facility generates two main products: aggregates and road base. Recycled aggregate and road base products typically produced at the facility are detailed in Table 2.1.

Table 2.1 Products and uses

Product	Make up	Potential uses
Recycled DGB20	Crushed concrete Quarry fines (aggregate 5mm or less)	Base material for construction of roads and highways with various load bearing requirements base material for construction of roads and highways with various load bearing requirements.
Enviroblend™	Crushed concrete Reclaimed asphalt pavement (RAP) from roadworks	Base material for construction of roads and highways with various load bearing requirements.
Recycled DGS 40;	Crushed concrete Quarry fines	Sub-base material for construction of roads and highways with various load bearing requirements.
Recycled DGS20	Crushed concrete	Sub-base material for construction of roads and highways with various load bearing requirements.
Recycled Sub-base	Crushed concrete wash out Quarry aggregate	Alternative to 100 mm sandstone sub-base pavement material. Material used as a sub-base or select fill for subdivisions, car parks, roads etc.

Table 2.1 Products and uses

Product	Make up	Potential uses
Superfill	Crushed brick RAP	Alternative to 53 mm sandstone sub-base pavement material. Material used as a sub-base or select fill for subdivisions, car parks, roads and hardstand areas.
20 mm Recycled Road Gravel	Crushed concrete wash out Quarry aggregate	Material for under concrete slabs and construction of lightly trafficked roads and driveways and car parks.
20 mm Recycled Road Base	Crushed concrete	Road-base for under concrete slabs and construction of lightly trafficked roads, driveways and car parks.

Source: Widemere EIS (ERM 2002).

The volume of product produced under current operations is a combination of blended imported material with processed waste material. The total product produced at the facility for last four years is shown in Table 2.2.

Table 2.2 Product produced per annum

Year	Produced product (t)
2009 – 2010	644,000
2010 -2011	727,000
2011 – 2012	741,000
2012 - 2013	744,000

2.5 Other waste management

The facility generates limited volumes of other waste not recycled on site. These waste types, volumes and management measures are detailed in Table 2.3.

Table 2.3 Waste management

Waste material	Volume/weight per annum	Management method
Waste oil Oils used in maintenance of equipment	4,000 litres	Waste oil is collected a licensed waste oil recycler.
Empty oil drums Metal containers used to store oil	20 drums	Oil drums are emptied of all residual oil. The drums are then crushed and placed into scrap metal bins for recycling.
Cardboard	-	Cardboard goes into general solid waste.
Scrap metal	4,200 t	Waste is placed in the scrap metal bins in the maintenance areas and recycled by a licensed scrap metal recycler.
General waste Includes waste from administration offices and lunchroom.	50 t 720 t	Placed in wheelie bins which are collected by Veolia. Office waste goes to Blacktown waste as general solid waste.

2.6 Hours of operation

The hours of operation for processing activities are:

- Monday to Friday 6 am to 10 pm; and
- Saturday 6 am to 4 pm.

The facility receives waste material and dispatches product:

- Monday to Friday 6 am to midnight; and
- Saturday 6 am to 4 pm.

No activities are undertaken on Sundays or public holidays.

2.7 Workforce

The facility currently employs up to 30 full-time staff. The general shift times are between 5:30 am and 7 pm. Shifts outside of these hours are only considered on a project by project basis, when material is required to be delivered during the night time period. For any other time, there are two shifts for the site as follows:

- Shift 1: 5:30 am to 5 pm: 15 staff; and
- Shift 2: 7:30 am to 7 pm: 15 staff.

2.8 Transport, access and parking

Access to the facility is from Widemere Road/Reconciliation Road. Approximately 468 truck movements (combination of inbound and outbound truck movements) are generated by the facility on an average daily basis. All transport to and from the facility is by road.

The facility provides 37 car parking spaces (one disabled) for employees and visitors.

2.9 Processing plant and equipment

Plant and equipment used at the facility is detailed in Table 2.4.

Table 2.4 Operational plant and equipment

Item	Number of items
980H Loader FL2137	1
980H Loader FL2071	1
980H Loader FL2310	1
972 Loader FL2208	1
Telehandler MH2084	1
Powerscreen MH2083	1
Excavator 227 (muncher)	1
Excavator 226 (bucket)	1

Table 2.4 Operational plant and equipment

Item	Number of items
Freightliner WC2086	1
Jaw crusher CR01	1
Impact crusher CR02	1
Primary screen SN01	1
Secondary screen SN02	1
Screen 3 SN03	1
Blending plant (stabilisation plant)	1

2.10 Environmental management

The facility operates under EPL 11815 for recovery of general waste and waste storage. The facility also operates under an operations environment management plan (OEMP) which sets out environmental management and monitoring requirements.

Dust and air quality management measures implemented at the facility include two wheel washing facilities, one located at the exit gate for inbound trucks exiting the site and the other wheel washing facility located just before entering the weighbridge for outbound trucks. The facility also has fixed stockpile water cannons and water carts on site to suppress dust emissions. The surface water management system at the facility directs surface water runoff into primary and secondary settlement ponds. Water is reused for onsite dust suppression and within the fixed plant and pugmill.

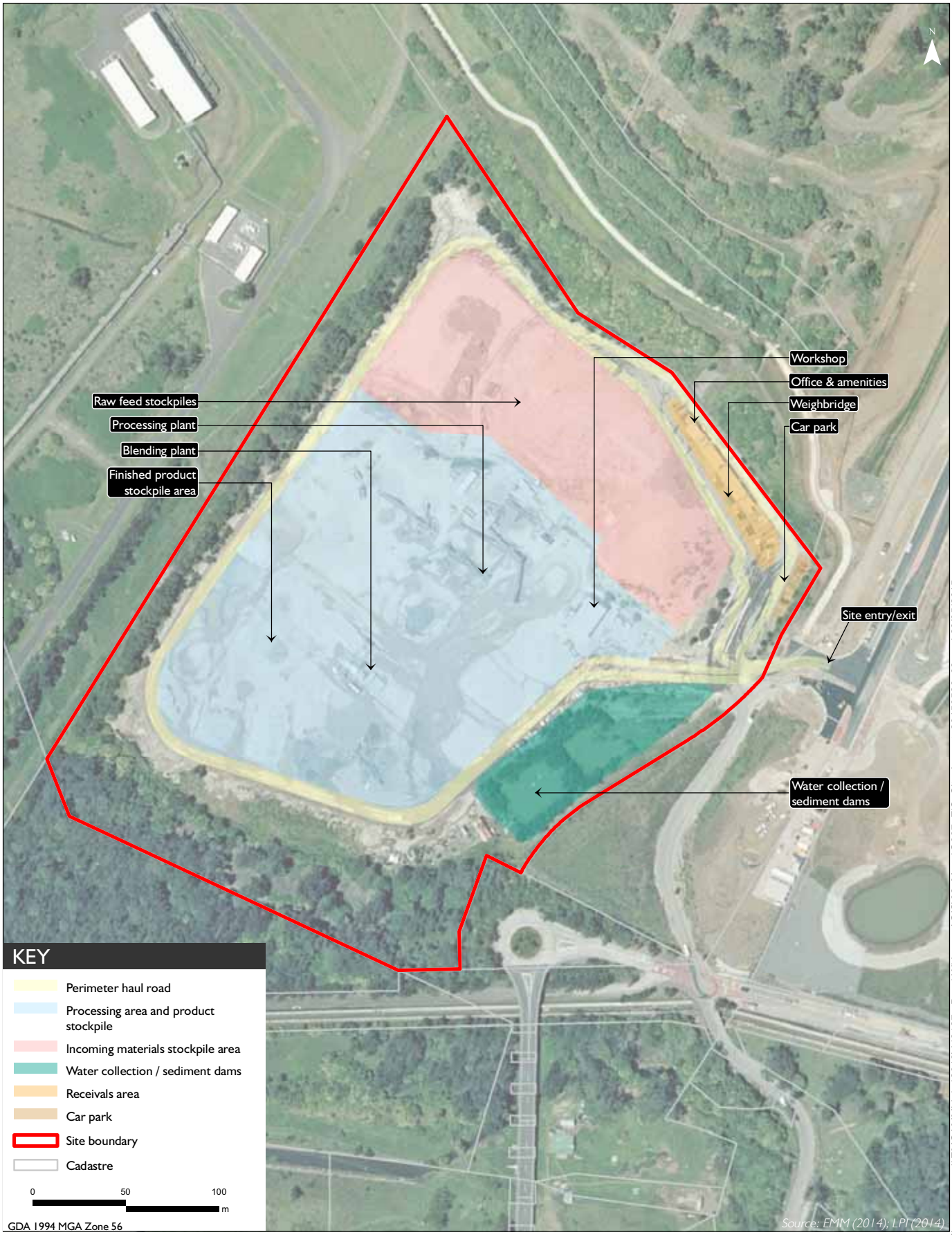
A number of other management measures are implemented at the facility to meet requirements under EPL 11815 and the development consent (DA-21-1-2002-I as modified). These are detailed in Table 2.5.

Table 2.5 Environmental management and monitoring requirements

Issue	Management procedure	Monitoring requirement
Materials management	Check and verify material origin prior to receival on site.	Tracking of materials received, and on site visual inspections of loads.
Dust	Locate processing activities well within the site, and use stockpiles as windshields. Spray haul roads and stockpiles with water as necessary to minimise dust generation. Install and maintain sprays to crushing equipment components. Reduce or cease dust generating activities during dry, windy conditions so that there is no visible dust leaving the site.	Daily visual assessment of dust generation, dust collection and monitoring on site in accordance with Clause 4.4, Table 3 of the development consent (DA-21-1-2002-I) as modified).
Stormwater runoff	Install and maintain filtered soaks at low points of site. Formalisation of drainage channels and installation diversion berms.	Visual inspection weekly and/or after rain.
Noise	Ensure equipment is fitted with appropriate silencers, and maintained and operated in a proper manner. Measure noise levels to confirm previous study predictions. Reassess noise levels if and when equipment or operating procedures are altered.	Within 90 days of commencement of operations confirm noise emissions in accordance with Clause 3.5, table 1 of consent (DA-21-1-2002-I as modified).

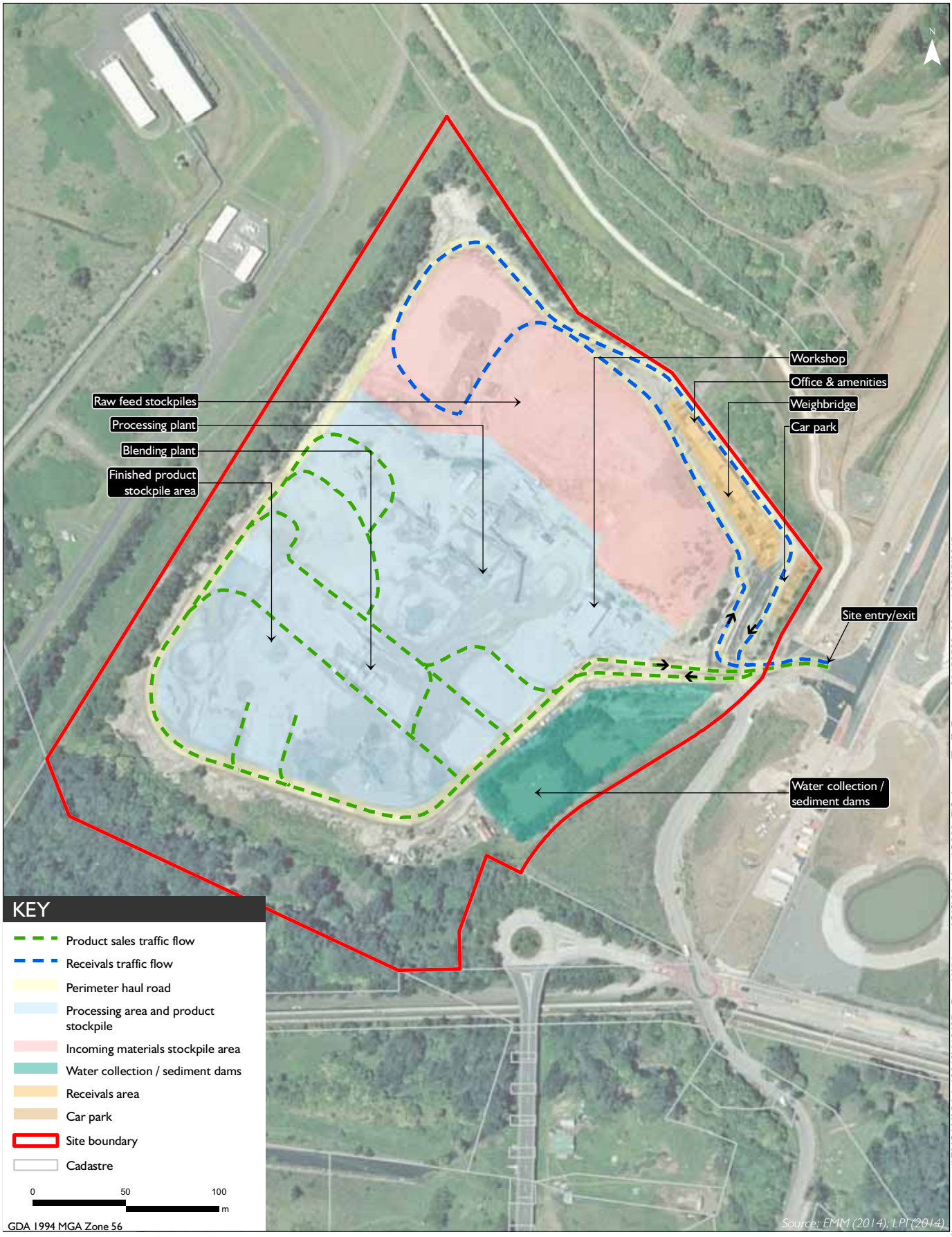
Table 2.5 Environmental management and monitoring requirements

Issue	Management procedure	Monitoring requirement
Visual	Maintain existing landscape features which provide a screen and landscape buffer.	Stockpiles are to be no more than 20 m in height.
Traffic	Ensure delivery of waste materials and product trucks follow designated traffic routes.	Site Transport Code of Conduct. All drivers to be made aware and inducted.
Refuelling	Ensure refuelling takes place in a designated bunded area.	No quantitative requirement.
Waste disposal	Maintain clearly marked separate bins for oil and domestic garbage.	No quantitative requirement.



Site layout - current operations

Widemere Recycling Facility
Environmental Impact Statement
Figure 2.2



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Internal traffic circulation
Widemere Recycling Facility
Environmental Impact Statement
Figure 2.3

3 Project description

3.1 Introduction

Boral is seeking development consent for the continuation of current approved operations, with the following additional elements:

- increase in the processing capacity, to 1,000,000 tpa;
- addition of new waste streams to the list of permitted wastes received at the facility;
- realignment of the southern portion of the perimeter haul road, associated changes to the site layout (refer to Figure 3.1); and
- change the operating hours of the facility.

The proposal is in response to changes in market demands for engineered road base products, and would have the additional benefits of optimising the use of the site, and consolidating waste from other Boral operations to improve broader resource recovery outcomes for the business.

Current operations and the additional elements under the proposal are outlined in Table 3.1.

Table 3.1 Current and proposed operations

Activity	Current operations	Proposed operations
Volume of material processed	750,000 tpa	1,000,000 tpa
Hours of operation	Processing activities: • 6 am-10 pm, Monday to Friday. • 6 am-4 pm, Saturday. Receival of waste material and dispatch of product 6 am-midnight, Monday to Friday. 6 am-4 pm, Saturday. No operations on Sundays or public holidays.	Processing, and receival and dispatch activities: • 6 am-midnight, Monday to Saturday. • 6 am-6 pm one Sunday per month, on average. Maintenance activities 6 am-6 pm on Sunday and public holidays. Periodic receival and dispatch outside operating hours for night time works, such as those required by the RMS.
Plant and equipment	Processing and blending as described in Section 2.2.	No change.
Number of employees	30.	33.
Parking	37 spaces (one disabled car park).	No change.
Stockpile height	20 m.	No change.

Table 3.1 Current and proposed operations

Activity	Current operations	Proposed operations
Materials received	Permitted waste as defined in the development consent (DA-21-1-2002-I as modified) and EPL 11815. See Section 3.2.2 for further detail.	Current permitted wastes with the addition of: • excavated natural material (ENM); • tiles and masonry (including materials direct from manufacturer, such as seconds material); • quarry products (greater than 20 mm); and • wet concrete batching plant stirrer waste.

Changes to current operations under the proposal are described in the following sections.

3.2 Proposed operations

3.2.1 Processing capacity

Boral is proposing to increase the volume of permitted wastes and blending material processed at the facility to a maximum of 1,000,000 tpa of material in total.

The proposed increase in processing capacity at the facility would increase the number of trucks travelling to and from the facility. It is estimated that, on average, the production increase would result in approximately 144 additional truck movements per day.

The stockpile storage capacity of permitted waste and recycled product will not be greater than 20 m above ground level and will not exceed 1,000,000 tonnes at any time (see Figure 3.2).

3.2.2 Perimeter haul road realignment

The proposal includes realignment of the perimeter haul road, as shown in Figure 3.1. The realignment would provide greater flexibility for vehicle movements and improve internal traffic management at the facility during peak periods. It would also facilitate an increase in the area available for stockpiling finished product, and improve the efficiency of the site water management system by improving water movement on site.

The perimeter haul road realignment would be contained fully within the site boundary. No changes to the general layout of plant and equipment are proposed, which would continue to be consistent with current operations.

3.2.3 Materials received

Permitted wastes under current operations would continue to be received by the facility. Approval is also sought to receive the following additional wastes:

- ENM;
- tiles and masonry (including materials direct from manufacturer, such as seconds material);
- quarry products (greater than 20 mm); and
- wet concrete batching plant stirrer waste.

Tiles and masonry would mostly be seconds sourced from various construction or development sites as well as Austral.

Concrete batching plant stirrer waste would be sourced mainly from Boral's concrete batching plants within the Sydney region. This waste is the remaining material in a concrete stirrer pit that is pumped out approximately once a year. As this is pumped from above ground tanks, there is no risk of runoff from hard surface areas of the concrete batching plant contaminating into the tank and the stirrer waste. The concrete stirrer waste will contain limited quantities of cement, chemical admixtures, fuels and lubricants, in addition to meeting EPL oil and grease criteria.

This wet concrete stirrer waste would be transported to the site in a vacuum suction tanker and stockpiled in the same location as the concrete washout received under approved operations, and allowed to dry prior to processing. The existing concrete washout stockpile area is constructed lower than the surface/road level and has a solid concrete base (with a surrounding retaining wall) which provides a non permeable barrier to contain the wet concrete stirrer waste. The stirrer waste would solidify quickly, and would be crushed at the facility in the incoming materials stockpile area.

To ensure that all receivals comply with the relevant EPA regulations, all loads received at the site are inspected in accordance with Boral Recycling's Inspection and Receivals Protocol, which includes the following:

- all received materials are inspected at least twice;
- no material is incorporated into the stockpile area until it has been inspected twice; and
- all receivals and inspections are logged with a docket sign-off when complete.

In addition, all Boral Recycling staff receive asbestos awareness, and bonded asbestos handling training. This protocol will continue to be applied to all existing and proposed new waste streams listed in Table 3.1 above.

3.2.4 Products

The facility would have the capacity to generate four additional products, although these remain consistent with the aggregates and road base and products produced under current operations. The new products are detailed in Table 3.2.

Table 3.2 Products and uses

Product	Make up	Potential uses
Recycled pipe bedding	Predominately brick or concrete	Bedding sand, fill under concrete slabs, other purposes as per sand applications
20 mm recycled aggregate	Predominately brick or concrete	Drainage applications, landscaping, walk ways
10 mm recycled aggregate	Predominately brick or concrete	Drainage applications, landscaping, walk ways
Engineered road base/ sub-base	Premix of construction and demolition waste and natural imported quarry rock	Civil, major infrastructure, and utility engineered applications
Non-engineered road base/ sub-base	Premix of construction and demolition waste	Non-engineered applications including, but not limited to, car parks, fill under slabs, landscaping temporary roads

Surplus clean quarry product that is imported for blending purposes may be directly on sold which is consistent with current operations. This would be a minor quantity and would be undertaken where excess clean quarry product is surplus to blending requirements.

3.2.5 Other waste management

The waste types, volumes and management methods are not expected to change significantly due to the proposal. As stated previously, the additional products generated under the proposal are consistent with existing products. Thus, existing environmental management and processing controls will apply to the new waste types received at the site.

3.2.6 Hours of operation

Changes to the hours of operation proposed include maintenance activities from 6 am to 6 pm on Sundays and public holidays. Maintenance activities comprise a set of tasks performed post inspection of the plant to repair mobile and fixed plant problems occurring directly from processing of the raw feed.

In addition, Boral is seeking approval to operate on up to 12 Sundays per year (one Sunday per month on average), and occasional receival and dispatch outside operating hours for projects such as those undertaken by the RMS during the night time.

The hours of operation (receival of waste, product dispatch and processing activities) would be as follows:

- Monday to Saturday 6 am to midnight; and
- Sunday 6 am to 6 pm one Sunday per month on average.

It is anticipated that the site would continue to operate with two main shifts, with staff numbers as follows:

- Shift 1: 5:30 am to 5 pm: 17 staff; and
- Shift 2: 6 am to 7 pm: 16 staff.

The above shifts would only be varied to include overnight shifts if a project required receivals at these hours.

3.2.7 Workforce

The facility currently employs up to 30 full-time operational staff. The proposal would require an additional three full time equivalent employees.

3.2.8 Transport, access and parking

Internal traffic flow around the site between trucks delivering waste material and trucks collecting product would remain the same as current approved operations.

The facility provides 37 car parking spaces (one disabled) for employees and visitors. No additional parking spaces are required as part of the proposal.

3.2.9 Construction

The only aspect of the proposal that would require construction is the realignment of the southern section of the perimeter haul road. Construction is expected to take approximately five days and would be completed by using equipment shown in Table 3.3 Material for the road would be sourced from product materials on site, as well as asphalt from Boral's Enfield plant.

Table 3.3 Construction equipment

Item	Number of items
Grader	1
980H Loader FL2071	1
Bobcat	1
Asphalt paver	1
Roller	1

The construction will require one day to lay the asphalt, which will be sourced from Boral's Enfield plant in five 16 tonne trucks.

There will be a maximum of five construction employees onsite at any time over the five days of construction. These will be temporary positions created for the purpose of construction works.

3.3 Environmental management

The facility would continue to operate under its OEMP and EPL 11815. Should the application be approved, a variation to the EPL would be required to reflect the changes under this proposal. The OEMP would be revised and updated to reflect the changes to the facility.

It should be noted that current processing operations at the site will remain (see Figure 2.1) under the proposal and no additional processes are required.

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Changes to alignment of the perimeter haul road

Widemere Recycling Facility
Environmental Impact Statement
Figure 3.1

EMM

Stockpile capacity of the site

Widemere Recyling Facility

Environmental Impact Statement

Figure 3.2

4 Statutory approvals

4.1 Introduction

This chapter outlines the statutory framework that applies to the proposal. It describes the relevant NSW and Commonwealth legislative and regulatory framework under which the proposal would be assessed.

4.2 Commonwealth legislation

Under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), actions that may have a significant impact on a matter of national environmental significance (MNES) are 'controlled actions' and require approval from the Commonwealth Minister for the Environment. MNES include:

- world heritage properties;
- national heritage places;
- wetlands of international importance (listed under the Ramsar Convention);
- listed threatened species and ecological communities;
- migratory species (protected under international agreements);
- Commonwealth marine areas;
- the Great Barrier Reef Marine Park;
- nuclear actions (including uranium mining); and
- a water resource, in relation to coal seam gas development and large coal mining development.

A search for MNES was conducted on 31 July 2014 with a 10 km buffer, and identified two places listed as world heritage, Australian Convict Sites (Old Government House and Domain, and Old Government House and Domain Buffer Zone) located in the Parramatta LGA, and two national heritage properties, Old Government House and the Government Domain in Parramatta LGA and the Vietnam War Comradeship Memorial in Fairfield LGA. The proposal would not have any impact on these properties, either directly or indirectly.

There are a number of listed threatened ecological communities, threatened species and migratory species within a 10 km radius of the facility. These are addressed in Chapter 12.

The proposal would not have a significant impact on MNES, and accordingly, approval from the Commonwealth Minister for the Environment is not required.

4.3 NSW Legislation

4.3.1 Environmental Planning and Assessment Act 1979

i General

The EP&A Act and the EP&A Regulation form the statutory framework for planning approval and environmental assessment in NSW. Implementation of the EP&A Act is the responsibility of the Minister for Planning, statutory authorities and local councils. It contains three parts that impose requirements for planning approval:

- Part 4 which provides for control of 'development' that requires development consent from the relevant consent authority. A division of Part 4 (Division 4.1) provides for control of SSD where the Minister for Planning (or delegate) is the consent authority.
- Part 5 which provides for control of 'activities' that do not require approval or development consent under or Part 4.
- Part 5A which provides for control of State significant infrastructure that do not require approval or development consent under Part 4.

The requirement for development consent is set out in EPIs.

ii State significant development provisions

Division 4.1 of the EP&A Act specifically relates to the assessment of development deemed to be significant to the State (ie SSD).

Section 89C(2) of the EP&A Act states that a:

> ... State environmental planning policy may declare any development, or any class or description of development, to be State significant development.

State Environmental Policy (State and Regional Development) 2011 (the SRD SEPP), among other things, defines certain development that is SSD. Clause 8 of the SRD SEPP states:

> (1) Development is declared to be State significant development for the purposes of the Act if:
>
> (a) the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act, and
>
> (b) the development is specified in Schedule 1 or 2.

The facility meets both these requirements; it is not permissible without development consent and is development specified in Schedule 1 of the SRD SEPP. Therefore, it is a SSD.

iii Permissibility

The facility is located within the Greystanes Southern Employment Lands which is listed as a State significant site under the Major Development SEPP.

Under the Major Development SEPP, the facility is zoned IN2 (Light Industrial). Within this zone, materials recycling or recovery centres are permissible with development consent.

Accordingly the proposal is permissible with development consent under the Major Development SEPP.

iv Development specified in Schedule 1

The facility is declared a SSD pursuant to SRD SEPP falling within the category of 'waste and resource management facilities', being defined as:

> (3) Development for the purpose of resource recovery or recycling facilities that handle more than 100,000 tonnes per year of waste.

The facility is a development for the purposes of resource recovery and a recycling facility that handles more than 100,000 t per year of waste.

v Consent authority

Under section 89D of the EP&A Act, the Minister for Planning is the consent authority. However, pursuant to section 23 of the EP&A Act the Minister may delegate the consent authority function to a range of persons or public authorities, including the PAC.

vi Requirement for environmental impact statement

A DA for SSD must be accompanied by an EIS, prepared in accordance with the EP&A Regulation. Before lodging an EIS, an applicant must request SEARs which are essentially terms of reference that specify what must be addressed in an EIS. The SEARs for the proposal were issued on 17 June 2014 and are provided in Appendix A. The sections of the EIS where the SEARs have been addressed are identified in Table 1.1.

vii Matters for consideration

When assessing a DA for SSD, the consent authority is required to take into consideration the matters outlined in Section 79C of the EP&A Act. This states:

> (1) Matters for consideration—general
>
> In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:
>
> (a) the provisions of:
>
> (i) any environmental planning instrument, and
>
> (ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Director-General has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and
>
> (iii) any development control plan, and
>
> (iiia) any planning agreement that has been entered into under section 93F, or any draft planning agreement that a developer has offered to enter into under section 93F, and

(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph), and

(v) any coastal zone management plan (within the meaning of the Coastal Protection Act 1979),

that apply to the land to which the development application relates,

(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,

(c) the suitability of the site for the development,

(d) any submissions made in accordance with this Act or the regulations,

(e) the public interest.

4.3.2 Approvals not required or which cannot be refused

Under Section 89J of the EP&A Act, the following authorisations are not required for SSD:

(a) the concurrence under Part 3 of the Coastal Protection Act 1979 of the Minister administering that Part of that Act;

(b) a permit under Section 201, 205 or 219 of the Fisheries Management Act 1994;

(c) an approval under Part 4, or an excavation permit under Section 139, of the Heritage Act 1977;

(d) an Aboriginal heritage impact permit under Section 90 of the National Parks and Wildlife Act 1974;

(e) an authorisation referred to in Section 12 of the Native Vegetation Act 2003 (or under any Act repealed by that Act) to clear native vegetation or State protected land;

(f) a bushfire safety authority under Section 100B of the Rural Fires Act 1997; and

(g) a water use approval under Section 89, a water management work approval under Section 90 or an activity approval (other than an aquifer interference approval) under Section 91 of the Water Management Act 2000.

Further, under section 89K of the EP&A Act, the following authorisations cannot be refused and are to be substantially consistent with development consent for SSD:

(a) an aquaculture permit under Section 144 of the Fisheries Management Act 1994,

(b) an approval under Section 15 of the Mine Subsidence Compensation Act 1961,

(c) a mining lease under the Mining Act 1992,

(d) a production lease under the Petroleum (Onshore) Act 1991,

(e) an environment protection licence under Chapter 3 of the Protection of the Environment Operations Act 1997 (for any of the purposes referred to in Section 43 of that Act),

(f) a consent under Section 138 of the Roads Act 1993,

(g) a licence under the Pipelines Act 1967.

i Other provisions

Other sections of the EP&A Act which may be relevant to the proposal include:

- section 23D which states the functions of the PAC including a request by the Minister or Director-General to 'review any (or any aspect or part of any) development, activity, infrastructure or project to which this Act applies' and 'hold a public hearing into any matter the subject of any such advice or review';

- section 80 which states that the consent authority can determine a development application by either granting consent (unconditional or subject to conditions) or refusing consent;

- section 80A which relates to the impositions of conditions of a development consent. This section provides that conditions may be imposed on a development consent if:

    - it relates to any matter referred to in section 79C(1) of relevance to the development the subject of the consent, or

    - it requires the modification or surrender of a consent granted under this Act or a right conferred by Division 10 in relation to the land to which the development application relates, or

    - it requires the modification or cessation of development (including the removal of buildings and works used in connection with that development) carried out on land (whether or not being land to which the development application relates), or

    - it limits the period during which development may be carried out in accordance with the consent so granted, or

    - it requires the removal of buildings and works (or any part of them) at the expiration of the period referred to in paragraph (d), or

    - it requires the carrying out of works (whether or not being works on land to which the application relates) relating to any matter referred to in section 79C(1) applicable to the development the subject of the consent, or

    - it modifies details of the development the subject of the development application, or

    - it is authorised to be imposed under section 80(3) or (5), subsections (5)–(9) of this section or section 94, 94A, 94EF or 94F.

- section 94 which enables the consent authority to impose a condition requiring the applicant to provide a development contribution if the consent authority "is satisfied that development for which development consent is sought will or is likely to require the provision of or increase the demand for public amenities and public services within the area";

- section 97 which states that an applicant who is dissatisfied with a determination can lodge an appeal in the Land and Environment within six months after determination. If the appeal is against a deemed refusal under section 82(1), the appeal must commence within six months after the expiration of the relevant period; and

- Section 98 which allows an objector to appeal against a consent authority's decision to grant consent within 28 days of the notice of determination. Section 23F states that a decision made by the PAC cannot be challenged if it was made after a public hearing.

4.3.3 Water Management Act 2000

The NSW *Water Management Act 2000* (WM Act) regulates the use and interference with surface and groundwater in NSW. The proposal is located within the area covered by the Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011 (the Water Sharing Plan). The facility is within the Georges River management zone.

Under Section 89J of the EP&A Act, water use approvals, water management works approvals and controlled activity approvals are not required for development that is SSD.

No groundwater is to be taken or intersected as a result of the proposal; therefore, no permits or licences are required under the WM Act.

The proposal would result in only a minor increase in the volume of surface runoff captured due to a small increase in impervious surfaces (less than 0.4 ha), nor would the proposal result in a significant change in water demands compared to current operations.

The surface water assessment and water balance for the proposal are summarised in Chapter 11.

4.3.4 National Parks and Wildlife Act 1974

The NSW *National Parks and Wildlife Act 1974* (NPW Act) provides for the conservation of places, objects and features of significance to Aboriginal people and protection of native flora and fauna. A person must not harm or desecrate an Aboriginal object or place without an Aboriginal heritage impact permit under Section 90 of the NPW Act. However, a Section 90 permit is not required for SSD approvals by provisions of Section 89J of the EP&A Act. Potential impacts on Aboriginal heritage objects or places is assessed in Chapter 13.

4.3.5 Threatened Species Conservation Act 1995

The NSW *Threatened Species Conservation Act 1995* (TSC ACT) aims to conserve biological diversity in NSW through the protection of threatened flora and fauna species and endangered ecological communities (EECs). The potential impact of the proposal on endangered species, populations, and ecological communities listed under the TSC Act is assessed in Chapter 12.

4.3.6 Protection of the Environmental Operations Act 1997

The POEO Act is the principal environmental protection legislation in NSW which is administered by the EPA. Schedule 1 of the POEO Act lists the 'scheduled activities' which are to be regulated by an EPL. Current operations at the facility are regulated by EPL 11815.

An EPL is required for the following activities listed under Schedule 1 of the POEO Act:

> 34 Resource recovery
>
> (1) This clause applies to recovery of general waste, meaning the receiving of waste (other than hazardous waste, restricted solid waste, liquid waste or special waste) from off site and its processing, otherwise than for the recovery of energy.

42 Waste storage

(1) This clause applies to waste storage, meaning the receiving from off site and storing (including storage for transfer) of waste.

EPL 11815 would be amended subject to development consent being granted. Under Section 89K of the EP&A Act, an application for an EPL (or modification to an ELP) cannot be refused if it is necessary for carrying out a SSD authorised by development consent.

The EPA has granted resource recovery exemptions under clause 51 of the NSW Protection of the Environment Operations (Waste) Regulation 2005 for waste material which would be applied to land provided it is a fit for purpose reuse of that waste, would not cause harm to the environment or human health and is not another path of disposal. These exemptions apply to the permitted waste received at the facility under current operations, in accordance with Condition L5 of the facility's current EPL.

4.3.7 Waste Avoidance and Resource Recovery Act 1997

The NSW *Waste Avoidance and Resource Recovery Act 2001* aims to encourage efficient use of resources and reduce environmental harm, through the principles of ecologically sustainable development and considering resource management options against the hierarchy of avoid, reuse and dispose.

The proposal is consistent with these objects through enhanced services for more quantities of resources to be recovered and recycled, thereby decreasing the need for waste going to landfill.

4.4 Environmental planning instruments and policies

4.4.1 State Environmental Planning Policies

i State Environmental Planning Policy (State and Regional Development) 2011

A development is declared to be SSD under the EP&A Act if the development is specified in Schedule 1 or 2 of the SRD SEPP. Clause 23 of Schedule 1 relates specifically to waste and resource management facilities and includes a category of development for the purpose of resource recovery or recycling facilities that handle more than 100,000 t per year of waste. The facility falls within this category of development and accordingly the facility has been declared to be an SSD.

ii State Environmental Planning Policy (Major Development) 2005

The facility is located within the Greystanes Southern Employment Lands which is listed as a State significant site under the Major Development SEPP. Under the Major Development SEPP, the facility is zoned IN2 (Light Industrial). Within this zone, materials recycling or recovery centres are permissible with development consent.

Accordingly the facility is permissible with development consent under the Major Development SEPP.

The objectives of the IN2 Light Industrial zone under the Major Development SEPP are:

(a) to provide a wide range of light industrial, warehouse and related land uses,

(b) to encourage employment opportunities,

(c) to minimise any adverse effect of industry on other land uses,

(d) to enable other land uses that provide facilities or services to meet the day to day needs of workers in the area,

(e) to facilitate employment-generating development for a wide range of purposes, including light industry, technology-based industry, manufacturing, warehousing, storage and research.

The proposal is consistent with these objectives through both the current and proposed operations, and, as previously stated, the proposal is permitted with development consent within the zone.

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

State Environmental Planning Policy No. 33—Hazardous and Offensive Development (SEPP 33) defines development that is potentially hazardous and offensive industry. A risk screening procedure to determine whether the development is considered to be a 'potentially hazardous industry' under the SEPP 33 has been completed as part of the EIS (see Chapter 13).

iv State Environmental Planning Policy No. 55 – Remediation of Land

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55) requires that land contamination and remediation be considered by a consent authority when determining a DA in NSW. Clause 7(1) of SEPP 55 states:

7 Contamination and remediation to be considered in determining development application.

(1) A consent authority must not consent to the carrying out of any development on land unless:

(a) it has considered whether the land is contaminated, and

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

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

The proposal provides for an increase in the quantity of construction and demolition waste that is processed into recycled products. It would not process waste that is contaminated. A detailed description of the measures to prevent contamination from incoming waste is provided in Chapter 10.

4.4.2 Fairfield Local Environmental Plan 2013

The facility is within the Fairfield LGA. The *Fairfield Local Environmental Plan 2013* (Fairfield LEP) provides a framework guiding decision making for land use and development in the Fairfield LGA, in accordance with the standard instrument provisions under Section 33A of the EP&A Act. The LEP aims to encourage sustainable natural resource management, development and conservation, promote economic development, and provide direction for future growth and change.

The proposal is consistent with these aims through both the current and proposed operations. The proposed modifications result in an increase in employment and both direct and indirect economic benefits. In addition, the modifications aim to respond to changes in market demands, optimise the use of the site and improve waste consolidation for the improvement of broader resource recovery outcomes.

4.4.3 Fairfield Development Control Plan 2013

The Fairfield City Wide DCP 2013 (the DCP) supplements the Fairfield LEP by providing more detailed controls and guidelines for development across the Fairfield LGA. The proposal is SSD; therefore clause 11 the SRD SEPP applies. Clause 11 states:

> Development control plans (whether made before or after the commencement of this Policy) do not apply to:
>
> (a) State significant development, or
>
> (b) development for which a relevant council is the consent authority under section 89D (2) of the Act.

Therefore the provisions of the DCP do not apply to the proposal.

5 Stakeholder consultation

5.1 Overview

This chapter provides an overview of stakeholder engagement for the proposal, a description of the engagement activities undertaken and a summary of the findings that have been incorporated into this EIS.

5.1.1 Formal consultation requirements

Stakeholder engagement and consultation forms a key platform for the preparation of large environmental impact assessments such as EISs for SSD. The SEARs for the proposal state:

> During the preparation of the EIS, you should consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups or affected landowners. In particular you must consult with:
>
> - Environmental Protection Authority;
> - Department of Primary Industries;
> - Fairfield City Council; and
> - local community and other stakeholders.
>
> The EIS must describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.

Consultation was undertaken during the preparation of this EIS. Matters raised during the consultation process and where they are addressed throughout this document are detailed in the following sections.

Matters raised by agencies based on the preliminary environmental assessment and as part of the agency requirements are detailed in Appendix A.

5.2 Commonwealth government

The facility is not predicted to have a significant impact on a Matter of National Environmental Significance listed in the EPBC Act. Therefore the Department of the Environment was not consulted regarding the proposal.

5.3 State and local government

State government agencies (DP&E, RMS, Fairfield City Council and EPA) have been consulted regarding the proposal to seek guidance on assessment approaches and policies that apply to the facility. This consultation is summarised in Table 5.1.

Table 5.1 Agency consultation

Agency	Date	Method	Issues raised
DP&E	18/03/2014	Meeting	A meeting was held to discuss the approval process for the proposed changes to the facility. DP&E identified that the appropriate approval pathway was under Division 4.1 of Part 4 of the EP&A Act.
Fairfield City Council	8/07/2014	Telephone	Visual - Council advised in its correspondence to DP&E that the EIS would require an analysis of visual impacts using photomontages was required. Discussions with Council (Karl Berzins) confirmed that if the changes to the site did not change the visual characteristics of the site, then this should be described in the EIS, and photomontages would not be necessary. Surface water - Council advised in its correspondence to DP&E that information presented in the EIS would need to demonstrate that there will be no net increase in stormwater runoff from the site, or increase in flood levels along Prospect Creek.
	8/10/2014	Meeting	A meeting was held to discuss the proposed changes to the facility. Matters raised by Council for consideration in the EIS were: • Flooding – Council requested confirmation in the EIS that there would be no change to the bunding surround the southern perimeter of the facility. • Traffic – Council requested that traffic impacts at the intersection of Widemere Road and Davis Road would be assessed in the EIS.
EPA	8/09/2014	Meeting	A meeting was held to discuss the proposed changes to the facility. No specific matters were raised by the EPA to be addressed in the EIS in addition to correspondence already submitted to DP&E.
RMS	26/08/2014	Email	Correspondence was submitted to RMS with a copy of PEA and an offer to meet regarding the proposal. The RMS did not request a meeting with Boral.

5.4 Community

The closest residences are more than 1 km from the facility. No significant impacts are predicted to occur to air quality, noise levels, traffic or visual amenity due to the proposal at residential receptors. During the public exhibition process, community members will be able to make a submission on the EIS.

5.5 Adequacy response

In addition to the formal consultation described in Section 5.1.1, consultation with DP&E and Fairfield City Council was undertaken between March and May 2015 following the submission of the draft EIS in December 2014. This consultation was in response to the DP&E's draft EIS adequacy review comments provided by the relevant agencies/authorities.

This EIS has been updated to incorporate the adequacy review feedback, where applicable.

6 Environmental risk assessment

6.1 Methodology

A preliminary environmental risk assessment for the facility was conducted as part of the scoping phase for the EIS to identify potential impacts and their likely severity. The predicted environmental, social and economic attributes of the facility were ranked according to the potential level of impact and the required assessment approach.

6.2 Prioritisation

A review of environmental and social attributes of the proposal was undertaken. Those matters identified as high or moderate assessment priorities are presented in Table 6.1. Past environmental assessments, as well as issues raised during consultation and in the SEARs, have provided the basis for prioritising the technical studies conducted for this EIS.

Table 6.1 Assessment priorities

Attribute	Matters for consideration	Where considered
Traffic and transport	Changes to road traffic generation (including cumulative impacts) associated with increased processing.	Chapter 7
	Potential impacts to the capacity, level of service and safety of local roads and intersections.	
Air quality and GHG	Changes to predicted dust emissions (including cumulative emissions) surrounding the site, including dust emissions associated with increased processing and truck movements.	Chapter 8
	Changes to greenhouse gas emissions from the facility.	
Noise and vibration	Changes to noise generation affecting sensitive residential receptors surrounding the site.	Chapter 9
	Changes to road traffic noise.	
Waste management	Changes to quantity, nature and management of waste streams.	Chapter 10
	Waste minimisation.	
Surface water	Changes to impervious runoff areas.	Chapter 11
	Changes to water demands at the facility.	
	Changes to site water balance and surface water management.	

Lower risk matters for the proposal include groundwater, ecology, Aboriginal and European heritage, hazards and social-economic and are presented in Table 6.2. No detailed technical studies have been carried out for these aspects. This does not mean that these matters are not important. Rather, the assessment suggested that these matters could be effectively managed using existing management measures and proven techniques, whereas the higher priority matters require a more detailed assessment.

Table 6.2 Lower risk matters

Attribute	Matters of consideration	Where considered
Groundwater	Interaction with groundwater.	Chapter 11
Ecology	Potential impacts to vegetation and potential fauna habitat, if present.	Chapter 12
Aboriginal heritage	Potential impacts to Aboriginal heritage items, if present. Meeting regulatory requirements.	Chapter 13
European heritage	Meeting regulatory requirements.	Chapter 13
Hazards	Risk from storing and using hazardous materials on the site.	Chapter 16
Socio-economics	Regional and state economic effects. Changes to amenity issues such as noise, traffic and air quality that may impact amenity of affected sensitive receptors.	Chapter 15
Visual amenity	Changes to visual amenity as result of changes at the facility.	Chapter 14

An assessment of lower risk matters for the proposed modification is presented in Chapters 11 to 16.

7 Traffic and transport

7.1 Introduction

The SEARs require the EIS to address the following traffic and transport matters:

- details of all traffic and transport predictions for the development during construction and operation, including a description of haul routes;
- details on access to the site from the road network including intersection location, design and sight distance;
- an assessment of predicted impacts on road safety and the capacity of the road network to accommodate the project;
- plans of any road upgrades, rail and other infrastructure works or new roads required for the development; and
- detailed plans of the proposed layout of the internal road network and parking on site in accordance with the relevant Australian standards.

Potential traffic and transport impacts from the proposal are assessed in the traffic impact assessment, provided in full in Appendix B. The following sections summarise the assessment.

7.2 Existing environment

7.2.1 Local road network

The local road network surrounding the facility is shown on Figure 7.1 and described in the following sections.

i Reconciliation Road

Reconciliation Road, constructed in 2013, serves as a link between industrial areas within the Fairfield and Holroyd LGAs, and provides access to the north of the facility to the M4 Motorway, Prospect Highway and Great Western Highway. It connects to Widemere Road at its southern extent at the facility's site access. Reconciliation Road is a sealed two-way road with two traffic lanes in each direction and has a 60 km/h speed limit. It is generally constructed to arterial or sub arterial road standards. There are a combination of roundabouts and traffic signals at intersections along its length.

Intersection sight lines to the north of the facility's site access (see Section 7.2.2) are over 500 m, which is more than adequate. To the south of the site access, the road dips and curves the south-west; intersection sight lines in this direction are approximately 100 m, which are acceptable given that the intersection is controlled by traffic signals and the route has a 60 km/h speed limit.

Traffic surveys on Reconciliation Road near the facility's site access were completed during the periods 6.00 am–9.00 am and 3.00 pm–6.00 pm on 13 March 2014 to measure hourly traffic volumes. Peak hour periods were 7.30 am–8.30 am and 4.00 pm–5.00 pm. During these peak periods, heavy vehicles constituted 15% of morning peak hour traffic and 7% of afternoon peak hour traffic (north of the facility).

Recorded peak hourly flows correspond to approximately 8,500 daily vehicle movements north of the facility and approximately 8,350 daily vehicle movements daily south of the facility, conservatively assuming that peak movements are 9% of total daily traffic movements.

ii Widemere Road

Widemere Road connects to Reconciliation Road immediately north of the facility's access. Prior to the construction of Reconciliation Road, Widemere Road provided the only point of access to the facility. Widemere Road is typically a 13 m wide industrial road marked with one lane in each direction with a 60 km/h speed limit. It now connects the Wetherill Park industrial estate to the south of the facility with the Greystanes Estate Southern Employment Lands to the north.

iii Hassall Street

Hassall Street is to the south of the facility, and connects to Widemere Road. Hassall Street is typically a 13 m wide industrial road marked with one travel and one parking lane in each direction with a 60 km/h speed limit. It provides access through the existing Wetherill Park industrial area to the south of the facility, to arterial roads including the Horsley Drive and Cumberland Highway.

7.2.2 Site access

Access to the facility is by a signalised traffic intersection with Widemere Road. There is a dedicated right turn lane on Reconciliation Road approaching from the north for access into the site, and two exit lanes turning left and right when exiting the facility onto Reconciliation Road and Widemere Road (see Figure 2.2).

7.2.3 Traffic generation from current operations

Intersection traffic counts undertaken on 13 March 2014 were used to estimate traffic movements from current operations. Of the trucks travelling to and from the facility during the surveyed six hour period, approximately 70% travelled to and from the north via Reconciliation Road, and 30% travelled to and from the south via Widemere Road.

Based on an average eight month period between July 2013 and February 2014 (inclusive), an average of 234 trucks visited the facility each day, which is equivalent to 468 vehicle movements. Traffic movements generated by the facility vary on a daily basis. A +85% maximum daily traffic factor was determined between the average and maximum daily truck traffic movements over the period from July 2013 to February 2014 (inclusive).

Traffic movements generated by the facility are predominantly trucks with minimal car traffic. The total daily car traffic is approximately 50 cars each weekday which is equivalent to 100 car movements.

Approximately 12% of daily tuck movements from the facility occur during the morning peak hour period on Reconciliation Road (7.30–8.30 am), and approximately 4% typically occur during the afternoon peak hour (4.00–5.00 pm).

7.2.4 Intersection performance

The RMS sets level of service standards for intersections. Traffic volumes at the site access and Reconciliation Road were analysed using SIDRA intersection modelling software for the morning and afternoon peak hour periods to determine its level of service. The intersection has low peak hour traffic delays, indicating good traffic operations and a high level of spare traffic capacity during the morning and afternoon peak hour periods. The intersection therefore has an 'A' level of service.

7.2.5 Safety and traffic management

Trucks moving around the facility perimeter have adequate road width available at the main corners along this roadway to permit safe truck circulation in both directions. A water truck is used for dust control purposes in addition to the wheel wash facilities for all trucks departing from the facility, and a visual inspection of all trucks is undertaken for any loose material which may be attached to the truck tyres or other parts of the vehicle before they leave the facility to prevent debris being carried on to local roads.

Additional traffic directional signage is displayed at numerous locations throughout the facility. The speed limit within the facility is 30 km/h, with clear sign postings at the main entry gate driveway and at other locations along the facility perimeter road.

7.2.6 Car parking

Staff and visitor car parking areas are located adjacent to the weighbridge, workshop and administration office. These are located between the facility weighbridges and offices and the main entry gate (see Figure 2.1). The parking area is sealed and has capacity for 37 cars.

7.2.7 Public transport and pedestrian and cycling access

The Liverpool – Parramatta transit way T-way is located approximately 120 m south of the facility where it intersects Reconciliation Road, and provides bus services between Liverpool and Parramatta. The T-way is within easy walking distance of the facility.

Footpaths and the Prospect Reservoir cycleway are located in the vicinity of the facility. The Prospect cycleway has been recently constructed and passes along the northern boundary of the facility, and links the facility with other nearby land uses and adjoining recreation areas.

7.3 Impact assessment

7.3.1 Traffic generation

The proposal is estimated to result in an increase in truck traffic at the facility, associated with increased volumes of waste material received, and product produced at the facility. In addition, there is a minor increase in the workforce which would increase by approximately three people as a result of the proposal.

As traffic movements generated by the facility vary on a daily basis, the variability between the average and maximum daily truck traffic movements for current operations was adopted to assess the worst case impacts of the proposal (ie +85% compared to the average daily traffic generation).

For proposed operations, assuming 295 days annual operation, on a typical day the average number of trucks visiting the facility would increase by approximately 30%, from 234 to 306 trucks per day. This traffic has been based on average and maximum daily truck volumes in Table 7.1.

Table 7.1 Future average and maximum daily trucks

	Current operations			Proposed operations			
Daily trucks movements	**Imported waste**	**Exported product**	**Total**	**Imported waste**	**Exported product**	**Total**	**Increase**
Average	124	110	234	182	124	306	**72 trucks/day (144 movements)**
Maximum (+85% of average)	234	198	432	337	229	566	**134 trucks/day (268 movements)**

As summarised in Table 7.1, on an average day there would be approximately 306 trucks per day arriving at, and departing from the facility, which would correspond to 612 daily truck movements.

On busy days, the facility could generate greater truck traffic volumes, estimated at up to 85% greater than the average. This corresponds to 566 daily truck loads (1,132 daily movements) under proposed operations.

7.3.2 Intersection performance

SIDRA intersection analysis undertaken for the proposal demonstrate that the future intersection degree of saturation and traffic delays would increase marginally for the two peak traffic periods, with no changes in the intersection level of service for both average days and maximum days under the proposal.

A summary of the SIDRA intersection analysis for average and maximum daily production compared to the existing traffic situation during the morning and afternoon peak traffic periods is provided in Table 4.3. The detailed SIDRA intersection analysis results are included in Appendix B.

Table 7.2 SIDRA intersection analysis results – proposed operations

Year Scenario	Time period	Degree of Saturation	Average vehicle delay (seconds)	Level of Service	Maximum queue length (m)[1]
Current operations (year 2014)	(7.30–8.30 am)	0.177	8.0	A	19.6
	(4.00–5.00 pm)	0.313	9.2	A	36.6
Proposed operations (year 2014 – average day)	(7.30–8.30 am)	0.194	8.9	A	21.6
	(4.00–5.00 pm)	0.313	9.4	A	36.6
Proposed operations (year 2014 – maximum day)	(7.30–8.30 am)	0.311	13.1	A	30.4
	(4.00–5.00 pm)	0.314	10.1	A	36.8

Notes: 1. Maximum queue length is from the south for all scenarios.

The maximum traffic queue lengths occur on the southern approach to the intersection on Reconciliation Road and would generally increase from approximately 20 m in the morning traffic peak hour (from the south) under current operations, to 21–30 m under the proposal, with no change to queue lengths in the afternoon peak hour.

7.3.3 Road capacity

The corresponding daily traffic increases for Reconciliation Road traffic from the proposal under both the average and maximum scenarios are shown in Table 7.3.

Table 7.3 Additional daily traffic movements from the proposal on Reconciliation Road

Location	Existing base traffic movements (all traffic)	Average day			Maximum (worst case day)		
		Traffic movements		Proportion of traffic from the facility	Traffic movements		Proportion of traffic from the facility
		Cars	Trucks	All traffic	Cars	Trucks	All traffic
Reconciliation Road, north of the site access intersection	8,500	2	100	1.2%	2	188	2.2%
Widemere Road, south of the site access intersection	8,350	4	44	0.6%	4	80	1.0%

The proportional daily traffic increases on Reconciliation Road would be highest to the north of the facility travelling towards the M4 Motorway, Prospect Highway and Great Western Highway. This corresponds to a +1.2% increase on an average day and +2.2 % on a maximum day. The proportional increases in the daily traffic using Widemere Road to the south of the facility would be lower, corresponding to a +0.6% increase on an average production day and +1.0% increase on a maximum day. Therefore, the proposal would not have an adverse impact on the local road network.

Reconciliation Road, Widemere Road and Hassall Street have been adequately constructed to carry significant volumes of heavy vehicle traffic including B-double trucks and other large vehicles, and are unlikely to be adversely affected by additional traffic volumes generated by the proposal. The existing external road network traffic safety is considered to be very good with Reconciliation Drive being a newly constructed road with high design standard, and the speed limit being limited to 60 km/h. Intersections are well designed with adequate sight distance for visibility.

Existing staff and visitor car parking areas at the facility are more than adequate for the current number of employees and visitors. The marginal increase of employees under the proposal should be accommodated by the current level of car parking capacity. During construction, some additional temporary construction workforce car parking demand would result from the proposal for up to four employee vehicles, which would be accommodated in the existing car parking area. A maximum of five people will be required when the asphalt is laid, which will be conducted on a single day.

7.3.4 Internal traffic circulation

The proposal includes a minor realignment of the internal haul road, which provides greater flexibility for vehicle movements and improve internal traffic management at the facility during peak delivery and transport times. This road would continue to be contained fully within the site boundary.

7.3.5 Construction traffic

Temporary construction traffic as a result of the proposal would relate to the proposed perimeter haul road realignment, which would be undertaken over a period of approximately five days. Construction workforce car parking would be accommodated within existing car parking at the facility.

The construction traffic generated as a result of the proposed haul road realignment includes up a maximum of 10 construction workforce car movements and up to 10 daily truck movements over five days of construction. The predicted additional traffic volumes resulting from construction activities will be significantly less than the corresponding additional traffic volumes during future project operations. As such, a detailed assessment is not warranted.

Heavy vehicles will remain on site during the construction period. All materials required will be sourced from within the facility except asphalt which will come from Boral's Enfield plant for road surfacing over a single day in the five day construction period.

The construction activities will not result in additional traffic movements being generated to remove construction waste materials from the facility, as these will be recycled and reused to produce roadbase material within the site.

7.4 Management and monitoring

There would be no change to current levels of traffic safety within the facility or on the local road network as a result of the proposal. This is because access to the site is via Reconciliation Road, which is newly constructed and to a high design standard in comparison to the current usage and the speed limit, with good intersection sight distance for visibility. The internal road widths generally comply with relevant standards for two way truck traffic movements.

Current operational procedures and the existing traffic management plan would be reviewed updated to reflect the changes to operations at the facility as a result of the proposal.

7.5 Conclusion

The traffic impact assessment for the proposal considered impacts associated with the increase in traffic travelling to and from the facility.

It is estimated that current operations at the facility generate approximately 234 daily trucks (468 truck movements) and approximately 50 daily car trips (100 car movements) to and from the site. The traffic impact assessment predicted that the proposal would increase traffic generation compared to current operations. Daily truck movements are predicted to increase to 306 truck loads (612 truck movements) on average, and were estimated to increase to up to 566 truck loads (1,132 truck movements) on a maximum day.

On average, daily traffic on the local road network (Reconciliation Road to the north and Widemere Road to the south of the site) is predicted to increase by up to +1.2% under the proposal. The additional truck traffic movements should be accommodated with minimal impacts to either the traffic capacity or the road pavement condition on these roads which are industrial area roads that have been adequately constructed to carry significant volumes of heavy vehicle traffic. Therefore, the proposal would not have an adverse impact on the local road network.

The proposal is unlikely to have a significant impact on intersection performance. The future peak hour operating performance of the facility access intersection would continue to be very good, remaining at level of service A, under both daily average and predicted maximum operations.

Employee and visitor numbers would change only marginally and no additional car parking capacity would be required.

Surrounding road network
Widemere Recycling Facility
Environmental Impact Statement

Figure 7.1

8 Air quality and greenhouse gas

8.1 Introduction

The SEARs require the EIS to address the following air quality and GHG matters:

Air quality and odour:

- description of all potential air emission and odour sources;
- a comprehensive air quality assessment of all potential air quality and odour impacts from the development, including details of air quality and odour impacts on private properties, in accordance with relevant Environment Protection Authority guidelines; and
- details of mitigation, management and monitoring measures for preventing and/or minimising both point and fugitive emissions.

GHG:

- a quantitative assessment of the potential Scope 1 and 2 greenhouse gas emissions of the development, and a qualitative assessment of the potential impacts of these emissions on the environment; and
- a detailed description of the measures that would be implemented on site to ensure that the development is energy efficient.

ENVIRON Australia Pty Ltd assessed potential air quality and GHG impacts from the facility (Appendix C). The following sections summarise the assessment.

8.2 Existing environment

8.2.1 Sensitive receptors

The facility is in an area surrounded by existing industrial land uses. The closest residential receptors, represented by assessment location R1, are approximately 1 km to the east of the facility. Location R10, north-east of the facility, represents the approximate location of potential future residential development, which is land zoned for high density residential (Table 8.1 and Figure 8.1).

Table 8.1 Sensitive receptor locations

Assessment location	Address/description	Receptor type	Distance to facility (m)
R1	71 Munro Street, Greystanes	Residential	1,000
R2	146 Daruga Avenue, Pemulwuy	Residential	1,320
R3	Industrial area - Greystanes	Industrial	1,150
R4	Industrial area - Davis Road	Industrial	220
R5	Greystanes Estate Southern Employment Lands	Industrial / commercial	300
R6	Hyland Road Youth Centre	Active recreation	590
R7	Gipps Road sporting complex	Active recreation	1,090
R9	Hyland Road park	Active recreation	790
R10	Greystanes Estate - future high density residential	Future residential	670

8.2.2 Local emission sources

A number of existing sources of air pollution emissions were identified within 2 km of the facility. These operations include:

- SITA recycling facility, approximately 0.5 km to the south-east;
- Steritech gamma irradiation sterilization facility, approximately 0.5 km to the south south-east;
- Transpacific waste oil recycling facility, approximately 0.6 km to the south-west;
- Albright and Wilson surfactant manufacturing plant, approximately 1 km to the west south-west;
- Caroma Industries ceramic products factory, approximately 1.2 km to the south;
- Visy beverage can manufacturing plant, approximately 1.2 km to the east;
- CSR gyprock manufacturing plant, approximately 1.2 km to the south south-west; and
- Dairy Farmers milk processing facility, approximately 1.7 km to the south-west.

Emissions from these facilities were sourced from the National Pollutant Inventory (NPI) database and include particulate matter, oxides of nitrogen, carbon monoxide, sulphur dioxide, heavy metals and volatile organic compounds.

Given proximity of these sources to the site, they have been used to predict ground level concentrations of particulate matter in the area surrounding the facility.

In addition to the above emission sources, the following sources may contribute to air pollution in the vicinity of the facility:

- dust entrainment and fuel combustion emissions from vehicle movements along public roads;
- wind generated dust from exposed areas within the surrounding region;
- seasonal emissions from household wood burning fires; and

- episodic emissions from regional vegetation (eg bush and grass) fires and dust storms.

Sources which contribute to air quality in the region also include dust storms and bushfires. Dust storms predominately contribute to particulate concentrations, while bushfires are a source of combustion pollutants and fine particulates including both primary particulates and secondary particulates from atmospheric gas to particle conversion processes.

8.2.3 Air quality

Background air quality has been characterised in terms of primary particulate pollutants, namely Total Suspended Particulate (TSP) matter, particulate matter with an equivalent aerodynamic diameter of 10 micrometres (μ) or millionths of a metre (PM_{10}) and particulate matter with an equivalent aerodynamic diameter of 2.5 microns ($PM_{2.5}$). Dust deposition, as a result of the TSP emissions, was also assessed.

Baseline air quality was quantified through data from the NSW OEH ambient air quality monitoring stations at Prospect, Liverpool and Chullora. The Prospect monitoring site is approximately 4 km north of the facility and records continuous concentrations of PM_{10}. In the absence of $PM_{2.5}$ monitoring at the Prospect station and to supplement data gaps, data from the Liverpool and Chullora stations (11 km south and 14 km east of the facility, respectively) was also reviewed. Data was obtained for the period 2001-2013. Boral also conducts dust deposition monitoring at two monitoring locations at the facility in accordance with its EPL, which was considered in characterising background air quality.

i PM_{10}

Hourly-average PM_{10} data were collated from the NSW OEH Prospect air quality monitoring station. Gaps in the Prospect PM_{10} air quality monitoring dataset were supplemented by the Liverpool and Chullora datasets. A summary of this combined PM_{10} baseline dataset is presented in Table 8.2.

Table 8.2 PM $_{10}$ – 24 hour average background levels 2011-2013

Parameter	2011	2012	2013
Number of observations	365	366	365
Average	15.8 μg/m³	17.6 μg/m³	19.2 μg/m³
Lower quartile	11.0 μg/m³	13.2 μg/m³	13.4 μg/m³
Median	15.4 μg/m³	16.5 μg/m³	17.6 μg/m³
Upper quartile	19.3 μg/m³	20.7 μg/m³	23.2 μg/m³
Minimum	4.5 μg/m³	5.1 μg/m³	5.3 μg/m³
Maximum	41.5 μg/m³	40.1 μg/m³	81.8 μg/m³
Number of days > 50 μg/m³	0	0	4
Highest concentration < 50 μg/m³	41.5 μg/m³	40.1 μg/m³	49.2 μg/m³

PM_{10} concentrations recorded at the three NSW OEH monitoring stations exhibit similarities across the three analysed years of data, both in magnitude and the daily variability of concentrations. No exceedance of the NSW EPA criterion of 50 µg/m³ was recorded during 2011 or 2012 at the Prospect monitoring station. Exceedances were recorded during 2011 and 2012 at the Chullora station and during 2011 at the Liverpool station. In its annual ambient air quality report, the NSW EPA (2012 and 2013) identify that the exceedances at Chullora during 2011 were attributable to localised construction activities, while the 2011 Liverpool and 2012 Chullora exceedance events coincided with hazard reduction burn events.

Notable exceedances of the NSW EPA criterion were recorded during 2013 at all three monitoring stations. These elevated concentrations were directly attributable to extensive bushfire events in the Greater Sydney Metropolitan Region between September and November 2013.

ii $PM_{2.5}$

As stated previously, $PM_{2.5}$ monitoring is not conducted at the NSW OEH Prospect station. In order to derive a $PM_{2.5}$ background dataset the ratio between concurrent 24-hour average PM_{10} and $PM_{2.5}$ was calculated for the NSW OEH Liverpool and Chullora monitoring stations between 2011 and 2013. This value was applied to the daily-varying PM_{10} concentrations recorded at the NSW OEH Prospect station between 2011 and 2013 to derive a concurrent $PM_{2.5}$ baseline dataset. The 24 hour average background $PM_{2.5}$ levels are presented in Table 8.3.

Table 8.3 $PM_{2.5}$ – 24 hour average background levels 2011-2013

Parameter	2011	2012	2013
Number of concentrations	365	365	365
Average	6.1 µg/m³	6.8 µg/m³	7.4 µg/m³
Lower quartile	4.2 µg/m³	5.1 µg/m³	5.2 µg/m³
Median	5.9 µg/m³	6.4 µg/m³	6.8 µg/m³
Upper quartile	7.4 µg/m³	8.0 µg/m³	8.9 µg/m³
Minimum	1.7 µg/m³	2.0 µg/m³	2.1 µg/m³
Maximum	16.0 µg/m³	15.4 µg/m³	31.5 µg/m³
Number of Days > 25 µg/m³	0	0	1
Highest concentration < 25 µg/m³	16.0 µg/m³	15.4 µg/m³	21.0 µg/m³

It is noted that the bushfire events between September and November 2013 in the Greater Sydney Metropolitan Region caused elevated $PM_{2.5}$ concentrations in 2013 relative to 2011 and 2012. The removal of data recorded during the period of bushfire activity reduces the annual average concentration to below the annual average National Environment Protection Measures (NEPM) advisory reporting goal of 8 µg/m³ for $PM_{2.5}$, illustrating the influence of natural events of ambient air quality.

iii Total suspended particulates

TSP are particles of sizes up to about 50 µm which can be suspended in air. TSP also contain the smaller PM_{10} and $PM_{2.5}$. No publicly available TSP monitoring is conducted in the vicinity of the facility. The OEH quarterly air quality monitoring reports for 2003 and 2004 were reviewed for concurrent PM_{10} and TSP concentrations. This data highlighted that on average, PM_{10} concentrations recorded by the OEH were 48% of TSP concentrations.

In the absence concurrent TSP monitoring data, this PM_{10}/TSP relationship from the 2003-2004 monitoring reports has been applied to the OEH Prospect station PM_{10} monitoring data. The derived annual average TSP concentration for 2011, 2012 and 2013 is therefore 33.1 µg/m³, 36.7 µg/m³, 40.0 µg/m³ respectively.

Exceedances in the NSW EPA criterion in 2013 coincided with extensive bushfire events in the Sydney region, as previously discussed.

iv Dust deposition

Dust deposition can cause nuisance impacts such as soiling of clothes on washing lines. Monitoring for dust deposition is conducted at two locations at the facility; the south-west and south-east corners of the site boundary. Recorded dust deposition levels (as total insoluble solids) are presented in Table 8.4.

Table 8.4 Dust deposition monitoring (g/m^2/month)

Year	Dust deposition (g/m$_2$/month)	
	South-west corner of the facility	South-east corner of the facility
2012	3.1	3.6
2013	4.8	5.1
NSW EPA criterion	**4**	

This assessment focuses on the incremental dust deposition levels generated by the proposal (ie the incremental increase in dust deposition of the proposal compared to current operations) for comparison against the NSW EPA incremental dust deposition criterion, as the deposition monitoring locations situated on the facility boundary would be heavily influenced by emissions from current operations. The data presented in Table 8.4 above is not considered appropriate to assess cumulative dust deposition levels as significant double counting of emissions would occur.

8.2.4 Meteorology and wind regime

To characterise the meteorology of the region surrounding the facility, long-term climate records, time resolved meteorological monitoring data and meteorological modelling for the region was drawn upon. In the absence of suitable on-site meteorological monitoring data, a combination of local monitoring datasets from OEH Prospect and Bureau of Meteorology (BoM) Automatic Weather Station (AWS) at Bankstown Airport, and meteorological modelling were used.

The Air Pollution Model (TAPM) was used to generate the representative local meteorological data required for the air quality assessment. TAPM was configured and run in accordance with *The Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC 2005).

Winds from the south-west and north-west are most frequent on an annual basis. Winds from the north-east to south-east prevail in summer. Wind characteristics during autumn, winter and spring are similar and from the south-west and north-west. The average recorded wind speed for 2013 was 2.0 m/s and the annual percentage of calm without wind is 13%.

There is significant variation in monthly rainfall, with the summer and autumn months typically experiencing higher falls than the remainder of the year. This means there is significant variation in dust generation potential and the potential removal of atmospheric pollutants.

Monthly mean minimum temperatures are in the range of 5°C to 18°C, with monthly mean maxima of 17°C to 28°C. The warmest months generally occur during summer between November and March.

8.3 Method

The air quality assessment was undertaken in accordance with the methods in *The Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DEC 2005).

The assessment compares cumulative air pollutant concentrations and dust deposition levels to NSW EPA ambient air quality criteria (DEC 2005) at representative receptors. Relevant criteria are described in the sections below.

8.3.1 Assessment criteria

Adopted air quality criteria for airborne particulates applicable to the proposal are summarised in Table 8.5. Air quality criteria apply to the total pollutant concentrations in the air (ie cumulative concentrations), not just the pollutants produced by the facility.

Table 8.5 Adopted impact assessment criteria

Pollutant	Averaging Period	Criterion
TSP	Annual	90 µg/m³
PM_{10}	24 hours	50 µg/m³
	Annual	30 µg/m³
$PM_{2.5}$	24 hours	25 µg/m³
	Annual	8 µg/m³
Dust deposition	Annual	2 g/m²/month – increment
		4 g/m²/month – cumulative

i Odour

Odour was not assessed in the study as the current and future waste materials are benign and do not emit odour. Therefore, the potential for odour emissions and impacts to the surrounding environment arising from current and proposed operations at the facility is negligible.

Materials handled at the facility are largely inert materials and the proposal does not introduce odour-generating waste streams (such as glass or green waste). Therefore, the potential for odour emissions and impacts to the surrounding environment as a result of the proposal is negligible and an odour assessment is not required.

8.3.2 Air quality modelling

To assess impacts on air quality from the proposal, the atmospheric dispersion model AMS/US-EPA regulatory model (AERMOD) (US-EPA, 2004) was used. Two emission scenarios were developed to estimate emissions of TSP, PM_{10} and $PM_{2.5}$ from current and proposed operations. The model simulations were undertaken for the 12 month period between 1 January 2013 and 31 December 2013 based on the dataset of NSW OEH Prospect monitoring dataset. The air dispersion modelling predicted the resultant concentrations of particulate matter generated for both scenarios.

8.3.3 Sources of emissions

The particulate emissions generated by the facility include:

- vehicle entrainment of particulate matter due to the haulage of material along internal roads;
- unloading of waste material;
- breaking of larger material and handling to stockpiles/crusher hopper;
- crushing and screening plant operations;
- conveying, transfer points and loading of crushed rock material to stockpiles;
- handling and transfer of crushed material to blend plant;
- blend plant and handling/stockpiling of blended final product;
- loading of product to truck for dispatch; and
- wind erosion associated with exposed areas and material stockpiles.

It is noted that all of the above sources are the same as current operations. No new sources would be introduced as a result of the proposal.

Pollutants emitted as a result of diesel fuel combustion are likely to be minor in nature relative to particulate matter emissions and these were not included in this assessment.

The realignment of the internal haul road would result in short-term dust emissions relative to other operational activities, and these potential emissions would be managed using water trucks for dust suppression.

8.3.4 Emission reduction factors

The following dust mitigation measures in place at the facility were applied as emission reduction factors in accordance with relevant guidelines for the air quality impact assessment (see Section 7.4 of Appendix C):

- three stockpile water sprays;
- two carts watering paved and unpaved internal haul roads;
- internal speed limit of 30 km/h;
- two units sweeping paved surfaces and internal haul roads;
- water sprays at the crushing and screening plant and blending plant which will be increased from eight to 12 under the proposal; and
- enclosed crushing and screening plant and blending plant.

8.4 Impact assessment

8.4.1 Particulate matter

Dispersion modelling was undertaken to predict incremental concentrations of TSP, PM_{10}, $PM_{2.5}$ and dust deposition for the two modelled scenarios: current and proposed operations. The results are discussed below.

i PM_{10}

The PM_{10} 24-hour average concentration is predicted to exceed the NSW EPA assessment criterion of 50 µg/m³ on one day over the modelled 12 month period for both current and proposed operations at assessment locations R1, R6, R7 and R9. As described in Section 8.2.3, the key contributor to background air quality 2013 is the October 2013 bushfire event.

The facility-only increment, NPI Source increment and background concentration recorded at the OEH Prospect monitoring station were extracted to understand the contributing factors to the additional exceedance day predicted. The results show that, for each receptor and scenario, the additional exceedance day is dominated by the recorded background at the OEH Prospect station (Table 18 of Appendix C).

Under the proposal, it is noted that an additional exceedance is predicted for R1 but not for assessment locations closer to the facility (ie R2, R3, R5 and R8). This is because of R1's proximity to NPI source 6 and the influence of this source's impact on localised air quality. In addition, it was noted that the combined NPI source predictions and OEH Prospect monitoring data returned an additional exceedance day, from four days in the monitoring data to five days, without the inclusion of emissions from the facility.

This demonstrates that the predicted exceedances events at sensitive receptor locations would only occur during periods of elevated background concentrations (ie extraordinary events) regardless of the proposal.

Annual average PM_{10} concentrations are predicted to be below the NSW EPA assessment criterion for both current and proposed operations.

ii $PM_{2.5}$

The $PM_{2.5}$ 24-hour average concentration is predicted to exceed the NEPM advisory reporting goal of 25 µg/m³ for both current and proposed operations at all receptors. However, like the result for PM_{10}, the key contributor to this exceedance is the October 2013 bushfire event in the Sydney region. No additional exceedances of the NEPM advisory reporting goal for 24-hour average $PM_{2.5}$ are predicted at any assessment locations during current and proposed operations. Therefore the predicted exceedances events at assessment locations would only occur during periods of elevated background concentrations (ie extraordinary events) regardless of current or proposed operations.

Annual average $PM_{2.5}$ concentrations are predicted to be below the NEPM advisory reporting goal for both current and proposed operations.

iii TSP

Annual average TSP concentrations were predicted for each of the assessment locations for both current and proposed operations. Predicted cumulative annual average TSP concentrations at all modelled sensitive receptors are below the NSW EPA assessment criterion for both current and proposed operations.

iv Dust deposition

Due to the proximity of the onsite dust deposition monitoring locations at the facility, and the likelihood of double-counting, the available monitoring data is not appropriate to pair with model predictions to assess cumulative levels. The assessment therefore compared incremental dust deposition levels from the proposal with NSW EPA incremental criterion of 2 g /m2/ month. The results demonstrate that the predicted incremental dust deposition levels are below the NSW EPA incremental assessment criterion at all surrounding receptors for both current and proposed operations.

v Summary of results

The results for current and proposed operations demonstrate that:

- the proposal is predicted to result in an increase in ambient particulate concentrations relative to current operations;
- incremental particulate concentrations and deposition levels from both current and proposed operations are low;
- compliance with short-term (24 hour) criteria for PM_{10} and $PM_{2.5}$ is heavily influenced by elevated background concentrations caused by natural events such as bushfires. Excluding these events, additional exceedances of short-term criteria are unlikely; and
- compliance with criteria for PM_{10} and $PM_{2.5}$ annual average concentrations is predicted at all surrounding receptors for both current and proposed operations at the facility.

8.5 Greenhouse gas assessment

The National Greenhouse Gas Accounting Factors 2013 (NGAF 2013) defines direct and indirect GHG emissions. The NGAF 2013 workbook prescribes a range of emission factors to estimate associated GHG emissions, which are specific to an activity and based on whether the emissions are 'direct' or 'indirect' sources.

Direct and indirect GHG emission sources at the facility would be diesel fuel combustion by the mobile plant (direct) and consumption of purchased electricity (indirect). Other minor sources of GHG emissions may include those generated by waste disposal and fugitive leaks from high voltage switch gear, but these are considered negligible in comparison with other emission sources and were not considered further in the assessment.

CO_2-e is an abbreviation of carbon dioxide equivalent and is the internationally recognised measure of GHG emissions. There are many types of greenhouse gases. Each of these gases has a different capacity to heat the atmosphere. CO_2 is not a potent GHG compared to the others. However, because CO_2 is produced in such huge quantities, its effect dwarfs all the other GHG combined. For ease of reporting, GHG emissions are reported as though they were equivalent to a given volume of CO_2. This is the CO_2-e.

The estimated annual CO_2-e emissions from current operations at the facility are 1,295 t CO_2-e scope 1 emissions and 1,015 t CO_2-e scope 2 emissions. The estimated annual CO_2-e emissions for the proposed future operations are 1,725 t CO_2-e scope 1 emissions and 1,353 t CO_2-e scope 2 emissions.

The significance of GHG emissions at the facility with regards to NSW and Australian annual GHG emissions is 0.0014% and 0.00042% of annual NSW and Australian GHG emissions for current operations, and 0.0019% and 0.00056% of annual NSW and Australian GHG emissions for proposed operations.

8.6 Management and monitoring

The existing Operational Environmental Management Plan (OEMP) would be reviewed and updated to reflect proposed operations. The two dust deposition monitors located at the facility would be retained and would continue to monitor dust deposition in accordance with the EPL. Dust mitigation measures would continue during operations including:

- water cannons on stockpiles;
- water cart on internal haul roads;
- wheel wash at the southern and northern exits of the facility;
- on site speed limits; and
- designed traffic routes.

Boral would continue to implement procedures to ensure that on site equipment is regularly maintained and serviced to maximum fuel efficiency, fuel consumption is be reduced by minimising vehicle kilometres travelled on site, and an ongoing review and implementation of energy efficiency measures are undertaken to reduce GHG emissions at the facility.

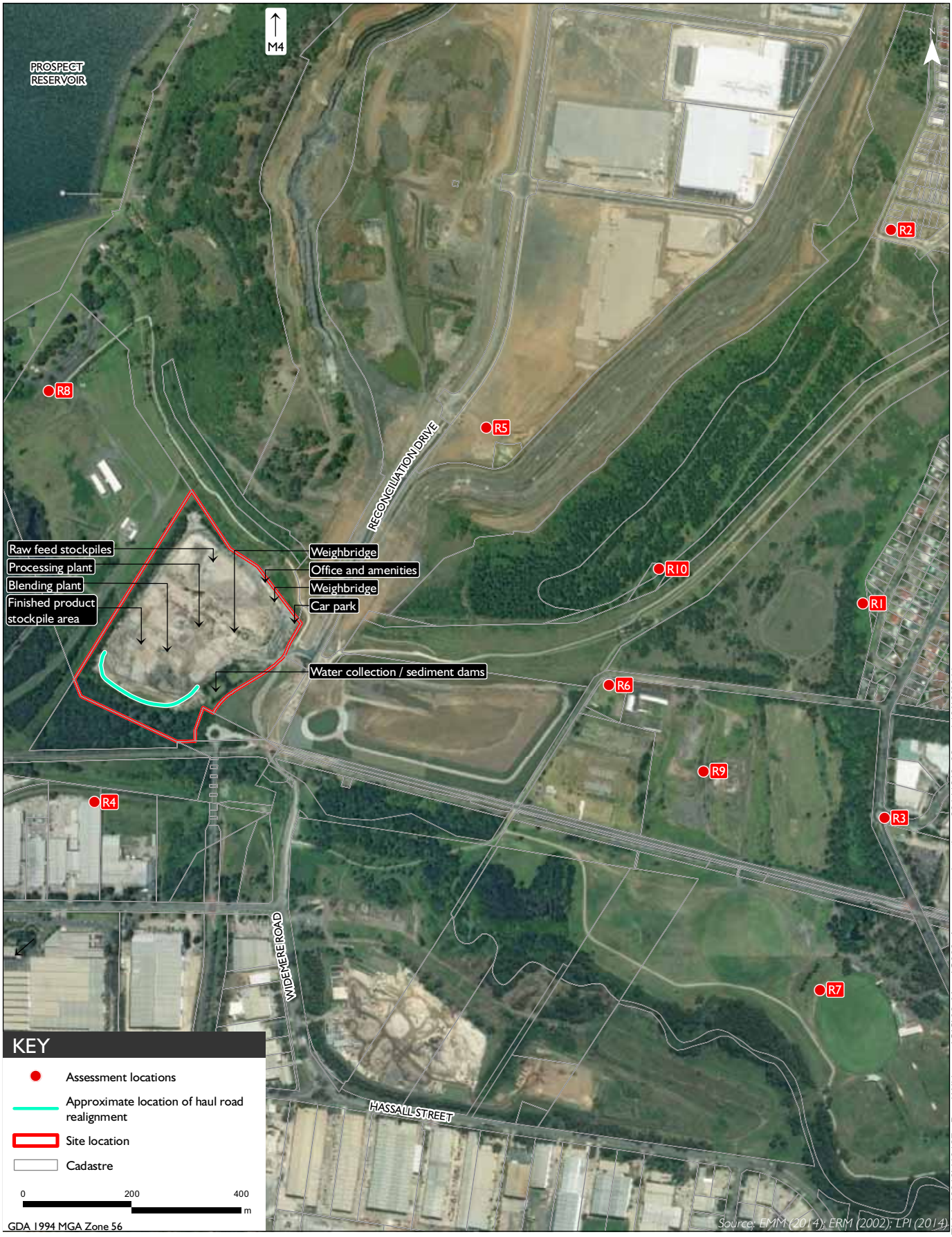
Boral would also review the location of the existing dust monitoring network in consultation with the EPA to ensure the monitors are suitably located.

8.7 Conclusion

The proposal would result in an increase in dust generation from the facility associated with the increased volume of material handled and processed on site.

Criteria exceedances are only likely during periods of elevated ambient air quality due to significant natural events such as bushfires. The air quality assessment predicts that the potential for adverse impacts on the surrounding environment due to the proposal is low.

The proposal would result in additional GHG emissions compared to current operations relative to the increase in handling and processing activities.



Assessment locations
Widemere Recycling Facility
Enviromental Impact Statement
Figure 8.1

9 Noise and vibration

9.1 Introduction

The SEARs require the EIS to address the following noise and vibration matters:

- description of all potential noise and vibration sources such as construction, operation and traffic noise;
- a comprehensive noise and vibration impacts assessment including cumulative impact assessment in accordance with relevant Environmental Protection Authority guidelines; and
- details of noise mitigation, management and monitoring measures.

EMM assessed potential noise and vibration impacts from the facility (Appendix D). The following sections summarise the assessment.

9.2 Existing environment

The facility is in an existing industrial area that contains a number of noise-generating industries and land uses. The closest existing residential receptors used for the noise assessment are the same as the ten assessment locations (R1-R10) detailed in Section 8.2.1 of the Air Quality Assessment.

To characterise the existing noise environment, unattended noise monitoring was undertaken. The rating background levels (RBLs), based on unattended noise measurements (see Figure 9.1 for unattended measurements locations), for the daytime (7 am to 6 pm Monday to Saturday, 8 am to 6 pm Sundays and public holidays), evening (6 pm to 10 pm), night (remaining periods) and morning shoulder (6 am to 7 am) periods for residential receptors (assessment locations R1 and R2) are shown in Table 9.1.

Table 9.1 Unattended noise measurement summary

Assessment location	Period[1]	Rating background level $L_{eq(15\text{-}min)}$ (RBL) dB(A)	Measured existing ambient $L_{eq,period}$ noise level dB(A)
R1 (monitoring location L1)[2]	Day	43	52
	Evening	42	49
	Night	39	47
	Morning shoulder	41	51
R2 (monitoring location L2)	Day	37	47
	Evening	37	44
	Night	35	44
	Morning shoulder	36[3]	n/a

Notes: *1. Day: 7 am to 6 pm Monday to Saturday; 8 am to 6 pm Sundays and public holidays; evening: 6 pm to 10 pm; night is the remaining periods. Morning shoulder is the period 6 am to 7 am for the purposes of this assessment.*

2. Measurement ceased after 10 May 2014 due to battery failure. However, in accordance with the INP, at least seven days of suitable data was collected.

3. Morning shoulder (6 am to 7 am) RBLs calculated as midpoint between day and night time RBLs in accordance with the INP.

Attended noise measurements at Receptors R1 and R10 from a previous assessment (Heggies 2005) were also reviewed. The noise environment at these receptors was influenced by distant traffic, insects and birds, and is typical of a suburban environment, with noise from nearby unrelated industrial operations also audible. A comparison of historical data against data collected by EMM in May 2014 indicates that the acoustic environment in the vicinity of the facility remains consistent with historical observations. Noise levels likely to be more elevated in the vicinity of the future residential assessment location (R10) as a result of recent commercial and industrial development within the Greystanes Estate.

9.3 Impact assessment

9.3.1 Assessment criteria

The *Industrial Noise Policy* (INP) (NSW EPA 2000) provides guidelines for assessing operational noise generated by industrial facilities. Assessment criteria depend on the existing amenity and background noise levels of areas potentially affected by a proposed development.

Two separate criteria are prescribed by the NSW EPA: amenity criteria and intrusiveness criteria. The amenity criteria covers a 24 hour assessment period (day, evening and night), while the intrusiveness criteria is applicable over 15 minutes in any period.

The amenity criteria require industrial noise levels (dB(A), $L_{eq,period}$) to be below an acceptable level at sensitive receptors based on their use. Where the ambient noise level is already high, the acoustic environment should not be deteriorated significantly.

Residential receptors potentially affected by the facility, represented by assessment locations R1, R2 and R10, are classified as suburban under NSW EPA's amenity criteria (Table 9.2). The morning shoulder amenity criteria were calculated by adopting the midpoint between day and night time amenity criteria.

Table 9.2 Base amenity criteria

Receptor	Indicative area	Time period	Recommended noise level dB(A), $L_{eq,period}$	
			Acceptable	Maximum
Residential	Suburban	Day	55	60
		Evening	45	50
		Night	40	45
Active recreation	All	When in use	55	60
Industrial	All	When in use	70	75

Intrusiveness criteria require that average 15 minute noise levels ($L_{eq,15\text{-}minute}$) from an introduced source do not exceed the existing noise level (RBL) by more than 5 dB during the day, evening and night. The intrusive criteria for the residential assessment locations are in Table 9.3.

Table 9.3 Base intrusive criteria

Receptor ID (monitoring location)[1]	Period[2]	RBL, dB(A)	Intrusive criteria dB(A), $L_{eq(15\text{-}min)}$
R1, R10 (L1)	Day	43	48
	Evening	42	47
	Night	39	44
	Morning shoulder	41	46
R2 (L2)	Day	37	42
	Evening	37	42
	Night	35	40
	Morning shoulder	36	41

Notes: 1. Receptors R3 to R9 have not been included as part of the intrusive assessment. Non residential receptors are assessed using amenity criteria.

2. Day: 7 am to 6 pm Monday to Saturday; 8am to 6pm Sundays and public holidays; evening: 6 pm to 10 pm; morning shoulder: 6 am to 7 am; night is the remaining periods.

i Project specific noise levels

INP application notes state that project specific noise levels (PSNLs) are determined only for the operational period of an assessment. In this instance, the facility will comprise of full operations (including all plants) during the day, evening and morning shoulder (6 am to 7 am) periods. Deliveries will take place until midnight, with processing (loader only) from 10 pm to midnight. Thus, these operations have been assessed against the night assessment period.

With full operations during the morning shoulder period at the site, the existing hourly industrial contribution has been analysed and determined for the morning shoulder period to use as a basis for establishing the morning shoulder amenity criteria.

The existing industrial noise level at residential assessment locations was estimated from unattended logger data which was averaged as being attributable to industrial sources. The residential assessment locations are in close proximity to identified industrial estates and this method provides a conservative assessment of existing industrial noise levels. Current industrial noise contributions at most recreational areas east of the site were conservatively assumed to be the same level as at R10, with the exception of R8 (which is west of the site and further removed from the industrial sites).

The PSNL is the lower of the calculated intrusive or amenity criteria. The PSNL for all periods are shaded in Table 9.4. Corrections have been made to residential amenity criteria to account for existing levels of industrial noise in accordance with section 2.2 of the INP.

Table 9.4 Project specific noise levels

Location	Period[1]	RBL, dB(A)	Intrusive criteria dB(A), $L_{eq(15\text{-}min)}$ (RBL+5)	Estimated existing industrial noise contribution dB(A), $L_{eq,period}$	Site specific amenity criteria dB(A), $L_{eq,period}$
R1. 71 Munro St, Greystanes	Day	43	**48**	52	52[2]
	Evening	42	47	49	**39**[2]
	Night	39	44	47	**37**[2]
	Morning shoulder	41	46	51[3]	**41**[2]
R2. 146 Daruga Ave, Pemulwuy	Day	37	**42**	47	55
	Evening	37	42	44	**39**[2]
	Night	35	40	42	**32**[2]
	Morning shoulder	36	41	47[3]	**37**[2]
R3. Industrial area Greystanes	When in use	N/A	N/A	<64	**70**
R4. Industrial area - Davis Road	When in use	N/A	N/A	<64	**70**
R5. Southern Employment Lands	When in use	N/A	N/A	<64	**70**
R6. Hyland Road Youth Centre	When in use	N/A	N/A	52	**52**
R7. Gipps Road sporting complex	When in use	N/A	N/A	52	**52**
R8. Lower Prospect Canal Reserve	When in use	N/A	N/A	<49	**55**
R9. Hyland Road Park	When in use	N/A	N/A	52	**52**
R10. Proposed high density residential	Day	43	**48**	52	52[2]
	Evening	42	47	49	**39**[2]
	Night	39	44	47	**37**[2]
	Morning shoulder	41	46	51[3]	**41**[2]

Notes: *1. Day: 7 am to 6 pm Monday to Saturday; 8 am to 6 pm Sundays and public holidays; evening: 6 pm to 10 pm; night is the remaining periods. Morning shoulder is the period 6 am to 7 am for the purposes of this assessment.*

2. Modification for existing industrial noise applied in accordance with section 2.2 of INP (EPA 2000) presented in Table 4.2.

3. Industrial contribution for morning shoulder period is log average of 32 and 40 lots of 15-min samples of logger 1 and logger 2

ii respectively.Sleep disturbance criteria

The facility operates during the morning, night, and shoulder periods, from 7 am to 10 pm. Therefore, sleep disturbance impacts have been assessed.

Operational noise criteria which consider the average noise emission of a source over 15 minutes are appropriate for assessing noise from relatively steady-state sources, such as engine noise from mobile plant and other equipment. However, noise from sources such as reversing alarms, track-plates and the banging of shovel buckets is intermittent and needs to be assessed using the L_{min} or L_{max} noise metrics.

The most significant impact of intermittent noises would be to disturb the sleep of nearby residents. The NSW EPA provides a screening criterion for sleep disturbance that is equal to the background noise level (L_{90}) plus 15 dB, calculated 1 m from the bedroom facade at the nearest residential receptors. Additional analysis should be undertaken where noise levels are predicted to be above this screening criterion.

The sleep disturbance criteria for residential receptors are in Table 9.5.

Table 9.5 Sleep disturbance criteria – residential receptors (night period)

Receptor	RBL (dB(A))	Sleep disturbance criteria dB(A), L_{max}
R1, R10	39	54
R2	35	50

iii Construction noise criteria

Construction would be limited to the realignment of the southern portion of the perimeter haul road over approximately five working days. Construction would occur concurrently with operational activities and were therefore assessed against operational noise criteria as per contemporary assessment methods.

The *Interim Construction Noise Guideline* (ICNG) recommends the following standard hours for construction where noise is audible at residential premises:

- Monday to Friday 7 am to 6 pm;
- Saturday 8 am to 1 pm; and
- no construction work is to take place on Sundays or public holidays.

Construction would occur Monday to Friday from 6 am to 6 pm. The corresponding criteria for out of hours construction activities (for the period 6 am to 7 am) would be identical to the operational criteria for this period.

iv Cumulative noise criteria

The INP cumulative noise criteria are in Table 9.6. There are multiple existing industrial sources in the area which could contribute to cumulative noise, including the Southern Employment Lands to the north and various industries to the south.

Table 9.6 Cumulative noise criteria

Receptor	Indicative area	Time period[1]	Recommended noise level dB(A), $L_{eq,period}$	
			Acceptable	Maximum
Residential	Suburban	Day	55	60
		Evening	45	50
		Night	40	45
Active recreation	All	When in use	55	60
Industrial	All	When in use	70	75

Source: *INP (EPA 2000).*

Note: *1. Day: 7 am to 6 pm Monday to Saturday; 8 am to 6 pm Sundays and public holidays; evening: 6 pm to 10 pm; night is the remaining periods.*

v Road noise criteria

Trucks would transport material to and from site via Widemere Road and Hassall Street (southbound) and Reconciliation Road (northbound). There are no residential dwellings along the northbound route. The nearest potentially affected residences along the southbound route are in Hassall Street and Gipps Road.

The Road Noise Policy (RNP) (NSW EPA 2011) criteria are in Table 9.7. Hassall Street and Gipps Road are arterial and sub-arterial roads according to the RNP. The RNP states where existing road traffic noise criteria are already exceeded, any additional increase in total traffic noise level should be limited to 2 dB.

Table 9.7 Road traffic noise assessment criteria for residential land uses

Road category	Type of project/development	Assessment criteria, dB(A)	
		Day (7 am to 10 pm)	Night (10 pm to 7 am)
Freeway/arterial/sub-arterial roads	Existing residences affected by additional traffic on existing freeway/arterial/sub-arterial roads generated by land use developments.	$L_{eq(15\text{-}hr)}$ 60 (external)	$L_{eq(9\text{-}hr)}$ 55 (external)

Source: RNP (EPA 2011).

In addition to meeting the assessment criteria, any significant increase in total traffic noise at receptors must be considered. Criteria for significant increases in total traffic are in Table 9.8.

Table 9.8 Relative increase criteria for residential land uses

Road category	Type of project/development	Total traffic noise level increase, dB(A)	
		Day (7 am to 10 pm)	Night (10 pm to 7 am)
Freeway/arterial/sub-arterial roads and transitways	New road corridor/redevelopment of existing road/land use development with the potential to generate additional traffic on existing road.	Existing traffic $L_{eq(15\text{-}hr)}$+12 dB (external)	Existing traffic $L_{eq(9\text{-}hr)}$+ 12 dB (external)

Source: RNP.

a. Vibration criteria

No significant vibration generating equipment items have been identified from the proposal. In addition, existing buffer distances would likely mitigate ground vibration generated by the facility's plant and equipment. Existing residential receivers are located over 1 km to the east of the site, with potential future residences at Nelsons Ridge approximately 700 m from the site.

Ground vibration levels generated by the plant and equipment at the site will not be perceptible given the distance between the site and current and potential future residential receivers. Onsite mitigtation measures such as isolation mounts for the crushing and screening plant exist to reduce vibration transmitted to surrounding structures and to the ground. FELs, excavators and road trucks used at the site are not considered major sources of vibration that could be perceived off site.

Continuous and intermittent vibration criteria have been assessed to understand their potential impact to human comfort. Structural vibration has been assessed against the strictest international guideline levels available, in the absence of a relevant Australian Standard. (Section 4.6.1 and 4.6.2 of Appendix D).

9.3.2 Modelling method

Noise levels were predicted using Brüel and Kjær Predictor Version 8.14 noise modelling software. 'Predictor' calculates total noise levels at receptors from the concurrent operation of multiple noise sources. The model considers factors such as:

- the lateral and vertical location of plant;
- source-to-receptor distances;
- ground effects;
- atmospheric absorption;
- topography of the mine and surrounding area; and
- applicable meteorological conditions.

i Operational noise

The total L_{eq} noise levels were predicted based on three-dimensional digitised ground contours of the surrounding land, the internal layout, buildings, bunds and stockpile areas of the facility. The equipment was placed at representative locations and heights, representing realistic operating scenarios. The modelling conservatively assumed that all plant and equipment operates simultaneously. While this may occur at times, the use of individual plant would generally be intermittent during operations. As such, operational noise modelling results are likely to be over representative of actual noise emissions.

ii Sleep disturbance assessment

Sleep may be disturbed by intermittent noises, such as reversing alarms or other heavy vehicles. The highest maximum noise levels from the facility would be from truck trailers, with a maximum (at source) sound power level of 120 dB(A) $L_{max.}$ Maximum noise levels at each residential assessment location during night (10 pm to 7 am) were calculated for a single event assuming worst case meteorological conditions (ie 3 m/s source to receptor winds). When sleep disturbance noise levels are below relevant criteria for worst case conditions, they would comply for all other meteorological conditions.

iii Construction noise assessment

The construction plant in Table 3.3 were modelled in conjunction with the operational fleet during maximum impact meteorological conditions (ie 3 m/s source to receptor winds) for daytime and morning shoulder periods (6 am to 6 pm) to reflect simultaneous construction and operational noise. When construction noise levels are below relevant criteria for these conditions, they would comply for all other meteorological conditions.

iv Meteorological conditions

The worst case meteorological conditions were adopted in the modelling (Table 9.9). The predicted noise levels are, therefore, worst case and should be considered conservative.

The INP default inversion parameter was adopted for the assessment (F class inversion). According to The INP, a default wind drainage value should be applied where sources are at a higher altitude than the receptors with no intervening topography. A drainage wind value has not been adopted as drainage winds are channelled away from receptors.

Table 9.9 Modelled meteorological conditions

Period	Calm	Maximum impact winds (3 m/s source to receptor)	Inversion (F class)[1]
Day	✓	✓	n/a
Evening	✓	✓	n/a
Night	✓	✓	✓
Morning shoulder	✓	✓	✓

Notes: 1.Inversion conditions only applicable to night time and morning shoulder periods.

9.3.3 Results

i Operational noise

Predicted noise levels for day, evening, night and morning shoulder periods under the modelled meteorological conditions at residential assessment locations are in Table 9.10. Where predicted noise levels are below relevant criteria for these conditions, they would comply for all other meteorological conditions. Noise emissions are predicted to be below the PSNLs at all receptors for all periods. The worst case scenario is under the maximum impact winds modelling scenario. The noise contours for the worst case scenario are shown in Figure 9.1.

Table 9.10 Predicted facility operational noise levels $L_{eq(15\text{-}min)}$, dB(A) – receptor locations

Receptor location	Period[1]	Calm[2]	Maximum impact winds (3 m/s)[3]	Inversion[4,5]	PSNL
R1 (L1)	Day	37	39	n/a	48 $L_{eq(15\text{-}min)}$
	Evening	35	38	n/a	39 $L_{eq,period}$
	Night	<30	<30	<30	37 $L_{eq,period}$
	Morning shoulder	37	39	<30	41 $L_{eq,period}$
R2 (L2)	Day	32	35	n/a	42 $L_{eq(15\text{-}min)}$
	Evening	31	34	n/a	39 $L_{eq,period}$
	Night	<30	<30	<30	32 $L_{eq,period}$
	Morning shoulder	32	35	<30	37 $L_{eq,period}$
R3	Day	37	40	n/a	70 $L_{eq,period}$
	Evening	35	38	n/a	70 $L_{eq,period}$
	Night	<30	<30	<30	70 $L_{eq,period}$
	Morning shoulder	37	40	<30	70 $L_{eq,period}$
R4	Day	51	54	n/a	70 $L_{eq,period}$
	Evening	49	51	n/a	70 $L_{eq,period}$
	Night	<30	31	31	70 $L_{eq,period}$
	Morning shoulder	51	54	31	70 $L_{eq,period}$

Table 9.10 Predicted facility operational noise levels $L_{eq(15\text{-}min)}$, dB(A) – receptor locations

Receptor location	Period[1]	Calm[2]	Maximum impact winds (3 m/s)[3]	Inversion[4,5]	PSNL
R5	Day	42	45	n/a	70 $L_{eq,period}$
	Evening	40	43	n/a	70 $L_{eq,period}$
	Night	<30	<30	<30	70 $L_{eq,period}$
	Morning shoulder	42	45	<30	70 $L_{eq,period}$
R6	Day	42	45	n/a	52 $L_{eq,period}$
	Evening	41	44	n/a	52 $L_{eq,period}$
	Night	<30	<30	<30	52 $L_{eq,period}$
	Morning shoulder	42	45	45	52 $L_{eq,period}$
R7	Day	37	40	n/a	52 $L_{eq,period}$
	Evening	35	38	n/a	52 $L_{eq,period}$
	Night	<30	<30	<30	52 $L_{eq,period}$
	Morning shoulder	37	40	40	52 $L_{eq,period}$
R8	Day	48	51	n/a	55 $L_{eq,period}$
	Evening	47	50	n/a	55 $L_{eq,period}$
	Night	<30	31	<30	55 $L_{eq,period}$
	Morning shoulder	48	51	51	55 $L_{eq,period}$
R9	Day	40	43	n/a	52 $L_{eq,period}$
	Evening	38	41	n/a	52 $L_{eq,period}$
	Night	<30	<30	31	52 $L_{eq,period}$
	Morning shoulder	40	43	43	52 $L_{eq,period}$
R10 (L1)	Day	36	39	n/a	48 $L_{eq(15\text{-}min)}$
	Evening	34	37	n/a	39 $L_{eq,period}$
	Night	<30	<30	<30	37 $L_{eq,period}$
	Morning shoulder	36	39	39	41 $L_{eq,period}$

Notes: *1. Day: 7 am to 6 pm Monday to Saturday; 8 am to 6 pm Sundays and public holidays; evening: 6 pm to 10 pm; morning shoulder: 6 am to 7 am; night is the remaining periods.*

2. Calm: no winds or temperature gradient.

3. Max prevailing wind: maximum prevailing winds noise level predicted at each assessment location.

4. Inversion: F class inversion.

5. Inversion conditions occur during night and morning shoulder periods only.

ii Sleep disturbance

The predicted L_{max} noise levels at the nearest residential assessment locations for night time (10 pm to 6 am) during worst case meteorological conditions would be below the relevant sleep disturbance criteria at all residential assessment locations for all meteorological conditions.

iii Construction noise

Noise from construction was assessed against operational PSNLs. The noise model was configured to predict the total L_{eq} noise levels from all construction activities in conjunction with operational noise. It is anticipated that construction would take five days and be limited to the southern portion of the site.

Construction noise levels would be below the relevant construction noise criteria at all residential and other assessment locations during worst case meteorological conditions.

iv Cumulative noise

Cumulative noise was predicted by combining the worst case noise levels from the facility with the highest measurements of day, evening and night existing industrial noise. The amenity level is derived by applying a correction factor of -3 dB(A) to modelled intrusive noise levels.

The facility's noise contribution would have negligible impacts on cumulative noise levels. Levels are predicted to increase by up to 1 dB(A) from existing cumulative industrial noise at assessment locations R1, R2 and R10 for day periods only. It is noted that existing industrial noise levels exceed the night time cumulative noise residential criteria at R1 and R10, however these levels are unaffected by the proposed facility operations.

v Road traffic noise

Trucks currently enter and depart the facility via Reconciliation Road. Northbound trucks travel via Reconciliation Road to the M4 Motorway, Prospect Highway and Great Western Highway; southbound trucks travel on Hassall Street to the Horsley Drive and Cumberland Highway. There are no residences along the northbound route.

The US Environment Protection Agency's method was used to predict the L_{eq} noise levels at residences along Hassall Street. The assessment was based on the predicted traffic volumes described in Section 7.3.1.

Road traffic noise increases associated with the proposal would be negligible (less than 1 dB). Existing traffic noise exceeds the criteria at the nearest residences on Hassall Road. Given this, the RNP requires that future traffic noise levels satisfy the relative increase criteria of not more than 2 dB, which is achieved.

Construction road traffic noise has a negligible impact compared to existing traffic levels.

9.4 Management and monitoring

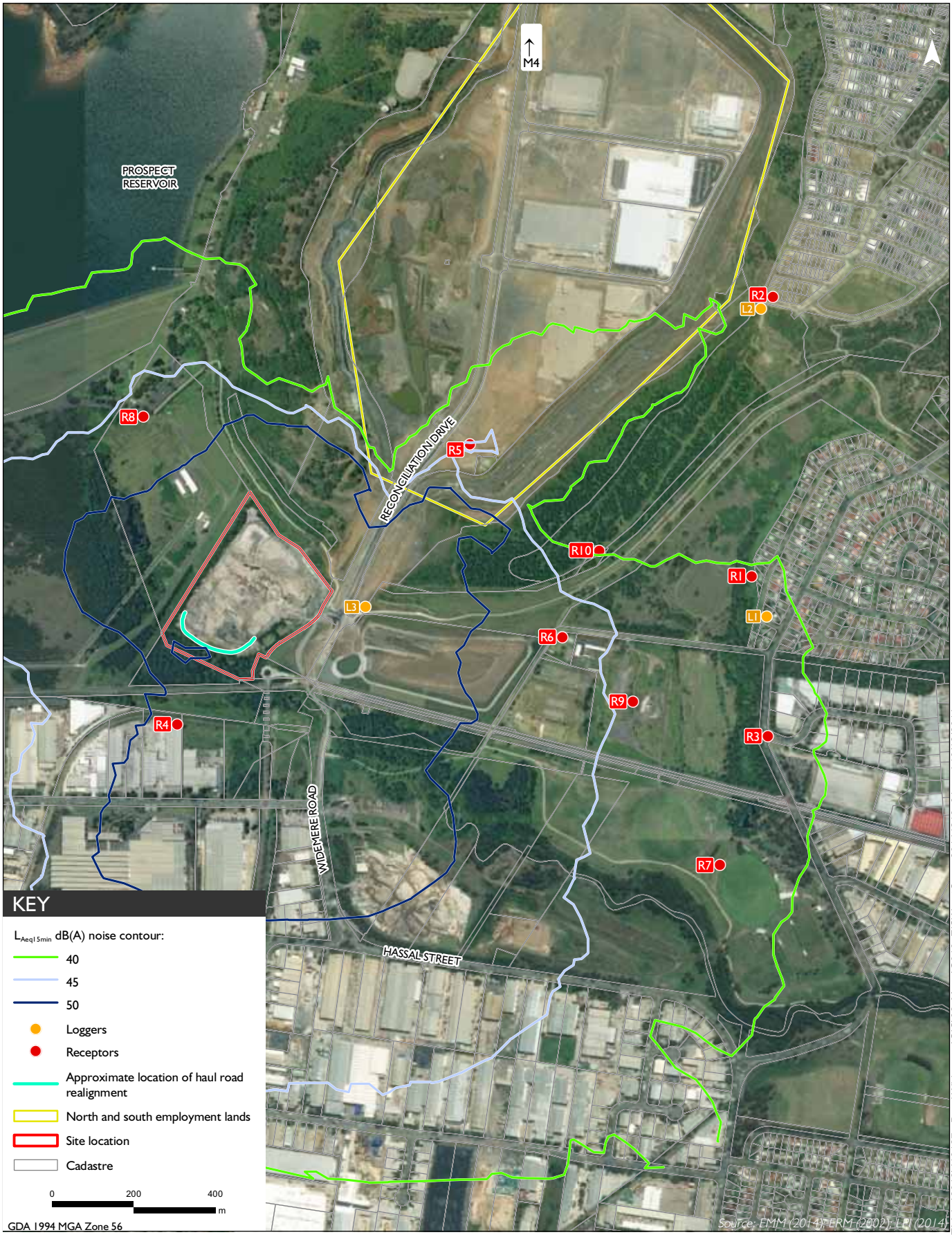
No exceedances of relevant noise criteria were predicted as a result of current or proposed operations. Therefore, no specific noise management or monitoring is proposed.

9.5 Conclusion

The noise assessment predicted that noise emissions from the facility would satisfy the PSNLs at all assessment locations. Potential sleep disturbance impacts from operational maximum noise level events would satisfy the relevant criteria at all assessment locations.

The cumulative noise assessment identified that the existing cumulative industrial noise would increase by up to 1 dB(A) at the most affected residential assessment locations during the day period. It is noted that existing industrial noise levels exceed the night time cumulative noise criteria, however these levels are unaffected by the proposed facility operations. Cumulative noise levels including the proposed facility would remain below relevant criteria at industrial and recreational assessment locations.

Road traffic noise is predicted to comply with relevant goals. Construction road traffic noise impacts are considered to be negligible due to the short constriction duration and sourcing of construction materials from the facility.



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Maximum impact winds to residential receptors

Widemere Recycling Facility
Environmental Impact Statement
Figure 9.1

10 Waste management

10.1 Introduction

The SEARs require the EIS to address the following waste management matters:

- identification and classification of waste streams that would be transported to and from, stored, handled, processed and disposed of at the facility;
- description of proposed waste transport, storage, handling, processing, and disposal; and
- description of potential impacts and impact mitigation associated with transporting, storing, handling, processing and disposing of waste.

The following sections address the SEARS and potential waste impacts from the facility. Waste transport, storage, handling, processing and disposal is also addressed in Chapters 3 and 4.

10.2 Existing environment

10.2.1 Permitted waste

Table 10.1 below lists the waste permitted to be received at the premises under Condition L5 of the facility's EPL (EPL 11815), including the activity (as listed under Schedule 1 of the POEO Act) and any other limits specified.

Table 10.1 Permitted waste

Waste	Description	Activity	Other limits
Building and demolition waste	As defined in Schedule 1 of the POEO Act, in force from time to time.	Resource recovery Waste storage	NA
Asphalt waste	-	-	-
Virgin excavated natural material (VENM)	-	-	-
Plasterboard and ceramics	-	-	-
Cured concrete waste batching plant	-	-	-

Table 10.1 Permitted waste

Waste	Description	Activity	Other limits
Soil	Soil that meet the CT1 thresholds for General Solid Waste in Table 1 of the Waste Classification Guidelines as in force from time to time with the exception of the maximum threshold values for contaminants specified in the 'Other Limits' column	Resource Recovery	Arsenic: 40mg/kg Cadmium: 2mg/kg Copper: 200mg/kg Mercury:1.5mg/kg Zinc: 600mg/kg Petroleum Hydrocarbons C6-C9: 150mg/kg Petroleum Hydrocarbons C10-C36: 1600mg/kg Polycyclic aromatic hydrocarbons: 80mg/kg Polychlorinated biphenyls (individual): 1mg/kg No Acid Sulfate Soil or Potential Acid Sulfate Soil is to be received at the Premises Soil thresholds would be subject to review at or before 31 October 2011
Garden waste	As defined in Schedule 1 of the POEO Act, in force from time to time	Resource Recovery Waste Storage	Not more than 1,000 tonnes stockpiled on site at any one time.
General or specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2005	As specified in each particular resource recovery exemption.	NA
-	any waste that is below licensing thresholds in Schedule 1 of the POEO Act	-	NA

Source: EPL 11815

Under current operations, all waste streams accepted at the facility comply with its EPL, as listed in Table 10.1.

Although resource recovery exemptions generally do not apply to waste received for processing at a recycling facility, the facility's EPL permits the receipt of 'General or specific exempted waste', being waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2005.

The transport, storage, handling and processing of waste material at the facility is detailed in Section 2.2 of this EIS.

The majority of wastes received are recycled into products, being aggregates and road base. The facility generates limited volumes of other waste not recycled on site. These waste types, volumes and management measures are detailed in Table 10.2.

Cleaning and process chemicals are not used at the site. Herbicides and pesticides are not used as part of normal operations and are limited to the control of weeds and pests.

Table 10.2 Residual waste

Waste material	Volume/weight per annum	Management method
Waste oil Oils used in maintenance of equipment	4,000 litres	Waste oil is collected by a licensed waste oil recycler.
Empty oil drums Metal containers used to store oil	20 drums	Oil drums are emptied of all residual oil. The drums are then crushed and placed into scrap metal bins for recycling.
Timber	-	All timber waste is treated as general solid waste.
Cardboard	-	Cardboard goes into general solid waste.
Scrap metal	4,200 tonnes	Waste is placed in the scrap metal bins in the maintenance areas and recycled by a licensed scrap metal recycler.
General waste Includes waste from administration offices and lunchroom.	50 tonnes 720 tonnes	Placed in wheelie bins which are collected by Veolia. Office waste goes to Blacktown waste as general solid waste.

10.2.2 Waste management

The facility currently implements a receivals protocol to ensure waste material entering the facility complies with the EPL and development consent. The protocol is as follows:

- upon arrival at the facility, all trucks delivering waste report to the weighbridge;
- drivers delivering materials are identified and their details noted in the office adjacent the weighbridge;
- a visual inspection is completed of the truck's load while stationary on the weighbridge;
- loads are classified, weighed and/or estimated;
- loads rejected at the initial inspection are directed off site and the details noted in the rejected loads register;
- upon successful initial inspection, a three part docket is produced for the load; and
- the docket is signed by the receivals clerk as having been inspected on arrival and given to the driver to present to the "spotter" before tipping the waste material in the receivals area.

Once a truck delivering waste materials exits the weighbridge, it is directed to the receivals area where the load is tipped and the following protocols are implemented:

- trucks with loads suspected of contamination where not first apparent are isolated for further inspection prior to any other action;
- other loads are directed to the appropriate stockpile area;
- drivers hand their docket to the spotter prior to tipping, to show he has been initially inspected;
- loads are then inspected after tipping prior to incorporation into stockpiles;

- should any suspect material be identified during the second inspection, the load is immediately isolated pending further investigation by the supervisor and is managed with the facility's suspect load handling procedure;
- for all other loads the spotter signs the docket to signify that further inspection has been carried out, and the material has been accepted and is suitable for inclusion into stockpiles; and
- the docket, having been signed by the driver and by two inspectors, is then held for future reference at the facility's office.
- Once the waste materials have been inspected and identified as being compliant with the facility's EPL they are handled and processed as described in Chapter 3.

10.2.3 Quality control

The facility implements a quality control procedure through sampling to ensure waste material entering the facility is classified correctly. Sampling is conducted monthly however if the facility receives a result that shows the presence of asbestos, the recycling manager would then request an audit of the entire facility.

The procedure is as follows:

- one FEL bucket of sample product (7-10 t) is taken on the day and moved to a designated, isolated area at the facility;
- a supervisor or trained operator undertakes a visual inspection and completes an assessment confirming visual absence of any suspect material;
- if any suspect material is present the site manager is contacted immediately;
- if the visual assessment is clear of suspect material, then from this bulk sample, one representative sample of approx 20 kgs is collected;
- the 20 kg sample is sent to a laboratory for identification;
- the bulk sample is quarantined in the designated area until a clear test result is received; and
- if foreign materials are detected, then additional samples are obtained from the quarantined bulk sample, and a hygienist is engaged to recommend an appropriate risk-based management strategy which would be governed by the nature and extent of the contamination.

10.3 Impact assessment

Permitted wastes under current operations would continue to be received by the facility. Approval is also sought to receive additional wastes not currently listed on the facility's EPL. These are detailed in Table 10.2 along with their classification under the EPA's Waste Classification Guidelines (DECCW 2009).

Table 10.3 Proposed new waste streams

Waste	Classification
Excavated natural material (ENM)	General solid waste (non-putrescible)
Tiles and masonry (including materials direct from manufacturer, such as seconds material)	General solid waste (non-putrescible)
Quarry products (greater than 20 mm)	General solid waste (non-putrescible)
Wet concrete batching plant stirrer waste	General solid waste (non-putrescible)

It is not anticipated that there would be a significant increase in the volume of residual waste as a result of increasing the volumes of material being received on site. Any residual waste would be handled in the same manner as current operations.

The transport, storage, handling and processing of waste material at the facility would remain the same as current operations detailed in Chapter 2 of this EIS. The disposal of residual waste material would also remain as detailed in Table 10.2.

10.4 Management and monitoring

Waste management during future operations would be consistent with procedures implemented during current operations including receivals protocol and quality control procedure which would continue to be implemented for the facility.

10.5 Conclusion

The facility would continue to receive waste materials consistent with current operations. Additional waste materials have been identified and classified according the Waste Classification Guidelines (DECCW 2009). The facility would continue to manage waste with management procedures implemented for current operations.

11 Soils and water

11.1 Introduction

The SEARs require the EIS to address the following soil and water matters:

- description of the water demands and a breakdown of water supplies including any water licensing requirements;
- a detailed water balance;
- description of the measures to minimise water use;
- description of the construction erosion and sediment controls;
- a description of the surface and stormwater management system, including on site detention, and measures to treat or reuse water;
- an assessment of potential surface and groundwater impacts associated with the development, including impacts to flooding, Prospect Creek, groundwater dependent ecosystems, and potentially affected groundwater users;
- details of impact mitigation, management and monitoring measures; and
- an assessment of any potential existing soil contamination.

The SEARS also require the EIS to address the following wastewater matters:

- a detailed description of the wastewater treatment process for the development including details of the volume of wastewater generated, treated, reused/recycled, or stored on site; and
- details of the key pollutant concentrations of the wastewater before and after treatment with reference to relevant water quality guidelines.

SLR Consulting Australia Pty Ltd (SLR) assessed potential water related impacts from the facility (Appendix E). Potential impacts to groundwater under the proposal has also been considered. The following sections summarise the assessment.

11.2 Existing environment

11.2.1 Soil and contamination

The type of industrial use at the site has varied over the years prior to its current use as a recycling facility. In the 1920s blue metal quarrying activities began operating north of the site by Sydney & Suburban Blue Metal Quarries Ltd. A crushing and screening plant was constructed in the late 1950s at the northern end of the facility, immediately south of the old water supply canal (ERM 2000).

Up until the mid 1970s the facility was used only for activities associated with the quarrying of blue metal. In 1975 an asphalt plant was constructed on the central portion of the facility. The operation of the asphalt plant involved the mixing of cold, solid materials (rock aggregate and fine filler material eg fly-ash) with hot liquid bitumen in a gas fired rotary mixer. The asphalt plant was suspended from continuous operations in 1996/97 after which it was mainly used for special contracts.

In 1996 hydrocarbon contaminated soil from the Boral's St Peters site was brought to the facility so that it could be bioremediated. A bunded remediation cell was constructed to control runoff from the impacted soils. Drainage from the area was discharged via a culvert to the large dam in the central portion of the facility. Remediated material was stockpiled in the northern part of the facility adjacent to the cell (ERM 2000).

A Phase 2 investigation conducted in 2001 confirmed that, with the exception of areas requiring remediation, the site was suitable for a proposed commercial or industrial use. Boral agreed and implemented a sampling and analysis program that included capping the contaminated areas of the facility. The remediation works were signed off by an EPA accredited Site Auditor.

Since the facility has operated as a construction and demolition waste recycling facility, no contaminated materials have been permitted into the facility. To the best of Boral's knowledge, the facility is free of contaminants with the exception of the capped (remediated) area of the facility.

11.2.2 Surface water catchment

The facility is in the Prospect Creek Catchment, a sub-catchment of the Georges River, which covers an area of approximately 98 km^2.

Prospect Creek flows in a north-easterly direction from Prospect Dam into a wetland area within Walder Park before flowing south-east through the southern part of the site, approximately 50 m south of the existing perimeter haul road. The site generally slopes in a south-easterly direction towards Prospect Creek.

The catchment of Prospect Creek upstream of the site is approximately 1.6km^2. Prospect Creek was inspected by SLR on 12 June 2014. The creek's channel was observed to be approximately 4 m wide in the vicinity of the site.

11.2.3 Existing stormwater management system

The surface water management system comprises a network of open drains, swales and pipes that collect stormwater runoff from the site, which is captured in two sediment basins (Basin 1 and 2) with a combined volume of 4,130 m^3. An open drain (upstream of the sediment basin) adjoins the outer perimeter of the haul road containing an oil and grit separator.

Stormwater flow on the site is generally as follows:

- stormwater generated on the western portion of the site drains overland towards the open drain that runs on the outer perimeter of the haul road;

- stormwater generated on the north-eastern portion of the site drains to a grass swale which runs south-west between the site entrance and the sediment basins, and is piped from the open drain to an oil/grit separator prior to being discharged to the sediment basins; and

- stormwater flowing south from the vegetated areas to the north/north-east of the site which are outside the disturbance footprint is collected in a grass swale before being diverted away from the facility.

The southern and eastern edges of the site are slightly raised in order to contain stormwater within the site. These bunds would not be modified by the Proposal.

The two sediment basins (Basin 1 and Basin 2) are hydraulically linked. Basin 2 has an outlet pipe of 800 mm which is a licensed discharge point (LDP) that discharges into Prospect Creek during an overflow event in accordance with the EPL.

Water from the second basin is extracted for the following activities:

- dust suppression on internal roads via water cart;
- dust suppression on stockpiles and in crushing and screening areas of the plant;
- fixed plant and pugmill; and
- wheel wash water – wastewater from the wheel wash is discharged via the oil/grit separator back to the first basin, thereby minimising water losses.

Water cannons are used on crushing and screening areas to manage dust generation by wind from raw feed stockpiles. Potable mains water is used to meet any water deficit where insufficient water is available from the sediment basins.

Stormwater is discharged to Prospect Creek via the current LDP, which is the outlet of Basin 2.

The oil and grit separator in the open drain collects stormwater generated in the western part of the site, as well as wastewater from the wheel wash. This oil and grit separator is cleaned periodically as required. Stormwater piped from the open drain (after going through the oil and grit separator) is discharged to Basin 1.

11.2.4 Erosion and sediment controls

Two open sediment pits located inline within the open drain collects sediment laden water temporarily. These are inspected regularly and cleaned out as required. Sediments will then be analysed, and depending on the results, reused in the production process or disposed offsite at an appropriate facility. A sandbag is used to trap sediment up gradient of the piped outlet of the open drain (up gradient of Basin 1).

11.2.5 Surface water quantity and quality

i Quantity

Water volumes in the sediment basins are affected by water reuse at the facility. Water levels in the basins are actively drawn down to ensure that no water is discharged from the facility's LDP more frequently than the design storm.

Discharge of water from the LDP is permitted under the facility's EPL when the 90th percentile five day rain event design storm is exceeded. Discharge volumes are subject to the EPL requirement to discharge up to a maximum of 100,000 L/day as a result of rainfall at the premises exceeding a total of 45 mm over any consecutive five day period.

During 2013 and 2014, Boral has advised that stormwater was discharged from the LDP on six occasions. The rainfall exceeded 45 mm for the preceding five days on every day of discharge with one exception, in June 2013, when rainfall occurred on six days in a seven day period, with a discharge occurring on the seventh day. This one exception is likely to have been the result of the basin being close to full due to rainfall in the preceding five days.

It is therefore considered that the basin is predominantly performing in accordance with the EPL's 45 mm, five day rainfall discharge requirement.

ii Quality

The Fairfield City Council Water Management Plan (Cardno 2007), states that waterways within the Prospect Creek Catchment have been found to be significantly affected by pollutants, with low levels of dissolved oxygen and high levels of pH and nutrients typically being recorded. Nutrient levels are typically greater following storms where large quantities of industrial runoff enter the system (Cardno, 2007).

A drain which runs through the Wetherill Park Industrial Estate reaches its confluence with Prospect Creek approximately 50 m down gradient of the site. Surface water quality in the creek is therefore likely to be heavily impacted by pollutants associated with industrial stormwater flows.

A summary of water quality data for Prospect Creek at Widemere Road, provided by Fairfield City Council, for May 2012 to May 2014, is presented in Table 11.1. The results show elevated concentrations of nutrients, pH and turbidity and low levels of dissolved oxygen in relation to ANZECC (2000) guideline criteria. This indicates that the Prospect Creek water quality adjacent to the site is poor at present.

Table 11.1 Fairfield City Council monitoring data for Prospect Creek at Widemere Road

Parameter	Units	ANZECC 2000 criteria[1]	Minimum	Maximum	Mean
Dissolved oxygen	mg/L	85 - 110	52.4	120.2	81.2
pH	pH units	6.5 – 8.0	7.2	9.22	8.2
Turbidity	NTU	6 - 50	7.4	391	63.0
Conductivity	uS/cm	125 – 2,200	255	1,650	967
Total phosphorus	mg/L	0.05	0.02	0.52	0.12
Total nitrogen	mg/L	0.5	0.6	6.9	1.54

Notes: 1. ANZECC 2000 guideline trigger values for slightly disturbed ecosystems in lowland rivers in South East Australia.

The EPL regulates the protection of receiving water quality if and when discharge occurs. The concentration of the pollutants discharged from the LDP must not exceed the limits specified in Table 11.2.

Table 11.2 Pollutant discharge limits

Parameter	Maximum allowable discharge concentration
Total suspended solids (TSS)	50 mg/L
pH	6.5 – 8.5
Turbidity	150 NTU
Oil and grease	10 mg/L

Daily water quality data was provided for the period from February 2013 to February 2014. All water quality samples collected during discharge events were reported to have pollutant concentrations that met EPL criteria for pH, TSS, turbidity and oil and grease as shown in Table 11.2.

The EPL criteria for water quality were therefore met during this period.

Background water quality monitoring of Prospect Creek is not conducted by Boral as there is no safe access to the creek channel from the site.

iii Flooding

Flood levels and flood risk details were obtained from Fairfield City Council for the site. Parts of the site, primarily to the south and along the western boundary are identified by Council as being in high, medium, and low flood risk precincts along the Prospect Creek corridor. These areas of the site are not within the operational areas.

Flood levels for the probable maximum flood (PMF), 100 year average recurrence interval (ARI) event and 20 year ARI event are provided in Table 11.3.

Table 11.3 Local overland flood details

Flood event	Overland flood level (mAHD)	Mainstream flood level (mAHD)
PMF	34.4 – 37.9	34.3
100 year ARI	32.8 – 33.5	32.8
20 year ARI	32.6 – 33.4	32.5

The development footprint of the site is shown to be unaffected by overland flooding. The only portion located in any of the overland flow flood risk precincts is the vegetated area adjacent to Prospect Creek along the western boundary.

No mapping was provided at the time of the report, however a comparison of mainstream flood levels with site elevations in the development footprint indicates that the development footprint is unlikely to be affected by mainstream flooding.

11.3 Impact assessment

11.3.1 Site water balance

GoldSim Version 11.0.6 (the model) was used to represent the water balance at the facility. The model simulates daily changes in the volumes of the sediment basins in response to inflows (rainfall) and outflows (evaporation and usage). The model makes uses operating conditions relevant to site water storage management and captures as accurately as possible the site's hydrologic cycle.

A number of simplifications, inputs and assumptions were incorporated in the model to represent the facility's water storage management system. These included rainfall runoff, potable water supply, evaporation, water usage and discharge (refer to Section 5.1 of Appendix E).

Two scenarios were assessed for the water balance:

- Existing development, intended to represent current operations at the facility. It is noted that, as the water demands input into the model have only recently been introduced into the site's water operating procedures, this scenario does not represent the water management practices which have historically operated on site. Instead, it provides a means of directly comparing the impact of the proposal with how the site would operate without the proposal.
- Proposed development, intended to represent operations under the proposal, which includes extension of the disturbance boundary to cover an additional 0.4 ha.

The results of the water balance and basin storage volumes for the existing development and the proposed development are summarised in Table 11.4.

Table 11.4 Water balance results

Year	Total basin inflow via runoff (ML)	Total basin outputs (ML)	Potable supplementary water usage (ML)	Number of days basin is empty	Number of overflow events	Annual volume of overflows (ML)	Number of overflows which met 100kL/day criteria	Number of overflows which met 45 mm rainfall over preceding 5 days criteria
Existing development								
Dry (25th percentile)	21.79	73.24	51.85	240	3	0.76	2	3
Median (50th percentile)	31.52	74.25	42.52	197	4	3.14	0	4
Wet (75th percentile)	41.28	83.33	42.00	190	7	11.69	1	7
Proposed development								
Dry (25th percentile)	22.75	73.48	51.11	237	3	0.99	2	3
Median (50th percentile)	32.88	74.71	41.47	193	5	3.66	0	5
Wet (75th percentile)	43.04	84.22	41.07	185	7	12.57	1	7

The results show that the facility would have a minimal effect on the frequency of predicted discharge events and the proposed water usage compared to the existing development scenario.

The water balance predicts that all discharges would meet the EPL condition requiring 45 mm rainfall depth over preceding five day EPL criteria for the three rainfall years analysed (ie dry, median and wet). The water balance predicts that the proposal would result in the following changes to the EPL discharge volume criterion:

- No additional overflow events under dry and wet year conditions. Of the three overflows that are predicted to occur, one overflow event would exceed the EPL discharge volume criterion of 100 KL/day under both existing and proposed development scenarios.

- One additional overflow event under median year conditions. All discharges for this rainfall year for both the existing and proposed development scenarios would exceed the EPL discharge volume criterion of 100 KL/day.

Assuming an empty basin (ie 100% storage availability), the 100 KL/day discharge volume limit under the current EPL is likely to be exceeded during heavy rainfall events in excess of approximately 72 mm rainfall depth. Less intense rainfall events which exceed 45 mm over five days may also lead to discharges greater than 100 KL/day depending on water levels within the basin prior to the rainfall event.

As the majority of overflows are predicted to exceed the EPL discharge volume criterion of 100 KL/day, the maximum discharge for all the three years was analysed. Local intensive rainfall patterns mean that, even if the site had significantly greater storage capacity, it still would be unable to meet the 100 KL/day discharge limit on some occasions. As such, the criterion is considered to be unachievable for the existing and proposed surface water management regime.

11.3.2 Water quality impacts

Sediment basin capacity and storage volume is provided in Table 11.1 and is adjusted to account for the proposal.

It has accounted for the following parameters to calculate basin storage requirements:

- hardstand catchment – 7.59 ha;

- vegetated catchment – 0.47 ha;

- hardstand volumetric runoff coefficient – 0.8 ha;

- vegetated volumetric runoff coefficient – 0.15 ha; and

- 90%ile five day rainfall depth being 45 mm (EPL 11815) and 75%ile five day rainfall depth being 19.2 mm (NSW Blue Book, 2004).

Table 11.5 Basin capacity

Sediment basin zone	Design criteria	Storage volume
Total basin	n/a	5,160 KL
Retention storage	EPA criteria based upon 90%ile five day rain event	2,764 KL
Settlement zone	75%ile five day rain event	1,180 KL
Sediment storage zone	Assumed to be a minimum of 50% of settlement zone	590 KL
Excess storage	n/a	626 KL

There is 646 KL of excess storage currently available for water retention and sediment storage, and the current basin is considered to provide adequate capacity for sedimentation treatment.

In addition, the basins may also serve to treat water quality through biological uptake of soluble pollutants (eg phytoplankton) which may exist in the water column, chemical absorption of pollutant to fine suspended sediment which remains in the water column, and UV disinfection by sunlight.

Two flocculent products are currently used at recommended quantities, being EM 640 CT and Damclear flocculent block. These flocculents may accumulate within the settled sediments at the bottom of the basins. It is proposed to analyse the sediments in accordance with the limits for heavy metals from Table 1, Column 4 of the Recovered Aggregate Order 2014. This testing will be undertaken when the basins are routinely cleared of sediment build up, and depending on the results, dispose the sediment at an appropriate facility or reuse in the production process at the site.

While discharge of flocculents may occur to Prospect Creek during high flow periods, based on available toxicity information and considering the likely dilution effects and low exposure periods, the potential adverse impacts to the downstream environment is considered to be a low risk.

As per Table 11.1, the basins have an approximate total volume of 5,160 KL. The 100 KL/day discharge volume is equal to approximately 2 mm depth of rainfall across the site. Assuming dry basins with 20% full of sediment (ie 4,130 KL of runoff retention capacity), the 100 KL/day discharge volume is likely to be exceeded for rainfall events in excess of 72 mm. This is equivalent to between a 20 to 50 year ARI one hour storm event or approximately 1 in 10 year ARI two hour storm event. Less intense rainfall events exceeding 45 mm over five days may also lead to overflow discharges.

The water balance modelling conducted as part of the assessment is the first detailed water balance modelling undertaken for the site since it has been fully operational.

Water quality monitoring of discharges from the LDP for current operations indicates that the pollutant discharge limits in the EPL (see Table 11.2) are being met. However, based on the results of the water balance, it is possible that the pollutant loading to Prospect Creek could potentially be greater under the proposed development scenario where discharge volumes exceed the volume of 100 KL/day during heavy rainfall events. Over a long period of time, cumulative pollutant loading to Prospect Creek could potentially be significantly greater compared to current operations.

An assessment of potential impacts to Prospect Creek downstream of the site as a result of increased discharge volumes (greater than 100 KL/day) has been completed. A review of rainfall data for the last 10 years was completed and the maximum loading of TSS was estimated for each year based on the EPL discharge volume criterion (100 KL/day on days where preceding five day rainfall depth exceeded 45 mm). For the 10 year period analysed:

- the maximum permissible TSS annual load ranged between 60 kg/yr and 180 kg/yr; and

- the maximum permissible oil and grease annual load ranged between 12 kg/yr and 36 kg/yr.

Under the proposed development scenario, for the median (50th percentile) year and based on annual discharges of 3.66 ML (see Table 11.4):

- the predicted TSS load is 183 kg/year. This is only slightly higher than the maximum permissible loading range compared to the 10 year period analysed. The TSS load for the median year was predicted using a conservative approach, assuming that all discharges had a TSS concentration of 50 mg/L, the maximum pollutant discharge limit specified on the facility's EPL; and

- the predicted oil and grease load is 3.66 kg/year, much lower than the permissible loading range compared to the 10 year period analysed.

To quantify the significance of the predicted TSS loading to Prospect Creek, MUSIC modelling software was used to predict mean annual TSS loads from an equivalent catchment area for various land uses, to provide a comparison with the predicted mean annual TSS load from the facility. MUSIC modelling parameters for soils and pollutants were selected based upon the Draft NSW MUSIC Modelling Guidelines (BMT WBM 2010).

As stated previously, the water balance predicts that the site's EPL discharge volume criteria may be exceeded during some heavy rainfall events. Even with significantly greater storage capacity, the local intensive rainfall patterns mean that the site would be unable to meet the 100 KL/day discharge limit on some occasions. Land uses analysed included runoff from forested and industrial catchments, and sealed and unsealed roads. These were compared to runoff from the facility. The results of the modelling indicate that the TSS loads being discharged offsite are relatively minor compared to other urban land uses, and slightly less than that predicted for a fully forested catchment. This is primarily due to the higher mean annual runoff volumes from these catchment types compared to the predicted mean annual overflow volumes from the LDP.

Based on the water balance modelling it is proposed that the discharge volume criteria be removed from the EPL, based on the following:

- the EPL criteria for zero discharge (for events up to and including the 90%ile 5 day rainfall event), will be maintained and is in effect a volumetric discharge criteria;

- existing operations management will control surface water reuse with surface water being recycled and reused onsite as much as possible;

- consultation with Fairfield City Council indicate that frequency and volume of discharge will not significantly impact Prospect Creek when adhering to the EPL criteria to retain a 90%ile five day rainfall depth;

- existing operational controls effectively manage sediment, ph, and oil and grease pollutants from discharging to Prospect Creek;

- the existing basins provide enough retention storage, and together with the maximising of water reuse on site, the annual discharge volume and TSS loading is the same as an equivalent sized forested catchment;

- the local intensive rainfall patterns mean that even with significantly greater storage capacity, the site is unable to meet the 100 kl/day discharge limit on some occasions;
- the basins cannot be practically deepened to an extent that prevents the exceedance of the 100 kl/day discharge limit during rare and prolonged rainfall events;
- space is constrained at the site which prevents additional water retention basins being created; and
- even if the discharge limit was to increase significantly (eg 100 times), the criteria would still be exceeded during some rainfall events.

Discharge flow volumes would continue to be monitored at the basin outlet to enable future calibration of the water balance modelling. The annual pollutant loading to Prospect Creek would also be estimated on an annual basis to assess the performance of the basins in managing pollutant loading to Prospect Creek.

11.3.3 Contamination risk

Operational procedures include screening and sorting waste during receival. This includes multiple visual inspections, with higher risk wastes sorted as a priority. These are then sorted into covered storage facilities (ie waste bins), removing the potential for any pollutants to be discharged in surface water runoff.

The concrete stirrer waste will be stored in the existing concrete washout and stirrer waste area pit. This area has been constructed to be lower than the adjoining landform with a concrete base and retaining wall. The pit is able to contain leachable contaminants and runoff.

There is potential for contaminants to be accumulated by surface water runoff from the additional raw stockpile areas, whose concentration levels will be variable depending on the waste content. These contaminants, including risks from hydrocarbons and alkalinity/acidity associated with sediments, will be controlled by existing measures which are described in Section 11.2.3, flocculation and pH adjustment of discharges. These existing controls will be updated and be applied to the new waste streams received and processed at the facility under the proposal.

The associated increase in pollutant load being discharged to Prospect Creek as a result of an increase in total overflow volume, increased waste stockpile storage area, and new permitted waste streams is thus considered minor.

To enhance the facility's water management, a runoff monitoring program will be implemented to establish the presence of and subsequent risk posted by potential contaminants in accordance with ANZECC (2000) assessment criteria. The program will be undertaken over 12 months to gather representative results, given the variability of wastes at the site, of basin water and basin sediment Sampling of any overflow water will be included on discharge days, and the potential contaminants of concern will be consulted with the EPA. The initial monitoring program will lead to an annual program during September or October to enact additional mitigation measures should elevated contaminant levels be identified.

11.3.4 Stormwater management

Hydrological modelling was undertaken using the ILSAX model of the western portion of the site (western drainage catchment) that contains the southern perimeter haul road, which drains to the sediment basins. The modelling indicated a potential increase in flows to the basins (Table 11.5), and represent a potential increase in flow rates from the facility's boundary to Prospect Creek.

Table 11.6 Hydrological modelling results

Rainfall event	Pre-development peak flow from western drainage catchment (m^3/s)	Post development peak flow from western drainage catchment (m^3/s)	Predicted peak flow impact (m^3/s)
5 year ARI	2.30	2.36	+0.06
20 year ARI	2.49	2.55	+0.06
100 year ARI	2.97	3.02	+0.05

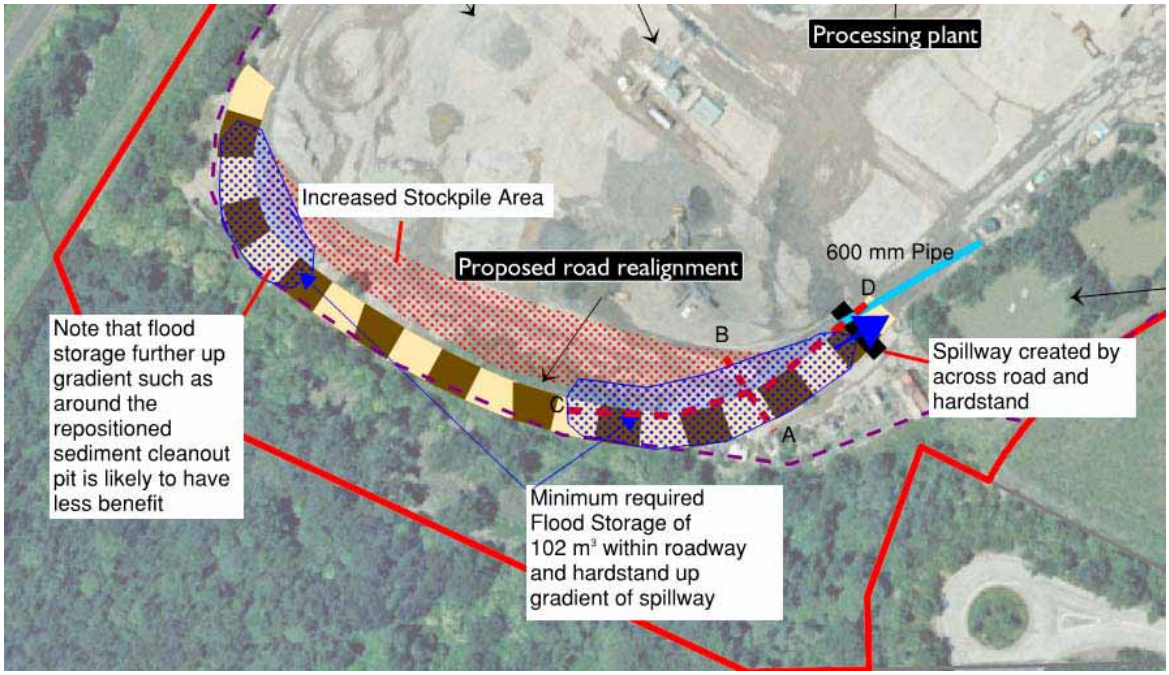
To manage localised flooding within the site, additional capacity for detention of runoff during rainfall events would be accommodated within the design of the southern portion of the perimeter haul road. This would attenuate the minor increase in peak flows from the western drainage catchment during flood events. The results of modelling with the proposed additional detention capacity are shown in Table 11.6.

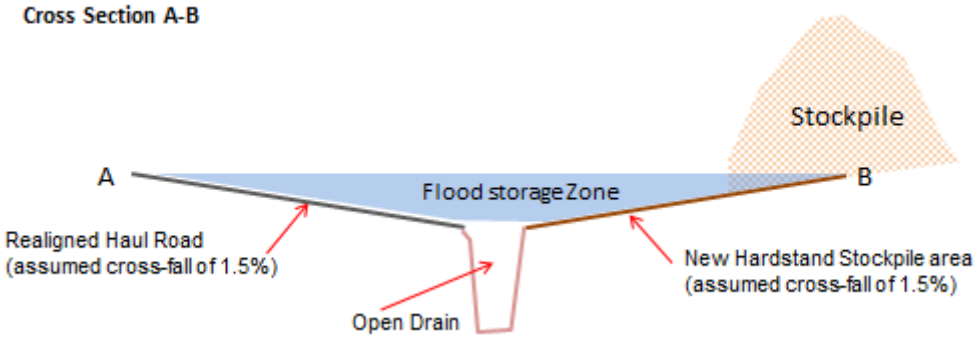
Table 11.7 Hydrological modelling results with detention capacity on perimeter haul road

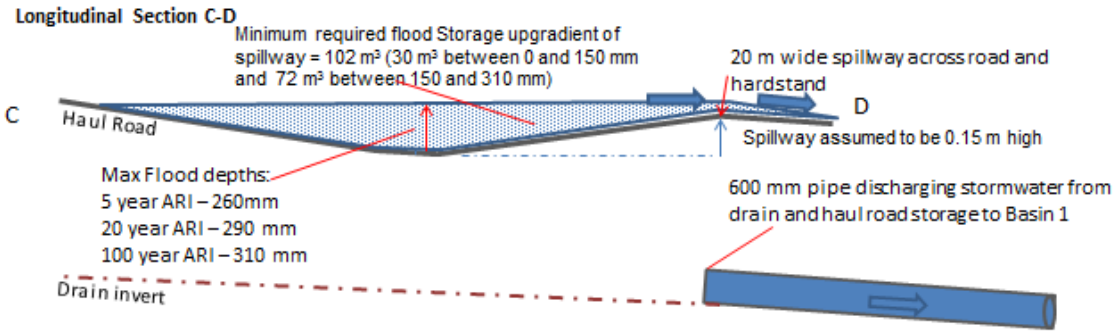
Rainfall Event	Proposed storage below spillway (m^3)	Proposed storage above spillway (m^3)	Total flood storage required (m^3)	Peak flood depth (mm)	Post development peak flow (m^3/s)	Peak flow impact (m^3/s)
5 year ARI	30	28	58	260	2.30	0
20 year ARI	30	53	83	290	2.49	0
100 year ARI	30	72	102	310	2.96	-0.01

This additional capacity would manage peak flood depths for up to a 100 year ARI of 310 mm (see Table 11.6), and would be up gradient of the pipe inlet at the end of the drain (flowing into the sediment basins) as shown on Figure 11.1. The detention of flows within the road design may lead to some additional ponding of water across the southern portion of the perimeter haul road and stockpile area for short periods during flood events. However, the maximum flood depth of 310 mm (Table 11.6) would not impact on truck movements around the perimeter haul road.

Figure 11.1 Additional storage in haul road realignment







11.3.5 Internal haul road realignment

A series of open drains are used to convey stormwater from the southern perimeter haul road. Soil and sediment is captured in pits adjacent to this roadway which is cleaned out as required.

As part of the road realignment, the open drain adjoining the southern part of this section of the haul road will be realigned as part of construction activities over the five day construction period. This includes relocation of the sediment clean out pit, which will continue to capture soil and sediment runoff from the realigned southern perimeter haul road under the proposal.

Future operations relating to stormwater and sediment control as a result of the proposal will continue to be managed under the existing surface water management and site OEMP. These will be updated accordingly to reflect the changes under the proposal.

11.3.6 Other downstream impacts

i Flooding

The southern boundary of the site footprint is elevated above the PMF level for Prospect Creek. The proposal would therefore not reduce storage, obstruct overland flow or worsen downstream flooding in the Prospect Creek floodplain.

ii Peak flows in Prospect Creek

The stormwater drainage calculations provided in the original EIS for the facility (ERM 2002) indicate that the sediment basins have existing capacity to manage a 1 in 20 year ARI event. The proposed haul road realignment and additional stockpile areas would generate less than 0.4 ha of additional impervious area. The proposed road realignment would also generate additional stormwater.

To ensure that the existing basins can be retained without exceeding the basin capacity, additional detention would be provided within the design of the haul road realignment as described in Section 11.3.4 which would retain flows from 5, 20 and 100 year ARI events.

The proposal would therefore not worsen downstream flooding for events up to, and including, the 100 year ARI.

iii Erosion in Prospect Creek

The proposal could potentially increase peak flows to Prospect Creek during flood events. This could potentially lead to a minor increase in bank erosion within the creek during flood events. Given the very minor predicted increase in flow, impacts are likely to be negligible. Notwithstanding, the proposed additional flood storage that would be built into the haul road realignment described in Section 11.3.3 would minimise this impact. Therefore the residual impact to bank erosion in Prospect Creek is considered to be negligible during flood events.

11.4 Groundwater

The potential impacts to groundwater have been considered as part of the proposal and is summarised below.

11.4.1 Legislation

The WM Act governs groundwater management at the facility under the *Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2011* (Metro GW WSP). The groundwater beneath the facility is managed as the Sydney Basin Central groundwater source.

11.4.2 Groundwater sources

There are three distinct hydrogeological units in the vicinity of the facility:

- a shallow unconfined alluvial system in the Quaternary sands and silt deposits associated with Prospect Creek;
- a confined hard rock system within the Hawkesbury Sandstone; and
- the Wianamatta shale which forms an aquitard overlying the overlying the Hawkesbury sandstone.

The alluvial aquifer is located immediately south of the facility and recharged by local rainfall. The aquifer discharges to Prospect Creek which rises in the area and flows to the south east. The Quaternary deposits are shallow and confined to a narrow corridor around the creek. It is therefore considered that the aquifer has limited storage and does not represent a resource of significant value.

The Hawkesbury Sandstone formation underlies the facility at a depth of approximately 100 m and hosts a porous rock aquifer. The aquifer is confined by the overlying and relatively impermeable Wianamatta shale that outcrops to the north of the facility and has a thickness range of 30 to 50 m. The confined aquifer is not hydraulically connected with the surface water resources (ie sediment dam and Prospect Creek) in the area.

11.4.3 Potential impacts

The proposed increase to processing and production at the facility is assessed as a low risk to the groundwater resources in the area. This is primarily due to the fact that groundwater will not be intercepted by proposed operations and that the footprint of the facility will remain unchanged.

In the absence of groundwater interception the potential for impacts to the groundwater resource are limited to pollution from onsite activities involving oil, grease and total suspended solids (TSS). As the production rate increases so will vehicle traffic and the use of machinery.

It is considered that existing surface water monitoring program is sufficient to identify potential impacts to groundwater quality. Monitoring at the licensed discharge point will provide an effective measure to identify impacts to water quality that may the shallow alluvial aquifer.

11.5 Management and monitoring

To mitigate the predicted impacts from the proposal, the following management measures are proposed:

- the sediment basins would retain their current total volume, which exceeds the volume of runoff generated by a 90th percentile, 5 day duration rainfall event, which is in effect a volumetric discharge criteria;
- the portion of the basin which is maintained as the 90%ile, 5 day duration rainfall event retention storage, would be increased to account for the increase in hardstand area;

- surface water would continue to be reused as much as possible onsite for operations;
- the water levels in the basins would be monitored and adjusted to ensure adequate water is available to be reused on site;
- water would be extracted from the basins during dry periods to maximise the stormwater storage capacity;
- water quality in the basins would be actively managed to ensure discharges meet water quality objectives in the EPL, including the use of flocculent reduce suspended solids and dosing to manage the pH;
- water quality monitoring would continue to be undertaken on a daily basis during any discharges from the LDP in accordance with the EPL, and at approximately monthly intervals during periods where there are no discharges;
- a 12 month monitoring program be undertaken to assess the risk posed by the potential (agreed with EPA) contaminants of concern in accordance with ANZECC (2000) assessment criteria and any additional management practices be implemented based upon its findings (and conducted annually in September or October);a pollutant load estimate be undertaken on an annual basis with consideration to discharge volumes and discharge quality in order to monitor the performance of the basin in relation to pollutant loading to Prospect Creek;
- the proposed realignment of the perimeter haul road would incorporate the following:
    - sediment laden water would be temporarily collected within two open sediment cleanout pits situated inline within the open drain adjacent to the roadway;
    - a sand bag would be used to trap sediment up gradient of the piped outlet of the open drain up gradient of Basin 1;
    - the sediment cleanout pits and open drain are would be regularly inspected and sediment would be cleaned out as required and analysed, and redistributed into the recycling process stockpiles (depending on testing results) as often as is necessary to manage water quality within the basins;
- the management of fuel spills would continue to be undertaken in accordance with the OEMP, including:
    - in the event of a spill, oil absorbent material is used to soak up the spill and the contaminated absorbent is disposed of at an appropriate landfill; and
    - a designated bunded area for fuel storage and transfer is provided. Oil absorbent material is kept on site and a waste bin is maintained on site to hold used absorbent prior to disposal.

Boral would also investigate options for additional stormwater storage and/or water supply options. This could include (but not be limited to):

- opportunities to extract water from other local basins owned by Boral; and
- opportunities to increase the capacity of the existing sediment basins with consideration to health and safety requirements, and if practical and feasible.

11.6 Conclusion

The proposal would result in a small addition (less than 0.4 ha) of impervious surfaces to the site as a result of the realignment of the southern portion of the perimeter haul road. Water balance modelling was undertaken to predict the impacts to the existing site water management regime as a result of the proposal.

The water balance model predicted that the proposal would result in a small increase in the volume and frequency of discharges from the site's LDP. The discharges are predicted to meet the EPL requirement which permits discharge where rainfall exceeds 45 mm over any consecutive five day period. However, the volumetric limit of 100 kL/day is considered to be unachievable for the existing surface water management system as well as the proposal. Therefore, it is proposed that the volumetric limit be removed from the EPL.

Potential flooding impacts would be managed through the inclusion of additional flood storage in the perimeter haul road realignment. The facility would maintain existing peak flow discharge rates from the facility during flood events. The southern boundary of the site footprint is elevated above the PMF level for Prospect Creek. The proposal would therefore not reduce storage, obstruct overland flow or worsen downstream flooding in the Prospect Creek floodplain.

Impacts to local water resources, water quality and ecology within Prospect Creek are considered to be negligible.

12 Ecology

12.1 Introduction

The SEARs require that the EIS assesses the following flora and fauna matters:

- an assessment of the potential impacts to threatened species, populations and communities, and their habitat(s), and if required describe how the principles of "avoid, mitigate, offset" have been used to minimise the impacts of the proposal on biodiversity.

This chapter includes an assessment of the existing flora and fauna at the site, potential impacts on flora and fauna and measures to minimise potential impacts on sensitive ecological features during construction and operation.

12.2 Existing environment

Flora and fauna surveys were completed in 1998 and 2000 (ERM 2000) to identify sensitive ecological features across the entire site. The ERM (2002) study was part of the EIS for the recycling facility. Redevelopment of the site involved the removal of a small patch of native vegetation in the north-western part of the site.

Previous surveys noted that much of the site was cleared, however small patches of Swamp She-oak (*Casuarina glauca*) forest remained, particularly around the southern boundary. The Swamp She-oak forest was heavily infested with weeds including Broad-leaved Privet (*Ligustrum lucidum*), Small-leaved Privet (*Ligustrum sinense*), Lantana (*Lantana camara*) and African Olive (*Olea europaea*).

The Swamp She-oak forest was classified as a component of Sydney Coastal River Flat Forest endangered ecological community (EEC), which has now been renamed to River Flat Eucalypt Forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions EEC, listed under the TSC Act.

No EPBC Act listed threatened ecological communities were recorded at the site as part of previous surveys(ERM 2002).

One threatened fauna species, the Eastern Freetail Bat (*Mormopterus norfolkensis*) was recorded at the site during the surveys (ERM 2002). A number of other threatened fauna species were not recorded, but were predicted to potentially occur at the site on an infrequent basis, including:

- Cumberland Land Snail (*Meridolum corneovirens*);
- Green and Golden Bell Frog (*Litoria aurea*); and
- mammals: Eastern Bentwing Bat (*Miniopterus schreibersii oceanensis*), Southern Myotis (*Myotis macropus*), Greater Broadnosed Bat (*Scoteanax rueppellii*) and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*).

Eight part tests (now seven part tests) under Section 5a of the EP&A Act were completed to determine the significance of the removal of a small patch of Sydney Coastal River Flat Forest EEC. Impacts were not predicted to be significant. This is relevant to the current assessment as the vegetation and habitat removal while small, was a larger area than for the perimeter haul road realignment.

12.2.1 Vegetation mapping and database searches

Detailed mapping has since been completed for the area (DECCW 2009) which has reclassified vegetation at the site. Vegetation in the southern portion of the site is mapped as Cumberland Swamp Oak Riparian Forest by DECCW (2009) (see Figure 12.1). This community is dominated by Swamp Oak, however may contain regenerating eucalypts including Grey Box (*E. moluccana*), Rough-barked Apple (*Angophora floribunda*), Blue Box (*E. baueriana*) and Forest Red Gum (*E. tereticornis*).

This community is a component of an EEC listed under the TSC Act, Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions (hereafter referred to as Swamp Oak Floodplain Forest EEC). This is a different community to that identified by previous studies.

Searches of the Atlas of NSW Wildlife (OEH 2014) and Protected Matters Search Tool (DoE 2014) were completed for the site as part of this EIS. Seven threatened bird, seven mammal, one snail and four plant species listed under the TSC Act have been recorded on the Atlas of NSW Wildlife (OEH 2014) within 10 km of the site. The Atlas of NSW Wildlife also reported another mammal species, the Greater Broadnosed Bat (*Scoteanax rueppellii*) from the site in 1998.

The Protected Matters Search Tool (DoE 2014) predicts that four threatened ecological communities and six threatened bird, two fish, three frog, six mammal, one reptile and nineteen flora species may occur within 10 km of the site. Database search results are shown in Appendix F.

12.2.2 Likelihood of occurrence for threatened biodiversity

Site photographs taken by EMM in February 2014 confirm that flora species at the site are the same as recorded in the earlier surveys (ERM 2000). The area to be disturbed for the perimeter haul road realignment comprises up to 12 juvenile Swamp Oaks that have grown out of stockpiles following soil disturbance. These trees are on the edge of a large patch of Cumberland Swamp Oak Riparian Forest on the southern site boundary. The Swamp Oaks are surrounded by weeds including Large-leaved Privet and Lantana.

Although highly degraded, vegetation on the southern boundary is considered to meet the description of Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions EEC as it is located on the floodplain of Prospect Creek and has a dense tree layer of Swamp Oak (NSWSC 2004a). The 12 juvenile Swamp Oaks along the proposed perimeter haul road are considered to be part of the EEC, despite these individuals occurring on disturbed soil. The impact of the haul road realignment on this community is assessed in Section 12.3 and Appendix F.

The Eastern Freetail Bat and Greater Broadnosed Bat have been recorded on or near the site (ERM 2002 and OEH 2014). It is likely that these species may forage in the Cumberland Swamp Oak Riparian Forest next to the proposed perimeter haul road. The impact of the haul road realignment on these species is assessed in Section 12.3 and Appendix F.

The Cumberland Swamp Oak Riparian Forest, in and adjacent to the haul road realignment, does not contain suitable habitat, or contains a low potential for the threatened invertebrate, reptile, frog, bird and mammal species recorded or predicted to occur (Appendix F). Accordingly, no further assessment has been conducted for these species.

There are a high number of records of threatened plants and one endangered plant population on the Atlas of NSW Wildlife associated with bushland at Prospect Reservoir to the north, including:

- *Marsdenia viridiflora* subsp. *viridiflora* population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas; and
- threatened plant species: Downy Wattle (*Acacia pubescens*), Juniper-leaved Grevillea (*Grevillea juniperina* subsp. *juniperina*) and Spiked Rice-flower (*Pimelea spicata*).

The Cumberland Swamp Oak Riparian Forest in and adjacent to the haul road does not contain suitable habitat for any of these threatened flora species; therefore no further assessment has been conducted.

12.3 Impact assessment

Up to 12 juvenile Swamp Oaks trees representative of Swamp Oak Floodplain Forest EEC would be removed for the perimeter haul road realignment. These trees are located on the edge of a large local occurrence of the community extending along the Prospect Creek floodplain. The removal of this small stand of juvenile trees which have regrown on disturbed soil would not fragment, have an adverse effect or substantially modify the local occurrence of the community.

The Swamp Oak Floodplain Forest EEC adjacent to the perimeter haul road is subject to the following key threatening processes:

- invasion, establishment and spread of Lantana; and
- invasion of native plant communities by African Olive.

Clearing on the edge of this community may contribute to further weed invasion and alteration of its composition. Runoff from construction activities may also contribute toward weed invasion. Weed control would be completed on Boral-owned land on the edge of the community prior to clearing, and sediment and erosion controls would continue to be implemented to minimise this risk.

An assessment of significance was completed for Swamp Oak Floodplain Forest EEC in accordance with Section 5a of the EP&A Act. The haul road realignment would not significantly impact the community for the reasons stated above.

The perimeter haul road is adjacent to known foraging habitat for the Eastern Freetail Bat and Greater Broadnosed Bat. Shelter and breeding habitat is unlikely to occur in this area due to the absence of mature, hollow-bearing trees, and would therefore not be affected. The haul road realignment would not affect foraging activities as the bats are nocturnal, and construction activities would occur during the day. The two key threatening processes listed above are also relevant to these microbat species habitats, as foraging becomes more difficult in cluttered environments. Accordingly, weeds would be controlled on the edge of the native vegetation for the benefit of both the EEC and threatened microbat species foraging habitat.

An assessment of significance was completed for the Eastern Freetail Bat and Greater Broadnosed Bat in accordance with Section 5a of the EP&A Act. The haul road realignment would not significantly impact the community for the reasons stated above.

Vegetation clearing has been restricted to the existing haul road and disturbed stockpiling area, largely avoiding impacts on native vegetation. Measures have been proposed (Section 12.4) to further minimise impacts on the Swamp Oak Floodplain Forest EEC and threatened microbat foraging habitat. These avoidance and minimisation measures reduce the scale of any potential impact such that offsetting is not required.

12.4 Management and monitoring

The following measures should be implemented to minimise impacts to biodiversity during construction and operation:

- demarcation of the disturbance limits using survey pegs to avoid clearing of the Swamp Oak Floodplain Forest EEC; and
- continued implementation of site sediment and erosion control measures to prevent runoff into native vegetation.

12.5 Conclusion

The perimeter haul road realignment would not have a significant impact on threatened biodiversity. Management measures would be implemented to further minimise any potential impacts of the haul road realignment on threatened biodiversity.

Remnant vegetation at the site (DECCW 2009)

Widemere Recycling Facility
Environmental Impact Statement
Figure 12.1

13 Heritage

13.1 Introduction

The SEARs require the EIS to address heritage and Aboriginal cultural heritage issues. The SEARs did not identify any specific matters to address.

Potential heritage impacts from the proposal are assessed in the sections below.

13.2 Existing environment

13.2.1 Background

Quarrying activities were undertaken immediately north-east of the facility from 1924, and it is reported that the site of the facility was used for activities associated with the quarry up to the mid-1970s. An asphalt plant was constructed within the facility's boundaries and operated until 1998 (ERM 2000).

Previous archaeological surveys of the facility found that the site was highly disturbed prior to the construction of the facility in 2002. The Aboriginal and historical heritage potential of the site have been assessed in previous investigations, and the major investigations are summarised in the Greystanes Estate Biodiversity and Heritage Report (ERM 2000). The findings of that report and potential impacts of the proposal are summarised below.

13.2.2 Historic heritage

The facility has been operating as a recycling facility since 2002 and is a highly disturbed site due to its current and historical land uses. The facility is south-east of Prospect Reservoir which is an iconic and historical waterbody. There are two items of heritage significance within the vicinity of the facility, being the Old Sydney Water Supply Canal located within Holroyd and Blacktown LGAs, and Prospect Reservoir in Blacktown LGA.

The canal is located approximately 34 m from the facility adjoining the northern boundary. Prospect Reservoir (including the Valve House) and its surrounding area is a heritage item on the State Heritage Register and under Blacktown Local Environmental Plan 2013. Prospect Reservoir is located approximately 750 m from the facility within the proposed site and is north-west of the facility.

The remains of the Widemere Quarry Tramway located near Widemere Road and Prospect Creek approximately 280 m from the facility also have historical significance.

There following items of heritage significance are located near the facility but not in the immediate area:

- Prospect Hill – Holroyd LGA;
- Lower Canal – Holroyd LGA;
- Veteran Hall – Fairfield LGA; and
- Upper Canal – Blacktown LGA.

13.2.3 Aboriginal cultural heritage

Archaeological surveys of the site were undertaken in 1998, and found that the site has been highly disturbed by previous quarrying activities and that it is unlikely any deposits would be on the site. No Aboriginal sites have been recorded in OEH's Aboriginal Heritage Information Management System (AHIMS).

13.3 Impact assessment

The previous uses of the site as a quarry and asphalt plant and the use in its current form as a recycling facility have resulted in an extensively disturbed site area. Construction is limited to works to realign the southern internal perimeter road. The likelihood that any historical heritage items or Aboriginal cultural heritage items would be uncovered during the road realignment is low.

None of the historic heritage items identified in Section 13.2.2 would be impacted as a result of the proposal and existing setbacks from the Old Sydney Water Supply Canal would be maintained.

13.4 Management and monitoring

If any items of heritage significance are uncovered during the internal road realignment, work would cease immediately in the vicinity of the item(s) and the OEH would be contacted to ascertain the necessary actions.

13.5 Conclusion

The facility is a highly disturbed site as a result of its current operations and historical uses. Heritage impacts at the facility have been assessed previously and found to be negligible. The proposal would not impact the disturbance footprint at the facility and the proposed road realignment of the perimeter haul road would be limited and contained within the site boundary.

Given the nature of the site, the potential for impacts to heritage items is very low.

14 Visual

The SEARs require the EIS to consider the following visual matters:

- an assessment of impacts (using photomontages) to views from public vantage points; and
- a description of visual impact mitigation measures such as landscaping.

Visual impacts of the proposal compared to current operations are assessed in the following sections.

14.1 Existing environment

14.1.1 Local visual character and topography

The facility is in a predominantly industrial area. To the south, the facility is bordered by Prospect Creek and its riparian zone, and beyond that is the Liverpool-Parramatta T-way and Wetherill Park industrial precinct. To the north is the Greystanes Estate industrial precinct. To the west and north-west is Prospect Reservoir and surrounding parkland and to the east is a large stormwater detention basin, immediately east of Reconciliation Road, and residential and industrial land uses approximately 1 km to the east.

The facility's topography varies between 32 m and 50 m AHD, and generally increases from south to north. North of the site boundary, the topography increases rapidly to approximately 106 m AHD at the highest point, a vegetated ridgeline on the eastern boundary of Prospect Reservoir. To the south of the facility boundary, topography slopes down to approximately 30 m AHD along Prospect Creek. Topographical high points surrounding the facility are primarily the ridgelines which are the former quarry walls to the north and north-east of the facility, which border the Greystanes Estate industrial precinct.

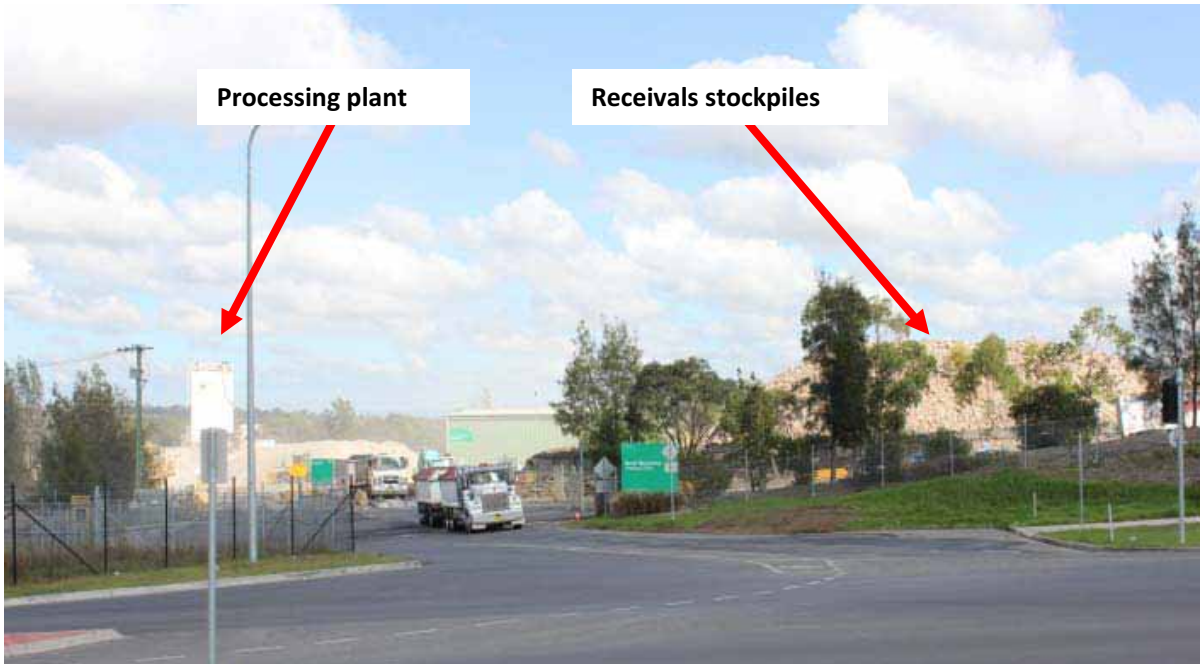
Public vantage points surrounding the facility include:

- Reconciliation Road and Widemere Road, from which vehicles and pedestrians have views to the facility, directly adjacent to the facility's access and on northern and southern approaches to the facility;
- Liverpool-Parramatta T-way immediately south of the facility, from which bus passengers may have views of the facility;
- Prospect Reservoir cycleway immediately north of the facility and along Reconciliation Road, from which cyclists and pedestrians are likely to have views of the facility; and
- Recreational areas and parks including Walder Park to the north, Hyland Road park to the east, and Gipps Road sporting complex to the south-east.

14.1.2 Current operations

The elements of the facility visible from surrounding locations primarily include receivals stockpiles, which are the dominant feature, the processing plant, and trucks entering and exiting the site. The receivals stockpiles (see Figure 2.1) vary in height depending on the volume of material on site at any given point, however the maximum stockpile height is 20 m. The tallest built element at the facility are the silos located at the stabilisation processing plant, which is located in the middle of the site, and at height of 18 m, they are in alignment with the topmost section of existing mature trees around the eastern boundary of the site adjoining Reconciliation Drive.

The facility is generally surrounded by mature trees and landscaping on its northern, southern and western boundaries, and therefore visibility of current operations is partially obscured. Photographs 14.1 to 14.5 illustrate existing features at the facility.

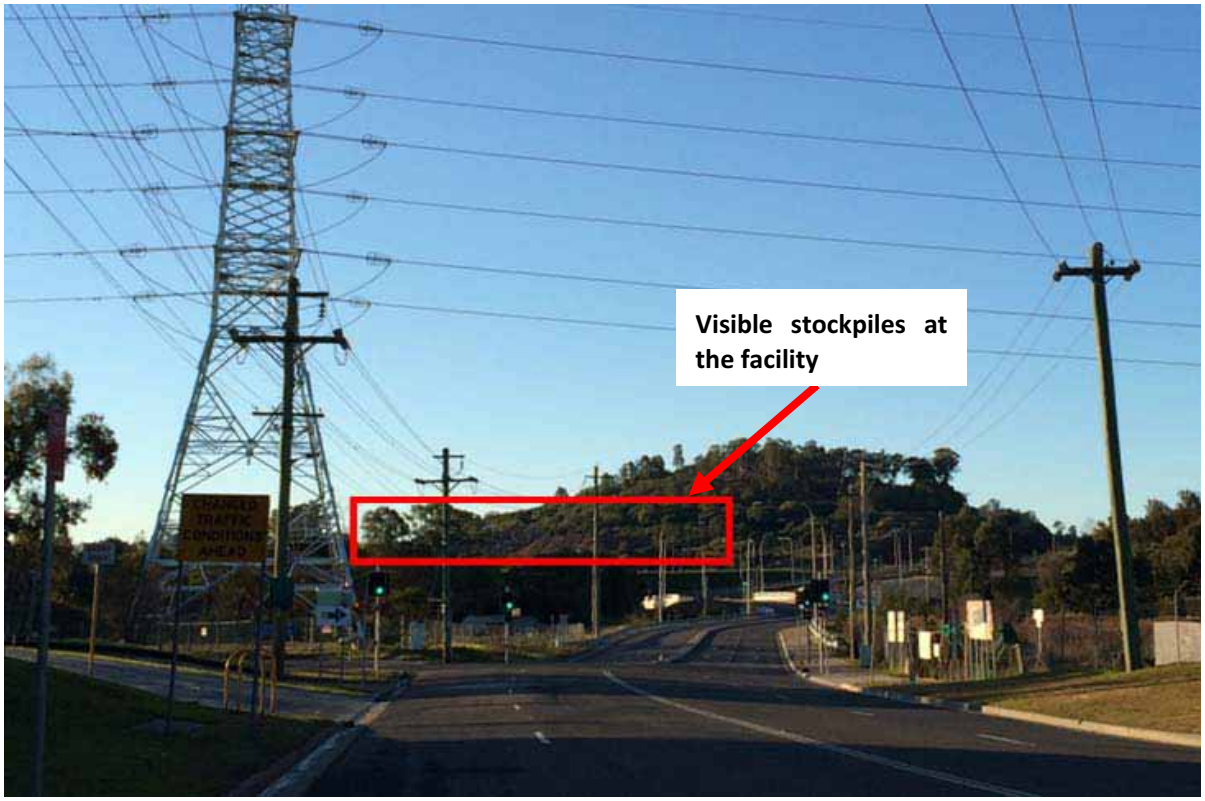


Photograph 14.1 **Looking east at the site access from Reconciliation Road with receivals stockpiles visible**

Photograph 14.2 **Photograph taken within the site showing mature screening vegetation on the western boundary of the facility (looking south), perimeter haul road and raw material stockpiles**

Photograph 14.3 Photograph taken within the site showing processing plant in the foreground and existing vegetated ridgeline immediately north of the facility which provides visual screening

Photograph 14.4 Photograph taken within the site showing stabilisation processing plant, looking north towards vegetated ridgeline immediately north of the facility which provides visual screening



Photograph 14.5 **Photograph taken from Widemere Road looking north towards the facility with raw material stockpiles visible above the vegetation along Prospect Creek**

14.2 Impact assessment

The elements of the facility visible from surrounding locations primarily include receivals stockpiles, which are the dominant feature, the processing plant, and trucks entering and exiting the site. There is no change proposed to the height or visual nature of any of these elements. The only aspect of the proposal which involves a change to visual elements at the facility is the realignment of the perimeter haul road in the southern portion of the facility.

The realignment would involve moving the perimeter haul road between approximately 5 m and 18 m south of its current location (see Figure 3.1). The changes would be wholly within the facility boundary in previously disturbed areas, and would not result in the removal of any existing vegetation that currently provides visual screening.

The changes to the perimeter haul road would create additional area of approximately 3,000 m^2 for product stockpiles. This would be a total increase of 4% in the area within the product stockpile area. This minor increase in the area of product stockpiles would not change the nature or scale of visual elements at the facility. Furthermore, as the location of stockpiles tends to be transient for current operations, depending on the quantity and type of products produced at any given time, the increase in total stockpile area is likely to be imperceptible at all public vantage points.

No changes to the location, configuration or height of processing plant is proposed.

The changes to the layout in the southern portion of the facility to accommodate the realignment of the perimeter haul road would not change the appearance or significant visual elements of the facility, and therefore is not expected to result in visual impacts or increase the visibility of the facility compared to current operations from public vantage points.

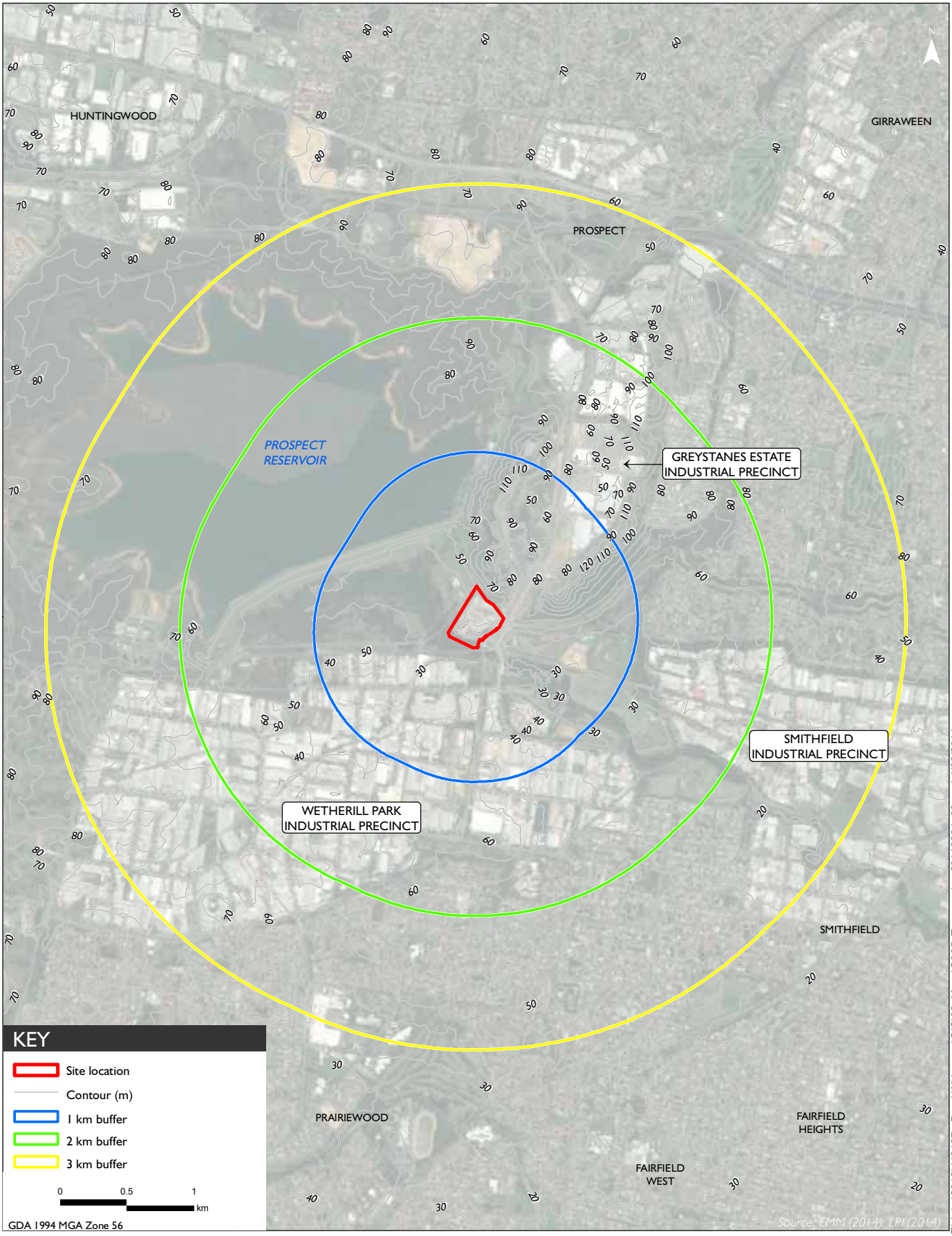
14.3 Management and monitoring

As no visual impacts are predicted, specific management and monitoring measures are not warranted.

14.4 Conclusion

The facility is located in area characterised by significant industrial and commercial land uses. As such, the scale and nature of the site is not inconsistent with the visual character of the surrounding area.

Visibility of the facility from public vantage points would remain unchanged from current operations. Furthermore, views would be partially obscured due to existing mature trees that would be retained.



T:\Jobs\2013\J13127 - Boral Widemere\GIS\02_Maps\G005_Topography_20140804_03.mxd 4/08/2014

Topography surrounding the facility
Widemere Recycling Facility
Environmental Impact Statement
Figure 14.1

15 Socio-economic

15.1 Introduction

The SEARs require the EIS to address the following socio-economic matters:

- an analysis of the economic and social impacts of the development, demonstrating that it would have a new benefit for the community, and paying particular attention to the potential effects on waste minimisation and resource recovery in the region.

This chapter assesses the potential socio-economic impacts of the proposal.

15.2 Background

The facility has operated as a construction and demolition waste recycling facility since 2002. It was originally developed due to the rate of urban development and renewal projects which result in construction and demolition waste, and the need to minimise landfill and new quarries in reasonable proximity to the Sydney metropolitan area.

15.3 Impact assessment

15.3.1 Amenity of surrounding land uses

Traffic and transport, heritage, hazard and risk, visual, air quality and odour, and noise and vibration assessments were conducted in accordance with the SEARs for the EIS. The respective assessments found that there is likely to be minimal impact on the amenity of the surrounding environment as a result of the proposal when assessed against applicable criterion or standards. The facility is located adjacent to the Greystanes Estate Southern Employment Lands, historically used for quarrying operations and associated activities, and is now a significant industrial and commercial precinct.

Therefore, the proposal is in keeping with the surrounding land uses in the area.

15.3.2 Waste minimisation and resource recovery

NSW government policy seeks to reduce waste going to landfill through minimising waste at the source and recycling the remaining construction and demolition waste materials. A framework for reducing waste and resource recovery was introduced in 2003 under the NSW Waste Avoidance and Resource Recovery Strategy and updated in 2007.

A review of waste strategy and policy performance in NSW (DECCW 2010) identified that more waste is being produced, but a greater portion is also being recycled within Sydney. The facility has made significant waste minimisation contributions to the Sydney region by processing permitted construction and demolition waste materials into recycled products that are reused for urban development.

The proposal for the increase of processing capacity from 750,000 tpa to 1,000,000 tpa provides enhanced social and economic benefits by increasing the volume of processing demolition and construction waste into recycled materials, thereby reducing landfill and increasing availability of recycled products for new urban development and renewal projects.

The recycling of construction and demolition materials contributes to the reduction of consumption of new or natural resources. The proposal would continue to contribute to, and further enhance, the resource recovery of construction and demolition materials, prolonging the life-cycle of certain materials used for urban development and minimise waste going to landfill.

The proposal would also result in an increase in the workforce of three people as a result of the proposal, which would have positive economic impacts.

15.4 Management and monitoring

Operations at the facility under the proposal would continue to be in accordance with the EPL, OEMP and development consent. No specific management or monitoring for socio-economic impacts are warranted.

15.5 Conclusion

The proposal would provide increased processing capacity at the facility, resulting in an increase of construction and demolition materials that are processed and recycled, which would continue to contribute to waste minimisation and recovery of resources and enhance these functions. The proposal would lead to enhanced social and economic net benefits to the Sydney region.

16 Hazards and risks

16.1 Introduction

The SEARs require the EIS to address the following hazard and risk matters:

- a risk screening and if necessary a Preliminary Hazard Analysis (PHA) in accordance with Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis and Multi-Level Risk Assessment.

As described in Section 4.4.1, SEPP 33 is a state-wide planning policy for the effective planning and assessment of potentially hazardous or offensive development for the purpose of industry or storage. A risk screening using the guideline *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33* (DP&I 2011) (Applying SEPP 33) was undertaken for the facility, described in the following sections.

16.2 Impact assessment

16.2.1 Potentially hazardous industry

Applying SEPP 33 provides thresholds for which a development is classified as being hazardous or offensive, which compares the quantities of stored or used hazardous materials to the distance from publicly accessible areas are exceeded. Potential quantities of hazardous materials to be stored and used on site were compared to the threshold quantities of dangerous goods in Applying SEPP 33.

Australian Standard 1940:2004 The Storage and Handling of Flammable and Combustible Liquids (AS 1940:2004) classifies diesel as a combustible liquid (Class C1). However, diesel is not classified as a dangerous good (for transport purposes) under the Dangerous Goods Code as its flash point is above 60°C.

As part of current operations, and under the proposal, diesel would continue to be stored on site. The facility currently has an 8,700 litre above ground diesel storage tank. The design of the tank complies with *AS1940 – 2004 The storage and handling of flammable and combustible liquids*. The tank would remain in its current location within a bunded area, 40 m from the site boundary.

Dangerous goods and other potentially hazardous materials to be stored on site are listed in Table 16.1.

Table 16.1 Other potentially hazardous materials to be stored on site

Classification	Name	Storage conditions	Approximate quantity
Dangerous Goods			
Class 2.1 Flammable Gas	Acetylene	Bottles	6x25 L bottles
Class 3 Flammable Liquid PG II	LPG	Bottles	4x25 L bottles

Notes: **Exempt from "Applying SEPP" risk screening test.*

***The Dangerous Goods Code states that diesel is not subject to the code as it is has a flash point of more than 60°C. The Work Practice Data Sheet provided by Chemwatch identifies Diesel as a Dangerous Good Glass 9.*

A screening test against the thresholds in *Applying SEPP 33* for dangerous goods is provided in Table 16.2.

Table 16.2 Applying SEPP 33 screening test

Dangerous goods classification	Total quantities	SEPP 33 screening threshold	Potentially hazardous
Class 2.1 (LPG only)	8 t*	10 t	No
Class 2.1 (liquefied excluding LPG)	30 kg	Greater than 500 kg at specified distance	No
Class 3 PG II	50 kg	Greater than 5 t at specified distance	No
Class 8 PG III	20 kg	50 t	No

Table 16.3 assesses the proposed development against *Applying SEPP 33* threshold limits for transportation of hazardous materials to and from the site. The number of weekly and annual deliveries and approximate quantities per load to the site are identified below.

Table 16.3 Applying SEPP 33 transportation screening test

Hazardous materials	Deliveries		Quantities per load	Potentially hazardous
	Weekly (peak)	Annual		
Class 2.1 Flammable Gas	6 bottles every 3 months	600 L	150 L	No
Other hazardous materials (Class 3 Flammable Liquid PG II)	n/a	400 L	100 L	No

16.2.2 Potentially offensive industry

The air, noise, odour and water emissions from the recycling facility have been assessed to determine if it is classified as a potentially offensive industry.

Air and noise emission assessments have been conducted as part of this EIS and conclude that the facility would continue to comply with the relevant criteria.

Surface water at the facility would be continued to be managed under current water management system which diverts surface water flow into primary and secondary settlement ponds, with some of this water being reused for on site dust suppression. Any overflow from the settlement ponds flow to Prospect Creek when storage capacity is exceeded. The facility's discharge is regulated by its EPL. The proposal would not result in measurable impact to the receiving environment.

The facility does not receive any putrescibles or odorous materials as part of current operations. The proposal does not seek to include any processing of putrescibles or odorous materials.

The facility would not result in increased levels of pollution from resulting from the proposed modifications that would impact the amenity of the area. Therefore, the recycling facility is not a potentially offensive industry.

16.3 Conclusion

Hazardous materials were identified and compared to threshold quantities and distances to site boundaries specified in DP&I's guideline Applying SEPP 33. This comparison demonstrated that the facility would not be a hazardous or offensive development provided appropriate setbacks from hazardous materials storage areas are maintained.

17 Statement of commitments

17.1 Introduction

This section identifies the commitments proposed to manage the potential impacts resulting from the proposal.

17.2 Statement of commitments

Commitments to specific management and monitoring measures proposed in Chapters 7 to 16 of this EIS to manage potential impacts resulting from the proposal are listed in Table 17.1. These measures have been considered in the context of the current operations and the OEMP already in place.

The measures that would be implemented during continued operation of the facility to avoid, mitigate and/or manage potential impacts identified in this EIS are summarised in Table 17.1.

Table 17.1 Commitments summary

Item	Commitment	EIS section
Traffic and transport	Current operational procedures and the existing traffic management plan would be reviewed updated to reflect the changes to operations at the facility as a result of the proposal.	7.4
Air quality	The existing OEMP would be reviewed and updated to reflect proposed operations. The two dust deposition monitors located at the facility would be retained and would continue to monitor dust deposition in accordance with the EPL. Dust mitigation measures would continue to operation including: • water cannons on stockpiles; • water cart on internal haul roads; • wheel wash at the southern and northern exits of the facility; • on site speed limits; and • designed traffic routes.	8.6
Greenhouse gas	Boral would continue to implement procedures to ensure that on site equipment is regularly maintained and serviced to maximum fuel efficiency, fuel consumption is be reduced by minimising vehicle kilometres travelled on site, and an ongoing review and implementation of energy efficiency measures are undertaken to reduce GHG emissions at the facility.	8.6
Waste management	Waste management during future operations would be consistent with current operations. The receivals protocol and quality control procedure would continue to be implemented across the facility.	10.2.2 10.2.3
Soils and water	To mitigate the predicted impacts from the proposal, the following management measures are proposed: • the sediment basins would retain their current total volume, which exceeds the volume of runoff generated by a 90th percentile, 5 day duration rainfall event; • the water levels in the basins would be monitored and adjusted to ensure adequate water is available to be reused on site; • water would be extracted from the basins during dry periods to maximise the stormwater storage capacity;	11.5

Table 17.1 Commitments summary

Item	Commitment	EIS section
	• water quality in the basins would be actively managed to ensure discharges meet water quality objectives in the EPL, including the use of flocculent reduce suspended solids and dosing to manage the pH; • water quality monitoring would continue to be undertaken on a daily basis during any discharges from the LDP in accordance with the EPL, and at approximately monthly intervals during periods where there are no discharges; • a 12 month monitoring program be undertaken to assess the risk posed by the potential (agreed with EPA) contaminants of concern in accordance with ANZECC (2000) assessment criteria and any additional management practices be implemented based upon its findings (and conducted annually in September or October); • a pollutant load estimate be undertaken on an annual basis with consideration to discharge volumes and discharge quality in order to monitor the performance of the basin in relation to pollutant loading to Prospect Creek; • the proposed realignment of the perimeter haul road would incorporate the following: – sediment laden water would be temporarily collected within two open sediment cleanout pits situated inline within the open drain adjacent to the roadway; – a sand bag would be used to trap sediment up gradient of the piped outlet of the open drain up gradient of Basin 1; – the sediment cleanout pits and open drain are would be regularly inspected and sediment would be cleaned out as required and redistributed into the recycling process stockpiles as often as is necessary to manage water quality within the basins; • the management of fuel spills would continue to be undertaken in accordance with the OEMP. Boral would also investigate options for additional stormwater storage and/or water supply options. This could include (but not be limited to): • opportunities to extract water from other local basins owned by Boral; and • opportunities to increase the capacity of the existing sediment basins with consideration to health and safety requirements, and if practical and feasible.	
Ecology	The following measures should be implemented to minimise impacts to biodiversity during construction and operation: • demarcation of the clearing limits using survey pegs to avoid overclearing of the Swamp Oak Floodplain Forest EEC; and • continued implementation of site sediment and erosion control measures to prevent runoff into native vegetation.	12.4
Heritage	If any items of heritage significance are uncovered during the internal road realignment, work would cease immediately in the vicinity of the item(s) and the OEH would be contacted to ascertain the necessary actions.	13.4

Table 17.1 Commitments summary

Item	Commitment	EIS section
Visual	The stockpile area located within the southern portion of the site would continue to be monitored to ensure that the height of the highest stockpile does not exceed 20 m.	14.3
Socio-economic	The continued management of operations under the proposal would be conducted to review traffic and transport, hazard and risk, visual, air quality and odour, and noise and vibration conditions at the facility in accordance with the EPL, OEMP and traffic management plans.	15.4

18 Justification and conclusion

According to the *Waste Avoidance and Resource Recovery Strategy Progress Report 2010* (DECCW 2010) (the 2010 Review), waste generation is increasing at a national average of 4.3% with construction and demolition waste comprising the largest proportion of waste nationally (ABS 2010).

Waste disposed to landfill results in environmental impacts, including greenhouse gas emissions and potential long term environmental pollution. Urban intensification is increasing in major centres and transport corridors of the Sydney metropolitan region, resulting in higher density buildings that need to be constructed. This continued rate of urban development and renewal is creating an increase in construction and demolition waste. Sydney is the largest contributor of waste within the state.

The NSW *Waste Avoidance and Resource Recovery Act 2001* promotes waste avoidance and resource recovery by developing waste avoidance and resource recovery strategies and programs. The NSW government's waste and resource recovery legislative framework seeks to reduce waste going to landfill through minimising waste at the source (avoidance) and maximising resource recovery (reuse, recycling, reprocessing and energy recovery) which encourages the efficient use of recovered resources while supporting the principles of improved environmental outcomes and ecologically sustainable development (ESD).

The *NSW Waste Avoidance and Resource Recovery Strategy 2007* (DECC 2007) (Waste Strategy 2007) provides a framework for minimising environmental impacts from waste generation through to disposal. The Waste Strategy 2007 sets targets for preventing waste generation and increasing the recovery and use of secondary resources, particularly from the construction and demolition sector. It aims to increase the recycling rate of construction and demolition waste from a baseline of 65% in 2007 to 76% in 2014.

The NSW Government has invested close to $500 million to transform waste recovery and recycling in NSW. The *Waste Less, Recycle More: A five-year $465.7 million Waste and Resource Recovery Initiative* (EPA 2013a) states that:

> [m]ore effort is needed to continue increasing the recycling rate for waste from households, business and industry' and '[s]ignificant infrastructure investment is required in order to keep up with the increasing waste generation rates and meet the NSW recycling targets.

In relation to the target for preventing waster generation and increasing recovery and reuse in the construction and demolition sector, NSW increased recycling by up to 73% in the 2008-2009 reporting period, representing an additional 615,500 tonnes recycled (DECCW 2011). In Sydney, the rate increased to 77% of construction and demolition waste recycled, surpassing the NSW target.

The 2010 review identified that strategy and policy have effectively and significantly increased resource recovery and waste recycling in NSW since 2002-2003. The continued need to improve waste recovery was emphasised and programs have been incorporated to the *NSW 2021 A Plan to Make NSW Number One* to increase waste minimisation and recycling, including funding measures to support new and upgraded infrastructure in the future.

The Waste Strategy 2007 has been recently reviewed and a *Draft NSW Waste Avoidance and Resource Recovery Strategy 2013 to 2021* (EPA 2013b) (Draft Waste Strategy 2013) has been released for public comment. The draft strategy sets targets to increase the current construction and demolition waste recycling rate from 75% to 80% (by 2021–22).

18.1 Need for the proposal

Since it commenced operation in 2002, the facility has made significant contributions to the NSW waste minimisation target by processing construction and demolition waste materials into recycled products that are used for a variety of construction and development applications. The proposal, which would increase the processing capacity from 750,000 tpa to 1,000,000 tpa of waste, provides for continued contribution to waste minimisation and resource recovery targets.

The proposal would enable a continued contribution toward the NSW Government's recycling strategies and targets. Specifically it would contribute to two key result areas identified in the Draft Waste Strategy 2013:

- Key Result Area 2: Increase recycling. By 2021–22, increase recycling rates for construction and demolition waste from 75% (in 2010–11) to 80%.
- Key Result Area 3: Divert more waste from landfill. By 2021–22, increase the waste diverted from landfill from 63% (in 2010–11) to 75%.

The proposal would provide a direct contribution towards achieving the targets above.

18.2 Objects of the Environmental Planning and Assessment Act 1979

The EP&A Act provides the framework for environmental planning and assessment in NSW. The objects of the EP&A 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 proposal is relevant to four objects of the EP&A Act, comprising:

- the proper management of artificial resources – the facility would continue to recover construction and demolition waste to generate recycled products used in urban development, avoiding the extraction of virgin resources for these applications;
- the economic use and development of land – the proposal would increase the capacity of an existing recycling facility, which is a more economically efficient use compared with developing a new facility;
- protection of the environment – the facility would minimise negative environmental impacts by diverting construction and demolition waste from landfill, and would operate in a manner that avoids or minimises impacts to the environment; and
- ESD – the proposal complies with the four ESD principles described in the EP&A Regulation. This is discussed further in Section 18.3.

18.3 Principles of Ecologically Sustainable Development

Schedule 2 of the EP&A Regulation describes four principles that must be complied with to achieve ESD. Table 18.1 demonstrates how the proposal complies with ESD principles.

Table 18.1 Compliance with ESD principles

Principle	Application	Compliance
The precautionary principle	Proposals need to be carefully evaluated to ensure they avoid serious or irreversible environmental damage.	The proposal avoids serious and irreversible environmental damage through the efficient use of an existing facility, requiring minimal additional land disturbance. The statement of commitments (Chapter 17) provides the measures to be implemented that would minimise and mitigate potential environmental impacts from the proposal to an acceptable level.
Inter-generational equity	The proposal needs to consider the health, diversity and productivity of the environment for future generations.	The facility would continue to process construction and demolition waste into recycled aggregate and road base. These waste products would otherwise be diverted to landfill. Without the use of recycled materials, virgin resources may need to be extracted from mines and quarries to provide new materials for construction projects. Diverting waste from landfill and avoiding the extraction of new materials is in the interest of the health, diversity and productivity of the environment of future generations.
Conservation of biological diversity and ecological integrity	The conservation of biodiversity and ecological integrity needs to be considered in the proposal.	The proposal requires minor land disturbance for the realignment of the internal perimeter road. The existing road would be widened to the south into an area currently used for stockpiles and laydown. This approach largely avoids disturbance to native vegetation south of the site which contains one threatened ecological community and habitat for threatened fauna species.
Improved valuation, pricing and incentive mechanisms	The proposal needs to consider environmental factors in the valuation of assets and services.	The facility would continue to divert waste from landfill to produce recycled construction materials that have economic value. This would avoid the economic cost of disposal and avoid virgin resources from being extracted to produce construction materials. Therefore, the proposal incorporates improved valuation, pricing and incentive mechanisms.

18.4 Conclusion

The facility provides existing infrastructure to facilitate the recycling and reuse of construction and demolition waste. This facility has contributed to meeting national and state recycling targets since it commenced operation in 2002. The proposal would enable a continued contribution toward the NSW Government's recycling strategies and targets. Specifically it would contribute to two key result areas identify in the Draft Waste Strategy 2013.

This EIS has demonstrated that noise, air quality, traffic and surface water impacts from the proposal would not be significant. Noise emissions from the facility would satisfy the PSNLs at all assessment locations, and there would not be any significant impacts associated with sleep disturbance, cumulative noise or road traffic noise.

The proposal would result in a small increase in dust generation from the facility associated with the increased volume of material handled and processed on site; however, the potential for adverse impacts on the surrounding environment due to the proposal is low. Similarly, GHG emissions would increase slightly compared to current operations relative to the increase in handling and processing activities.

The proposal is unlikely to have a significant impact on the local road network and intersection performance. The future peak hour operating performance of the facility access intersection on Reconciliation Road would continue to be very good, remaining at level of service A, under both daily average and predicted maximum operations.

The water balance and surface water assessment for the proposal predicts that the proposal would not result in significant impacts to the downstream catchment of Prospect Creek.

The proposal provides enhanced social and economic benefits by increasing the volume of processing construction and demolition waste into recycled materials, thereby reducing the need for landfill and use of virgin resources, and increasing availability of recycled products. Accordingly, using recycled materials contributes to conservation of natural resources and biodiversity, and accords with the principles of ESD.

The proposal would not result in significant impacts to the environment and the commitments proposed within this EIS would ensure that the modifications to the facility under the proposal would meet regulatory standards. Therefore the proposal is sound and justified, and is in the public interest.

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