Kurri Kurri Battery Recycling Facility

Request for Secretary's Environmental Assessment Requirements

Prepared for Pymore Recyclers International Pty Ltd | 19 February 2016

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Final

Report J15156RP1 | Prepared for Pymore Recyclers International Pty Ltd | 19 February 2016

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1 Introduction

1.1 The project

Pymore Recyclers International Pty Ltd (Pymore) proposes to construct a facility to recycle batteries in Kurri Kurri, NSW (the project). The facility would recycle approximately 60,000 tonnes per annum (tpa) of used lead-acid batteries (ULABs). It is intended to reuse components recovered from the ULABs (lead from lead paste, grids and poles, and polypropylene from the cases) for use in the manufacture of new lead-acid batteries. Sodium sulphate recovered during the process can also be reused in many industrial applications.

The project is intended to have several benefits, including:

- diversion of hazardous wastes from landfill;
- recovery of materials and resources for reuse;
- employment of up to 60 full-time equivalents; and
- utilisation of a generally previously disturbed site, within an existing industrial area and on appropriately zoned land.

1.2 Site and surrounds

The project is to be located at 129 Mitchell Avenue, Kurri Kurri (the site). The site is in the Cessnock local government area, approximately 40 km northwest of Newcastle (Figure 1.1). The site will occupy part (approximately 3.4 ha) of the lot on which the Weston Aluminium Dross Recycling Plant (the aluminium plant) is located within Lots 796 and 797, DP 39877 (Figure 1.2).

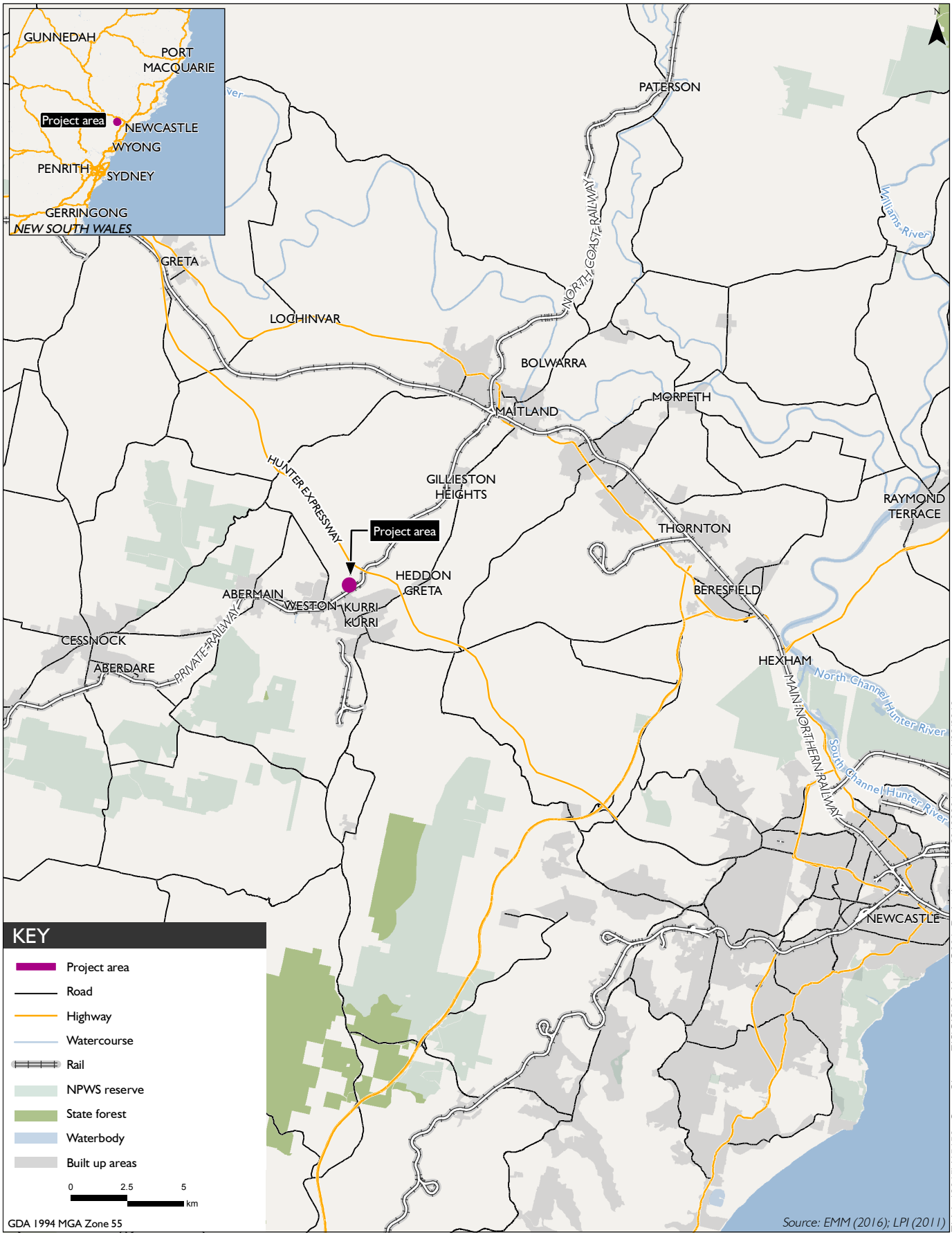
The site currently comprises undeveloped land used for the storage of unused industrial equipment for the aluminium plant. Some remnant native vegetation occurs in the southern portion of the site.

Surrounding land uses are primarily industrial as shown in Figure 1.3, including the aluminium plant, a waste water treatment facility 750 m to the east, and the Hydro Aluminium Kurri Kurri Smelter 1.3 km to the north. The residential areas of Kurri Kurri and Weston are approximately 650 m to the south-east and 1,000 m to the west of the site, respectively. The Hunter Expressway is approximately 550 m to the north-east. Swamp Creek is approximately 70 m to the north.

The site is zoned IN3 Heavy Industrial under the *Cessnock Local Environmental Plan 2011* (Cessnock LEP).

1.3 Applicant

Pymore is an Australian company wholly owned by PRI Holdings who has major interests in lead recycling operations in other countries and over 30 years experience in battery and lead recycling productions.



Location of project area

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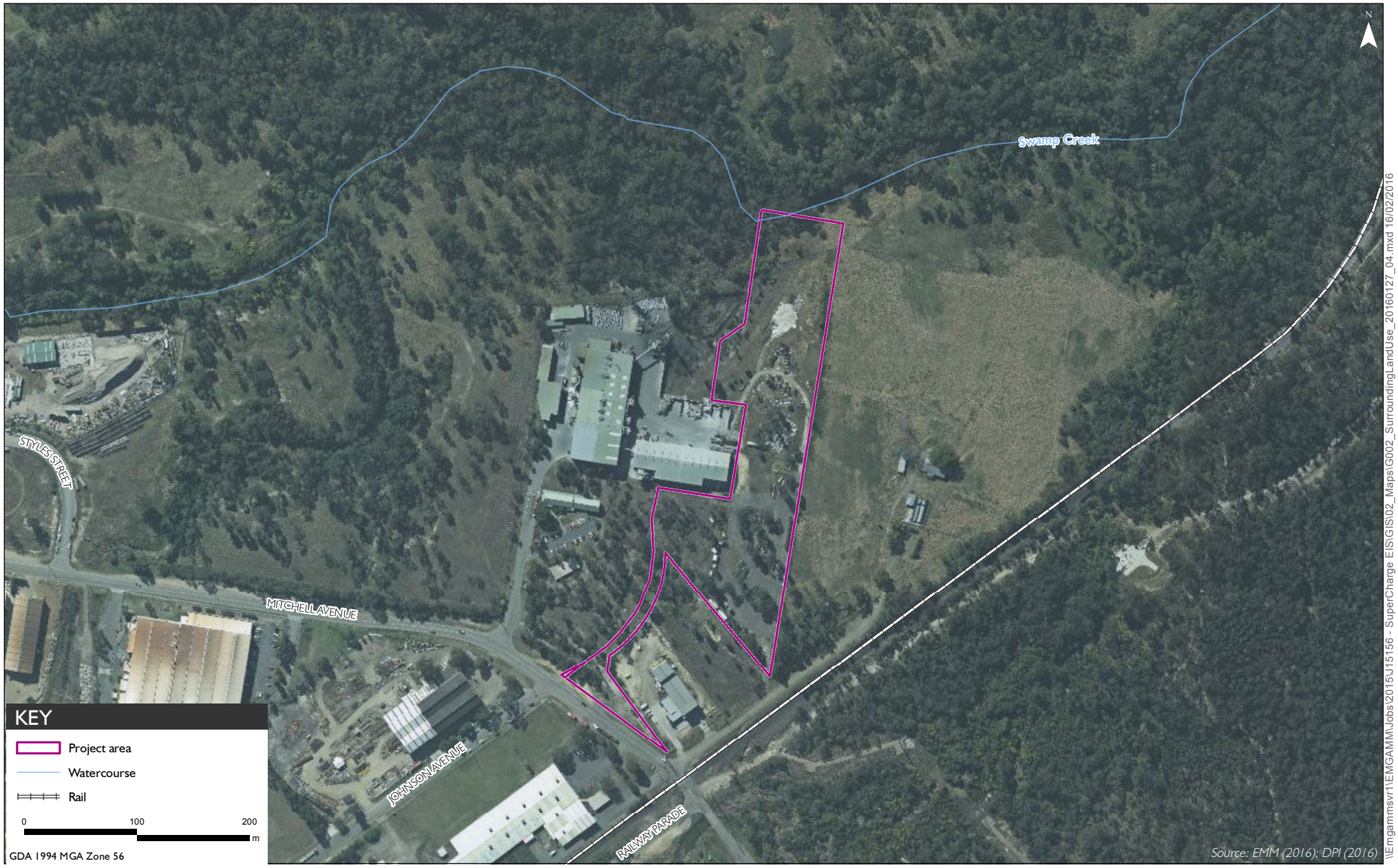
Figure 1.1



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Project site

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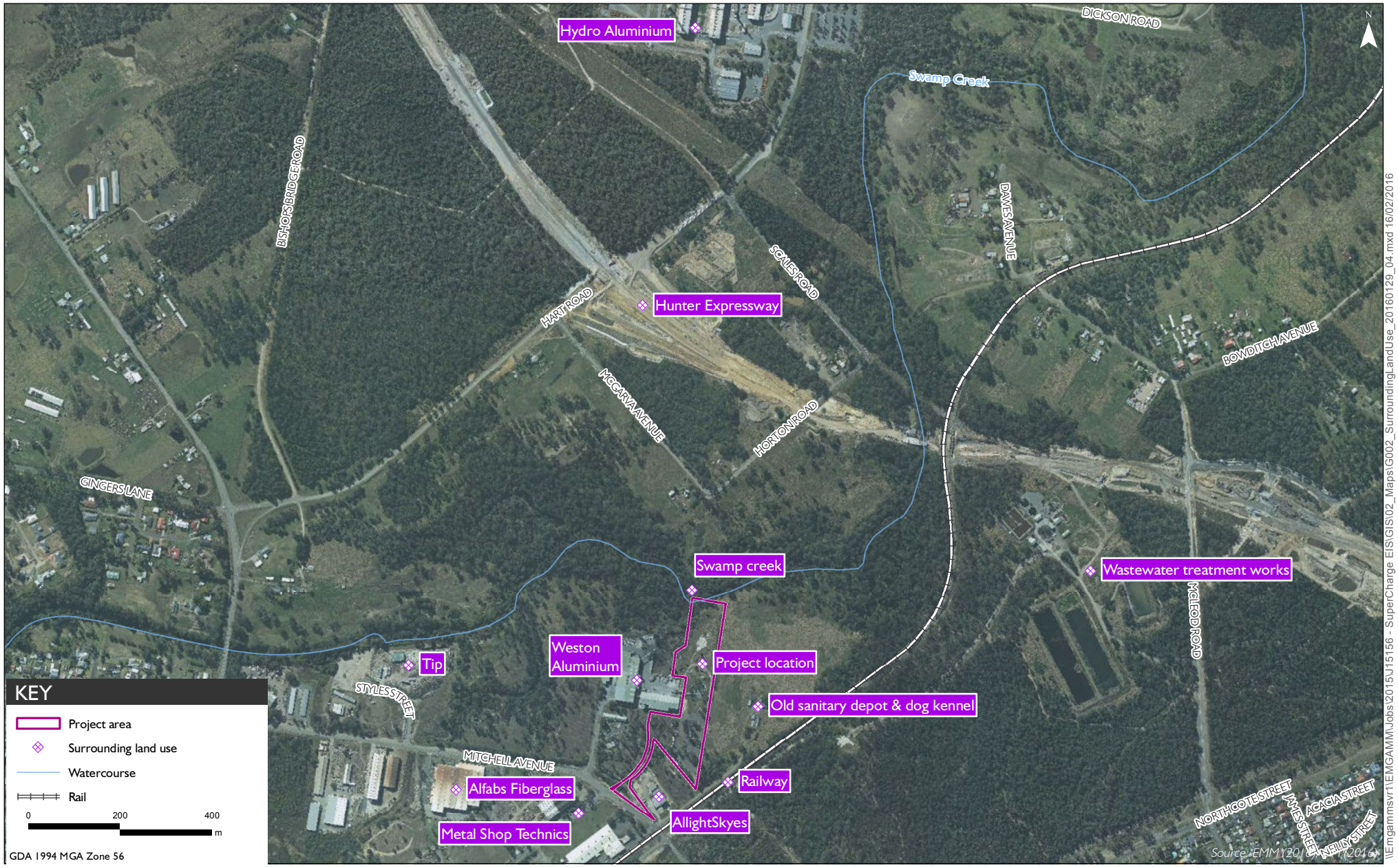
Figure 1.2



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Surrounding land use

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Figure 1.3

1.4 Purpose of report

A development application (DA) for the project is required to be submitted under Part 4 of the NSW *Environmental Planning and Assessment Act 1979 (*EP&A Act). The project is State significant development (SSD) (see Section 2.1) and, therefore, Division 4.1 of the EP&A Act applies and the NSW Minister for Planning, or the Minister's delegate, is the consent authority.

The purpose of this report is to request, and inform the content of, the Secretary's environmental assessment requirements (SEARs) for the project. The SEARs will identify the requirements for the environmental impact statement (EIS) that will be prepared to accompany the DA for the project.

This report has been prepared by EMM Consulting Pty Ltd (EMM) on behalf of Pymore.

2 Planning framework

2.1 Planning approval pathway

State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP) identifies development that is significant to NSW (ie SSD). Clause 8(1) of the SRD SEPP declares development to be SSD for the purposes of the EP&A 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 Cessnock LEP permits, with consent, development for the purposes of a battery recycling facility (waste management facility) within the IN3 zone.

Schedule 1 of the SRD SEPP includes:

23 Waste and resource management facilities

...

(5) Development for the purpose of hazardous waste facilities that transfer, store or dispose of solid or liquid waste classified in the Australian Dangerous Goods Code or medical, cytotoxic or quarantine waste that handles more than 1,000 tonnes per year of waste.

...

The facility would store more than 1,000 tonnes per year (or tpa) of ULABs that would be processed to recover reusable lead. ULABs are defined as a hazardous waste (Dangerous Good Class 8). Therefore, the project is SSD as it meets the requirements of Clause 8(1) of the SRD SEPP.

Section 78A(8A) of the EP&A requires a DA for SSD to be accompanied by an EIS. Schedule 2 of the NSW *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) requires an EIS to be prepared in accordance with the SEARs issued for the project.

2.2 Other State approvals required

The approvals required for the project will be determined in the EIS. In addition to development consent under Division 4.1 of Part 4 of the EP&A Act, the likely State approvals required include:

- an environment protection licence (EPL) under the NSW *Protection of the Environment Operations Act 1997* (POEO Act); and
- a consent under section 138 of the NSW *Roads Act 1993*.

Under section 89K of the EP&A Act, these approvals cannot be refused for an SSD project and are to be substantially consistent with the development consent, if granted.

2.3 Planning policies

The application of the following planning policies relevant to the project would be considered in the EIS:

- SRD SEPP;
- *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP);
- *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* (SEPP 33);
- *State Environmental Planning Policy No. 55 – Remediation of Land* (SEPP 55);
- Cessnock LEP; and
- *Strategic Regional Land Use Policy* (NSW Government 2012).

2.4 Commonwealth legislation

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

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

If an action would, or is likely to, have a significant impact on any MNES, it is deemed to be a Controlled Action and requires approval from the Commonwealth Environment Minister or the Minister's delegate.

Potential impacts to MNES will be assessed in the EIS. The project is unlikely to have a significant impact on any MNES.

3 Project description

3.1 Recycling technology

The technology used for the project will be supplied by Engitec Technologies S.p.A (Engitec). Engitec has developed the CX Integrated System, which uses a combination of hydrometallurgical and pyrometallurgical process for the recovery of lead and associated by-products. This technology is used in over 60 plants worldwide to treat ULABs and is used in the Renewed Metal Technologies plant in Wagga Wagga.

3.2 Used lead-acid battery recycling process

The ULAB recycling plant would have four main processes – crushing, screening and separation; desulphurisation; crystallisation; and lead smelting – which are described further below. The entire recycling process converts a ULAB into materials which are recycled for use in new products. Lead and plastics recovered are used in the production of new batteries. Sodium sulphate crystals are a by-product of ULAB recycling which are readily used in other industries.

Figure 3.1 shows a simplified flow process of the proposed ULAB recycling facility.

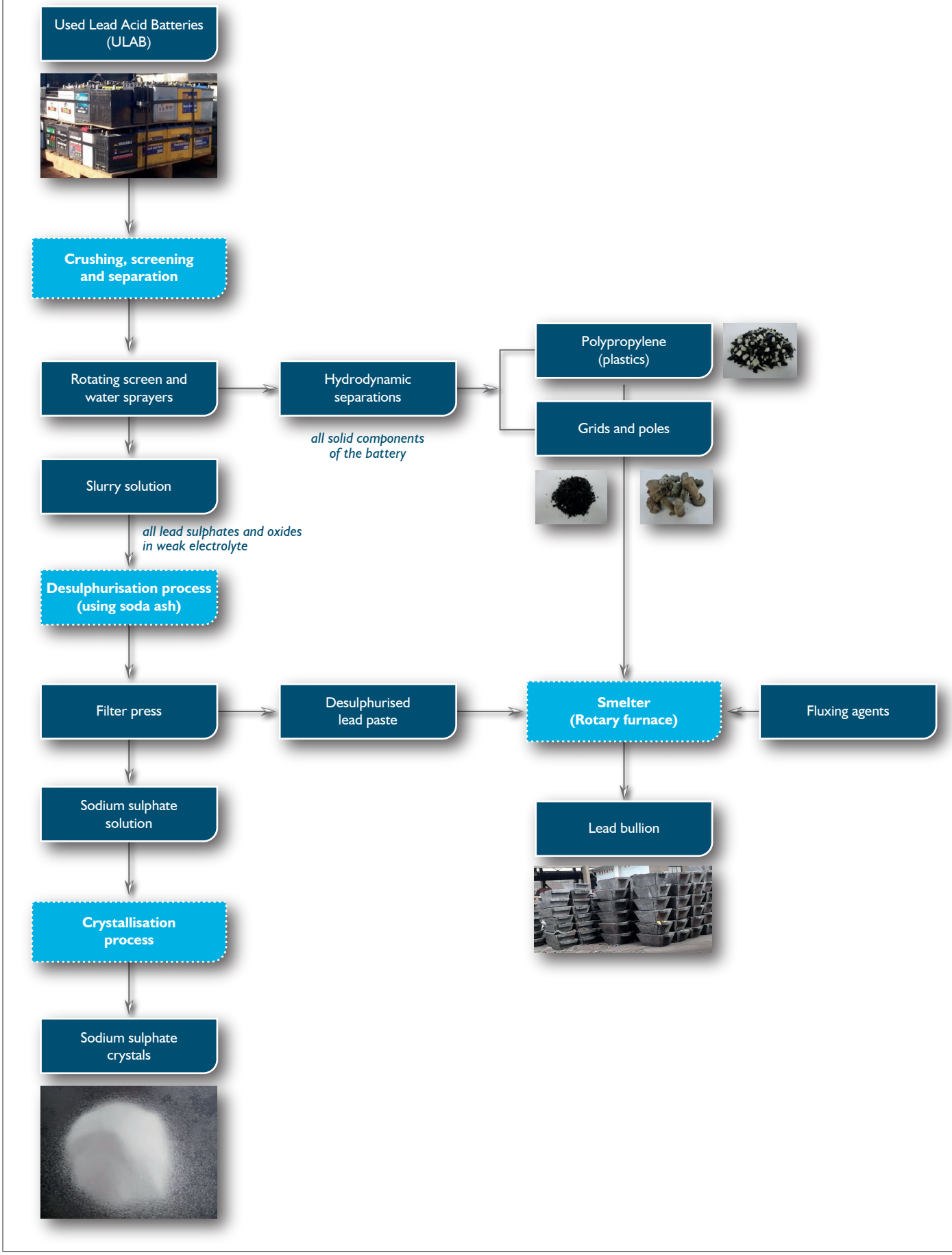
3.2.1 Crushing, screening and separation

The ULABs are sent through an automatic de-palletiser, into a vibrating feed hopper, and transported on a belt conveyor into a crushing mill. To protect the crusher a metal detector is installed to remove iron and other unwanted metallic objects while the batteries are still on the belt conveyor. The batteries are crushed to 50 – 80 mm in size. The crushing mill is fully enclosed in an acoustic chamber to mitigate noise as well as prevent dust emissions.

The crushed materials pass through a screen and are wetted down with high pressure water sprayers using recycled water. This rotating screen separates the solid and liquid components of the batteries. These materials include:

- lead metals such as battery posts (or poles) and battery plates (called grids); and
- crushed polypropylene plastic from the battery casing and cover; and
- a slurry solution composed mainly of lead pastes from the battery plates and the electrolyte in the battery.

The solid components (lead metals and plastics) go through a further hydrodynamic separation process using controlled flow of recycled water which naturally separates the materials due to their differences in density. The solid metals are collected and fed into the rotary furnace, while the plastics (polypropylene) are washed, cleaned and sent to battery production facilities where they are pelletized and reused as battery casings and covers.



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Scrap battery (ULAB) recycling process flow diagram

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Figure 3.1

3.2.2 Desulphurisation and crystallisation

The slurry solution of lead sulphates, lead oxides and sulphuric acid goes through a desulphurisation process which effectively removes the sulphur from lead sulphates and sulphuric acid. This is an important step in minimising sulphur (sulphur dioxide and sulphur trioxide) emissions by eventually converting them to a solid form instead of gases emitted from the furnace. Removal of the sulphur prior to feeding the material to the furnace significantly improves smelting efficiency.

Desulphurization involves mixing the slurry with soda ash to produce sodium sulphate. The resulting solution is further processed in a filter press which separates the desulphurised lead paste from the sodium sulphate solution.

The liquid sodium sulphate is processed further through crystallization which removes water, purifies, and converts the solution to sodium sulphate crystals. Sodium sulphate crystals are packed and sold commercially to glass and detergent manufacturers.

3.2.3 Lead smelting

The lead smelting process uses a furnace to melt the lead metals and lead oxide from the lead paste, subjecting them to high temperatures to recover the lead and produce lead bullion.

Desulphurised lead paste is fed into a rotary furnace, mixed with the solid metals and some fluxing agents, and processed under high temperatures into lead bullion. The rotary furnace will be completely enclosed to prevent release of fugitive emissions. Dust and smoke suction chambers and closed ducting systems convey the dust and smoke to a series of filters inside a filter bag house to ensure that air emissions are clean and free from lead particulates. The lead bullion is sent to battery production facilities for production of new batteries.

4 Stakeholder engagement

Pymore and EMM will engage with stakeholders during preparation of the EIS. Stakeholder groups, with a vested interest in the project, include:

- relevant State government agencies including the Department of Planning and Environment (DP&E), Roads and Maritime Services, Office of Environment and Heritage, Environment Protection Authority, and Department of Primary Industries Water;
- Cessnock City Council;
- Weston Aluminium; and
- local residents and community groups.

Engagement activities with the stakeholders identified above will be developed as part of a stakeholder engagement program that will be prepared following receipt of the SEARs. Outcomes of engagement activities will be addressed in the EIS and relevant technical studies.

5 Preliminary environmental impact assessment

5.1 Overview

A preliminary environmental impact assessment has been undertaken to identify key aspects for investigations in the EIS. The assessment was based on a an environmental interactions risk screening assessment which was based on knowledge of the site and its surrounds (ie existing environment), environmental interactions, and the indicative project design. Potential environmental impacts have been identified and then ranked according to their likelihood of occurrence and potential consequences. The assessment assumes conventional mitigation practices will be adopted as necessary.

Table 5.1 Environmental interaction screening risk assessment

Potential impact	Priority
Waste management	
Diversion of hazardous wastes from landfill	High
Human health	
Impacts to employee health	Moderate
Off-site health impacts	Low
Noise	
Operational noise impacts	Low
Cumulative noise impacts from the proposal and surrounding land uses	Moderate
Air quality and odour	
Air quality and odour impacts associated with the proposal	Low
Cumulative air quality and odour impacts from the proposal and surrounding land uses	Moderate
Hazards	
Hazards from the storage and transport of dangerous goods	Moderate
Ability to respond to and manage fires and incidents at the facility	Low
Bushfire risks to facility	Moderate
Groundwater	
Impacts on groundwater flow, quantity and quality	Low
Surface water	
Changes to surface water flows and quality	Moderate
Flooding impacts to facility	Moderate
Ecology	
Impact on threatened species and communities	Moderate
Aboriginal cultural heritage	
Impacts on Aboriginal artefacts	Moderate
Impacts on cultural heritage values	Moderate
Historic heritage	
Impacts on historic heritage	Low
Traffic and transport	
Impacts to local road networks	Moderate
Final landform and rehabilitation	
Ability to effectively rehabilitate site	Low
Visual amenity	

Table 5.1 Environmental interaction screening risk assessment

Potential impact	Priority
Impacts on surrounding visual receptors	Low
Potential impact on the nature of the visual character of the surrounding area	Low
Land and soils capability	
Increased risk of erosion	Low
Reduction in agricultural productivity	Low
Economics	
Impacts on property values due to noise and dust impacts	Low
Local and regional employment opportunities	Moderate
Social	
Community concerns about amenity	Moderate
Effects on traffic and roads	Moderate

5.2 Priority issues for EIS

Based on the risk assessment results in Table 5.1, the following priority ratings were assigned to each potential impact:

- High – diversion of hazardous wastes from landfill;
- Medium – human health, noise, air quality and odour, hazards, surface water, ecology, Aboriginal heritage, traffic and transport, economics, and social matters; and
- Low – all other matters.

Accordingly, the high and medium ranked issues will be given greater attention during preparation of the EIS. They, along with all other requirements given in the SEARs, will be fully investigated using established and well proven technical assessment methodologies.

6 Conclusion

The proposed ULAB recycling facility in Kurri Kurri, NSW is SSD and requires approval under Division 4.1 of Part 4 of the EP&A Act. This document provides the necessary information for the Secretary and the DP&E to prepare the SEARs for an EIS to accompany the DA.

The environmental matters that will require investigation in the EIS include:

- waste management;
- human health;
- noise;
- air quality and odour;
- hazards;
- bushfire;
- surface water;
- ecology;
- Aboriginal heritage;
- traffic and transport;
- economics; and
- social.

These matters will be fully investigated using established and well proven technical assessment methodologies.

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