Enirgi Power Storage Recycling Consolidation Project
Environmental Impact Statement
Chapters 15 - 23

July 2018

15. Biodiversity

15.1 Introduction

A biodiversity assessment has been completed to assess the potential impact of the Project on the biodiversity values of the study area. The Project site has been primarily cleared and retains minimal biodiversity values. The results of the investigations are presented in the following sections.

15.2 Methodology

15.2.1 Database review

A search of relevant databases was conducted to obtain records of threatened and migratory species, populations and ecological communities within the locality. The search included all species, populations and ecological communities listed under the NSW Threatened Species Conservation Act 1995 (*NSW TSC Act, 1995*) and Commonwealth Environment Protection Biodiversity Conservation Act 1999 (*EPBC Act, 1999*) with the potential to occur in the locality.

The assessment included a review of:

- OEH (2017a) Bionet Wildlife Database Atlas – licensed data for Wagga Wagga LGA. Search of all terrestrial threatened flora and fauna species (within a 10 kilometre radius of the proposal site) (searched May 2017).
- OEH (2017b) Bionet NSW threatened species, online profiles.
- DotEE (2017a) EPBC Act Protected Matters Search Tool – for a 10 kilometre radius around the subject site (searched May 2017).
- DotEE (2017b) Species profile and threats database, online profiles.
- NSW Department of Primary Industries –priority weed declarations – Wagga Wagga regional authority area (DPI 2018) (searched May 2018).

15.2.2 Field survey

General flora and fauna field surveys were conducted by an ecologist on 12 May 2017 and 13 April 2018. Where appropriate, field surveys were conducted in accordance with '*Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities Working Draft*' (DEC 2004).

The primary objectives of the field surveys were to:

- Determine the presence and/or potential for threatened flora and fauna species, populations, ecological communities, listed under the NSW TSC Act and Commonwealth EPBC Act, and their habitats to occur in the study area.
- Determine the value of the habitat in the study area for flora and fauna species, particularly for threatened species and species of conservation significance, and describe potential impacts that would result from the proposal.
- Describe the flora and fauna species, habitat, populations and ecological communities in the study area in relation to their occurrence and quality in the locality. This included ground-truthing and reference to satellite imagery.
- Determine the condition and extent of vegetation removal required for the proposal.

Survey effort for this proposal is summarised in Table 15-1.

Table 15-1 Survey effort for ecological assessment

Survey method	Effort
Flora plot and transect surveys (see Figure 15-1)	Four plots (dimensions 20 metres by 20 metres, and 20 metres by 50 metres) and a random meander transect throughout the proposal site to record incidental species.
Fauna habitat assessment	Potential fauna habitat identified within areas of vegetation clearing and adjacent areas.
Opportunistic fauna observations	Opportunistic fauna observations for all fauna species encountered during flora surveys and habitat assessment.

15.2.3 Flora

Flora surveys were conducted in the proposal site and study area using transect and plot surveys (Figure 15-1). For the transect survey, the random meander technique (Cropper 1993) was conducted throughout the subject site. As rare plants often exist in discrete populations in specific areas, a random search can increase the probability of finding rare plant populations. A random search effort also encompasses a greater portion of the landscape, as the search is not limited to specific areas (only the stratification unit), and is useful in surveying difficult terrain and irregular shaped search areas.

Four plots of dimensions 20 metres by 50 metres were surveyed in the subject site. Within each plot the following vegetation and habitat characteristics were recorded:

- Description of vegetation
- Dominant canopy vegetation
- Dominant understorey vegetation
- Groundcover species and abundance
- Any signs of previous disturbance and grazing

LEGEND

- Vegetation plot
- Project boundary
- Proposed modification

Vegetation type

- Derived native grassland
- Introduced grassland
- Planted native vegetation
- Box-Gum Woodland (TSC Act)

Paper Size A4

0 15 30 60

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

Enirgi Power Storage Recycling
Consolidated project EIS

Job Number 2315946
Revision A
Date 18 Jun 2018

Vegetation plots and types

Figure 15-1

Suite 3, Level 1, 161-169 Baylis Street Wagga Wagga NSW 2650 Australia **T** 61 2 6923 7400 **F** 61 2 6971 9565 **E** wgamail@ghd.com **W** www.ghd.com

N:\AU\Wagga Wagga\Projects\23\15946\GIS\Maps\Ecology figure.mxd

Data source: NSW Government (LPI): Aerial image - 2015; Enirgi Power Storage Recycling: 2018 proposed modification, internal roads - 2017. Created by:mking3

15.2.4 Vegetation communities

Surveys of vegetation communities in the study area were carried out to characterise vegetation formation, class, structure and condition. Plant community composition is especially important for those areas that have the potential to be a threatened ecological community.

Flora surveys enabled determination of the composition and extent of ecological communities occurring in the study area. The study area was investigated to identify vegetation communities present and to identify any areas with the potential to be classified as a threatened ecological community.

15.2.5 Fauna

Fauna surveys comprised habitat assessment for all fauna groups and observations of fauna signs. Fauna habitat resources were assessed to identify areas of potential habitat within the study area. Specific resources such as shelter, basking, roosting, nesting and foraging sites for birds, bats, arboreal mammals, amphibians, ground-dwelling mammals and reptiles were noted.

Habitat details recorded included presence or absence of:

- Hollow-bearing trees (arboreal mammals, hollow-nesting birds and microchiropteran bats)
- Feed trees (e.g. *Allocasuarina* spp. and mistletoe)
- Roost sites (hollow-bearing trees or caves/rocky outcrops for bats)
- Waterbodies (amphibians)
- Nests (birds)
- Rocky outcrops and ground debris (reptiles)
- Other features likely to provide potential habitat for threatened fauna

Searches for potential mammal, amphibian, and reptile habitat were carried out and recorded during flora surveys and bird surveys. Opportunistic sightings of all fauna species were also recorded.

Any indirect evidence of fauna (e.g. scats, feathers, fur, tracks, dens, nests, scratches, chew marks and owl wash) was recorded and/or photographed.

15.2.6 Limitations

Field surveys were conducted outside the optimal survey period for many species when many plants have finished flowering and are unable to be detected. For any threatened flora species that were not detectable at the time of the survey, but which had the potential to occur at the site, an assessment was made of the suitability of the habitat for the species and its likelihood of occurrence.

Some fauna species are mobile and transient in their use of resources. Consequently, it is likely that not all species either resident or transitory at the site would have been recorded during the site inspections. The disadvantage of this limitation was reduced by undertaking database searches, and by assessing the habitat value of the study area for threatened and migratory species known to occur in the region to determine their likelihood of occurrence.

This survey was not designed to enable all species, either resident or transitory to the study area, to be detected. Instead it was aimed at providing an overall assessment of the ecological values of the study area with particular emphasis on threatened and migratory species to allow an assessment of the potential impacts of the proposal. For those species of conservation significance that were not detected but likely to occur in the study area, an assessment of the likelihood of their occurrence was made based on known habitat requirements.

15.3 Existing environment

15.3.1 General description

The study area occurs within the South West Slopes Bioregion. This bioregion covers the lower inland slopes of the Great Dividing Range extending from north of Cowra through southern NSW into western Victoria.

The study area of the proposed access site occurs within the boundaries of the Junee Hills and Slopes Mitchell Landscape in the Riverina Local Land Services area. This landscape is over 98 per cent cleared and is therefore considered to be an over-cleared landscape (i.e. greater than 70 per cent cleared) (DEC 2005).

The landscape is primarily dominated by agricultural land use, mostly cropping. Land to the south-west and directly to the north is dominated by industrial development. Native woodland vegetation is scarce and exists patchily along roadside reserves and as scattered patches in private property.

The assessment method detailed in DEC (2009) and OEH (2014) was used to broadly assess the landscape value of the vegetation in each study area, as described in (Table 15-2).

Table 15-2 Assessment of the landscape value of vegetation in the study area

Landscape value	Subject site and study area
Size/Shape	The Project site covers an area of about 1.39 hectares of which 0.09 hectares is in woodland and 0.86 hectares is in grassland areas (outside existing hardstand areas) and is divided into four sections that are located in areas of vegetation. The largest of these areas is linear in shape and is 0.46 hectares.
Location in landscape	The study area occurs within the industrial business district of Bomen, a suburb in the north of Wagga Wagga, and is surrounded by industrial and agricultural land uses
Per cent cover native vegetation within a two kilometre radius of site	<10 per cent
Connectivity value	The proposal includes vegetation that: • Is not in low condition • Has an average width less than 20 metres • Links to surrounding native vegetation on one compass quarter of the proposal. • The connectivity value is therefore low.
Next nearest remnants, distance, size and connectivity	The nearest remnant native vegetation is immediately west of the Project site, in the road reserve of Byrnes Road. There are no connected reserves in the study area.
Distance to nearest large remnant > 1000 hectares	The Berry Jerry Precinct of the Murray Valley National Park is located about 30 kilometres west of the Project site and covers an area of about 1,200 hectares.

Terrestrial habitat connectivity the study area has been reduced due to past clearing in the landscape for agriculture and industrial development. There is limited connectivity between remnant patches of woodland and scattered paddock trees.

Vegetation corridors assist fauna to move through the landscape between different areas of habitat. The woodland in the study area provides limited connectivity along roadside vegetation and paddock trees to patches of remnant vegetation in private property. There is little connectivity to the riparian corridor of the Murrumbidgee River to the south of the study area.

Native woodland vegetation exists along roadside reserves and as scattered patches and paddock trees in private property. A native planting of locally endemic species, mixed with remnant woodland extending from the road reserve occurs in the north-western section of the project site.

15.3.2 Flora species

Field surveys identified 51 flora species, of which 22 species are native and 29 species are introduced (see Appendix N). Remnant native canopy vegetation occurs in the north-western section of the Project site with scattered Yellow Box (*Eucalyptus melliodora*) trees occurring amongst a locally-native planting, and directly connected to the Yellow Box and Blakely's Red Gum (*E. blakelyi*) trees in the roadside reserve immediately to the west. The remnant trees and planting within the Project site would be removed by the Project. Yellow Box and Blakely's Red Gum trees also occur to the southof the Project site. There is a line of native tree plantings on the eastern boundary of the property which would not be impacted by the proposal. One small (diameter at breast height less than 20 cm) planted River Red Gum (*E. camaldulensis*) tree would be removed by the proposal near the existing carpark.

Most areas are cleared of native vegetation and dominated by introduced species including Lambs Tounges (*Plantago lanceolata*), Paspalum (*Paspalum dilatatum*), Wireweed (*Polygonum aviculare*) and Catsear (*Hypochaeris radicata*). The exception to this is a small patch of derived native grassland, on the eastern boundary of the Project site and within the patch of remnant trees and planting in the north-western section of the Project. These are further discussed below.

One species, Silver-leaved Nightshade (*Solanum eleagnifolium*) is listed as a priority weed species for the Riverina region (DPI 2018). The control duty listed for this species is '*prohibition on dealings*', which means the plant must not be imported into the State or sold. The species is uncommon in the the Project site, with only one individual plant identified.

Plant community types

Two plant community types are present in the Project site:

- Derived native grassland (Plate 15.1).
- Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT ID 277) (Plate 15.2). The derived native grassland in the Project site is likely to be derived from this community.

Plant community type - Derived native grassland (no PCT ID).

- Conservation status - Not listed.
- Condition - The PCT in the Project site is in moderate/good poor condition as defined under the Bio Banking Assessment Methodology (OEH 2014).
- Extent in the Project site – 0.18 hectares.
- Plots completed in vegetation zone - One plot was surveyed in this vegetation zone.
- Project site description – this community occurs mostly in the eastern section of the Project site between the property boundary and the eastern side of the building. Commonly occurring native grass species included Wallaby Grass (*Rytidosperma erianthum*), Windmill Grass (*Chloris truncata*) and Couch (*Cynodon dactylon*). Although this section of derived native grassland is dominated by native species, it also included introduced species which are likely to be more abundant during the spring.

Although the derived native grassland is likely to be derived from Yellow Box and Blakely's Red Gum woodland in the study area, the surrounding cleared grassland areas are dominated by introduced species. The small size of the derived grassland (<0.2 hectares) and it's isolated nature amongst introduced vegetation, means it is unlikely to form part of the threatened ecological community of White Box Yellow Box Blakely's Red Gum grassy woodland and derived native grassland listed under the TSC Act or EPBC Act.

Plant community type - Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT ID 277).

- Conservation status – Listed as the endangered ecological community White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland) under the TSC Act. In the Project site, the community does not meet the classification criteria for the critically endangered form of the ecological community listed under the EPBC Act due to the degraded nature of the groundcover and lack of native species diversity.
- Condition - The PCT in the Project site is in moderate/good poor condition as defined under the Bio Banking Assessment Methodology (OEH 2014).
- Extent in the Project site – 0.09 hectares.
- Plots completed in vegetation zone - One plot was surveyed in this vegetation zone.
- Project site description – this community occurs in the north-western section of the Project site, extending west outside the property boundary. The community occurs as a small patch of woodland dominated by a canopy of Yellow Box and is interspersed with locally native plantings, which include eucalypts and acacias. Due to past clearing for industrial development, the groundcover contains a high proportion of introduced species mixed with native species. Commonly occurring native grass species include Hairy Panic (*Panicum effusum*) and Windmill Grass.

Plate 15.1 Derived native grassland in the southern end of the Project site

Plate 15.2 Box-Gum Woodland in the north-eastern section of the Project site

Fauna

Surveys of the study area undertaken by GHD identified 11 fauna species, of which one, the European Rabbit (*Oryctolagus cuniculus*) is introduced (see Appendix N). The trees in the wider study area provide habitat for a number of bird species and all species recorded during surveys were birds common to modified agricultural landscapes.

Commonly recorded birds included the Galah (*Eolophus roseicapillus*), Magpie-lark (*Grallina cyanoleuca*) and Willie Wagtail (*Rhipidura leucophrys).* No threatened species of bird were recorded during current surveys.

One introduced mammal, the European Rabbit was recorded during current surveys. In addition, native mammals that may occur in the wider study area include the Eastern Grey Kangaroo (*Macropus giganteus*), Common Brushtail Possum (*Trichosurus vulpecula*) and White-striped Freetail Bat (*Tadarida australis*). Other introduced mammals likely to occur include the Fox (*Vulpes vulpes*) and Cat (*Felis catus*).

No amphibian species were heard calling within the study area, likely due to the lack of aquatic habitats available in the study area.

No species of reptile were recorded during surveys, however species likely to occur include skinks such as the Tree Skink (*Egernia striolata*) and snakes such as the Eastern Brown Snake (*Pseudonaja textilis*).

Fauna habitat

Fauna habitat in the study area occurs mainly in remnant native vegetation along roadsides and as scattered paddock trees in the wider study area, mostly to the south. There is marginal habitat provided by grasslands through the surrounding heavily grazed paddocks.

The limited remnant vegetation in the study area provides foraging and breeding habitat for a limited number of commonly occurring bird species.

Hollow-bearing trees occur throughout the study area but none occur in the Project site. Hollow-bearing trees in the study area are likely to provide roosting and nesting habitat for microchiropteran bats (such as the White-striped Freetail Bat), arboreal mammals (such as the Common Brushtail Possum) and a range of woodland birds.

Grassland areas in the study area are likely to provide foraging habitat for mammals such as the Eastern Grey Kangaroo. Grassy areas are also likely to provide foraging habitat for woodland birds, including threatened species such as the Superb Parrot (*Polytelis swainsonii*) which has been previously recorded in the Bomen locality.

Woody debris is very limited in the study area, however, where it occurs it is likely to provide suitable habitat for commonly occurring reptiles such as skinks and snakes. No woody debris is present in the Project site.

Threatened biota

No threatened species were recorded during current field surveys. However, the Superb Parrot has been previously recorded in the locality.

Likelihood of threatened biota occurring in the study area

The literature review, database search and field surveys identified, three ecological communities, three flora species, 20 bird species and three mammal species listed under the EPBC Act and/or TSC Act that have been previously recorded or are known or likely to occur in the study area (see Appendix O).

15.4 Impact assessment

15.4.1 Potential direct impacts

Vegetation removal

The proposal would remove about 0.95 hectares of vegetation, comprising Box Gum Woodland, derived native grassland and general groundcover vegetation, as summarised below in Table 15-3, also see Figure 15-1.

Table 15-3 Vegetation removal

Vegetation type	Amount (hectares)
Box Gum Woodland	0.09
Derived native grassland	0.21
Groundcover vegetation	0.65
Total	**0.95**

Removal of vegetation within the patch of Box-Gum Woodland includes about four Yellow Box trees greater than 30 centimetres in diameter at breast height and 17 smaller trees that include both Yellow Box regrowth and planted eucalypts. All planted trees and shrubs would be removed within the patch to provide for the turning circle and temporary parking area.

Native grassland groundcover would be permanently removed for the extension of the crystalliser and pallet storage shed and introduced groundcover would be permanently removed for the extension of the existing carpark, the oxygen plant and associated buildings, the U-lab warehouse and turning circles.

The loss of a small area of woodland, a native planting and groundcover vegetation may represent a minor loss of potential nesting, roosting and foraging habitat for some fauna species. However, the habitat is marginal due to the dominance of introduced groundcover species and its previous disturbance, and only a minor area of trees would be impacted.Better quality habitat is available outside the Project site in the study area and locality, including within the road reserve immediately connected to the western edge of the property. One small planted River Red Gum would also be removed by the Project.

15.4.2 Potential indirect impacts

Water quality, chemical and fuel impacts on flora and fauna

The Project has the potential to cause impacts to native flora and fauna through spills of fuels and chemicals. This may occur during refuelling operations or during preparation and use of chemicals for weed management. Spills could potentially contaminate habitat for species dependent on drainage lines such as frogs.

The Project site does not occur in the vicinity of any creeks or dams. With the implementation of safeguards it is unlikely that the Project would cause sedimentation or water quality impacts which could reach downstream waterbodies in the wider locality.

The Project could also potentially affect flora through spray drift during application of herbicides.

These impacts would be unlikely to be substantial due to the limited area of impact and the implementation of mitigation measures detailed in section 15.5.

Weeds

The groundcover vegetation in the study area contains a range of introduced and native species. The Project has the potential to further introduce and spread weeds in the study area through the movement of machinery and light vehicle traffic and disturbance associated with earthworks. One priority weed was identified within the study area. The proposal has the potential to spread this weed into new areas and to introduce new priority weed species to the area.

The implementation of mitigation measures detailed in section 15.5 would limit the potential for the spread of weeds associated with the Project site.

Disturbance of fauna

The Project has the potential to temporarily affect the use of the study area by fauna as a result of increased disturbance during construction. The use of machinery may temporarily deter some fauna species such as birds from using potential habitat in the study area during construction.

15.4.3 Cumulative impacts

The Project would cause impacts additional to those that have occurred due to previous land use activities in the study area; including expansion of the Bomen industrial business park, construction of new roads associated with the industrial area, agricultural activities and utilities. Given the small scale of vegetation removal involved, and the degraded nature of the groundcover vegetation proposed to be removed, it is unlikely that the Project would cause significant cumulative ecological impacts.

15.4.4 Key threatening processes

The Project would involve one key threatening process listed under the TSC Act and EPBC Act; clearing of native vegetation. The Project would remove 0.09 hectares of Box-Gum Woodland and 0.21 hectares of derived native grassland.

The impacts of key threatening processes would be minimised through the implementation of mitigation measures detailed in section 15.5.

15.4.5 Summary of impact assessment

Due to the removal of Box-Gum Woodland, the Project would have impacts on the TSC Act listing of the endangered ecological community. However, the Project site is located within the Wagga Wagga LEP Biodiversity Certification Area. This means that any development within this biocertified area is deemed not to have a significant impact on NSW-listed ecological communities, threatened species, or populations and their habitats provided that the development or activity is undertaken in accordance with the Wagga Wagga LEP and Order of Biodiversity Certification. Therefore an assessment of significance under the EP&A Act was not completed for Box-Gum Woodland or any other TSC Act listed biota.

The literature review, database search and field surveys identified 20 birds, three mammals, three plants and three ecological communities listed under the EPBC Act known or likely to occur in the study area. The proposal is considered to have a low potential to impact on threatened biota likely to occur due to the limited vegetation removal required. Therefore, no assessments of the significance of impacts for matters of NES were prepared.

The Box-Gum Woodland community within the Project site does not classify for listing under the EPBC Act, therefore a significance assessment according to the EPBC Act Policy Statement ‘Matters of National Environmental Significance: Significant impact guidelines 1.1’ (DotE 2013) was not prepared.

15.5 Mitigation measures

In relation to biodiversity the following mitigation measures are recommended.

Loss of native vegetation habitat

- All staff will be inducted and informed of the limits of vegetation clearing and the areas of vegetation to be retained. Areas of vegetation not to be removed will be clearly marked prior to construction.
- Tree removal will be minimised as far as practicable.
- Temporary exclusion fencing will be erected to prevent encroachment and clearing of native vegetation beyond the construction footprint.
- Stockpiles of construction materials will be restricted to existing cleared areas and not within areas of adjoining native vegetation. Stockpiles would be within existing cleared and hardstand areas in the EPSR facility.

Spread of weeds

- Priority weed control measures will be implemented as part of the CEMP to prevent their spread in the study area.
- Declared priority weeds will be managed according to requirements under the NSW Biosecurity Act 2015.
- Soil disturbance will be avoided as much as possible to minimise the potential for spreading weeds and generating sediment.

Chemicals and fuel impacts on native vegetation

- Any herbicides used for weed control will be applied to the manufacturer's specifications and as outlined in the manufacturers Material Safety Data Sheet.
- Broad spectrum non-selective herbicides (residual herbicides) will not be used. Herbicides selected for use will be appropriate for the species being treated.
- Spraying of herbicides will not be undertaken in windy weather or within such distance of a watercourse as will permit any of the herbicide to enter the water.

16. Heritage

16.1 Introduction

A detailed Aboriginal and non Aboriginal Heritage Assessment for the Project has been undertaken by OzArk Environmental & Heritage Management (OzArk) to identify potential impacts of the Project on Aboriginal and Non Aboriginal heritage values in the locality. The assessment is presented in Appendix P, this section presents the key findings of the assessment. The Aboriginal and non Aboriginal Heritage Assessment included:

- A desktop assessment to describe the Aboriginal history of the area, existing environment and landscape features of the project, and to create a predictive model of Aboriginal sites for the Project application area.
- A visual inspection of the Project application area.

The assessment incorporates and builds upon the results of previous studies for the existing Used Lead Acid Battery (ULAB) Resource Recovery Facility and Plastics Resource Recovery Facility (PRRF), previously approved under former development consents, for Renewed Metal Technologies (RMT), now EPSR.

16.2 Methodology

16.2.1 Legislative Context

Legislation and regulations that protect Aboriginal and non Aboriginal heritage have been outlined below.

The Environmental Planning and Assessment Act (EP&A Act, 1979) ensures that environmental and heritage impacts are considered when assessing the land use planning requirements of a development, in NSW.

The National Parks and Wildlife Act (NPW Act, 1974), as amended protects Aboriginal heritage (places, sites and objects) within NSW and the *National Parks and Wildlife Regulation 2009* provides a framework for undertaking activities and exercising due diligence. Section 86 and Section 90 of the NPW Act provide protection to Aboriginal objects and places.

An Aboriginal Heritage Impact Permit (AHIP) under section 90 of the NPW Act is not required for developments which have been declared a State Significant Development in accordance with 89J (1)(d) of the EP&A Act.

Penalties apply for harming an Aboriginal object or place. Harm under the NPW Act is defined as any act that; destroys defaces or damages the object, moves the object from the land on which it has been situated, causes or permits the object to be harmed. If any Aboriginal objects are identified during the activity, then works should cease in that area and Office of Environment and Heritage (OEH) notified (DECCW, 2010a).

The NSW *Heritage Act 1977* protects the natural and cultural history of NSW with emphasis on non-indigenous cultural heritage through protection provisions and the establishment of a Heritage Council. Other legislation of relevance to cultural heritage in NSW includes the NSW *Local Government Act 1993*. Local planning instruments also contain provisions relating to Aboriginal and non-Aboriginal heritage and development conditions of consent.

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) protects Matters of National Environmental Significance, include items on the National Heritage List and the Commonwealth Heritage List, both administered by the Commonwealth Department of the Environment and Energy. Ministerial approval is required under the EPBC Act for proposals involving significant impacts to National/Commonwealth heritage places.

The Secretary's Environmental Assessment Requirements (SEARs) issued for this Project also outline provisions for the assessment and management of Aboriginal and non Aboriginal heritage.

16.2.2 Desktop Assessment

The desktop assessment took into consideration the following guidelines and policies, in accordance with the SEARs:

- Guide to Investigating Assessing and Reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011).
- Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010).
- Draft Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation (Department of Planning, 2005).
- Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW, 2010).
- NSW Heritage Manual (DUAP).
- An Aboriginal Heritage Impact Management System (AHIMS) database search was completed on 6 June 2017. The entire Project site was searched, within a search area encompassing ten kilometres by ten kilometres.
- A search of the Native Title Tribunal administered Native Title Vision and Mative Title Register on 13 May 2018.
- A search of National and Commonwealth Heritage Listings was completed on 13 June 2018.
- A search of the State Heritage Register was completed on 13 June 2018.
- A search of the Wagga Wagga Local Environmental Plan (LEP) 2010, was completed on 13 June 2018.

Database searches are located in the Appendices of the Aboriginal and non Aboriginal Heritage Assessment located in Appendix P.

16.2.3 Site Survey

A visual inspection of the Project site was undertaken by an OzArk Archaeologist, on 2 June 2017, to confirm disturbance levels and potential archaeological sensitivity for Aboriginal and non Aboriginal heritage. The Wagga Wagga Local Aboriginal Lands Council (WWLALC) were invited to attend the survey, via a letter of invitation. However, WWLALC were unable to provide a site officer for the site survey due to sorry business. As a result the assessment was not assisted by Aboriginal community representation.

One of the underlying principles for determining Aboriginal occupation models and spatial patterning is to analyse the archaeological signature in relation to the various landforms present within a survey area.

Due to the relatively small size of the Project area, all assessment took place within one landform unit: lower slopes. As such, it is not possible in this report to use the survey results to examine differences between landscape units in the region.

All portions of the areas of land denoted as 'moderately modified' in Figure 1-2 of the Aboriginal and non Aboriginal Heritage Assessment (provided in Appendix P) were fully assessed on foot. Areas shown in Figure 1-2 of the Aboriginal and non Aboriginal Heritage Assessment as 'highly modified' were not inspected as there is no possibility of recording Aboriginal cultural heritage sites or objects within these contexts.

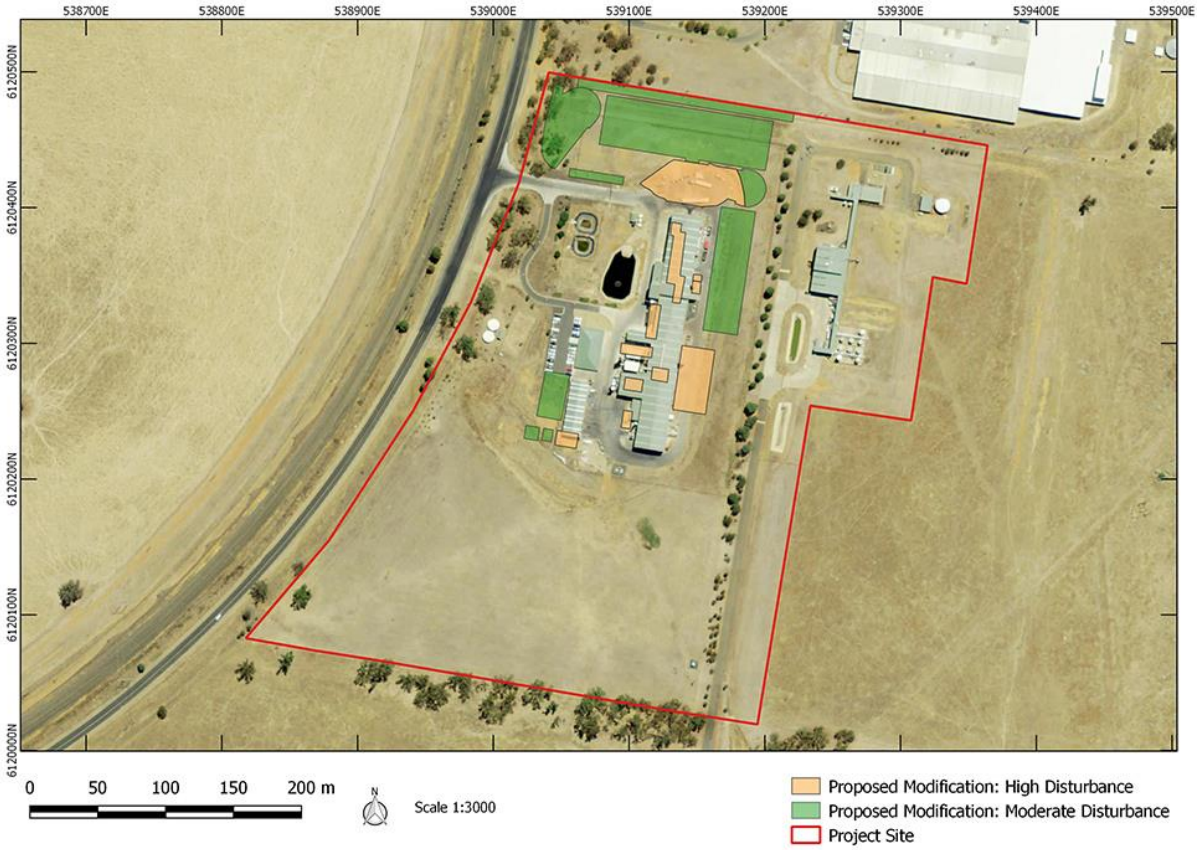


Figure 16-1 Aerial showing the Project site and degree of prior modification

16.3 Existing environment

16.3.1 Aboriginal occupation

Previous archaeological surveys indicate that the Project area is within a landscape that retains high Aboriginal cultural and archaeological values. A declared Aboriginal Place (Bomen Axe Quarry) exists to the south of East Bomen Road, and site 56-1-0120 has been recorded among granite outcropping on Lot 3 DP594679 to the east of the Project area. More recent surveys (such as by Matthew Barber whose report of these recordings is not held by AHIMS and was not able to be consulted) have identified numerous sites on the western side of Byrnes Road within close proximity to the proposal site, with the closest being less than 400 metres from the Project area at its nearest point.

The pattern of recorded site dispersal and proximity to the Bomen Axe Quarry make it likely that additional sites occur in the vicinity of the project. This is supported by more recent assessments in the area that have identified further Aboriginal sites/objects and potential archaeological deposits at Bomen, such as the Kelleher Nightingale (2008).

The *Wagga Wagga Local Environmental Study, Aboriginal Cultural Heritage Assessment* (Kelleher Nightingale 2008: Figure 3, presented in Figure 16-2) mapped the archaeological sensitivity of the Bomen region. While the Project area in this figure is located in an area of low archaeological sensitivity, it is, nevertheless, within proximity to areas of moderate or high archaeological sensitivity.

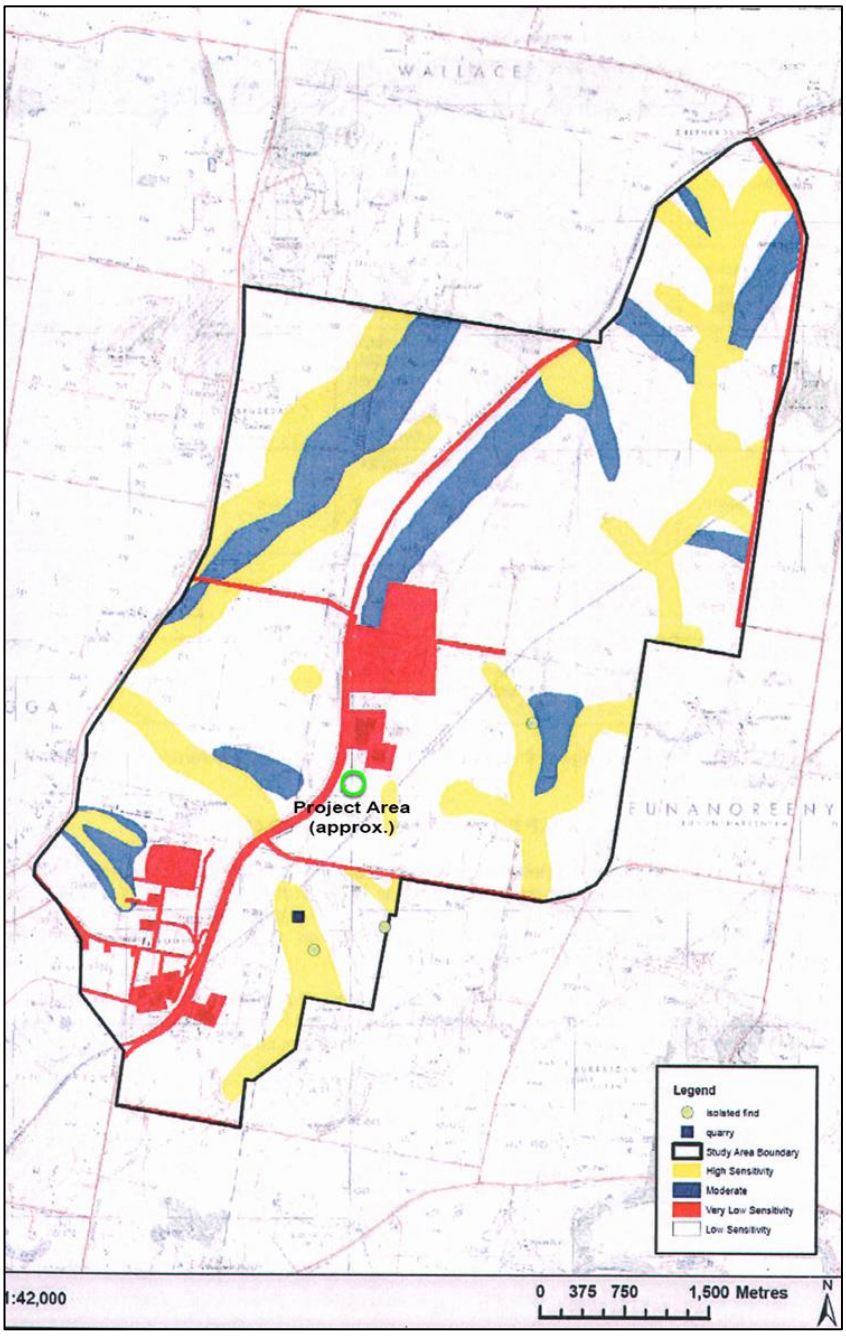


Figure 16-2 Archaeaological sensitivity of the Bomen area showing the location of the Project site

(source: Kelleher Nightingale 2008: Figure 3).

Knowledge of the environmental contexts of the Project area and a desktop review of the known local and regional archaeological record (Section 3.2 and 3.3 of the Aboriginal and non Aboriginal Heritage Assessment**,** provided in Appendix P), the following predictions are made concerning the probability of those site types being recorded within the Project area:

- Isolated finds may be indicative of: random loss or deliberate discard of a single artefact, the remnant of a now dispersed and disturbed artefact scatter, or an otherwise obscured or sub-surface artefact scatter. They may occur anywhere within the landscape but are more likely to occur in topographies where open artefact scatters typically occur.
  - As isolated finds can occur anywhere, particularly within disturbed contexts, it is predicted that this site type could be recorded within the Project area.
- Open artefact scatters are defined as two or more artefacts, not located within a rock shelter, and located no more than 50 metres away from any other constituent artefact. This site type may occur almost anywhere that Aboriginal people have travelled and may be associated with hunting and gathering activities, short or long term camps, and the manufacture and maintenance of stone tools. Artefact scatters typically consist of surface scatters or sub-surface distributions of flaked stone discarded during the manufacture of tools, but may also include other artefactual rock types such as hearth and anvil stones. Less commonly, artefact scatters may include archaeological stratigraphic features such as hearths and artefact concentrations which relate to activity areas. Artefact density can vary considerably between and across individual sites. Small ground exposures revealing low density scatters may be indicative of background scatter rather than a spatially or temporally distinct artefact assemblage. These sites are classed as 'open', that is, occurring on the land surface unprotected by rock overhangs, and are sometimes referred to as 'open camp sites'.
  - Artefact scatters are most likely to occur on level or low gradient contexts, along the crests of ridgelines and spurs, and elevated areas fringing watercourses or wetlands. Larger sites may be expected in association with permanent water sources.
  - Topographies which afford effective through-access across, and relative to, the surrounding landscape, such as the open basal valley slopes and the valleys of creeks, will tend to contain more and larger sites, mostly camp sites evidenced by open artefact scatters.
  - As a majority of the Project area is within lower slope landforms distant to permanent water (Section 2.1 of the Aboriginal and non Aboriginal Heritage Assessment provided in Appendix P), this site type is not predicted to be common. The moderate degree of disturbance in the Project area will probably mean that any scatter has become displaced. It is likely that any sites associated with such landforms are likely to have a low artefact density and a low complexity of tool types as the sites are either one-off events or only infrequently used. It is noted that the artefact scatters are recorded in the general area (Section 3.2 of the Aboriginal and non Aboriginal Heritage Assessment provided in Appendix P) but the Project area lacks the topographic attributes identified in Section 3.4.2 of the Aboriginal and non Aboriginal Heritage Assessment provided in Appendix P), and this lowers the possibility that the area contains sites of this type.

- Aboriginal scarred trees contain evidence of the removal of bark (and sometimes wood) in the past by Aboriginal people, in the form of a scar. Bark was removed from trees for a wide range of reasons. It was a raw material used in the manufacture of various tools, vessels and commodities such as string, water containers, roofing for shelters, shields and canoes. Bark was also removed as a consequence of gathering food, such as collecting wood boring grubs or creating footholds to climb a tree for possum hunting or bark removal. Due to the multiplicity of uses and the continuous process of occlusion (or healing) following removal, it is difficult to accurately determine the intended purpose for any particular example of bark removal. Scarred trees may occur anywhere old growth trees survive. The identification of scars as Aboriginal cultural heritage items can be problematical because some forms of natural trauma and European bark extraction create similar scars. Many remaining scarred trees probably date to the historic period when bark was removed by Aboriginal people for both their own purposes and for roofing on early European houses. Consequently the distinction between European and Aboriginal scarred trees may not be clear.
  - Due to the total clearance of trees from within the Project area, this site type will not be recorded.
- Quarry sites and stone procurement sites typically consist of exposures of stone material where evidence for human collection, extraction and/or preliminary processing has survived. Typically these involve the extraction of siliceous or fine grained igneous and meta-sedimentary rock types for the manufacture of artefacts. The presence of quarry/extraction sites is dependent on the availability of suitable rock formations.
  - This site type is recorded in the region, most notably the declared Aboriginal Place: the Bomen Axe Quarry (Section 3.3 of the Aboriginal and non Aboriginal Heritage Assessment provided in Appendix P). However, rock outcropping is absent in the Project area and this site type will not be recorded.
- Burials are generally found in soft sediments such as aeolian sand, alluvial silts and rock shelter deposits. In valley floor and plains contexts, burials may occur in locally elevated topographies rather than poorly drained sedimentary contexts. Burials are also known to have occurred on rocky hilltops in some limited areas. Burials are generally only visible where there has been some disturbance of sub-surface sediments or where some erosional process has exposed them.
  - Given the nature of past land-use in the Project area, the small size of the Project area and the granite-derived soils, recording this site type in the Project area will be extremely unlikely.

16.3.2 European settlement

The Wagga Wagga area was first visited by Europeans when the party of explorers led by Charles Sturt travelled through the area in 1829, during their exploration of the Murrumbidgee and Murray Rivers. Settlement followed soon after. Historic settlement in the study area is closely related to the pastoral and agriculture activity that has characterised the region's economy.

The following information has been summarised from the Wagga Wagga City Council Urban Heritage Study (Freeman 2002).

Initial European settlement of the Riverina region and Wagga Wagga area began in the 1830's as pastoral landholders from Sydney began to expand south, first into Goulburn area and by 1836 into the Wagga Wagga area.

During this initial pastoral settlement, major routes between Sydney, Melbourne and Adelaide were established. By the 1840's these routes had become well defined tracks or roads. The route used by the early explorer Sir Thomas Mitchell during his 1836 journey eventually became the Port Phillip Road. This was the main overland route from Sydney to Melbourne and passed through Wagga Wagga.

By the late 1860's, the New South Wales government became aware of the increasing settlement and agricultural production in the Riverina region. The Wagga Wagga area was incorporated into a municipality in 1870 as the population had reached more than 1,200.

16.4 Impact assessment

Visual inspection of the Project area (2 June 2017) and a revised desktop assessment of the project in June 2018, for both the Aboriginal and non Aboriginal heritage assessment confirmed that the area has been impacted by high levels of ground surface disturbance. The land has been cleared and used for over a century for agricultural purposes. More recently there have been significant earthworks for the construction of the existing facilities in Area A and C, and for drainage works in Area B, see Figure 16-3 below.

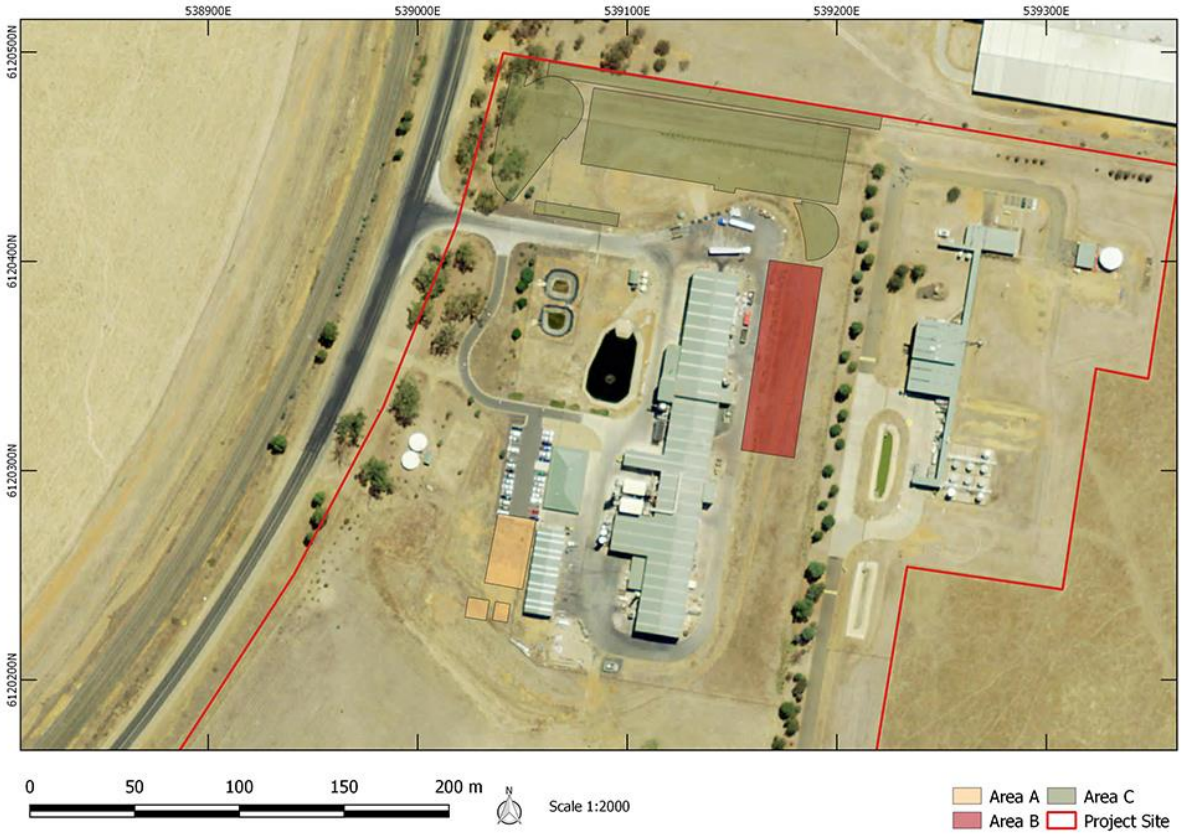


Figure 16-3 The project site identifying the three areas of less disturbed land

16.4.1 Aboriginal heritage impacts

Assessment of areas A, B and C resulted in no Aboriginal cultural heritage sites or objects being recorded. Further, due to the level of previous disturbances, it is highly unlikely that the Project area contains the potential for further, undetected subsurface archaeological deposits.

The AHIMS database search, completed on 6 June 2017 (located in Appendix 1 of the Aboriginal and non Aboriginal Heritage Assessment, provided in Appendix P) returned 22 sites, with no sites previously recorded within the Project site. The closest site being in excess of 300 metres from the Project site.

16.4.2 Non Aboriginal heritage impacts

Assessment of areas A, B and C resulted in no sites or relics of non Aboriginal heritage being recorded. The project site has been highly modified through clearance, earthworks, and laying of tarmac. As a result it was considered that the area would be unlikely to retain any historical relics or subsurface archaeological deposits.

A search of National and Commonwealth Heritage Listings did not show up any listings. The State Heritage Inventory database search (13 June 2018) listed one place at Bomen with State heritage values, being the Bomen Railway Station, located some two kilometres away from the Project site, at 46 Dampier St Lot 3 DP 852602.

A search of the Wagga Wagga Local Environmental Plan (LEP) included one place at Bomen with local heritage values, being the Bomen Stationmasters Residence at 58 Dampier St, Lot 1 DP 830096. Neither the Bomen Railway Station or the Bomen Stationmasters Residence are located within the project site, and are located sufficient distance away(1.8km) to preclude any impact on either site or their visual amenity.

16.5 Mitigation measures

The following recommendations are made in relation to Aboriginal and non Aboriginal Heritage heritage:

- No further Aboriginal or non Aboriginal heritage assessment is required for the project.
- The *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010c) do not need to be initiated as there is no potential impact to Aboriginal cultural values within the project site.
- The project should remain within the assessed area. If project impacts are placed beyond the assessed area, further assessment may be required.
- In the unlikely event that an Aboriginal artefact is located during the construction of the project, all works in that area should cease immediately and the *Unanticipated Finds Protocol* attached in Appendix 3 of the Aboriginal and non Aboriginal Assessment located in followed.
- Construction workers involved with the project should be made aware of the legislative protection of Aboriginal cultural heritage objects under the *National Parks and Wildlife Act 1974*. Appendix 3 and 4 of the Aboriginal and non Aboriginal Assessment located in Appendix P has been provided to ensure that workers are able to identify Aboriginal cultural heritage items should they be noted during the course of project construction.
- In the unlikely event that historical relics or deposits are unearthed during the proposed works, the *Unanticipated Finds Protocol* (Appendix 5 of the Aboriginal and non Aboriginal Assessment located in Appendix P) should be followed.

17. Greenhouse gas emissions

17.1 Introduction

The Greenhouse Gas Emissions (GHG) assessment was prepared to consider potential greenhouse gas emissions arising from the project. The assessment has been completed in accordance with the SEARS which includes:

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

The assessment was conducted in accordance with the general principles of the National Greenhouse and Energy Reporting Regulations 2008 and the National Greenhouse and Energy Reporting (Measurement) Determination 2008. These are guidelines and are considered representative of good practice GHG accounting in Australia and applicable to the project.

The following tasks have been undertaken:

- Scope definition considering the possible emission sources of greenhouse gases, including carbon dioxide, nitrous oxide, and methane
- Identification of relevant aspects of energy use and emissions from construction and operation
- Identification and application of appropriate emission factors and calculation methods
- Determination of the carbon dioxide equivalent emissions for each greenhouse gas and summing these values to estimate the total GHG emissions attributable to the development
- Discussion of potential GHG and energy mitigation and reduction opportunities to ensure the development is energy efficient

17.2 Greenhouse gas emissions inventory

17.2.1 Scope of inventory

The greenhouse gases considered in the assessment and the corresponding global warming potential (GWP) for each GHG are listed in Table 17-1.

The GWPs from the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment report and s2.02 of the National Greenhouse and Energy Reporting (NGER) Regulations 2008 were used.

Table 17-1 Greenhouse gases and 100 year global warming potentials

Greenhouse gas	Global warming potential
Carbon dioxide (CO2)	1
Methane (CH4)	25
Nitrous oxide (N2O)	298

17.2.2 Emissions scopes

Emissions have been separated into Scope 1 and 2. These scopes are defined in accordance with s2.23 and 2.24 of the NGER Regulations as follows:

- Scope 1 emissions are GHG emissions created directly by a person or business from sources that are owned or controlled by that person or business.
- Scope 2 emissions are GHG emissions created as a result of the generation of electricity, heating, cooling or steam that is purchased and consumed by a person or business. These are indirect emissions arising from sources that are not owned or controlled by the person or business who consumes the electricity.

During operation of the expanded EPSR facility, scope 1 emissions will be produced from the combustion of fuels and from industrial processes. Scope 2 emissions will arise from the consumption of electricity at the facility in plant and equipment under the operational control of EPSR.

During construction of the expanded EPSR facility, scope 1 emissions will arise from the combustion of fuels in construction equipment. Scope 2 emissions will be generated from the consumption of grid electricity for construction purposes.

Quantification of scope 3 emissions, being GHG emissions that are generated in the wider economy as a consequence of a person's or business's activities was not specified in the SEARs and have not been estimated.

17.2.3 Exclusions

Exclusions from this GHG assessment include:

- Emissions associated with vegetation removal, as the Project site has been previously cleared of any areas of vegetation.
- Leakage of sulphur hexafluoride (SF_6) from electrical equipment. High voltage electrical equipment at the proposed facility may utilise SF_6 as a dielectric medium, which could leak to atmosphere. However, the associated emissions are likely to be negligible in the context of the development as a whole, and have been excluded from the assessment.
- Emissions from the generation, storage, or use of perfluorocarbons. The development is unlikely to store, generate, or use perfluorocarbons.
- Emissions associated with the leakage of hydrofluorocarbons. The facility may use negligible quantities of hydrofluorocarbons for refrigeration and air conditioning during construction and operation. However, the associated emissions are likely to be negligible compared with other emissions from the development and therefore were excluded from the assessment.
- Emissions associated with transport, including:
  - Transport of feedstock and product to and from site during operation
  - Transport of materials and equipment to site during construction
  - Transport of wastes from site during both construction and operations
- Whilst the overall frequency and size of deliveries is likely to increase as a result of the development, changes in the overall volumes of fuel combusted are unlikely to have a significant impact on the overall emissions inventory relative to emissions resulting from activities at the facility itself.

- Other emissions considered to be negligible compared with the total emissions for the development, including emissions associated with:
  - the decommissioning and rehabilitation of the development site
  - combustion of oils and greases in plant, and other minor instances of fuel use

17.2.4 Assumptions

Assumptions used in estimating GHG emissions for the development are listed in Table 17-2. The assessment was based on emission factors available at the time of the assessment and future changes in emission factors were not considered. Where possible, emissions factors from compilation 9 of the National Greenhouse and Energy Reporting (Measurement) Determination (F2017L00829) were used.

Activity data used for the GHG assessment was provided by EPSR.

Emissions occurring during the construction of the expanded EPSR plant were based on an estimated construction period of 3 months.

Table 17-2 Greenhouse Gas Assessment Assumptions by Source

Parameter	Assumptions
Construction	
Diesel combustion	Quantity of diesel consumed during construction was estimated at 43.8 kL over the construction period. Diesel requirements for site development works (earthmoving, clearing, excavation, fill placement, grading and other ground preparation works) is expected to be low.
Electricity use	The electricity load from construction activities was estimated as 200 kW, with construction occurring 12 h per day and a construction period for 3 months. Electricity will be sourced from the NSW electricity grid during the construction phase.
Operations	
Liquefied petroleum gas (LPG) combustion	Minor quantities of LPG will be required for on site mobile equipment. Estimated LPG use for the upgraded plant is 127 kL/a. An emission factor of 60.6 kg of CO_2-e per GJ has been used.
Diesel combustion	Minor quantities of diesel will be required for on site mobile equipment. Estimated diesel use for the upgraded plant is 110 kL/a. An emission factor of 70.2 kg of CO_2-e per GJ has been used.
Natural gas combustion	Estimated natural gas use for the upgraded plant is 300 TJ/a. An emission factor of 51.53.2 kg of CO_2-e per GJ has bene used
Soda ash use	Estimated soda ash use for the upgraded plant is 20kt/a. An emission factor of 0.415 t of CO_2-e per t of soda ash has been used. Method 1 from s4.29 of the NGER Determination was used to estimate emissions from this source.
Lead ingot production – coal coke use	Coal coke is consumed in the production of lead ingots. Method 1 from s4.94 of the NGER Determination was used to estimate emissions from this source.
Electricity use	All electricity is drawn from the NSW grid. A scope 2 emissions factor of 0.83 kg of CO_2-e per kWh has been used. Annual electricity usage for the upgraded plant is estimated at 11,000 MWh.

17.2.5 Construction emissions

A summary of estimated scope 1 and scope 2 GHG emissions occurring as a result of construction activities for the expanded EPSR facility is available in Table 17-3 below. The analysis shows that emissions from the construction stage are negligible.

Table 17-3 Estimated Greenhouse Gas Emissions – Construction Activities

Activity	Scope 1 Emissions (t CO2 -e)	Scope 2 Emissions (t CO2 -e)
Diesel Combustion	119	0
Electricity Use	0	182
Total	119	182

17.2.6 Operational emissions

A summary of estimated annual scope 1 and scope 2 GHG emissions from operation of the expanded EPSR facility is available in Table 17-4 below.

Table 17-4 Estimated Annual Greenhouse Gas Emission Loads – Expanded Facility

Activity	Existing Plant Emissions (t CO_2-e)*	Expanded Plant Emissions (t CO_2-e)	Impact of Additional Capacity (t CO_2-e)
LPG Combustion	101	198	97
Diesel Combustion	148	298	150
Natural Gas Combustion	11,509	15,459	3,950
Soda Ash Use	3,979	8,300	4,321
Coal Coke Use	6,878	10,262	3,384
Electricity Use	4,646	9,130	4,484
Total	**27,262**	**43,649**	**16,385**

*Based on 2016/17 s19 NGER report.

Table 17-5 shows the greenhouse gas emissions intensity of the expanded facility, and the relative impact of the production capacity added as a result of the development. The analysis indicates that the emissions intensity for the additional capacity will be reduced significantly from the existing plant, by over 20%. This means that there are lower emissions per tonne of lead produced.

Table 17-5 Emissions Intensity – Expanded Facility

Activity	Existing Plant	Expanded Plant	Additional Capacity
Production (t)	34,989	70,190	35,201
Emissions Intensity (t CO2-e / t produced)	0.78	0.62	0.47

17.3 Impact assessment and comparison

The impact of increases in annual greenhouse gas emissions from the proposed expansion is minor in the context of Australia's greenhouse gas emissions as a whole. Australia's national inventory emissions for 2015 were approximately 564,400,000 t of CO_2-e, of which 15,212,000 t of CO_2-e were attributable to the non-ferrous metal manufacturing sectors (Commonwealth of Australia, 2017). Emissions from the manufacturing and construction sector as a whole in New South Wales were approximately 5,974,000 t of CO_2-e during 2015 (Commonwealth of Australia, 2017). A summary of the contribution of the expanded EPSR plant to these totals is available in Table 17-6 below, which shows that additional emissions from the expanded plant are negligible.

Table 17-6 Impact of additional emissions from the expanded plant

Sector	2015 Emissions (t CO2 –e)	Contribution of Additional Manufacturing Capacity (%)
Australian Non-Ferrous Metals Sector	15,212,000	0.13%
NSW Manufacturing and Construction Sector	5,974,000	0.33%

17.4 Energy efficiency measures

Fundamentally, lead products made from reclaimed sources have lower embodied energy and greenhouse gas emissions than those produced from virgin ores.

The existing EPSR facility utilises a range of energy saving measures within its process controls, utilities, furnaces, boilers and steam systems, and motor drivers. Examples of these measures in use at the EPSR facility are listed below. EPSR is committed to continuing the energy saving measures as high priority during planning and operation of the proposed expansion.

17.4.1 Process controls and utilities

- Finite control on weighing soda ash into reactors to optimise use.
- Optimisation of reactions and process reagents using data from pressure meters, pH meters, flow meters, temperature sensors, and oxidation reduction potential (ORP) meters.
- Increased control and correct fuel to air ratios using servo motors on boilers, kettles and hot air generator.
- Operator training for process optimisation.
- Use of energy efficient LED lighting (typically 150W) instead of metal halide lighting (typically 400W).

17.4.2 Furnaces

- Use of 100% oxygen to improve burner efficiency and thus lower gas needs
- Servomotors are installed on the gas and oxygen valves for finite control and to ensure the correct fuel ratios are maintained at all times. The proposed system is energy efficient that maximises cost optimization, reliable, low emissions and low maintenance firing system.

17.4.3 Boilers and steam

- A second effect crystalliser is used to recover energy from waste steam
- Regular maintenance on boilers and fired appliances to ensure all are running optimally
- Lagging and insulation of hot pipes to ensure all heat is retained
- Fine tuning of the condenser to maintain hot process water circuit
- Optimise boiler blowdown and bleed times through process monitoring of boiler chemistry

17.4.4 Motors and drivers

- Use of variable speed drives (VSDs) on equipment where possible to reduce power consumption. Currently 12 VSDs are installed on large motors at the EPSR facility, ranging in size from 11kW to 250kW.
- Vector phase correction to improve power factor.

18. Design and visual

18.1 Introduction

This section includes an overview of the visual and landscape values of the Project application area. The assessment considers the visibility of the proposed expansion of the Enirgi Power Storage Recycling (EPSR) facility from key vantage points in the surrounding area and potential impacts on the localities visual and landscape character. This section addresses the key requirements of the SEARs.

This assessment focuses on the Project's effect on visual amenity from specific vantage points with public access. The method was adapted from *Environmental Impact Assessment Practice Note – Guideline for Landscape Character and the Visual Impact Assessment and Guidelines for Landscape Visual Impact Assessment* (RMS 2013). This establishes a process for determining visual impact by referring to the sensitivity of the area and magnitude of the Project's impact in that location.

The sensitivity of an area relates to its character, the view's quality and how any changes would be viewed from various locations. The visual magnitude is the degree of contrast between the development and the pre-existing landscape. Table 18-1 below shows how the visual impact is determined by combining the sensitivity of receivers and the magnitude of impact.

The visual impact assessment considers the visibility of the proposed facility from representative viewpoints, assigns a sensitivity and assesses the impact.

Table 18-1 Landscape character and visual impact grading matrix

Impact rating		Magnitude					
		High	Moderate – high	Moderate	Moderate – low	Low	Negligible
Sensitivity	High	High					
	Moderate – high		Moderate – high				
	Moderate			Moderate			
	Moderate – low				Moderate – low		
	Low					Low	
	Negligible						Negligible

The Project from a design and visual perspective represents an expansion of the existing ULAB facility within an existing industrial precinct at Bomen. Views of the Project application area are generally limited to neighbouring industrial premises and vantage points on Byrnes Road and East Bomen Road. The proposed expansion includes the establishment of a new building, new warehouse, internal roads and extension of the current building which will be visually integrated with the existing facility and will not alter the overall landscape character of the locality.

18.2 Existing environment

18.2.1 Site setting

The existing ULAB recycling facility is located within the Bomen Business Park. The facility comprises a range of processing infrastructure predominantly housed in a series of steel clad buildings surrounded by asphalt and hardstand, typical of an industrial setting. Visual elements include the steel processing sheds, vent stacks and hoppers as shown in Plate 18.1 below.

Plate 18.1 Processing sheds and stacks. Photograph taken facing south-east.

The existing EPSR plastic resource recovery facility (PRRF) is located to the east of the existing facility and will form part of the integrated operations subject to this development application.

18.2.2 Surrounding land use

Land use in the surrounding locality is predominantly industrial, being located within the Bomen Business Park. Industries within the area include:

- BOC gas facility
- Old wool combing facility
- Riverina Oils & Bio Energy (ROBE)
- Southern Oil Refining
- Vinidex

Land uses directly adjacent to the Project site are as follows:

- North –The old wool combing facility is directly adjacent and is being leased out to a range of businesses including manufacturing, truck companies and Visy Industries. ROBE lies directly north again of the wool combing facility.
- East – the EPSR plastics recycling facility is located immediately to the east of the proposed extension area.
- South – Directly south, a new road associated with the Riverina Intermodal Freight & Logistics (RiFL) Hub is currently being constructed. The BOC gas facility lies further south.
- West – The development of the RiFL intermodal hub is currently being constructed to the west. The RiFL hub is extensive and will be developed in a number of stages over a number of years and commenced construction in early 2017.

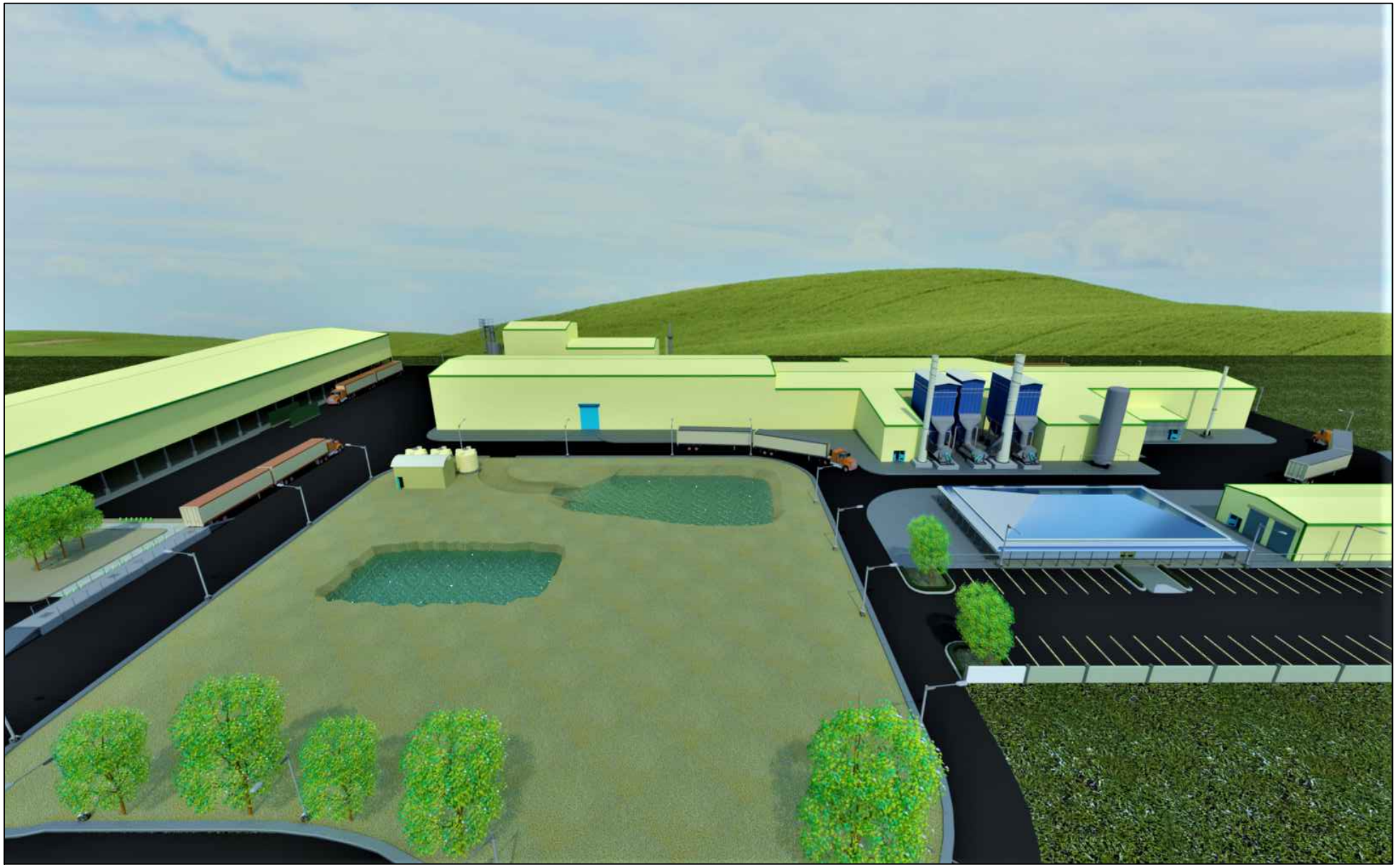
18.3 Impact assessment

18.3.1 Key features of the project

The Project has the following key features that were taken into consideration to determine the visibility and consideration of visual impacts associated with the project.

- A new building to the east of the current facility will contain a new salt storage, crystallisation area, purification and scrubber. This new building will be approximately 18 meters in height at the southern end, and drop down to approximately 11 meters in height at the northern end.
- A new warehouse to the north of the current facility will contain chemicals, raw materials and ULAB. This new facility will be approximately 18.5 meters in height over the entire length of the facility.
- The existing facility will undergo some upgrades to include a new furnace to supplement the existing furnace, a new filter baghouse and exhaust stack, modified battery breaker to increase capacity, relocation of the slag bay, addition of on-site oxygen generation.
- A small increase to capacity of the existing carpark.
- Alterations to the existing internal roads to provide access to the new buildings and plastic resource recovery facility.
- Inclusion of the activities of the adjoining plastics resource recovery facility (PRRF).

An artist's impression of the proposed changes to the facility can be seen in below, in Figure 18-1.



EPSR PERSPECTIVE VIEW

SCALE NTS

ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

REVISION HISTORY					
REV. NO.	DATE	DESCRIPTION	DRAWN	CHECKED	APPRVD
0	03-06-18		FWCF	LCC	

PROJECT	RMT EXPANSION				
TITLE	PLANT PERSPECTIVE				
DWG NO.	RMT - 0000	DATE	04.03.18		
DRAWN BY	FWCF	CHECKED BY	LCC	REV NO.	PAGE NO.
DESIGNED BY	LCC	APRVD BY	MW	0	4/6

NOTE: THIS DRAWING IS PROPERTY OF EVERGREEN ENVIRONMENTAL RESOURCES INCORPORATED. AND IS NOT TO BE COPIED OR REPRODUCED IN PART OR IN WHOLE WITHOUT CONSENT.

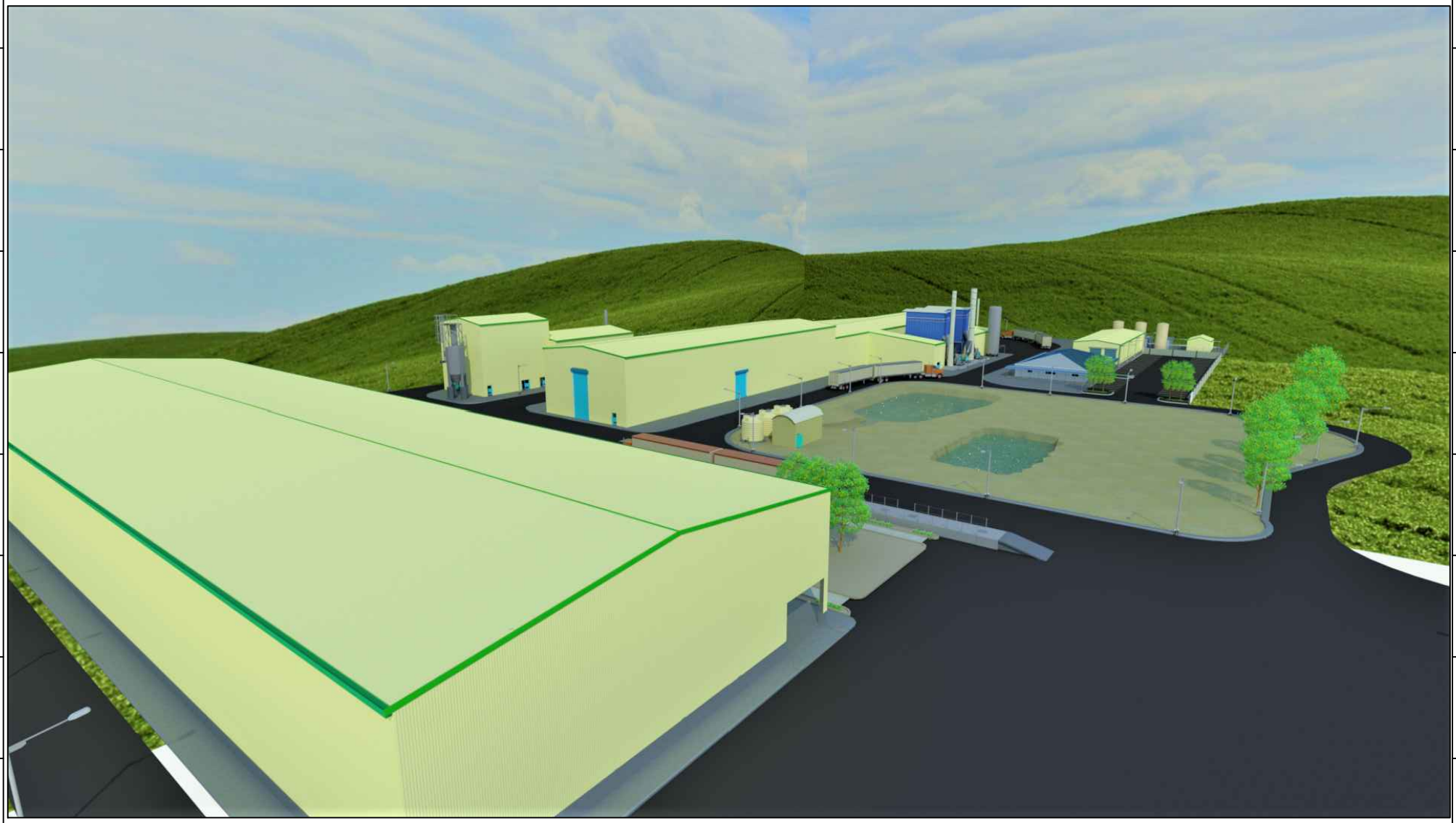
Figure 18-1: Artists impression of the proposed changes to the facility looking in an easterly direction.

18.3.2 Viewer locations and impacts

Wool combing facility

The wool combing facility is located north of the ULAB recycling facility. The wool combing facility is leased to a range of other industrial site users and the closest workshop/offices is 130 m from the proposed construction work and new building. This is unlikely to have a major impact in the area due to its industrial zoning. A photo of the current view is presented in Plate 18.2. An artist impression of the proposed changes to the facility from the wool combing facility perspective is presented in Figure 18-2.

Plate 18.2 Existing view of the facility from the Wool combing facility.



EPSR PERSPECTIVE VIEW

SCALE NTS

ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

REVISION HISTORY					
REV. NO	DATE	DESCRIPTION	DRAWN	CHECK'D	APRV'D
1	02-06-18		FWCF	LCC	

PROJECT	RMT EXPANSION				
TITLE	PLANT PERSPECTIVE				
DWG NO.	RMT - 0000	DATE	04.03.18		
DRAWN BY:	FWCF	CHECKED BY:	LCC	REV NO.	PAGE NO.
DESIGNED BY:	LCC	APRVD BY:	MW	0	3/6

NOTE: THIS DRAWING IS PROPERTY OF EVERGREEN ENVIRONMENTAL RESOURCES INCORPORTED, AND SUCH MUST NOT BE REPRODUCED COPIED IN PART OR IN WHOLE WITHOUT CONSENT

Figure 18-2: Artists impression of the proposed changes to the facility looking in a south easterly direction.

Byrnes Road

Byrnes Road is located west of the ULAB recycling facility. In general it would be road users coming from the north that would be able to potentially visually see the new building from the road. There is however good screening from well-established trees and the speed limit in this area is also 100 km/hr which quite fast to be taking too much notice to this expansion as they are behind the existing building. A photo of the current view is presented in Plate 18.3. An artist impression of the proposed changes to the facility from Byrnes Road perspective is presented in Figure 18-3.

Plate 18.3 Existing view of the facility from Byrnes Road.

EPSR PERSPECTIVE VIEW

SCALE NTS

ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

REVISION HISTORY

REV. NO.	DATE	DESCRIPTION	DRAWN	CHECK'D	APRV'D
0	02-06-18	-	FWCF	LCC	

PROJECT	RMT EXPANSION				
TITLE	PLANT PERSPECTIVE				
DWG NO.	RMT - 0000		DATE	04.04.18	
DRAWN BY:	FWCF	CHECKED BY:	LCC	REV NO.	PAGE NO.
DESIGNED BY:	LCC	APRV'D BY:	MW	0	1/6

Figure 18-3: Artists impression of the proposed changes to the facility looking in an easterly direction from Byrnes Road.

East Bomen Road and PRRF

East Bomen Road is located south-east of the ULAB recycling facility. Due to topography the facility cannot been seen from East Bomen Road. There is however, an access road running north, which currently provides access to the PRRF. A photo of the current view from the PRRF facing north is presented in Plate 18.4. An artist of the proposed changes to the facility also facing north from the PRRF is presented in Figure 18-4.

Plate 18.4 Existing view of the facility from the plastic recycling facility.

EPSR PERSPECTIVE VIEW

SCALE NTS

ALL DIMENSION ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

REVISION HISTORY					
REV. NO	DATE	DESCRIPTION	DRAWN	CHECK'D	APRV'D
0	02-06-18	-	FWCF	LCC	

PROJECT	RMT EXPANSION				
TITLE	PLANT PERSPECTIVE				
DWG NO.	RMT - 0000		DATE	06.02.18	
DRAWN BY:	FWCF	CHECKED BY:	LCC	REV NO.	PAGE NO.
DESIGNED BY:	LCC	APRVD BY:	MW	0	6/6

NOTE: THIS DRAWING IS PROPERTY OF EVERGREEN ENVIRONMENTAL RESOURCES INCORPORATED. AND SUCH MUST NOT BE REPRODUCED COPIED IN PART OR IN WHOLE WITHOUT CONSENT.

EVERGREEN ENVIRONMENTAL RESOURCES INC.

Figure 18-4: Artist impression of the proposed changes to the facility looking in a westerly direction from the PRRF

18.3.3 Visual impacts assessment

The sensitivity of receivers and magnitude of impacts from key view locations is considered in Table 18-2.

Table 18-2 Visual impacts at representative viewer locations

Viewpoint	Assessment	Visual impact
Wool combing facility	**Sensitivity: Low** The proposed new ULAB and chemical warehouse, new building and extension of roads and current building will be visible from the wool combing facility. However they are not in direct line of site. The closest building faces west and the new extensions are occurring south. There is also a distance of 130 m between the facilities, which will not make the construction of the extensions feel invasive on their space. **Magnitude: Low** Extensions to the facility are visible however, there is minor changes to the landscape and the new buildings will integrate with the existing facility with size and colour.	Low
Byrnes Road	**Sensitivity: Low** Some of the proposed extensions to the facility would be visible to passing motorists, in particular those travelling northbound. This would generally be limited: • The new ULAB and chemical warehouse at the northern extent of the project, • One end of the new building to the east of the existing facility, which would house a new salt storage, crystallisation area, purification and scrubber, and • Oxygen generation facilities at the southern extent of the project. The view would be very short in duration to motorists passing by, and is largely obscured by remnant vegetation in the road reserve. The sensitivity of this visual impact is considered low, for the above reasons. **Magnitude: Negligible** Some of the extensions to the facility would be visible to passing motorists, but there is a negligible change in landscape character within the existing EPSR facility infrastructure.	Negligible
East Bomen Road and PRRF	**Sensitivity: Low** The extensions to the facility, in particular the new building proposed to the east of the existing facility, and the extension of the existing building to the east, are not visible at all from East Bomen Road due to topography. The visual impact from the PRRF has been taken into account, however the PRRF forms an integrated part of the two facilities operations. The sensitivity of this visual impact is considered low, due to the facility no being visible from East Bomen road and the integration of the proposed extensions is the same in colour and height as they existing view. There is also tree screening between the facilities. **Magnitude: Negligible** Extensions to the facility are not visible from East Bomen Road and the new building and extensions are the same colour providing visual integration from the PRRF.	Negligible

18.4 Mitigation measures

The following mitigation measures would be implemented to minimise the extent of impacts upon visual amenity for the proposed works:

18.4.1 Landscape

While there is no formal additional landscaping proposed as part of the proposed expansion, tree screening can be put in place between the ULAB recycling facility and the wool combing facility if there are concerns from the owners.

18.4.2 Lighting

The surrounding facilities to the north and east do not operate in the evening, so lighting would not impact on their businesses. Impacts of light spill towards Byrnes Road is minimal however all requirements of Australian Standard 1158 Road Lighting and the Building Code of Australia will be considered in the lighting design associated with the new building. This will be determined during the construction phase of the development.

18.4.3 Signage

There will be no changes to signage requirements for the facility towards Byrnes Road and a low profile signage display has already been adopted.

19. Cumulative impacts

19.1.1 Existing environment

The proposed facility has been considered in the context of existing developments and future approved projects in the locality. The following information sources were reviewed to identify any other projects likely to contribute to cumulative impacts:

- The major projects register for the Wagga Wagga LGA (reviewed on 13 June 2018)
- Council website
- Roads and Maritime website
- General knowledge of projects in the vicinity of the proposal site

Table 19-1 Other current relevant projects in the Wagga Wagga LGA

Project	Location	Status
Essential Energy Construction of new subtransmission line	240 meters east of the proposal site	Construction in progress – poles constructed
Bomen Solar Renewed Estate	240 meters east of the proposal site	Proponent reviewing submissions
Potential waste management facility at the site of the decommissioned Riverina Wool Combing effluent ponds	Adjacent to the proposal site to the west	Early planning stages
Teys Australia Wagga Wagga Relocation of Retail Ready Meat Products Facility	About 4 km west of the proposal site	Major project, SEARs issued
Gregadoo Solar Development of a 45 MW solar farm and associated infrastructure at Gregadoo	About 16 km south of the proposal site	Major project, SEARs issued
Terrain Solar Wagga Wagga Solar Farm	Immediately east of the transmission line option 2 corridor	Development Application, being assessed by the Southern Joint Regional Planning Panel
Riverina Intermodal Freight and Logistics (RiFL) Hub Wagga City Council	Various locations around Bomen	Staged construction

19.1.2 Potential impacts

The proposal may have cumulative impacts during construction with any of the projects listed in Table 19-1, that are near the proposal site and may be constructed at the same time as the proposal.

Potential cumulative impacts with other projects, that could result in environmental impacts are listed in Table 19-2.

Table 19-2 Potential cumulative environmental impacts

Environmental factor	Potential cumulative impacts
Construction traffic	Construction vehicles used for the proposal may use local roads to access the proposal site at the same time as construction vehicles are used for other projects in the Bomen area. This would contribute to increased local traffic. The expected timing of these developments (pending their approval) is not currently known. However, it is anticipated that the primary traffic impacts of these projects will occur during their construction phases rather than their operational phases, and will be short term in nature. A number of the developments are located a substantial distance from the proposal site. Taking into account the spare capacity of Byrnes Road, and the provision of turning lanes at the intersection with Trahairs Road, it is assessed that the proposal and developments detailed in Table 19-1 would have minor cumulative impacts on the road network.
Air quality	Dust and exhaust fumes from construction activities for projects in the Bomen area may contribute to an overall temporary decrease in air quality in the local area. With the implementation of safeguards and management measures, it is expected the potential air quality impacts during construction would be low and short-term.
Visual	Cumulative landscape and visual impacts may result from construction of the proposal and other proposed projects. These visual impacts are likely to be consistent with the industrial zoning of the area. Existing remnant vegetation and landscape plantings, and proposed additional landscaping would aid in minimising visual impacts to surrounding sensitive receivers and local road users.
Biodiversity	The proposal and other projects could result in cumulative impacts relating to removal of vegetation in the Bomen area. These cumulative impacts are unlikely to be substantial, as vegetation removal for this proposal would be within the Wagga Wagga Biodiversity Certification Area and would result in a low loss of habitat and low impacts on biodiversity.

19.1.3 Safeguards and mitigation measures

Safeguards and management measures provided in Table 19-3 would be implemented to minimise potential traffic management impacts.

Table 19-3 Cumulative impact mitigation measures

Impact	Environmental safeguards	Timing
Cumulative traffic impacts	The construction traffic management plan will consider other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic.	Construction

20. Environmental management and commitments

This EIS identifies safeguards and mitigation measures to minimise adverse environmental impacts which could potentially arise as a result of the proposal. These are outlined throughout chapters 7 to 19. These management measures would be incorporated into the detailed design and applied during construction, operation and decommissioning of the proposal.

All safeguards and mitigation measures outlined in this document would be managed by implementing a project environmental management plan. The project environmental management plan would manage the impacts of all stages of the proposal and would include the following specific plans:

- Construction environmental management plan (CEMP) to address the impacts of the construction phase
- Operational environmental management plan (OEMP) to address the impacts of the operational phase

Table 20-1 provides a consolidated summary of the proposed environmental management and mitigation measures for the Project.

Table 20-1 Summary of safeguards and mitigation measures

Issue	Mitigation measures
General	• A Construction Environmental Management Plan will be developed prior to the commencement of construction activities for the Project • An Operational Environmental Management Plan will be developed prior to the commencement of operational ativites
Air and odour	• Short term potential construction dust impacts will be managed with the adoption of standard dust management measures in the Construction Environmental Management Plan (CEMP). General management measures during construction may include: – Minimising the amount of land cleared for construction – Watering of exposed soil, access and excavation areas as required to reduce dust – Covering of stockpiles and any trucks transporting spoil – Reducing or minimising construction works on days with very high winds – Rehabilitating cleared areas as soon as practicable • EPSR should continue to operate the site in accordance with the EPL and the EPSR Operational Environmental Management Plan
Noise and vibration	• No additional mitigation measures recommended.
Traffic and transport	• A Construction Traffic Management Plan will be prepared prior to construction commencing, to ensure the safe and efficient movement of traffic and workers. This includes vehicle approach and departure routes, parking and traffic management and on site and public road safety requirements
Human health	• No additional mitigation measures recommended

Issue	Mitigation measures
Hazard and risk	• Minimising build-up of combustible materials on-site • Installing bollards/protective barriers around gas metering station and LPG storage vessel • Inspection and maintenance regime for the gas metering station, LPG storage vessel and associated pipework • Screening for water containers of any sort before going to the furnace and casting facilities • Separation of, or tightly controlled usage of water around the furnace and casting areas • Building design to avoid inadvertent water leakage into the furnace and casting areas
Fire and incident management	• Smoke detectors • Fire detection system • Leakage tests of gas safety shutoff valves • Sealing the electrical rooms and regular monthly cleaning to reduce dust near sensitive electrical equipment • Regular inspection and testing of control valve, pump house, water tanks and overall hydrant system • Implement a fire plan with local emergency services such as fire and rescues NSW and Rural Fire Services • Ensuring bags used within the baghouses are of low combustibility
Waste	• No additional mitigation measures recommended
Soil and water	**Integrated water management system capacity** • The primary basin and secondary basin water levels will be intentionally kept as low as possible to allow for increased storage availability during an incident or in the event of a rainfall event. • Silt traps, detention bays, and energy dissipation measures installed on site and designed to capture run-off from the expanded development area during operation of the ULAB facility. **Erosion and sedimentation control** • An erosion and sediment control plan will be prepared for the construction activities in accordance with the Manageing Urban Stormwater: Soils and Construction “The Blue Book” (Landcom 2004). **Oil, grease and hydrocarbons** • Any drains not connected to the stormwater basin will be fitted with filters to capture any small amounts of oil, grease and hydrocarbons. • Filters in drains to be checked at regular intervals.

Issue	Mitigation measures
	Heavy metals • Further characterisation of lead impacts should be completed prior to development works, as a condition of consent. Such works should aim to delineate the lateral and vertical extent of the impact and identify any potential contamination sources, in order to inform subsequent management and remediation activities, as well as improve future site practices. • A remediation action plan (RAP) would be prepared outlining the strategies to remove/ mitigate the human health and environmental risks arising from any identified lead impact and other potential unidentified contamination at the site.Mitigation measures to manage contamination during construction would be outlined in the Construction Environmental Management Plan (CEMP). The measures outlined in the CEMP would be informed by the outcomes of the additional characterisation work and a RAP. An unexpected finds procedure would also be incorporated into the CEMP. • Update existing site management and work health and safety plans as an interim management measure to: – limit the potential risk of exposure to contamination during the current operation of the facility by maintaining appropriate design and continuation of existing site management practices – provide an indication of any emerging contamination issues by maintaining biennial soil monitoring as required in the development consent (DA05/0517, issued by City of Wagga Wagga) for the existing facility. • Implementation of an unexpected finds process within EPSR's operationsl environmental management plan, to assist in managing potential unexpected encounters with contaminated soil and/or groundwater.
Biodiversity	**Loss of native vegetation habitat** • All staff will be inducted and informed of the limits of vegetation clearing and the areas of vegetation to be retained. Areas of vegetation not to be removed will be clearly marked prior to construction. • Tree removal will be minimised as far as practicable • Temporary exclusion fencing will be erected to prevent encroachment and clearing of native vegetation beyond the construction footprint. • Stockpiles of construction materials will be restricted to existing cleared areas and not within areas of adjoining native vegetation. Stockpiles would be within existing cleared and hardstand areas in the EPSR facility.

Issue	Mitigation measures
	Spread of weeds • Priority weed control measures will be implemented as part of the CEMP to prevent their spread in the study area. • Declared priority weeds will be managed according to requirements under the NSW Biosecurity Act 2015. • Soil disturbance will be avoided as much as possible to minimise the potential for spreading weeds and generating sediment. **Chemicals and fuel impacts on native vegetation** • Any herbicides used for weed control will be applied to the manufacturer's specifications and as outlined in the manufacturers Material Safety Data Sheet. • Broad spectrum non-selective herbicides (residual herbicides) will not be used. Herbicides selected for use will be appropriate for the species being treated. • Spraying of herbicides will not be undertaken in windy weather or within such distance of a watercourse as will permit any of the herbicide to enter the water.
Aboriginal Heritage	• The Project should remain within the assessed area. If Project impacts are placed beyond the assessed area, further assessment may be required. • In the unlikely event that an Aboriginal artefact is located during the construction of the project, all works in that area should cease immediately and the Unanticipated Finds Protocol attached in Appendix 3 of the Aboriginal and non Aboriginal Heritage Assessment (provided in Appendix P), followed. • Construction workers involved with the Project should be made aware of the legislative protection of Aboriginal cultural heritage objects under the NPW Act. Appendix 4 of the Aboriginal and non Aboriginal Heritage Assessment Report (provided in Appendix P) has been provided to ensure workers are able to identify Aboriginal cultural heritage items should they be noted during the course of Project construction.
Non-Aboriginal heritage	• Should any non-Aboriginal archaeological relics be unexpectedly found during works, work must cease in the area and EPSR's Manager is to be contacted. Works within the area may only recommence after approval is given by their relevant staff. Depending on the nature of the find, notification of any relics may be required under Section 146 of the Heritage Act 1977.
Greenhouse gas emissions	• No mitigation measures recommended.
Design and visual	**Landscape** • While there is no formal additional landscaping proposed as part of the proposed expansion, tree screening can be put in place between the ULAB recycling facility and the wool combing facility if there are concerns from the owners. **Lighting** • The surrounding facilities to the north and east do not operate in the evening, so lighting would not impact on their businesses. Impacts of light spill towards Byrnes Road is minimal however all requirements of Australian Standard 1158 Road Lighting and the Building Code of Australia will be considered in the lighting design associated with the new building. This will be determined during the construction phase of the development.

21. Justification and conclusions

21.1 Findings of the environmental impact statement

21.1.1 Introduction

The EP&A Regulation requires that an EIS include:

"*the reasons for justifying carrying out the development or activity in the manner proposed, having regard to biophysical, economic and social considerations and the principles of ecologically sustainable development*."

The principles of Ecologically Sustainable Development (ESD) in relation to the Project are considered in Section 21.1.5. The following sections provide an overview of the main findings of the EIS having regard to biophysical, social and economic considerations.

21.1.2 Biophysical considerations

Soil and Water

The Project involves an expansion of the existing ULAB and plastics resource recovery facilities and represents a continuation of the existing industrial landuse at the site. It does not introduce any new processes or change the landuse. Appropriate design and a continuation of existing site management practices would limit the potential risk of contamination during the operation of the facility.

It is intended that the existing integrated water management system will be expanded to accommodate the Project. The existing water management system is designed to manage all water from the developed area of the site, including both surface water and process water.

It is not anticipated that consolidation and extension of the facility would result in any adverse impacts to soil and water.

Biodiversity

The Project site has been primarily cleared and retains minimal biodiversity values. The field surveys identified 35 flora species, of which 13 species were native and 22 were introduced. The proposal would result in the removal of approximately 0.21 hectares of groundcover vegetation, which includes approximately 0.18 hectares of derived native grassland. All mature remnant canopy vegetation within the Project area would be retained.

Due to the minimal amount of vegetation removal, no key threatening processes listed under the TSC Act or EPBC Act are relevant to the proposal. The proposal is also unlikely to have any significant cumulative ecological impacts.

Greenhouse gas emissions

The impact of increases in annual greenhouse gas emissions from the proposed expansion is considered very minor in the context of Australia's greenhouse gas emissions as a whole. The project will consolidate ULAB recycling facilities to a single location and adopt modern emission controls to mininimise emissions from the facility.

21.1.3 Social considerations

Traffic and transport

The expansion of the ULAB facility is expected to result in an additional 14 heavy vehicle movements per day. This level of increase is low and is not considered likely to cause any considerable impact on the nearby local road network, and will fall within typical daily traffic fluctuations.

The expansion will require an increase in number of staff working at the facility, with peak traffic movements occurring at shift change overs at 6 am and 6 pm. An predicted increase of twelve vehicle movements at shift change is considered low and is considered unlikely to cause any considerable impact on the nearby local road network, and will fall within typical daily traffic fluctuations.

The existing site intersection configuration at Byrnes Road is considered adequate to accommodate articulated vehicles and is appropriate for the additional operational and construction traffic volumes.

Construction traffic which will consist of articulated vehicles, small trucks and vans, delivering various construction materials, can be effectively managed through development and implementation of a Construction Traffic Management Plan.

Heritage

The Project site has been previously impacted by high levels of ground surface disturbance. No Aboriginal heritage sites are recorded in the project application area, the closest known site previously recorded is some 300 meters away. No impact to Aboriginal heritage is expected.

No items of non Aboriginal heritage were recorded within the project application area. A search of the State Heritage Inventory database listed four items. The closest of those items being the Bomen Railway Station, located approximately two kilometres away. No impact to non Aboriginal heritage is anticipated.

Design and visual

Views of the expanded ULAB facility would be primarily restricted to three viewer locations including Byrnes Road, East Bomen Road and the neighbouring Wool combing facility. On Byrnes Road the visibility of the proposed extensions would essentially be limited to one end of the new building to the east of the facility, for the northbound motorists. The existing facility is not visible at all from East Bomen Road.

The proposed extensions would be visible from the wool combing facility, however the impacts are considered low as the closest wool combing building faces west, and the proposed extensions to the ULAB facility are occurring south, and some 130 meters distance away.

Air and odour

The ULAB facility currently emits pollutants from the licence discharge points identified in the EPL (Appendix C). The proposal will have one new discharge point, the hygiene baghouse (hygiene air). Potential impacts at all nearby residential and industrial receivers, and ambient pollutant levels have been considered. Predicted incremental results were generally an order of magnitude lower than the impact assessment criteria, with the exception of SO_2. The worst case (10-minute average) predicted SO_2 level is approximately 30% of the impact assessment criterion. This predicted value would be conservative, as the site would not emit the modelled SO_2 emissions over the entire day.

The maximum (100th percentile) impact was assessed for all pollutants at the nearest sensitive receivers. The results demonstrate compliance for all pollutants at all receivers. No adverse impacts are predicted for any sensitive receivers.

Predicted cumulative pollutant concentrations at nearby receptors demonstrate compliance for all receivers with ambient pollutant levels taken into account.

Noise and vibration

No construction noise impacts are expected on the surrounding environment. Predicted noise levels at the identified receivers are below the construction noise management levels for the Project. Construction traffic volumes would be low when compared to existing traffic volumes along Byrnes Road, and no construction noise impacts are expected.

Noise during operation of the Project is predicted to be insignificant and not expected to impact upon surrounding receivers in the area.

Human health

Existing health and safety management systems and procedures in place at the facility will be amended to include the expansion, and engineering controls will also be put in place to reduce lead exposure. These are considered adequate to manage potential human health impacts associated with lead, on site.

Low emission rates, the remote location of the ULAB facility and the absence of sensitive receivers make the potential for off-site heath impacts from generated lead dust negligible.

The expansion of the ULAB facility is not expected to cause any adverse impacts on human health.

Hazard and risk

The PHA determined that the risk arising from the dangerous goods stored and used onsite does not exceed the individual fatality or injury risk criteria specified in NSW DoP publications HIPAP No. 4 ‘Risk Criteria for Land Use Safety Planning’.

The Project is predicted to meet the relevant amenity criteria throughout the life of the project and is not considered to be “potentially offensive”. The project is not expected to cause any adverse impacts to hazard and risk.

Fire and incident management

The existing ULAB facility is dependent on a fire hydrant system located around the facility, and on the local fire brigade for manual firefighting. The expansion of the ULAB facility would require additional firefighting controls and equipment to be installed, it would also necessitate amendment of incident management equipment and procedures. It is not anticipated that extension of the facility would result in adverse impacts to fire and incident management.

Waste

The facility is designed for the recycling of ULAB and the Project involves consolidating EPSRs existing recycling operations within a single modern facility. The Project is consistent with the ‘NSW Waste Avoidance and Resource Recovery Strategy 2014-21’ through promoting the recycling of ULABs and avoiding waste generation.

21.1.4 Economic considerations

The ESPR ULAB facility currently employs 77 people, in a day and night shift rotation, and operates 24 hours seven days per week. Once the expanded facility is operational it is expected to increase to approximately 100 employees.

Construction is expected to take approximately 6 months and will take place in three stages. It is expected that approximately 20-30 construction workers will be employed during each stage, however there is potential for this to increase to 40-50 workers at any one time, should construction stages overlap.

The EPSR ULAB facility is a prominent business in the Bomen Industrial Park, and an increase in employment opportunities would have positive economic benefits for the region.

21.1.5 Ecologically sustainable development

Ecologically Sustainable Development (ESD) is an objective of the EP&A Act, under Section 5(a)(vii), and is a required assessment consideration under Schedule 2, Part 3, clause 7(4) of the Environmental Planning and Assessment Amendment (Part 3A Repeal) Regulation 2011.

ESD can be achieved through implementation of the following principles:

- The precautionary principle, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainly should not be used as a reason for postponing measures to prevent environmental degradation
- Intergenerational equity, namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations
- Conservation of biological diversity and ecological integrity, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration
- Improved valuation, pricing and incentive mechanisms, namely, those environmental factors should be include in the valuation of assets and services.

The overall objectives of ESD are to use, conserve and enhance natural resources. This ensures ecological processes are maintained facilitating improved quality of life, now and into the future.

EPSR are committed to the principles of ESD and the principles of ESD have been applied to the Project development, design, planning and assessment as detailed further below.

The precautionary principle

The precautionary principle reinforces the need to take risk and uncertainty into account, principally in respect to threats of irreversible environmental damage. Risk assessment and analysis was incorporated into the various stages of Project design and environmental assessment and within decision making processes. The assessment of potential environmental impacts as part of this EIS indicate that there would be no threats of serious or irreversible environmental damage as a result of the construction and operation of the project. Where environmental impacts have been considered likely to occur, safeguards and mitigation measures have been proposed to minimise and manage any environmental impacts during construction and operation of the proposal.

Intergenerational equity

Social equity is defined by intergenerational equity, which is focussed on the concept that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. The primary objective for the Project is to consolidate all battery recycling operations at the Bomen facility which operates using the most efficient technology.

The ARA facility in Alexandria is currently operating within existing approval and licencing conditions, however being an older facility it does not utilise the most modern best practice technology. As a result the ARA facility emits more sulphur dioxide and produces more slag per tonne of batteries recycled, and produces a greater amount of waste from acid treatment to be disposed of to a licenced landfill facility. The Bomen facility operates a more efficient technology, through operation of a desulphurisation process.

Relocation of the ARA operations to the Bomen facility has a number of positive outcomes for future generations. Treatment of acid at the Bomen facility produces a salt which can be sold on for beneficial reuse, while reducing the amount of slag waste produced that needs to be disposed of at landfill. It would reduce sulphur dioxide emissions. The Bomen facility operates in a purpose built industrial park, with the nearest sensitive receivers a distance of over 1 kilometre away, while the ARA facility currently operates in close proximity to residential neighbours.

The Project would not result in any impacts that are likely to adversely impact on health, diversity or productivity of the environment for future generations.

Conservation of biological diversity and ecological integrity

The principle of conservation of biological diversity and ecological integrity should be fundamental consideration for all development proposals.

This Project has been located and designed, so that the impact area is located on already disturbed land, and next to existing infrastructure. No clearing is required as part of the construction and as a result the Project would not have any impacts on biological diversity or ecological integrity.

Improved valuation, pricing and incentive mechanisms

This principle requires that costs to the environment be factored into the economic costs of a proposal. The basis for this principle is the concept that pricing and other financial arrangements relating to the proposal should reflect the social and environmental costs of the use of the resource on which it is based. This includes consideration of future values, which may exceed current values, as the resources become scarcer.

This EIS has assessed the likely environmental impact of the proposal. The proposal has taken into account these potential impacts and has identified safeguards and mitigation measures to be implemented to minimise the risk of significant adverse impacts. Implementation of these environmental measures would increase both the capital construction costs and the operational costs of the Project. This signifies that environmental resources have been included in the costs of the proposal.

21.2 Conclusion

The Project involves an expansion of the existing used lead acid battery (ULAB) recycling facility at Bomen, to facilitate a consolidation of all EPSRs battery recycling facilities in NSW at a single location. The ULAB facility currently processes around 70,000 tonnes per annum (tpa) of ULABs, and is proposing to expand the existing operations to achieve a production capacity 120,000 tpa.

The Project also includes incorporation of an existing Plastics Resource Recovery Facility (PRRF) into the integrated recycling operations.

The Project requires consent under Part 4, Division 4.1 of the EP&A Act. As such, an assessment of the short, medium and long term impacts of the Project, taking into account the principles of ESD, has been undertaken in this EIS.

Many of the potential issues identified the initial risk assessment of the Project have been effectively managed/eliminated through careful design and operational features. To manage other issues, and in some cases eliminate them completely, the EIS identifies a range of mitigation measures that would be implemented during construction and operation of the Project.

The EIS has demonstrated that the Project would not have a significant impact on the environment with implementation of the proposed mitigation measures and is consistent with the principle of ESD.

Consolidation of all ESPR ULAB recycling operations at the Bomen facility would result in improved environmental outcomes. The Bomen facility operates more efficient technology, which reduces the amount of waste requiring disposal to landfill, and decreases the amount of sulphur dioxide, nitrogen dioxide and volatile organic compound emissions. The Bomen facility is also located in a purpose built industrial estate which reduces impacts on sensitive receivers.

The proposal would also stimulate the economy in the Wagga region by generating ongoing employment, during operation with a predicted increase in staff from 77 employees to approximately 100 people.

22. References

22.1 References - general

ANZECC, (2000), *Australian Water Quality Guidelines for Fresh and Marine Water Quality – Volume 3*, Australian and New Zealand Environment and Conservation Council

ARTL (2009), *baseline contamination survey*

Austroads (2005), *Austroads Guide to Traffic Engineering Practice – Part 5 Intersections at Grade*

Austroads (2016), *Austroads Guide to Road Design Part 3: Geometric Design*

Austroads (2017), *Guide to Traffic Management Part 11: Parking*

Australian Government Bureau of Meteorology (2017), *Climate Data Online*. [ONLINE] Available at: http://www.bom.gov.au/. [Accessed 30 May 2017]

Australian Standards (1985), *AS1217.1 – 1985 Acoustics – Determination of sound power levels of noise sources: Part 7 – survey method*

Australian Standards (2010), *AS2436 – Guide to noise and vibration control on construction, demolition and maintenance sites*

Commonwealth of Australia (2008), *National Greenhouse and Energy Reporting (NGER) Regulations*

Commonwealth of Australia (2008), *National Greenhouse and Energy Reporting (Measurement) Determination*

Commonwealth of Australia (2017), *National Inventiory Report 2015, Volume 1*

Cropper (1993) Random meander technique

DEC (2004)*, Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities Working Draft'*

DECC (2009), *Interim Construction Noise Guideline*

Department of Environment, Climate Change and Water, Sydney (now OEH) (DECCW) (2010), *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*

Department of Environment, Climate Change and Water (now OEH) DECCW (2010b), *Due Diligence Code of Practice for the Protection of Aboriginal objects in New South Wales*

Department of Environment, Climate Change and Water (now OEH) DECCW (2010c), *Aboriginal Cultural Heritage Consultation Requirements for Proponents*

Department of Planning (DoP) (2005), *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation*

Department of Environment, Climate Change and Water, Sydney (now OEH) (DECCW) (2011), *Road Noise Policy*

Department of Infrastructure, Planning and Natural Resources (DIPNR) (2004), *NSW Planning Guidelines for Walking and Cycling*

Department of Primary Industries, Office of Water (2017), *All Groundwater Map*. [ONLINE} Available at: http://allwaterdata.water.nsw.gov.au

Department of Primary Industries (Science and Research) (2017), *Climate of Wagga Wagga Agricultural Institute*, http://www.dpi.nsw.gov.au/content/research/centres/wagga/climate Accessed March 2017

DotEE (2017a), EPBC Act Protected Matters Search Tool – for a 10 kilometre radius around the subject site (searched May 2017), http://www.environment.gov.au/epbc/pmst/index.html

DotEE (2017b), Species profile and threats database, online profiles

Environment Protection Authority (EPA) (2016). *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*

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

Erosion and sedimentation control – According to the Wagga Wagga (2017) EPSR Stormwater Management Plan

Freeman (2002), Wagga Wagga City Council Urban Heritage Study

GHD (2017), *Enirgi Power Storage Recycling. Enirgi Power Storage Consolidation Project. Preliminary Environmental Assessment*

GHD (2017), *Renewed Metal Technologies Facility Expansion Traffic Impact Assessment*

Goode, A.M,. and Daamen, C.C,. (2008), *Mid-Murrumbidgee Groundwater Model Calibration Report. A report to the Australian Government from the CSIRO Murray-Darling Basin Sustainable Yields Project*. CSIRO, Australia. 40pp

Kelleher Nightingale Consulting Pty Ltd (2008), *Wagga Wagga Local Environmental Study. Aboriginal Cultural Heritage Assessment. Report for Willana Associates*

Kellogg Brown and Root Pty Ltd, 2005. Lead Battery Recycling Facility, Wagga Wagga – Environmental Impact Statement

Mitchell, M., (2009), *Mid Murrumbidgee Alluvium. Groundwater Management Area 013: Gundagai to Narrandera. Groundwater Resources Status Report – 2007*, NSW Department of Water and Energy, Sydney

NSW Department of Planning (NSW DoP) (2011a), *Applying SEPP 33: Hazardous and Offensive Development Application Guidelines*

NSW Department of Planning (NSW DoP) (2011b), *Multi-level Risk Assessment Guideline*

NSW Department of Planning (NSW DoP) (2011c), *Hazardous Industry Planning Advisory Paper No 4 – Risk Criteria for Land Use Safety*

NSW Department of Planning (NSW DoP) (2011d) *Hazardous Industry Planning Advisory Paper No 4 – Risk Criteria for Land Use Safety*

NSW Department of Primary Industries (DPI 2017), Noxious weed declarations – Wagga Wagga local control authority area (searched May 2017)

NSW Government (2011), *Workplace Health and Safety Regulation (WHSR)*

Office of Environment and Heritage (OEH) 2011, *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*

Office of Environment and Heritage (OEH) (2014), *Bio Banking Assessment Methodology*

Office of Environment and Heritage (OEH) (2017b), NSW threatened species, online profiles

Standards Australia (1997) *AS/NZS 4452 – The storage and handling of toxic substances Storage and Handling*

Protection of the Environment Operations Act 1997 (NSW)

Protection of the Environment Operations (Clean Air) Regulation 2010 (NSW)

Roads and Maritime Services (2009), *Traffic Control at Works Sites and AS1742.3 – Traffic Control for Works on Roads*

Roads and Maritime Services (2013), *Environmental Impact Assessment Practice Note – Guideline for Landscape Character and the Visual Impact Assessment and Guidelines for Landscape Visual Impact Assessment*

Safe Work Australia (2014), *engaged ToxConsult Pty Ltd*

Standards Australia (2012), *On-site domestic wastewater management,* AS 1547-2012. Available from: SAI Global

Wagga Wagga City Council Development Control Plan (2010)

23. Glossary and abbreviations

Abbreviations	Definitions
AHD	Australian Height Datum
µg/m^3	micrograms per cubic metre
ABS	Australian Bureau of Statistics
ACHCRs	Aboriginal Cultural Heritage Consultation Requirements
AEMR	annual environmental management reports
AEP	annual exceedance probability
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal heritage impact permit
ANZECC	Australian and New Zealand Environment and Conservation Council
AQIA	Air quality Impact Assessment (AQIA)
ARA	Australian Refined Alloys
As	Arsenic
Average recurrence interval	Average recurrence interval
AWTS	Aerated Wastewater Treatment System
BA	provision of a basic
Biota	The flora and fauna of a region.
BLL	Blood lead levels
BLRL	Blood lead removal levels
BTEX	Benzene, ethylbenzene, toluene and xylene
CCL	cumulative contaminant loading
Cd	Cadmium
CEMP	Construction Environmental Management Plan
CH_4	methane
Clean Air Regulation	*Protection of the Environment Operations (Clean Air) Regulation 2010*
CLM Act	*Contaminated Land Management Act 1997*
CNVMP	Construction Noise and Vibration Management Plan
CO	carbon monoxide
CO_2	carbon dioxide
Construction environmental management plan	A site or proposal specific plan developed to ensure that appropriate environmental management practices are followed during the construction and/or operation of a proposal.
Contractor	The entity engaged or appointed to construct the proposal. In the event that Council decides to construct the proposal using its own resources, the term would include the Council construction team.
Council	Wagga Wagga City Council
Cr	Chromium
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CTMP	Construction Traffic Management Plan (CTMP
Cu	Copper
Cumulative impact	An impact created by accumulation or successive additions of individual impacts, which may not themselves be substantial.
dB	Decibel (A-weighted)

Abbreviations	Definitions
dB(A)	Frequency weighting filter used to measure 'A-weighted' sound pressure levels, which conforms approximately to the human ear response, as our hearing is less sensitive at very low and very high frequencies
dbh	Diameter at breast height
DEC	NSW Department of Environment and Conservation
DECC	Department of Environment and Climate Change, now OEH (see below)
DECC	Department of Environment and Climate Change
DECCW	NSW Department of Environment, Climate Change and Water, now OEH (see below)
Decibel [dB]	The units that sound is measured in.
DG	dangerous goods
DIPNR	NSW Department of Infrastructure, Planning and Natural Resources
DoP	Department of Planning
DP&E	Department of Planning and Environment
DPI	Department of Primary Industries
DRIS	Decision Regulation Impact Statement
Earthworks	All operations involved in loosening, removing, depositing, shaping and compacting soil or rock
Ecologically sustainable development	Development which uses, conserves and enhances the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased.
EIS	Environmental Impact Statement. Required by section 112 of the EP&A Act.
EIS	environmental impact statement
Engitec	Engitec Technologies S.p.a.
Environment	For the purpose of the REF, environment incorporates physical, biological, heritage, cultural, economic and social aspects.
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW). Provides the legislative framework for land use planning and development assessment in NSW
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth). Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
EPBC Act, 1999	*Biodiversity Conservation Act 1999*
EPHC	Environment Protection Heritage Council
EPL	Environment Protection Licence
EPSR	Enirgi Power Storage Recycling

Abbreviations	Definitions
ESD	Ecologically sustainable development. Development which uses, conserves and enhances the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased.
Fill	One or more of the following: 1. The depth from the subgrade level to the natural surface. 2. That portion of road where the formation is above the natural surface.3. The material placed in an embankment.
Flood	Relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with major drainage before entering a watercourse.
Floodplain	The area of land adjacent to a stream that is subject to inundation by floods up to and including the probable maximum flood event, that is, flood prone land.
FM Act	*Fisheries Management Act 1994* (NSW)
GHD	GHD Pty Ltd
GHG	Greenhouse Gas Emissions
GWP	global warming potential
H_2SO_4	sulphuric acid
Heritage Act	*Heritage Act 1977* (NSW)
Heritage Act	*Heritage Act 1977*
HIL	health investigation levels
HIPAP	Hazardous Industry Planning Advisory Paper
HSMS	Health and Safety Management System
Hydrology	Term given to the study of the rainfall and runoff process; in particular, the evaluation of peak flows, flow volumes and the derivation of hydrographs for a range of floods.
ICNG	*Interim Construction Noise Guideline*
Infrastructure SEPP	*State Environmental Planning Policy (Infrastructure) 2007*
INP	Industrial Noise Policy
IPCC	Intergovernmental Panel on Climate Change
km	kilometres
km/hr	kilometres per hour
L_{Aeq}	Equivalent sound pressure level – the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
$L_{Aeq(15hr)}$	The L_{Aeq} noise level for the period 7 am to 10 pm.
$L_{Aeq(1hr)}$	The highest hourly L_{Aeq} noise level during the day and night periods.
$L_{Aeq(9hr)}$	The L_{Aeq} noise level for the period 10 pm to 7 am.
$L_{Aeq(period)}$	Equivalent sound pressure level: the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
LALC	Local Aboriginal Land Council
L_{Amax}	The maximum sound level recorded during the measurement period.
Land use	The type of development existing or permitted in an area whether it be industrial, commercial, residential, recreational or a combination of some or all of these different uses.

Abbreviations	Definitions
LEP	Local Environmental Plan. A type of planning instrument made under Part 3 of the EP&A Act.
LEP	local environmental plan
LGA	Local government area
LGA	local government area
LIB	Lead in Blood
Likely	Taken to be a real chance or possibility.
Locality	The area within a 10 kilometre radius of the proposal.
Lot	A part (consisting of one or more pieces) of any land (except a road, a reserve, or common property) shown on a plan, which can be disposed of separately and includes a unit or accessory unit on a registered plan of strata subdivision and a lot or accessory lot on a registered cluster plan.
LPG	Liquefied petroleum gas
m	metres
m/s	metres per second
m^3	cubic metre
mg	milligram
MNES	matters of national environmental significance
MSDS	material safety data sheet
N_2O	nitrous oxide
NaOH	sodium hydroxide
NGER	National Greenhouse and Energy Reporting
Ni	Nickel
NO_2	Nitrogen dioxide
NO_2	nitrogen dioxide
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NSW	New South Wales
NSW TSC Act, 1995	*NSW Threatened Species Conservation Act 1995*
OCP and OPPs	Organochlorine and organophosphate pesticides
OEH	NSW Office of Environment and Heritage
ORP	oxidation reduction potential
OzArk	OzArk Environmental & Heritage Management
Pb	lead
PCBs	Polychlorinated biphenyls
PHA	Preliminary Hazard Assessment
PM_{10}	Particulate matter up to 10 microns in diameter
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
PPE	personal protective equipment
Proposal site	The area that would be directly impacted by the proposal.
PRRF	plastic resource recovery facility
RBL	Rating background level is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours).
RBL	Rating Background Levels
Receiver	Any person, as well as a residence, business or facility, with the potential to be affected by an environmental impact (eg noise or air quality).
REF	Review of environmental factors

Abbreviations	Definitions
RNP	*Road Noise Policy 2011*
Road reserve	A road reserve is a legally described area within which facilities such as roads, footpaths, and associated features may be constructed for public travel. It is the total area between boundaries shown on a cadastral plan.
Roads and Maritime	Roads and Maritime Services
ROBE	Riverina Oils & Bio Energy
RSS	Risk and Sustainability Superintendent
Runoff	The amount of rainfall which actually ends up as streamflow, also known as rainfall excess.
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SEPP 33	*State Environmental Planning Policy No 33 – Hazardous and Offensive Development*
SF_6	sulphur hexafluoride
SHR	State heritage register
SO_2	sulphur dioxide
SO_3	Sulfur trioxide
SRD SEPP	State and Regional Development SEPP
SSD	State Significant Development
State and Regional Development SEPP	*State Environmental Planning Policy (State and Regional Development) 2011*
Study area	The area of impact and any additional areas, which are likely to be affected by the proposal, either directly or indirectly. In this study it includes the area of impact and adjacent areas of Planning Agreement Areas and private land. Generally this includes the area up to 500 metres from the proposal boundary.
SWI	Safe Work Instructions
SWL	Standing Water Level
SWMS	Safe Working Method Statement
TCP	traffic impact assessment
The Project	Enirgi Power Storage Recycling Consolidation Project
Threatened species	A species specified in Schedule 1 Part 1 (endangered species), Part 4 (presumed extinct) and Schedule 2 (vulnerable species) of the TSC Act, in Schedule 4 (endangered species), 4A (critically endangered species) and Schedule 5 (vulnerable species) or under the EPBC Act.
TIA	traffic impact assessment
tpa	tonnes per annum
TPH	Total petroleum hydrocarbons (TPH)
TSC Act	*Threatened Species Conservation Act 1995*
TSP	Total Suspended Particulate
TWA	time weighted average
ULAB	Used Lead Acid Battery
Unlikely	Taken to be an unlikely or remote possibility of occurring.
VOCs	volatile organic compounds
VSDs	variable speed drives
Wagga LEP	Wagga Wagga Local Environmental Plan 2010
WARR Act	*Waste Avoidance and Resource Recovery Act 2007*
WHS	Work Health and Safety

Abbreviations	Definitions
WHSR	*Workplace Health and Safety Regulation 2011*
WWLALC	Wagga Wagga Local Aboriginal Land Council
Zn	Zinc

Scope and limitations

This report has been prepared by GHD for Enirgi Power Storage Recycling Pty Ltd and may only be used and relied on by Enirgi Power Storage Recycling Pty Ltd for the purpose agreed between GHD and Enirgi Power Storage Recycling Pty Ltd. as set out in section 1.5 of this report.

GHD otherwise disclaims responsibility to any person other than Enirgi Power Storage Recycling Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD. GHD disclaims liability arising from any of the assumptions being incorrect.

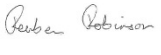
GHD has prepared this report on the basis of information provided by Enirgi Power Storage Recycling Pty Ltd, which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

GHD

Suite 3, Level 1
161-169 Baylis Street
Wagga Wagga NSW 2650
T: 61 2 6923 7400 F: 61 2 6971 9565 E: wgamail@ghd.com

2315946-81880/https://projects.ghd.com/oc/Canberra/rmtpreliminaryapprov/Delivery/Documents/EIS/Word/2315946-REP_Renewed metal technologies Environmental Impact Statement.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
Rev 0	B. Fourie B. Neville	K. Rosen		R. Robinson		06/12/2017
Rev 1	B. Neville	K. Rosen		C. Joubert		26/06/2018
Rev 2	B. Neville	K. Rosen		K. Rosen		11/07/2018

www.ghd.com