

Weston Aluminium Thermal Processing Facility: Resource Recovery of Residual Ash

Modification Report

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Executive Summary

Weston Aluminium Pty Ltd (WA) operates a resource recovery facility at 129 Mitchell Avenue, Kurri Kurri (the site). On 12 December 2018, State Significant Development Consent (SSD 7396) was granted for the construction and operation of a Thermal Processing Facility (TPF) on the site. SSD 7396 permits the processing of up to 8,000 tonnes per annum of medical, quarantine and other wastes. The TPF was constructed during 2019 - 2020, and commissioning is currently being undertaken.

The Environmental Impact Statement (EIS) prepared for the TPF (AECOM, 2016) estimated that up to 800 tonnes per annum of residual ash would be generated from the TPF operations. The EIS also stated that the residual ash material would be disposed of at an offsite landfill licensed to accept such wastes.

Preliminary profiling of the ash materials generated during the initial commissioning phase of the TPF has identified that residual ash is comprised of recoverable scrap metal and various oxides (silicon oxides, aluminium oxides and iron oxides) - each of which can be beneficiated for reuse as per WA's existing processes.

WA is therefore proposing to reprocess (while staying within the existing approved scale of production) and recycle residual ash from the TPF (the Project) and no landfilling of these residual ash materials would occur. These activities would align with WA's closed-loop, zero-waste resource recovery framework and would result in a beneficial environmental outcome by diverting up to 800 tonnes per year of wastes away from landfill and promoting resource recovery and reuse.

WA is seeking to modify SSD 7396 to clarify the recycling process for residual ash and to remove any obligation to dispose of residual ash to landfill (rather than allowing for onsite reprocessing and recycling of the residual ash). The Project does not involve an increase in the approved processing limits, hours of operation, traffic loads, air quality or noise limits, or wastes received at the site. These aspects of the operation would remain consistent with the approved development.

The Project is substantially the same development as originally approved and would result in a net beneficial environmental outcome by reprocessing and recycling residual ash, rather than disposing of it to landfill. A modification to SSD 7396 is therefore being sought under section 4.55(1A) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This Modification Report has been prepared to accompany the modification application and provides an assessment of the key environmental issues associated with the Project.

A qualitative assessment was undertaken of the potential impacts of the Project on a range of environmental factors, including:

- Air quality;
- Soil and water
- Waste management;
- Traffic and transport;
- Noise;
- Hazard and risk;
- Greenhouse gas emissions;
- Socio-economic;
- Visual amenity;
- Heritage; and
- Biodiversity.

The Project is expected to have a beneficial outcome with respect to waste / resource recovery management and a negligible impact on these environmental issues, given that the Project involves

existing operational processes already undertaken at the site and would be within approved production limits. The storage and handling of residual ash materials and finished products would be undertaken in accordance with existing site operations and quality control procedures.

1.0 Introduction

1.1 Background to the Project

Weston Aluminium Pty Ltd (WA) operates a resource recovery facility at 129 Mitchell Avenue, Kurri Kurri (the site). On 12 December 2018, State Significant Development Consent (SSD 7396) was granted for the construction and operation of a Thermal Processing Facility (TPF) on the site. SSD 7396 permits the processing of up to 8,000 tonnes per annum of medical, quarantine and other wastes. The TPF has been constructed and commissioning is currently being undertaken.

The Environmental Impact Statement (EIS) prepared for the TPF (AECOM, 2016) estimated that up to 800 tonnes per annum of residual ash would be generated from the TPF operations. The EIS also stated that the residual ash material would be disposed of at an offsite landfill licensed to accept such wastes.

Since the establishment of the Alternative Materials Division in 2007, WA has achieved success with the identification of value-adding opportunities, the fostering of sustainable end-use markets for the recycling and reuse of its various conventional ash streams, and continues to diversify its operations to identify further opportunities for resource recovery of internal and external material streams. WA continues to drive resource recovery in NSW and Australia-wide through their central and founding involvement in the Australasian Industrial Ecology Network (refer <http://aien.com.au/>). This Project strives to continue WA's efforts in this space.

Preliminary profiling of the ash materials generated during the initial commissioning phase of the TPF has identified that residual ash is comprised of recoverable scrap metal and various oxides (silicon oxides, aluminium oxides and iron oxides) - each of which can be beneficiated for reuse as per WA's existing processes. WA is therefore proposing to reprocess (while staying within the existing approved scale of production) and recycle residual ash from the TPF (the Project) and no landfilling of these residual ash materials would occur. These activities would align with WA's closed-loop, zero-waste resource recovery framework and would result in a beneficial environmental outcome by diverting wastes away from landfill and promoting resource recovery and reuse.

WA is seeking to modify SSD 7396 to clarify the recycling process for residual ash and to remove any obligation to dispose of residual ash to landfill (rather than allowing for onsite reprocessing and recycling of the residual ash). The Project does not involve an increase in the approved processing limits, hours of operation, traffic loads, air quality or noise limits, or wastes received at the site.

The Project is substantially the same development as originally approved and would result in a net beneficial environmental outcome by reprocessing and recycling residual ash, rather than disposing of it to landfill. A modification to SSD 7396 is therefore being sought under section 4.55(1A) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) (further discussed at **Section 3.1.1**). This Modification Report has been prepared to accompany the modification application and provides an assessment of the key environmental issues associated with the Project.

1.2 Site Location

The site comprises a single parcel of land known as Lot 61 in Deposited Plan 1237125 located at 129 Mitchell Avenue, Kurri Kurri (**Figure 1** and **Figure 2**). The site is approximately 9.2 hectares (ha) in size and lies between 12 and 16 m Australian Height Datum (AHD).

The site is located within an existing industrial area to the north of Kurri Kurri and the east of Weston, approximately 700 m from the nearest residential area. The Kurri Kurri wastewater treatment plant, owned and operated by Hunter Water Corporation, is located approximately 800 m to the north-east of WA and the now closed Hydro Aluminium Smelter site is located approximately 1,200 m to the north.

1.3 History of Operations

WA commenced operations in 1998 with six employees and one rotary furnace and has progressively increased and diversified its operations. WA traditionally recovers aluminium from dross, which is a by-product of the aluminium smelting process, sourced from aluminium smelters across Australia and

New Zealand, and reprocesses scrap metal to support on-trading activities and remelt and casting operations in the production of deoxidant products for the steelmaking sector.

Dross is a dry metallic solid that is typically composed of aluminium, aluminium oxide, other metal oxides, traces of sodium, fluoride (bath) and alloying metals. Dross can contain 30 to 75 percent metallic aluminium, which can be recovered for further use.

The existing operation also treats spent potlining (SPL), which is a by-product of primary aluminium production (smelting). SPL contains varying proportions of aluminium, carbon, fluorides, and other trace contaminants including cyanide and sodium. WA detoxifies and recovers mineral resources from SPL to help reduce the total volume of waste from the primary aluminium manufacturing sector, and in doing so, generates a value-added product for use in the construction-product manufacturing sector.

In 2011, WA installed, commissioned and commenced operation of its Briquetting Plant. The Briquetting Plant was designed to improve the processing outcomes of its various mineral dust streams into a range of formulated briquetted products for use as slag modifying agents in the steelmaking sector. As a consequence, WA has since achieved a closed-loop, zero-waste position with respect to its core processes.

Further diversification of WA operations has also occurred via thermal processing of pharmaceutical and illicit drug wastes within existing furnaces. In 2019, WA received approval for the ongoing commercial-scale processing of pharmaceutical and illicit drug wastes.

In response to earlier Trial processing successes, WA received approval on 12 December 2018 for the construction and operation of the TPF for the processing of medical, quarantine and other wastes. The TPF has since been constructed and commissioning is currently being undertaken.

Approximately 50 percent of the WA site has been developed for the existing operation with the remainder being either grassed, partially vegetated or used for equipment or materials storage and stormwater management. The WA facility includes an administration building, three large industrial buildings for the waste processing operations, a truck loading bay, workshop, and other ancillary structures such as bag houses, bulk materials storage bunds and rotary kiln combustion chambers.

1.4 Approval History

The WA site currently operates under three development consents. Development Consent (DA 10397 of 1995) for the facility was granted by the Land and Environment Court of NSW on 30 August 1996. WA was subsequently granted Development Consent (DA 86-04-01) for additions to the facility on 20 September 2001. These two approvals have identical conditions of consent and have been subject to 12 modification applications to allow various alterations and additions. State Significant Development Consent (SSD 7396) was granted on 12 December 2018 for the construction and operation of the independent TPF at the WA facility. SSD 7396 is the subject of the current modification application.

WA is approved under its current development consents to process the following:

- Up to 40,000 tonnes per year as a combination of aluminium dross, SPL and pharmaceutical and illicit drug wastes through its rotary furnace operations;
- Up to 35,000 tonnes of scrap aluminium metal per year via trading and through its reverberatory furnace operation; and
- Up to 8,000 tonnes per year of the following waste types within the TPF:
 - clinical and related waste;
 - waste pharmaceuticals, drugs and medicines;
 - waste from the production and preparation of pharmaceutical products;
 - quarantine wastes; and
 - other wastes (as permitted by the Environment Protection Licence (EPL)).

1.5 Proposed Modification of Conditions

Modification of SSD 7396 is required to clarify the recycling process for residual ash and to remove any obligation to dispose of residual ash to landfill (rather than permitting the onsite reprocessing and recycling of the residual ash). Proposed modifications to SSD 7396 conditions of consent are provided below, with deletions shown as ~~strike through~~ and additions shown in **bold**.

- Schedule 2, Condition A2

This condition would need to be updated to include reference to this Modification Report:

A2. The Development may only be carried out:

- a. in compliance with the conditions of this consent;*
- b. in accordance with all written directions of the Planning Secretary;*
- c. in accordance with the EIS and Response to Submissions;*
- d. in accordance with the Development Layout Plans in Appendix 1; and*
- e. in accordance with the management and mitigation measures in Appendix 2; and*
- f. in accordance with the Modification request SSD 7396 Modification 1 and the enclosed Modification Report, dated 17 July 2020, prepared by AECOM.**

- Schedule 2, Condition B25

This condition would need to be deleted to remove reference to residual waste leaving the site:

~~*B25. Deleted. All residual waste must also leave the site via the weighbridge and its quantity, type, quality and destination recorded.*~~

- Appendix 2 Applicant's Management and Mitigation Measures

Appendix 2 of SSD 7396 would need to be updated to include the revised list of management and mitigation measures, as discussed in **Section 7.0** of this Modification Report. A complete summary of the revised management measures for inclusion in SSD 7396 is provided in **Appendix B** of this Modification Report.



Figure 1 Site Location



Figure 2 Site Layout

2.0 Description of the Project

2.1 Project Overview

Preliminary profiling of the ash materials generated during the initial commissioning phase of the TPF has identified that residual ash is comprised of recoverable scrap metal and various oxides (silicon oxides, aluminium oxides and iron oxides) – each of which can be beneficiated for reuse as per WA's existing processes.

WA is therefore proposing to reprocess (while staying within the existing approved scale of production) and recycle the residual ash from the TPF (the Project) and no landfilling of these residual ash wastes would occur. This would mean that residual ash materials from operation of the TPF would form part of WA's established marketable products.

WA is seeking to modify SSD 7396 to clarify the recycling process for residual ash and to remove any obligation to dispose of residual ash to landfill (rather than allowing for onsite reprocessing and recycling of the residual ash). The Project does not involve an increase in the approved processing limits, hours of operation, traffic loads, air quality or noise limits, or wastes received at the site.

2.2 Process Description

The scrap metal processing operations and beneficiation of residual ashes are existing approved processes which have been described within previous environmental assessment reports for the site (Envirosciences 1994; URS 2001; GHD 2010; AECOM 2012; and AECOM 2017). A brief overview of how the Project would be undertaken within these existing processes is provided below.

2.2.1 Recoverable Scrap Metal

Residual ash from the TPF operations would be removed from the ash trough for temporary storage within either bulk bags or sealed bins. The residual ash material would then be processed through the site's conventional scrap metal processing operations to separate ferrous and non-ferrous metals from the non-metallic oxides. The recoverable scrap metal would then either be reprocessed within WA's existing scrap melting reverberatory furnace (for the manufacture of deoxidant products for the steelmaking sector) or otherwise on-traded to established markets.

2.2.2 Beneficiation of Residual Ash

Following the removal of recoverable scrap metals, the residual ash materials would be collected directly into waterproof, polypropylene bulk bags of approximately 1 tonne capacity or other sealable containers in accordance with existing waste management procedures. The bags will be tied off and transferred by forklift to the dedicated primary material storage area within the fully enclosed ALDEX building. Ash material would then be blended with the site's existing ash streams (generated during conventional dross and SPL processing and scrap melting operations), milled to specification, bagged and transported to existing customers.

The end-use products are used as a substitute for raw materials in manufacturing and industrial processes. Such reuse options include:

- Slag additives for the steelmaking industry;
- Cement manufacture; and
- Brick and tile manufacture.

2.3 Construction Details

The reprocessing and recycling of residual ash materials would be undertaken within existing infrastructure and storage buildings at WA. There would be no need for installation or construction of any additional infrastructure or pieces of equipment.

2.4 Operational Environmental Controls

The existing facility is comprised of best available technology and complies with stringent pollution limits. Emissions from operational processes are controlled by existing plant through:

- Standard operating procedures;
- Temperature control;
- Scrubber/baghouse complexes, supported by preventative maintenance programs;
- Real-time emissions monitoring and feedback systems; and
- By-product residues returned to the raw material feed in a closed-loop cycle.

Regular emissions testing, plant and equipment inspections, auditing and reporting form part of WA's existing maintenance and operational procedures to confirm that environmental control systems are maintained and operating as required.

WA achieved certification of its Integrated Management System (IMS) under *AS/ANZ ISO 9001:2016 Quality Management Systems* in 2019. The IMS integrates the organisational systems and processes into one complete framework and includes the Environmental Management System (EMS) (certified to *AS/NZS ISO 14001:2016 Environmental Management Systems*) and the Safety Management System (certified to *AS/NZS ISO 45001:2018 Occupational Health and Safety Management Systems*).

The IMS provides WA with a formal framework for systematically identifying and managing environmental aspects and impacts. WA's operational values include the continuous application of technological improvements to minimise environmental emissions and impacts. These values feed into the IMS under which the WA Facility operates. Through implementation of these management systems, which are audited annually, WA strives for continuous improvement and the implementation of best practice industry standards.

2.5 Need for the Project

At the time of writing the EIS for the TPF in 2016, it was envisaged that residual ash material would be simply disposed of to landfill. During preliminary stages of commissioning of the TPF, WA undertook an exercise to profile the residual ash material, revealing that the ash contained scrap metals and oxides of iron, silicon and aluminium. Scrap metal and non-metallic oxides are compatible with existing material streams processed on site and can be used within existing processes to create a final marketable product instead of requiring disposal to landfill. The recoverable scrap metal can be extracted and either reprocessed within WA's scrap melting reverberatory furnace or otherwise on-traded, while the remainder of the ash material can be beneficiated for reuse within established markets as per WA's existing processes.

The Project would assist in meeting the objectives of the waste management hierarchy by promoting the recovery of resources and recycling of materials and by reducing the disposal of wastes to landfill. This is consistent with WA's Corporate Vision and Mission, and ongoing promotion of Industrial Ecology (resource recovery and reuse) within the manufacturing sector. In doing so the Project would result in beneficial environmental outcomes by removing the need to dispose of up to 800 tonnes per year of residual ash material within landfill.

The Project would align with WA's closed-loop, zero-waste disposal resource recovery framework and would provide economic benefits by utilising all by-products of the TPF operations to create final marketable products and removing the costs associated with the disposal of the residual ash to landfill.

2.6 Alternatives

The 'do nothing' option would involve the unnecessary landfilling of up to 800 tonnes per year of residual ash material from the TPF operations. WA has identified the potential to reprocess or recycle this residual ash material, which would result in environmental and economic benefits by converting what would otherwise be a waste product into a final product with established markets. If the Project does not proceed then the potential environmental and economic benefits achieved by diverting the residual ash from landfill and reusing it within existing processes would not be realised. Proceeding

with the Project is therefore the preferred option, to ensure that resource recovery is optimised at every opportunity.

3.0 Statutory Planning

3.1 State and Local Legislation

3.1.1 Environmental Planning and Assessment Act 1979

The EP&A Act and the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) provide the framework for environmental planning in NSW and include provisions to ensure that proposals that have the potential to impact on the environment, are subject to detailed assessment and provide opportunity for public involvement.

The WA Facility currently operates under three separate development consents:

- DA 10397 of 1995 (as modified) granted by the Land and Environment Court of NSW on 30 August 1996;
- DA 86-04-01 (as modified) issued by the Minister for Planning on 20 September 2001; and
- SSD 7396 issued by the Minister for Planning on 12 December 2018.

It has been demonstrated through this Modification Report that the Project constitutes a minor change to the activities as originally approved. No increase to the overall annual processing tonnage limits is being sought; WA would reprocess the residual ash material within its conventional processing operations while remaining within the existing processing limits. The residual materials are compatible with existing material streams processed on site and can be used within existing processes to create final marketable products. The Project would result in negligible environmental impacts with a net beneficial environmental outcome achieved by diverting wastes away from landfill and promoting resource recovery and reuse.

Following the completion of the Project, the end result would be substantially the same development as originally approved. Therefore, modification to SSD 7396 is being sought under section 4.55 (1A) of the EP&A Act.

3.1.2 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) aims to protect, enhance and restore the quality of the environment in NSW, to reduce risk to human health and promote mechanisms that minimise environmental degradation through a strong set of provisions and offences. An EPL is required from the NSW EPA if any of the activities associated with the Project are determined to be a 'scheduled activity' under Schedule 1 of the POEO Act, by virtue of section 48 of the POEO Act.

The WA facility currently operates under EPL 6423, which allows WA to carry out the activities listed in **Table 1** on its premises.

Table 1 Existing WA site scheduled activities

Scheduled Activity	Fee Based Activity	Scale
Metallurgical activities	Aluminium Production (scrap metal)	>10,000 tonne annual production capacity
Resource recovery	Recovery of hazardous and other waste	Any hazardous and other waste recovered
Metallurgical activities	Scrap metal processing	0-100,000 tonne annual production capacity
Waste disposal (thermal treatment)	Thermal treatment of hazardous and other waste	Any capacity
Waste storage	Waste storage – hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	Any listed waste type stored

The approved quantities of materials that can be processed at the WA facility are summarised in **Section 1.4** and would not be altered as part of the Project.

Waste tracking requirements under Part 3, Division 1 of the *Protection of the Environment (Waste) Regulation 2014* would continue to be implemented for waste inputs and WA would retain any waste sampling and classification results that it obtains for the life of the Project.

3.1.3 Waste Avoidance and Resource Recovery Act 2001

The *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) promotes waste avoidance and resource recovery to achieve a continual reduction in waste generation. The WARR Act aims to ensure that resource management options are considered against the following hierarchy:

- avoidance of unnecessary resource consumption;
- resource recovery (including reuse, reprocessing, recycling and energy recovery); and
- disposal.

The WARR Act requires the NSW Environment Protection Authority (EPA) to develop a state-wide waste strategy to include targets for waste reduction, resource recovery and the diversion of waste from landfill disposal. The EPA's *NSW Waste and Resource Recovery Strategy 2014 – 2021* (WARR Strategy) was released in December 2014 and provides a framework for waste management over the seven year period. Specifically, the WARR Strategy sets the following objectives for 2021 – 2022:

- avoiding and reducing the amount of waste generated per person in NSW;
- increasing recycling rates to:
 - 70% for municipal solid waste;
 - 70% for commercial and industrial waste;
 - 80% for construction and demolition waste;
- increasing waste diverted from landfill to 75%;
- managing household problem wastes better;
- reducing litter; and
- reducing illegal dumping.

The Project would assist in meeting the objectives of the waste management hierarchy, as set out in the WARR Act and the WARR Strategy, by promoting the recovery of resources and recycling of materials and by reducing the disposal of wastes to landfill. The Project would remove the need to dispose of up to 800 tonnes per year of residual ash material within landfill, which would directly contribute to the WARR Strategy targets of increasing recycling rates for commercial and industrial waste and increasing wastes diverted from landfill.

3.1.4 Cessnock Local Environmental Plan 2011

WA's Facility is located within an IN3 Heavy Industrial Zone under the *Cessnock Local Environmental Plan 2011* (LEP 2011). The objectives of the IN3 Zone are:

- To provide suitable areas for those industries that need to be separated from other land uses;
- To encourage employment opportunities;
- To minimise any adverse effect of heavy industry on other land uses; and
- To support and protect industrial land for industrial uses.

The Project is consistent with the objectives of the LEP 2011 and is consistent with the existing approved industrial land use.

3.2 Commonwealth Legislation

3.2.1 Environment Protection and Biodiversity Conservation Act 1999

Actions that may significantly affect matters of National Environmental Significance (NES) require assessment and/or approval from the Commonwealth Department of Agriculture, Water and the Environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The EPBC Act lists nine matters of NES that must be addressed when assessing the environmental impacts of a proposal. Actions likely to impact on matters of NES require approval from the Commonwealth Minister under Part 6 of the EPBC Act.

A Protected Matters Search of NES Matters within a 10 km radius of the WA site was undertaken on 9 April 2020 to determine what NES features may be present. The results of the search are contained in **Appendix A** and summarised in **Table 2**.

Table 2 Consideration of matters of National Environmental Significance (EPBC Act)

NES Matters	Comment
Australia's World Heritage properties	There are no World Heritage properties within 10 km of the Project Area.
National Heritage Places	There are no National Heritage Places within 10 km of the Project Area.
Ramsar wetlands of international importance	No Ramsar wetlands are located within 10 km of the Project Area. The nearest Ramsar wetlands are in the Hunter Estuary Wetlands located around 20 km to the southeast of the Project Area.
Nationally threatened species and ecological communities	It is unlikely that there would be any impact on Commonwealth-listed threatened species or ecological communities.
Migratory species listed under the EPBC Act	It is unlikely that there would be any impact on Commonwealth listed migratory species or migratory species protected under international agreements.
Commonwealth marine areas	The Project is not located within or adjacent to a Commonwealth marine area. There would be no direct or indirect impact upon a Commonwealth marine area.
Great Barrier Reef Marine Park	The Project is not located within or adjacent to the Great Barrier Reef Marine Park. There would be no direct or indirect impact upon the Great Barrier Reef Marine Park.
Nuclear actions, including uranium mining	The Project would not involve a nuclear action.
Water resources impacted on by a coal seam gas or large coal mining development	The Project would not involve coal seam gas or coal mining.

4.0 Consultation

4.1 Agency Consultation

Consultation with Department of Planning, Industry and Environment (DPIE) has been undertaken in order to provide details of the Project and to seek feedback regarding matters to be addressed within this Modification Report.

An initial project briefing and meeting request was lodged with DPIE on 3 July 2020, and a scoping meeting was held on 8 July 2020. Information provided to DPIE included the background to the Project, a description of the proposed activities and the proposed environmental planning and assessment pathway. No specific environmental issues required to be addressed within the Modification Report were raised by DPIE during the scoping meeting.

4.2 Other Stakeholders

WA undertook consultation with the community and other stakeholders during the preparation of the EIS (AECOM 2016) for the TPF. Consultation activities included a project briefing, opportunity for questions and platform for the community to raise issues that they considered important to the community or that required addressing in the EIS.

The environmental assessment process provides an opportunity for the community to submit feedback and raise concerns regarding the proposed development. The EIS was publicly exhibited between 8 September 2016 and 24 October 2016. Submissions made by the public and agencies were addressed within the Response to Submissions Report (RTS) prepared for the Project. The RTS and environmental assessment updates responded to each of the public submissions, and associated control strategies/safeguards have been incorporated into the environmental management plans and procedures accordingly.

The current Project does not involve an increase in approved processing limits, hours of operation, traffic loads, air quality or noise limits, or wastes received at the site. There would be no anticipated impacts to the community and as such, additional community consultation is not considered to be required. As the Project involves a modification under section 4.55(1A) of the EP&A Act, the application is not required to be notified and publicly exhibited.

5.0 Prioritisation of Issues

An assessment of potential environmental impacts associated with the Project, based on existing data and knowledge of the site, was carried out. A risk analysis was undertaken to rank these issues according to the level of environmental risk.

5.1 Risk Matrix

Potential impacts are ranked according to the risk matrix (refer to **Table 3**) as being a High, Medium, Low or Very Low risk to the environment.

Potential Consequence:

1. Broad scale environmental impact.
2. Regional environmental impact.
3. Local environmental impact.
4. Minor environmental impact.
5. Insignificant environmental impact.

Likelihood of adverse impact:

- a. Almost certain.
- b. Likely.
- c. Possible.
- d. Unlikely.
- e. Rare.

Table 3 Risk matrix

		Likelihood of adverse impact				
		A	B	C	D	E
Potential consequence	1	High	High	Medium	Low	Very Low
	2	High	High	Medium	Low	Very Low
	3	Medium	Medium	Medium	Low	Very Low
	4	Low	Low	Low	Low	Very Low
	5	Very Low	Very Low	Very Low	Very Low	Very Low

5.2 Risk Analysis

Potential environmental issues related to the Project were analysed and ranked using the above risk matrix. The risk analysis is provided in **Table 4**.

This ranking aims to allow the prioritisation of issues for assessment and does not consider the application of mitigation measures to manage the environmental effects. In all cases, appropriate and proven mitigation measures chosen based on experience with other similar projects would be used to minimise and manage potential impacts identified in this risk analyses. Where required, these measures are described throughout **Section 6.0**.

Table 4 Risk analysis

Environmental Aspect	Potential Environmental Issue	Consequence	Likelihood	Ranking
Air quality	Generation of fugitive emissions and dust	4	E	Very Low
	Exceedance of existing regulatory compliance stack air emission limits	4	E	Very Low
Soil and Water	Spills of residual ash material to site catchment and pollution of local waterways	4	E	Very Low

Environmental Aspect	Potential Environmental Issue	Consequence	Likelihood	Ranking
Waste Management	Storage and handling of residual ash material	5	E	Very Low
Traffic and Transport	No increase in traffic or transport movements	5	E	Very Low
Noise	No change to existing operational processes	5	E	Very Low
Hazard and Risk	No change to current operations or storage requirements	5	E	Very Low
Greenhouse Gas (GHG) Emissions	No change to GHG emissions	5	E	Very Low
Socio-economic	No change to current operations	5	E	Very Low
Visual Amenity	No changes to site layout or other visual amenity	5	E	Very Low
Heritage	No change to current facility footprint	5	E	Very Low
Biodiversity	No change to current facility footprint	5	E	Very Low

5.3 Key Issues

Based on the risk analysis presented above and consultation with DPIE, potential environmental issues are considered to have a Very Low anticipated impact and each of the issues are discussed further in **Section 6.0** of this Modification Report.

6.0 Environmental Impact Assessment

A qualitative assessment was undertaken of the potential impacts of the Project on a range of environmental factors as outlined in **Table 5**.

Table 5 Potential environmental impacts associated with the Project

Environmental Factor	Consideration
Air Quality	<p>The WA site is located within an established industrial area with the nearest residential areas located approximately 700 m to the south. The main sources of air pollutants in the area surrounding the WA facility include emissions from other industries within the local industrial area, commercial activities, motor vehicles, and domestic wood heaters.</p> <p>The Project would involve the reprocessing of recoverable scrap metals and the beneficiation of residual ash materials (consisting of oxides of iron, silicon and aluminium) within existing, approved operational processes. Scrap metal and non-metallic oxides are compatible with existing material streams processed on site.</p> <p>The Project would be undertaken within approved production limits and therefore no additional air quality impacts beyond those approved for the existing operations are expected to occur.</p> <p>The potential for fugitive emissions to occur during the transfer of residual ash material from the TPF to downstream operations would be minimal, as residual ash materials first pass through a water bath (process seal) prior to its removal from the ash trough directly into a bin or bulk bag. This operation mitigates any dust generation. The beneficiation of residual ash material is undertaken within the fully enclosed ALDEX building, which is maintained under negative pressure via active ventilation to a dust collector. Storage bays and processing operations within the ALDEX building (including the separation of ferrous and non-ferrous scrap, and the crushing, blending, sizing and bagging of ash oxides) are ventilated to the dedicated dust collector. Potential issues relating to fugitive emissions would be adequately managed through the established ash management and handling procedures implemented at the WA site.</p> <p>Potential air quality impacts as a result of the Project would be negligible.</p>
Soil and Water	<p>The Project would be undertaken within existing facilities on site. No new construction activities or ground disturbance would be required for the Project and as such there would be no direct impact to soils and local water quality.</p> <p>Operation of the Project is not expected to result in impacts to soil and water. The transfer of residual ash materials for temporary storage in bulk bags or bins would be undertaken in accordance with existing waste management arrangements. Processing operations would be performed within enclosed buildings and residual ash materials would be stored within the fully enclosed ALDEX building.</p> <p>The WA site has a first flush stormwater control system, which consists of a forebay, linear wetland and Stormwater Detention Pond. There would be no change to the impermeable surface areas draining to the existing stormwater control system. The existing management measures would continue to be implemented during operation of the Project. Potential impacts to soil and water quality as a result of the Project would be negligible.</p>

Environmental Factor	Consideration
Waste Management	<p>There would be no additional wastes generated as a result of the Project. The residual TPF ash material that would be reprocessed and recycled as a result of the Project represents less than five percent of the total quantity of residual ash benefited from all facility operations through downstream processes at the WA site.</p> <p>The storage and handling of residual ash materials and finished products would be undertaken in accordance with existing waste management and quality control procedures.</p> <p>The Project would promote the recovery of resources and recycling of materials while eliminating the need to dispose of wastes to landfill. The Project would result in beneficial environmental outcomes by removing the need to dispose of up to 800 tonnes per year of residual ash material within landfill and instead reusing these materials to create final marketable products within established markets.</p> <p>Potential impacts related to waste management would be negligible, with overall environmental benefits achieved by diverting up to 800 tonnes per year of wastes from landfill.</p>
Traffic and Transport	<p>There would be no construction-related activities required for the Project and as such there would be no construction traffic impacts.</p> <p>During operation of the Project, existing site access and transport routes would continue to be utilised. The storage, handling and dispatch of finished product to customers would be undertaken in accordance with existing transport protocols and code of conduct.</p> <p>The Project is not proposing to increase WA's processing tonnage limits and as such there would be no increase in truck movements beyond those approved for the existing facility operations. Any increase in the transport of products to clients as a result of the Project would be offset by the decrease in truck movements related to the disposal of residual ash to landfill, which would no longer be required.</p> <p>Potential impacts related to traffic and transport would be negligible.</p>
Noise	<p>There would be no construction activities required for the Project and as such no construction-related noise would be generated.</p> <p>WA has approval to operate 24 hours per day, 7 days per week, with specific receptor noise limits prescribed for day, evening and night-time periods. Truck movements are restricted to between the hours of 7am and 10pm in accordance with Condition L5.1 of EPL 6423. The Project would not change the approved operating times or noise limits.</p> <p>The Project would utilise existing operational processes, would remain within the approved scale of production and is not expected to generate an increase in truck movements beyond those associated with the existing operation. Potential noise impacts as a result of the Project would be negligible.</p>
Hazard and Risk	<p>Scrap metal and non-metallic oxides are compatible with existing material streams processed on site. These residual materials would be used within existing operational processes to create a final marketable product. The Project does not involve an increase in the scale of production or a change to the waste types received, stored and handled at the site. Therefore, the existing risk profile and hazard management measures currently in place would remain unchanged.</p>

Environmental Factor	Consideration
GHG Emissions	The Project would involve the reprocessing of residual ash material within existing processes and would remain within the approved scale of production. There would be no increase in GHG emissions above those previously assessed in the EIS for the TPF (AECOM, 2016). Potential impacts associated with GHG emissions as a result of the Project would be negligible.
Socio-economic	The Project would be limited to the WA site and is not anticipated to impact on any items or places of social value to the community. The Project would provide economic benefits by utilising all by-products of the TPF operations to create final marketable products and removing the costs associated with the disposal of the residual ash to landfill. Potential adverse socio-economic impacts as a result of the Project would be negligible. Project operation will likely support an additional full time equivalent (FTE) employment position.
Visual Amenity	No new plant or equipment is proposed as part of the Project and no construction activities are required. Potential impacts to visual amenity as a result of the Project would be negligible.
Heritage	No new construction activities or ground disturbance would be required for the Project. All proposed activities would be undertaken within the existing WA site and building footprints. Impacts to heritage as a result of the Project would be negligible.
Biodiversity	No ground disturbance would be required by the Project. All proposed activities would be undertaken within the existing WA site and building footprints. Impacts to biodiversity as a result of the Project would be negligible.

7.0 Management Measures

The EIS and Response to Submissions Report prepared for the TPF included a summary of the management measures to be incorporated into the construction and operation of the TPF. The summary of management measures constitutes a condition of consent as it is attached as Appendix 2 of SSD 7396. Condition A2(e) of SSD 7396 requires WA to carry out the development “*in accordance with the management and mitigation measures in Appendix 2*”.

One of the management measures contained within Appendix 2 of SSD 7396 includes a reference to the disposal of ash materials at an offsite landfill and therefore needs to be revised to reflect the current Project. The required amendments are shown in **Table 6** and a complete summary of the revised management measures is provided in **Appendix B** of this Modification Report.

Table 6 Required amendments to relevant management measures as listed in Appendix 2 of SSD 7396

Ref #	Current management measure	Revised management measure
2.	Ash materials resulting from the thermal treatment process will be disposed of at an offsite landfill licensed to receive such wastes as per the POEO Act.	Ash materials resulting from the thermal treatment process will be reprocessed and beneficiated for reuse within WA’s existing approved processes.

8.0 Conclusion

This Modification Report presents details of the Project and assesses the potential impacts of the Project on the environment. The Project seeks to clarify the recycling process for residual ash from the TPF and to modify the consent to remove any obligation to dispose of residual ash to landfill.

Preliminary profiling of the ash materials generated during the initial commissioning phase of the TPF has identified that residual ash is comprised of recoverable scrap metal and various oxides (silicon oxides, aluminium oxides and iron oxides) - each of which can be beneficiated for reuse as per WA's existing processes.

The Project does not involve an increase in the approved processing limits, hours of operation, traffic loads, air quality or noise limits, or inputs received at the site. These aspects of the operation would remain consistent with the approved development.

A qualitative assessment of environmental issues revealed that the potential adverse impacts of the Project would be negligible. The Project would assist in meeting the objectives of the waste management hierarchy by promoting the recovery of resources and recycling of materials and by reducing the disposal of wastes to landfill. In doing so the Project would result in beneficial environmental outcomes by removing the need to dispose of up to 800 tonnes per year of residual ash material to landfill.

9.0 References

AECOM (2012) *Environmental Assessment: Spent Potlining Processing*, Revision D – Final Revised, AECOM, May 2012.

AECOM (2016) *Thermal Waste Processing Project: Environmental Impact Statement - SSD_15_7396*, AECOM, August 2016.

AECOM (2017) *Environmental Assessment: Modification – Pharmaceutical & Illicit Drug Waste Processing*, AECOM, July 2017.

Envirosciences (1994) *Environmental Impact Statement for an Aluminium Dross Recycling and Alloying Plant at Kurri Kurri*, Envirosciences Pty Ltd, July 1994.

GHD (2010) *Report on Proposed Briquetting Plant, Kurri Kurri: Environmental Assessment*, GHD, November 2010.

URS (2001) *Environmental Impact Statement for Additions to the Kurri Kurri Aluminium Refining and Recycling Facility*, URS, April 2001.

Appendix A

EPBC Protected Matters Search

Appendix A EPBC Protected Matters Search



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 09/04/20 11:28:14

[Summary](#)

[Details](#)

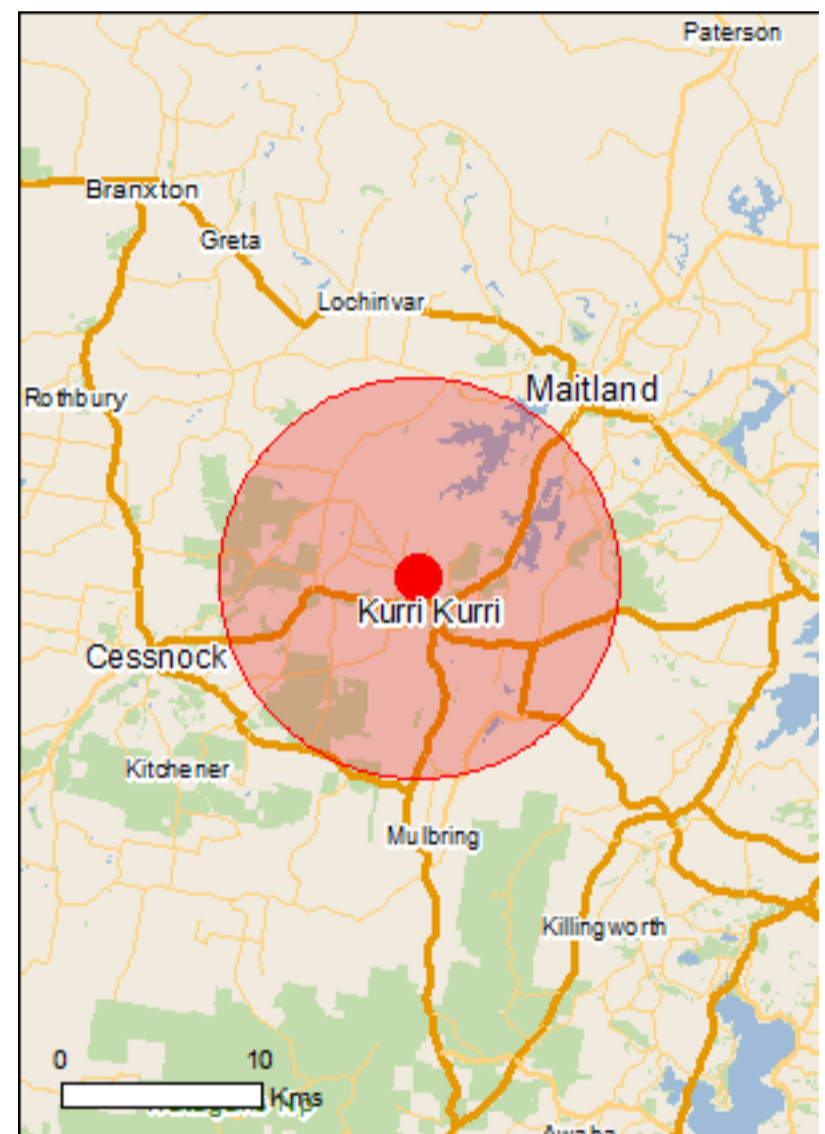
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

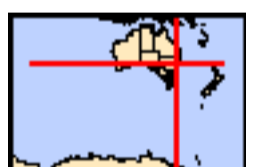
[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

Buffer: 10.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	44
Listed Migratory Species:	16

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	4
Commonwealth Heritage Places:	None
Listed Marine Species:	22
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	3
Regional Forest Agreements:	1
Invasive Species:	47
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Hunter estuary wetlands	10 - 20km upstream

Listed Threatened Ecological Communities

[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Central Hunter Valley eucalypt forest and woodland	Critically Endangered	Community may occur within area
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area
Hunter Valley Weeping Myall (Acacia pendula) Woodland	Critically Endangered	Community may occur within area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area

Listed Threatened Species

[Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat likely to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area

Name	Status	Type of Presence
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Frogs		
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat may occur within area
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area
Litoria littlejohni Littlejohn's Tree Frog, Heath Frog [64733]	Vulnerable	Species or species habitat may occur within area
Mixophyes balbus Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Endangered	Species or species habitat likely to occur within area
Insects		
Synemon plana Golden Sun Moth [25234]	Critically Endangered	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat known to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat likely to occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Potorous tridactylus tridactylus Long-nosed Potoroo (SE Mainland) [66645]	Vulnerable	Species or species habitat may occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat known to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Plants		
Acacia bynoeana Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat may occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat likely to occur within area
Cynanchum elegans White-flowered Wax Plant [12533]	Endangered	Species or species habitat likely to occur within area
Eucalyptus glaucina Slaty Red Gum [5670]	Vulnerable	Species or species habitat known to occur within area
Eucalyptus parramattensis subsp. decadens Earp's Gum, Earp's Dirty Gum [56148]	Vulnerable	Species or species habitat known to occur within area
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area
Grevillea parviflora subsp. parviflora Small-flower Grevillea [64910]	Vulnerable	Species or species habitat known to occur within area
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat may occur within area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat likely to occur within area
Persoonia hirsuta Hairy Geebung, Hairy Persoonia [19006]	Endangered	Species or species habitat may occur within area
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area
Prostanthera cineolifera [11233]	Vulnerable	Species or species habitat may occur within area
Pterostylis gibbosa Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood [4562]	Endangered	Species or species habitat may occur within area
Rutidosis heterogama Heath Wrinklewort [13132]	Vulnerable	Species or species habitat known to occur within area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat known to occur within area
Tetratheca juncea Black-eyed Susan [21407]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Hoplocephalus bungaroides Broad-headed Snake [1182]	Vulnerable	Species or species habitat may occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Commonwealth Land - Airservices Australia Commonwealth Land - Australian Telecommunications Commission Commonwealth Land - Telstra Corporation Limited

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Sugarloaf	NSW
Werakata	NSW
Werakata	NSW

Regional Forest Agreements

[[Resource Information](#)]

Note that all areas with completed RFAs have been included.

Name	State
North East NSW RFA	New South Wales

Invasive Species

[[Resource Information](#)]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892] Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-32.80524 151.47591

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact Us](#) page.

Appendix B

Summary of Management Measures

Appendix B Summary of Management Measures

Table B1: Summary of Management Measures

Ref#	Management and Mitigation Measures	Timing
Waste Management		
1.	Throughout the construction and operation of the Project, WA will implement the waste hierarchy principals outlined in the WARR Strategy.	Construction
2.	Ash materials resulting from the thermal treatment process will be reprocessed and beneficiated for reuse within WA's existing approved processes.	Operation
3.	WA will not accept wastes for onsite processing which are not defined in the Development Consent or encompassed in the updated EPL 6423.	Operation
4.	WA will ensure that wastes received onsite have been properly classified by the providers of those wastes, and will fulfil its waste tracking requirements as set out in the Protection of the Environment Operations (Waste) Regulation 2014.	Operation
5.	A screening process will be implemented for all waste arriving at the site. No waste will be allowed to be deposited at the site until approval has been provided by the WA operator. A formal screening and approval procedure will be included in the Project Operational Management Plan regarding the screening process. This process will mimic established and mature dross/SPL/scrap inspection and accept/reject procedures.	Operation
6.	WA will ensure that it and any of its transport contractors comply with the Dangerous Goods (Road and Rail) Transport Act 2008, Dangerous Goods (Road and Rail Transport) Regulation 2014, and ADG Code when arranging for the transport of any materials covered by the ADG Code.	Operation
7.	In accordance with EPA requirements, WA will retain any waste sampling and classification results that it obtains for the required interval of time (currently for a minimum 7-years).	Operation
8.	Waste water will be disposed of to the waste water network in accordance with the Trade Waste Agreement with Hunter Water.	Operation
9.	The Project will not receive, store or process any organic solvents (G150) wastes or E-waste.	Operation
Air Quality and Odour		
10.	Existing safeguards to manage air quality impacts, including the existing fabric filter and lime injection system, which will service both the proposed Project and the existing reverb furnace process emissions.	Operation
11.	Additionally, the Project will include real time monitoring and activated carbon injection. The Project will be equipped with an extractive emission monitoring system comprised of oxygen, carbon monoxide and carbon dioxide analysers.	Operation
12.	Analysers will be used for monitoring combustion efficiency calculations, process control and alarm generation.	Operation
13.	Exhaust gases from the secondary chamber, once cooled, will receive an injection of both activated carbon and lime into the fabric filter exhaust inlet duct. Here, exhaust gases will undergo filtration with activated carbon and lime for particulate, acid gas, heavy metals and dioxin control within the plant's existing fabric filter. Treated exhaust gases will then be discharged to the atmosphere from the existing stack.	Operation

Ref#	Management and Mitigation Measures	Timing
14.	The facility will include an emergency bypass stack in which hot combustion gases may be vented directly to the atmosphere during emergency situations or power failure. The proposed bypass stack will be equipped with a fail-safe pneumatically assisted and counterweighted insulated stack cap.	Operation
15.	All air quality monitoring, management and pollution control systems will be operated to maintain emissions below proposed emissions limit for Stack 5 and existing emissions limits for all other stacks.	Operation
Traffic and Transport		
16.	A Construction Traffic Management Plan will be prepared and implemented prior to the construction phase of the Project as part of the CEMP. This will include the guidelines, general requirements and principles of traffic management to be implemented during the construction phase to minimise the potential for traffic impacts on Mitchell Avenue. Specifically, no construction traffic will be allowed to park or idle on the surrounding road network.	Construction
17.	The WA Site's existing Operational Environmental Management Plan will be updated to incorporate consideration of the Project's operational traffic requirements. Measures that will be implemented to manage operational traffic include: <ul style="list-style-type: none"> • An induction process for drivers; • Time of day travel restrictions in accordance with the Development Consent and EPL; • The requirement to follow approved operational access and egress routes from the Hunter Expressway; and • The identification of area for light vehicle overflow parking within the boundaries of the WA site. 	Operation
Noise and Vibration		
18.	Construction Hours – Works will be limited to standard construction hours where possible.	Construction
19.	Standard Mitigation Measures: All construction activities associated with the development of the Project will be subject to the standard noise and vibration mitigation measures described below: <ul style="list-style-type: none"> • The contractor will, where reasonable and feasible, apply best practice noise mitigation measures including: <ul style="list-style-type: none"> – Maximising the offset distance between noisy plant items and nearby noise sensitive receivers; – Avoiding incidents of noisy plants working simultaneously close together and adjacent to sensitive receivers, where practicable; – Orientating where possible, equipment with directional noise emissions away from sensitive receivers; – Locating noisy plant away from potentially noise affected neighbours or behind barriers, such as sheds or walls; – Loading and unloading out away from sensitive receivers, where practicable; – Carrying out maintenance work on construction plants with the potential to generate noise impacts away from noise sensitive receivers and confined to standard daytime construction hours, where possible; – Relocating any vibration generating plant and equipment away from noise and vibration sensitive receivers in order to minimise any potential vibration impacts; – Turning off plant that is not being used; – Ensuring plant is regularly maintained, and repairing or replacing equipment that becomes noisy; and – Arranging the construction work site to minimise the use of movement alarms on vehicles and mobile plant. 	Construction

Ref#	Management and Mitigation Measures	Timing
20.	<p>Local Road Traffic – Heavy Vehicles Noise Mitigation:</p> <ul style="list-style-type: none"> • The following mitigation measures are proposed in order to minimise the impact from heavy vehicles on local roads: <ul style="list-style-type: none"> - All trucks will be fitted with mufflers and any other noise control equipment in good working order; - As far as practical and safety consideration, truck drivers will avoid: <ul style="list-style-type: none"> ▪ Heavy acceleration and braking; ▪ Compression braking; ▪ Reversing as far as practicable; ▪ High speeds; ▪ Pick-ups and deliveries outside standard construction hours; ▪ Idling outside noise sensitive receivers; and ▪ Truck routes to and from the construction work site will be via arterial routes. • Reversing Alarms: <ul style="list-style-type: none"> - The potential noise impact associated with reversing alarms will be managed and minimised via a combination of proactive driver/operator training and operational procedures. The following mitigation strategies will be undertaken, taking into account that SafeWork NSW Work Health and Safety requirements will need to be satisfied with respect to safety surrounding construction vehicles; - The primary means for minimising reversing alarm noise will be through a dedicated effort on the part of all construction equipment drivers to minimise, wherever feasible, the amount of reversing of their vehicles; - Wherever feasible, turning circles will be created at the end points of vehicle work legs, which will allow trucks to turn and avoid the need for reversing; and - Emphasis will be placed during driver training and site induction sessions on the potential adverse impact of reversing alarms and the need to minimise their use. 	Construction and Operation
21.	The existing site Operational Environmental Management Plan will be in force to manage operational noise.	Operation
Soil and Water		
22.	Where excess spoil is excavated at the Project Area (not foreseen), it will be subject to sampling and classification according to the Waste Classification Guidelines Part 1: Classifying Waste (EPA, 2014a) prior to being transported offsite to an authorised receiver.	Construction
23.	Erosion and sediment control practices will be incorporated into the CEMP for the Project, in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) to prevent construction site runoff entering the WA Site stormwater system, or the nearby Swamp Creek.	Construction
24.	<p>To minimise the potential for contamination to occur during construction works the following measures will be employed during construction works:</p> <ul style="list-style-type: none"> • Excavated spoil will be stored so as to prevent its uncontrolled release; and • Construction works and laydown areas will be confined to hardstand areas where reasonable and practicable to do so. 	Construction

Ref#	Management and Mitigation Measures	Timing
25.	Groundwater interception will be avoided where possible.	Construction
26.	Spill kits will be available at the construction site.	Construction and Operation
27.	All liquids will be stored in appropriately bunded areas in accordance with Safety Data Sheet and manufacture requirements.	Construction and Operation
28.	Refuelling activities will be undertaken in existing dedicated refuelling bunds.	Construction and Operation
29.	The existing OEMP prepared for the Facility provides a framework to effectively manage the potential pollution of soils and water during the operation of the Project. The OEMP will be updated where relevant to incorporate the Project in consultation with DP&E. The site Surface Water Management Plan will also be updated to incorporate the relevant compliance requirements of the Project.	Operation
30.	During operations WA will continue to comply with any water quality management measures set out in EPL 6423. This may include stormwater monitoring (such as that currently undertaken at the WA Site), as well as the appropriate storage, enclosing, bunding and covering of SPL material and pharmaceutical wastes.	Operation
31.	WA will continue to liaise with Hunter Water to ensure the operational phase of the Project is included in a Trade Waste Agreement with Hunter Water.	Operation
32.	The CEMP will include of procedure for the management of contamination or potential contamination during site work, including the following measures as a minimum: <ul style="list-style-type: none"> • Should any potential anthropomorphic contaminated material (e.g. chitter, slag, building waste (brick or similar) or any odorous materials) the contractor will be required to cease work in the vicinity to the material; • Sampling will take place to identify the content of the material; • Material will be managed pursuant to the results of the sampling analysis with any contaminated material handled and managed accordingly; and • Regardless of potential to contain contamination, any excess material generated by construction work that needs to be disposed of offsite will be classified accordingly. 	Construction
Hazards		
33.	The following practices currently employed at the WA Site will continue during the operation of the Project: <ul style="list-style-type: none"> • Baghouse No. 5 will be fitted with a real-time, continuous particulate monitoring system; • All baghouses will be fitted with high differential pressure detection to activate bag switch-over and clogged bag cleaning processes; • The existing site EMS will be updated to incorporate the management requirements of the Project; and • Dangerous Goods will be transported to and from site in accordance with the ADG Code, the Dangerous Goods (Road and Rail Transport) Act 2008 and the Dangerous Goods (Road and Rail Transport) Regulation 2014. A number of further safety studies will be required to be conducted in accordance with:	Operation

Ref#	Management and Mitigation Measures	Timing
	<ul style="list-style-type: none"> • The hazard-related conditions of consent provided by DP&E; • The Work Health and Safety Act 2011, associated regulations (including the Work Health and Safety Regulation 2011), and codes of practise; and • The Protection of the Environment Operations Act 1997 and associated regulations. 	
34.	<p>The following measures will be implemented to control, minimise and manage risks during all phases of the Project:</p> <ul style="list-style-type: none"> • In detailed design, locate product storage areas at separation distances with specific reference to the applicable Australian Standards; • Conduct a Fire Safety Study for the Project to determine appropriate fixed and portable fire protection systems for the Project Area; • A Final Hazard Analysis will be prepared prior to construction; • Develop a Traffic Risk Assessment and a detailed Route Selection study for the dangerous goods transport activities particularly for the transport of dangerous goods to the Project Area; • Carry out safety in Design Reviews in accordance with Work Health and Safety Regulation 2011 and Code of Practice – Safe Design of Structures (Safe Work Australia, July 2012); and • The flood protection measures identified in the Preliminary Hazard Analysis (AECOM, 2017) including minimum floor levels, flood proofing of buildings and infrastructure and the implementation of operational, emergency and safety plans with respect to flooding will be implemented for the Project. 	Construction and Operation
35.	<p>The following measures will be implemented to control, minimise and manage risks:</p> <ul style="list-style-type: none"> • Update the Safety Management System Manual, November 2015 to include the operations and materials associated with the Project prior to the commencement of operation in accordance with the requirements of the Work Health and Safety Regulation 2011; • Update the Emergency Response Plan (Weston Aluminium Pty Ltd, November 2015) to include specific responses to the hazard scenarios identified in this PHA and any other safety studies conducted for this Project; • Develop and implement an appropriate Safety Management Plan. This should include access by workers to a risk register for all construction activities; • Ensure a permit to work system is implemented, in particular where workers may be exposed to high risk activities; • Undertake audits on construction activities, and address and communicate any findings to the relevant workers; • Ensure the workers have appropriate training and the necessary competencies; and • Implement actions/risk reduction strategies as identified through Safety in Design reviews. 	Construction and operations.
36.	<p>During operations, the following measures will be implemented:</p> <ul style="list-style-type: none"> • Update the site Safety Management Plan. This should include access by workers to a risk register for all operational activities; • Update the site Emergency Response Plan to ensure a co-ordinated response to the hazard scenarios identified in this assessment; 	Operation

Ref#	Management and Mitigation Measures	Timing
	<ul style="list-style-type: none"> • Update the site Operational Environmental Management Plan; • Undertake audits on operational activities, and address and communicate any findings to the relevant workers; • Ensure workers have appropriate training and necessary competencies; • Implement appropriate maintenance programs to minimise potential for equipment failures; • Notify SafeWork NSW of any WHS Regulation Schedule 15 chemicals that are likely to exceed 10 percent of the threshold quantity; • Prepare/update any placards, manifests and emergency plans as required for chemicals exceeding the WHS Regulation Schedule 11 placard or manifest quantities; and • Update the onsite dangerous goods register and Safety Data Sheet register, as well as provide updated dangerous goods notifications to SafeWork NSW as required. 	
37.	<p>The following safeguards will be implemented to limit the consequences and likelihood of a fire occurring at the Project Area's dangerous goods store:</p> <ul style="list-style-type: none"> • The Project Area will be continuously staffed with appropriate security fencing and/or other systems to resist malicious attack; • The proposed warehouse building will incorporate an electrical system designed to meet relevant explosion protection standards; • No equipment will operate in dangerous goods warehouses areas that might generate friction or other sources of heat contributing to the risk of ignition; • A strict smoking ban will continue to be enforced on the WA Site; • Process areas will contain properly maintained equipment (such as forklifts) suitable for the relevant hazardous area classification; • All incompatible dangerous goods classes will be completely segregated with appropriate fire separation distances created and maintained (including use of fire walls etc. where necessary) according to AS 1940:2004 – The Storage and Handling of Flammable and Combustible Liquids; • All spills will be quickly and completely cleaned up; • No dangerous goods will be accepted at the Project Area unless they are packaging complying with the ADG Code and the requirements of the WHS Regulation, with steel drums preferred where possible to limit potential for damage and leakage; • Adequate sprinkler or foam systems will be installed if the Fire Safety Study indicates these are required; • Fully bunded dangerous goods warehouse sections will be maintained so as to limit the spread of fire and prevent the discharge of contaminated fire-water in the event of such an incident; and • Training will be provided for staff in correct equipment operation, accident prevention and emergency response (including firefighting). 	Operation

Ref#	Management and Mitigation Measures	Timing
38.	<p>The following additional safeguards will be implemented to limit the consequences and likelihood of a toxic release from class 6.1 dangerous goods:</p> <ul style="list-style-type: none"> • Equipment (such as forklifts) will be properly maintained to minimise the risk of damage to packaging; and • No transfer operations of class 6.1 materials destined for thermal processing will occur outside the thermal waste processing plant. 	Operation
39.	<p>To control, minimise and manage risks during the post-closure phase of the Project, the following measures will be implemented:</p> <ul style="list-style-type: none"> • Develop a decommissioning plan. This should include a project risk register that is available to all workers, including any risk items added during the construction and operations phases; and • Keep records of all workplace health and safety information relating to the Project post closure phase; • The storage and handling of dangerous goods during the Project will be undertaken in accordance with the relevant Australian Standard for each class of dangerous goods, including those outlined below: <ul style="list-style-type: none"> - AS/NZS 3816:1998, Management of clinical and related wastes relating to the management of class 6.1 pharmaceutical substances; - HB 202-2000, A management system for clinical and related wastes – Guide to the application of AS/NZS 3816-1998, Management of clinical and related wastes; - AS 1940:2004 – The Storage and Handling of Flammable and Combustible Liquids relating to the management of paints, solvents, pharmaceutical and quarantine wastes classified as class 3 substances; - AS 3780:2008 – The storage and handling of corrosive substances - management of class 8 pharmaceutical and quarantine wastes classified as corrosive substances; - AS/NZS 4452:1997, The storage and handling of toxic substances - management of class 6.1 pharmaceutical substances; - AS/NZS 4681:2000 – The storage and handling of Class 9 miscellaneous dangerous goods relating to class 9 pharmaceutical wastes; and - AS/NZS 3833:2007 – The Storage and Handling of Mixed Classes of Goods, in Packages and Intermediate Bulk Containers considered for the management of areas where various classes of goods are stored, such as waste preparation areas. 	Post-Operation
40.	<ul style="list-style-type: none"> • The Shredder would be operated in a negative pressure environment. Following the addition of waste material to the shredder, the shredder hood would be closed effectively sealing the shredder and preventing the escape of any material during the shredding process. A bin is placed under the shredder to capture shredded material following its processing. The shredder is designed such that the shredder bin fits tightly under the shredder to prevent material escape. • During the operation of the shredder, air is drawn from the shredder in order to maintain a negative pressure environment. This air is directed to either: <ul style="list-style-type: none"> - The primary combustion chamber for thermal treatment if the combustion chamber is in operation; or 	Operational

Ref#	Management and Mitigation Measures	Timing
	- Passed through a High Efficiency Particulate Air (HEPA) filter before release to ensure any airborne material is captured.	
41.	The following would be implemented to prevent cross contamination of waste streams: <ul style="list-style-type: none"> • Wastes associated with the project to be transported, stored and processed separately to SPL and dross material; • Separate processing facilities would be used to treat each waste stream. No dross or SPL material would be treated by the project and no medical waste would be treated in the existing facility; and • Storage and handling procedures unique to each waste type (including procedures currently in place at WA) would be implemented across the site to prevent loss of containment. 	Operational
42.	To prevent fire or explosion resulting from excessively hot exhaust gas coming into contact with activated carbon the following would be implemented: <ul style="list-style-type: none"> • Preliminary heat exchanger to remove excess heat from exhaust gas following release from secondary combustion chamber; • Forced air cooler to inject ambient air to further reduce temperature of exhaust gas following the heat exchanger; • Water spray system would automatically operate if the fabric filter inlet temperature were to exceed the deemed maximum operate; • If the exhaust gas process temperatures were to exceed 230°C at the baghouse for any reason then the flow of activated carbon would automatically cease and the exhaust gases would bypass the fabric filter eliminating any risk of fire or explosion; • Programmable Logic Controller (PLC) would be utilised to monitor the operation of the plant in real-time allowing systems responses (shutdowns) to be implemented immediately in the event of 'upset' conditions; and • The system would utilise high quality, high ignition temperature activated carbon specifically designed for combustion flue gas applications. 	Operational
Human Health		
43.	All air pollution management, monitoring and pollution prevention systems will be operated to maintain the proposed emissions limits from Stack 5.	Operational
Biodiversity		
44.	Limit the construction disturbance footprint area of the Project as far as possible through the use of flagging, to restrict plant and machinery movements.	Construction
45.	Minimise soil transportation within, or out of the Project footprint to reduce the potential for weed spread.	Construction
46.	Stockpile or store construction materials within the existing hardstand areas of the WA Site.	Construction
47.	Apply appropriate erosion and sedimentation controls around the Project Area during construction to prevent impacts to downstream riparian habitats.	Construction

Ref#	Management and Mitigation Measures	Timing
48.	A clearing procedure will be prepared which details the methods to be implemented during clearing. This should include suitable protocols in case of any fauna found during clearance works. Such as procedure to contact suitable fauna handlers/ecologists to rescue, relocate or euthanize any fauna.	Construction
Heritage		
49.	<p>Aboriginal Cultural Heritage:</p> <ul style="list-style-type: none"> Although no archaeological heritage items have previously been identified within the Project disturbance area or immediate surrounds, should an artefact or item of Aboriginal cultural heritage be discovered during construction works, the following standard procedure should be adopted: <ul style="list-style-type: none"> Cease all works immediately in the area to prevent any further impacts to the site; Notify the OEH; Engage a suitably qualified archaeologist and Registered Aboriginal Parties (RAP) to determine the nature, extent and significance of the site and provide appropriate management advice. Management action(s) will vary according to the type of evidence identified, its significance (both scientific and cultural) and the nature of potential impacts; Prepare and submit an AHIMS site card for the site; and In the event that potential human skeletal remains are identified within the Project area at any point during the life of the Project, all work in the vicinity of the remains should cease immediately and OEH should be notified for further instruction. 	Construction
50.	<p>Non-Aboriginal Heritage:</p> <ul style="list-style-type: none"> Should any items of potential cultural heritage significance be uncovered during earthworks, the immediate area of the potential find will be isolated and the heritage officer at Cessnock City Council contacted for advice. 	Construction
Visual Amenity		
51.	The waste processing building will be clad in green Colorbond and the use of reflective materials will be avoided where possible.	Design / Construction
52.	Exterior lighting will be designed and constructed in accordance with <i>Australian Standard 4282 – Control of Obtrusive Effects and Outdoor Lighting</i> .	Design / Construction
Consultation		
53.	A Stakeholder Consultation Plan will be prepared to detail how the community and key stakeholders will be consulted during the construction and operation of the Project.	Construction and Operation.